

SECRET

ATTACHMENT II

FRC Comments on Pilgrim's
RETS Submittal (dated April 15, 1983)

April 9, 1984

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Draft # 7th of NUREG-0473, Rev. 3, December 1983

Licensee RETS Submittal

Comments

DRAFT # 7th

NUREG-0473
Revision 3

STANDARD RADIOLOGICAL EFFLUENT TECHNICAL
SPECIFICATIONS FOR BOILING WATER REACTORS

March 1982
SEPTEMBER 1982

PHPS
RADIOLOGICAL ENVIRONMENTAL
TECHNICAL SPECIFICATIONS
SUBMITTAL

April 15, 1983

3/12/82
3/2/82

(Draft # 7th) 12/1/83

Comparison of Plant Radiological Effluent Technical Specifications
With NUREG-0473 (Model RETS for BWR)

Draft # 7 of NUREG-0473, Rev. 3, December 1983

Plant: Fajom 1

Page 5 of 83

Licensee RETS Submittal

Comments

1.0. DEFINITIONS

The defined terms of this section appear in capitalized type and are applicable throughout these technical specifications.

ACTION

1.1 ACTION shall be that part of a Specification which prescribes remedial measures required under designated conditions.

CHANNEL CALIBRATION

1.2 A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it is in agreement with the necessary range and accuracy to known values of the parameter which the channel monitors. The CHANNEL CALIBRATION shall encompass the entire channel including the channel and alarm and/or trip functions, and shall include the CHANNEL FUNCTIONAL TEST. CHANNEL CALIBRATION may be performed, by any series of sequential, overlapping or total channel checks such that the entire channel is calibrated.

CHANNEL CHECK

1.3 A CHANNEL CHECK shall be the qualitative assessment of channel behavior during operation by observation. A channel check may include, where possible, comparison of the channel output with other indicators and/or status derived from independent instrumentation channels, measuring the same parameter.

CHANNEL FUNCTIONAL TEST

1.4 A CHANNEL FUNCTIONAL TEST shall be:

- a. Testing channels - the injection of a signal into the channel as close to the sensor as practicable to verify OPERABILITY including alarm and/or trip functions.
- b. Bypassable channels - the injection of a signal into the sensor to verify OPERABILITY including alarm and/or trip functions.

DOSE EQUIVALENT 1-131

1.5 The DOSE EQUIVALENT 1-131 shall be that concentration of 1-131 (activity) which alone would produce the same thyroid dose as the quantity and fraction of 1-131, I-132, I-133, I-134 and I-135 actually present. The thyroid dose factors used for this calculation shall be those listed in Table III of IEP-1000, "Calculation of Dose Factors for Power and Test Reactor Sites" (see Table IV of NRC Regulatory Guide 1.145, Revision 1, October 1977).

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6/7/82

Major Discrepancies

Licensee has not included in the definition the "Dose Equivalent 1-131."

Licensee's Justification

None

Reviewer's Comments

Licensee should include the definition in RETS proposal as it is referenced in page 41 of model RETS.

AA. ACTION

ACTION shall be that part of a Specification which prescribes remedial measures required under designated conditions.

1. Instrument Calibration - An instrument calibration shall be the adjustment of an instrument signal output so that it corresponds within acceptable range and accuracy to a known value. Calibration shall encompass the entire instrument including activation, alarm or trip.

2. Instrument Power Test - An instrument functional test shall be the injection of a simulated signal into the instrument primary sensor to verify the proper instrument alarm and/or alarm and/or tripping action.

3. Instrument Check - An instrument check is qualitative assessment of instrument operability by observation of the instrument behavior during operation. This assessment shall include, where possible, comparison of the instrument with other independent instruments measuring the same variable.

Draft of 7th of NUREG-0473, Rev. 3, December 1993

Comments

Licensee RETS Submittal

1.9 DEFINITIONS (Continued)

GASEOUS RADWASTE TREATMENT SYSTEM

(e.g. The "Simulated Offgas System")

1.6 A GASEOUS RADWASTE TREATMENT SYSTEM is any system designed and installed to reduce radioactive gaseous effluents by collecting primary coolant system offgases from the main system and providing for delay or hold-up for the purpose of reducing the total radioactivity prior to release to the environment.

MEMBER(S) OF THE PUBLIC

1.7 MEMBER(S) OF THE PUBLIC shall include all persons who are not occupationally associated with the plant. This category does not include employees of the utility, its contractors or vendors. Also excluded from this category are persons who enter the site to service equipment or to take deliveries. This category does include persons who use portions of the site for recreational, occupational or other purposes not associated with the plant.

OFFSITE DOSE CALCULATION MANUAL (ODCM)

1.8 The OFFSITE DOSE CALCULATION MANUAL shall contain the current methodology and parameters used in the calculation of offsite doses due to radioactive gaseous and liquid effluents, in the calculation of gaseous and liquid effluent monitoring alarm/trip setpoints, and in the conduct of the environmental radiological monitoring program.

OPERABLE - OPERABILITY

1.9 A system, subsystem, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s), and when all necessary attendant instrumentation, controls, electrical power, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its function(s) are also capable of performing their related support function(s).

OPERATIONAL MODE - MODE

1.10 An OPERATIONAL MODE (i.e., MODE) shall correspond to any one inclusive combination of core reactivity condition, power level, and average reactor coolant temperature specified in Table 1.1.

PROCESS CONTROL PROGRAM (PCP)

1.11 The PROCESS CONTROL PROGRAM shall contain the current formula, sampling, analyses, tests, and determinations to be made to ensure that the processing and packaging of solid radioactive wastes based on demonstrated processing of actual or simulated wet solid wastes will be accomplished in such a way as to ensure compliance with 10 CFR Part 20, 10 CFR Part 71 and Federal and State regulations and other requirements governing the disposal of the radioactive waste.

DWR-ST5-1

PWR-ST5-1

3-2

1

9/3/82

1. GASEOUS RADWASTE TREATMENT SYSTEM

The GASEOUS RADWASTE TREATMENT SYSTEM is that system identified Figure 4.B.F.1.

BB. MEMBER(S) OF THE PUBLIC*

MEMBER(S) OF THE PUBLIC shall include all persons who are not occupationally associated with the plant. This category does not include employees of the utility, its contractors, or vendors. Also excluded from this category are persons who enter the site to service equipment or to take deliveries. This category does include persons who use portions of the site for recreational, occupational or other purposes not associated with the site.

Z. OFFSITE DOSE CALCULATION MANUAL (ODCM)

AN OFFSITE DOSE CALCULATION MANUAL (ODCM) shall be a manual containing the current methodology and parameters to be used in the calculation of offsite doses due to radioactive gaseous and liquid effluents, in the calculation of gaseous and liquid effluent monitoring instrumentation alarm/trip setpoints, and in the conduct of the Radiological Environmental Monitoring Program.

X. Operable - Operability

A system, subsystem, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s). Implicit in this definition shall be the assumption that all necessary attendant instrumentation, controls, normal and emergency electrical power sources, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component or device to perform its function(s) are also capable of performing their related support function(s).

K. Mode - The reactor mode is that which is established by the moderator-switch. The modes include shutdown, refuel, startup and run which are defined as follows.

Major Discrepancies

1. Licensee's definition on the Gaseous Radwaste Treatment System does not include a description of the system.
2. Licensee has not addressed the Process Control Program (PCP).

Licensee's Justification

1. None
2. Licensee stated that PWR does not have a Process Control Program.

Reviewer's Comments

1. Licensee should provide a generic description of the Gaseous Radwaste Treatment System.
2. Licensee should address PCP, since it is part of the RETS.

Comments

Licensee DEIS Submittal

1.0 DEFINITIONS (Continued)

PURGE - PURGING

1.12 PURGE or PURGING is the controlled process of discharging air or gas from a confinement to maintain temperature, pressure, humidity, concentration or other operating condition, in such a manner that replacement air or gas is required to purify the confinement.

RATED THERMAL POWER

1.13 RATED THERMAL POWER shall be a total reactor core heat transfer rate to the reactor coolant of ___ M-t.

SITE BOUNDARY

1.14 The SITE BOUNDARY shall be that line beyond which the land is neither owned, nor leased, nor otherwise controlled by the licensee.

SOLIDIFICATION

1.15 SOLIDIFICATION shall be the conversion of wet wastes into a form that meets shipping and burial ground requirements.

SOURCE CHECK

1.16 A SOURCE CHECK shall be the qualitative assessment of channel response when the channel sensor is exposed to a source of increased radioactivity.

THERMAL POWER

1.17 THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.

UNRESTRICTED AREA

1.18 An UNRESTRICTED AREA shall be any area at or beyond the SITE BOUNDARY access to which is not controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials, or any area within the SITE BOUNDARY used for residential quarters or for industrial, commercial, institutional, and/or recreational purposes.

Major Discrepancies

1. Licensee has not addressed PURGE-PURGING definition.
2. Licensee has not addressed Solidification definition.
3. Licensee's definition on Unrestricted Area is not clear.

Licensee's Justification

1. None
2. This definition of Solidification is tied to the PCP.
3. None

Reviewer's Comments

1. Licensee should address the PURGE-PURGING definition.
2. Licensee should address waste Solidification together with PCP.
3. Licensee should re-word the phrases to clarify the definition.

CC. SITE BOUNDARY*

The SITE BOUNDARY shall be that line beyond which the land is not owned, leased, or otherwise controlled by the licensee.

Y. SOURCE CHECK

A SOURCE CHECK shall be the qualitative assessment of channel response when the channel sensor is exposed to a radioactive source.

DD. UNRESTRICTED AREA*

An UNRESTRICTED AREA shall be any area at or beyond the SITE BOUNDARY access to which is not controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials and the Pilgrim Station shorefront area used for recreational purposes.

*Information regarding radioactive gaseous and liquid effluents, which allows identification of structures and release points as well as definition of UNRESTRICTED AREAS within the SITE BOUNDARY that are accessible to MEMBER OF THE PUBLIC, is as shown in Figure 1.1.

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Draft # 7" of NUREG-0473, Rev. 3, December 1983

Comments

Licensee RETS Submittal

INSTRUMENTATION

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3.10 The radioactive liquid effluent monitoring instrumentation channels shown in Table 3.3-12 shall be OPERABLE with their alarm/trip setpoints set to ensure that the limits of Specification 3.3.1.1 are not exceeded. The alarm/trip setpoints of these channels shall be determined and adjusted in accordance with the methodology and parameters in the GFSITE DOSE CALCULATION MANUAL (GDCM).

APPLICABILITY: At all times.

ACTION:

- a. With a radioactive liquid effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above specification, without delay suspend the release of radioactive liquid effluents monitored by the affected channel, or declare the channel inoperable, or change the setpoint so it is acceptably conservative.
- b. With less than the minimum number of radioactive liquid effluent monitoring instrumentation channels OPERABLE, take the ACTION shown in Table 3.3-12. Exert best efforts to return the instruments to OPERABLE status within 72 days and, if unsuccessful, explain in the next 5-annual Radiological Effluent Release Report why the inoperability was not corrected in a timely manner.
- c. The provisions of Specifications 3.0.3, 3.0.4, and 6.9.2.9.b are not applicable.

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SURVEILLANCE REQUIREMENTS

4.3.3.10 Each radioactive liquid effluent monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK, SOURCE CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations at the frequencies shown in Table 4.3-12.

RWR-ST3-1

PWR-ST3-1

3/4 3-73

9/3/82

Major Discrepancies

1. The licensee has not addressed Action b. of the model RETS with regard to the reporting requirements.

Licensee's Justification

None

Reviewer's Comments

1. The licensee should address the issues prescribed by Action b. of the model RETS.

LIMITING CONDITIONS FOR OPERATION

INSTRUMENTATION

3.3.3 Radioactive Liquid Effluent Instrumentation

Applicability

As shown in Table 3.8-1.

1. The radioactive liquid effluent monitoring instrumentation channels shown in Table 3.8-1 shall be OPERABLE with their alarm/trip setpoints set to ensure that the limits of Specification 3.8.A.1 are not exceeded during periods when liquid wastes are being discharged.

Action

- a. With a radioactive liquid effluent monitoring instrumentation channel alarm/trip setpoint less conservative than a value which will ensure that the limits of 3.8.A.1 are met, without delay suspend the release of radioactive liquid effluents monitored by the affected channel and declare the channel inoperable.

① →

- b. With one or more radioactive liquid effluent monitoring instrumentation channels inoperable, take the ACTION shown in Table 3.8-1.

SURVEILLANCE REQUIREMENTS

4.8.8 Radioactive Liquid Effluent Instrumentation

1. The setpoints for monitoring instrumentation shall be determined in accordance with the GDCM.
2. Each radioactive liquid effluent monitoring instrumentation channel shall be demonstrated OPERABLE at the frequencies shown in Table 4.8-2.

Draft # 7" of NUREG-0473, Rev. 3, December 1983

TABLE 3.3.7.11.1
RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

| INSTRUMENT | MINIMUM CHANNELS AVAILABLE | ACTION |
|--|----------------------------|--------|
| 1. GROSS RADIOACTIVITY MONITORS PROVIDING ALARM AND AUTOMATIC TERMINATION OF RELEASE a. Liquid Radwaste Effluent Line | (1) | 110 |
| 2. GROSS RATE OR GROSS RADIOACTIVITY MONITORS PROVIDING ALARM BUT NOT PROVIDING AUTOMATIC TERMINATION OF RELEASE a. Service Water System Effluent Line b. Component Cooling Water System Effluent Line | (1) | 112 |
| 3. FLOW RATE MEASUREMENT DEVICES a. Liquid Radwaste Effluent Line b. Discharge Canal | (1) | 112 |
| 4. RADIOACTIVITY RECORDERS* a. Liquid Radwaste Effluent Line | (1) | 113 |
| | (1) | 115 |

*Required only if alarm/trip set point is based on recorder/controller

3/4 3-73

3/12/82

Comments

Licensee RETS Subtotal

Major Discrepancies

Licensee has not addressed Service Water and Component Cooling Water Effluent Lines. Also, an effluent line from Neutralizer Sump is not addressed.

Licensee's Justifications

In Attachment A to the cover letter (April 15, 1983), the Licensee stated that "PNPS does not have these monitors. Therefore, grab samples will be obtained and analyzed on a weekly basis" The Licensee noted that component cooling water is a closed loop system.

Reviewer's Comments

At the site meeting during June 7-8, 1982, the resolution was that the Licensee adds a composite sampler to the discharge canal and includes a weekly sampling in the sampling program. The Licensee failed to provide a composite sampler at the discharge canal.

TABLE 3.3.8.1

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

| Instrument | Minimum Channels Available | Applicability | Action |
|--|----------------------------|--|--------|
| 1. Gross Radioactivity Monitors Providing Automatic Termination of Release a. Liquid Radwaste Effluent Line | (1) | During actual discharge of liquid wastes | 1 |
| 2. Flow Rate Measurement Devices a. Liquid Radwaste Effluent Line b. Discharge Canal* | (1) | During actual discharge of liquid wastes | 2 |

*Flow will be estimated based on the design flow rate of the operating Circulating Water Pumps and/or the operating Salt Service Water Pumps.

Draft § 7" of NUREG-0473, Rev. 3, December 1983

Comments

Licensee RETS Submittal

TABLE 3.3.7.11-1 (Continued)

TABLE NOTATION

- ACTION 110** - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases may continue provided that prior to initiating a release:
- a. At least two independent samples are analyzed in accordance with Specification 4.11.1.1.3, and
 - b. At least two technically qualified members of the Facility STAFF INDEPENDENTLY verify the release rate calculations and discharge line valving;
- Otherwise, suspend release of radioactive effluents via this pathway.
- ACTION 111** - Not Applicable.
- ACTION 112** - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided that, at least once per 12 hours, grab samples are collected and analyzed for gross radioactivity (beta or gamma) at a limit of detection of at least 10^{-5} microcuries/g.
- ACTION 113** - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided the flow rate is estimated at least once per 4 hours during actual releases. Pump curves generated in situ may be used to estimate flow.
- ACTION 114** - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, liquid additions to this tank may continue provided the tank liquid level is estimated during all liquid additions to the tank.
- ACTION 115** - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via the affected pathway may continue provided the gross radioactivity level is determined at least once per 4 hours during actual releases.

① →

Major Discrepancies

1. Licensee has not addressed the minimum number of qualified individuals to verify the release rate calculation and discharge line valving.

Licensee's Justification

None

Reviewer's Comments

Licensee should follow the minimum number of verification as per model RETS or provide justification.

BWR-ST5-1

3/4 3-75

3/12/82

TABLE NOTATION

- ACTION 1** - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases may be resumed provided that prior to initiating a release:
1. At least two independent samples are analyzed in accordance with Specification 4.8.A.1, and;
 2. An independent verification of the release rate calculations is performed and;
 3. An independent verification of the discharge valving is performed.
- ① →
- ACTION 2** - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided the minimum flow rate is verified at least once per 4 hrs during actual releases.

Draft # 7" of NUREG-0473, Rev. 3, December 1983

Comments

Licensee RETS Submittal

TABLE 3.3.3.11-1
RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

| EMERGENCY | CHANNEL CHECK | SOURCE CHECK | CALCULATION | CHANNEL FUNCTIONAL TEST |
|--|---------------|--------------|-------------|-------------------------|
| 1. GROSS RADIOACTIVITY MONITORS PROVIDING ALARM AND AUTOMATIC ISOLATION OF RELEASE | | | | |
| a. Liquid Radwaste Effluent Line | ② | F | N(2) | Q(3) |
| 2. GROSS BETA OR GAMMA RADIOACTIVITY MONITORS PROVIDING ALARM AND AUTOMATIC ISOLATION OF RELEASE | | | | |
| a. Service Water System Effluent Line | D | N | N(2) | Q(3) |
| b. Component Cooling Water System Effluent Line | D | N | N(2) | Q(3) |
| 3. FLOW RATE MEASUREMENT DEVICES | | | | |
| a. Liquid Radwaste Effluent Line | B(4) | N.A. | F | Q |
| b. Discharge Canal | B(4) | N.A. | F | Q |

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1/4 3-76

3/12/82

Major Discrepancies

1. Licensee has not addressed service water and component cooling water.
2. Licensee's frequencies for instrument check and source check are not consistent with model RETS.

Licensee's Justification

1. In Attachment A to the cover letter (April 15, 1983) the Licensee stated that "PNPS does not have these monitors. Therefore, grab samples will be obtained and analyzed on a weekly basis" The Licensee noted that component cooling water is a closed loop system.
2. None

Reviewer's Comments

1. At the site meeting during June 7-8, 1982, the resolution was that the Licensee adds a composite sampler to the discharge canal and includes a weekly sampling in the sampling program. The Licensee failed to provide a composite sampler at the discharge canal.
2. Licensee should provide justification or follow the model RETS.

TABLE 4.4.B.2

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

| Instrument | Instrument Check | Source Check | Channel Calibration | Channel Functional Test |
|---|------------------|--------------|--------------------------|-------------------------|
| 1. Gross Beta or Gamma Radioactivity Monitors Providing Alarm and Automatic Isolation | | | | |
| a. Liquid Radwaste Effluent Line | * ② | N.A. | Once per operating cycle | Quarterly |
| 2. Flow Rate Measurement Devices | | | | |
| a. Liquid Radwaste Effluent Line | * | N.A. | Once per operating cycle | Quarterly |

*Quoting or refer to release via this utility.

Draft # 7" of NUREG-0473, Rev. 3, December 1983

Comments

Licensee RETS Submittal

TABLE 4.3.7.11-2 (Continued)

TABLE NOTATION

- (1) The CHANNEL FUNCTIONAL TEST shall also demonstrate that automatic isolation of this pathway and control room alarm annunciation occur if any of the following conditions exists:
1. Instrument indicates measured levels above the alarm/trip setpoint.
 2. Circuit failure.
 3. Instrument indicates a downscale failure.
 4. Instrument controls not set in operate mode.
- (2) The CHANNEL FUNCTIONAL TEST shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exists:
1. Instrument indicates measured levels above the alarm setpoint.
 2. Circuit failure.
 3. Instrument indicates a downscale failure.
 4. Instrument controls not set in operate mode.
- (3) The initial CHANNEL CALIBRATION shall be performed using one or more of the reference standards certified by the National Bureau of Standards or using standards that have been obtained from suppliers that participate in measurement assurance activities with NBS. These standards shall permit calibrating the system over its intended range of energy and measurement range. For subsequent CHANNEL CALIBRATION, sources that have been related to the initial calibration shall be used. (Operating plants may substitute previously established calibration procedures for this requirement.)
- (4) CHANNEL CHECK shall consist of verifying indication of flow during periods of release. CHANNEL CHECK shall be made at least once per 24 hours on days which continuous, periodic, or batch releases are made.

Major Discrepancies

Licensee has not addressed table notations for the proposed table 4.8.13-2.

Licensee Justifications

None

Reviewer's Comments

Licensee should review the table notations as noted in the model RETS.

Comments

Licensee RETS Submittal

INSTRUMENTATION

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

LIMITING CONDITIONS FOR OPERATION

3.3.3.11 The radioactive gaseous effluent monitoring instrumentation channels shown in Table 3.3-13 shall be OPERABLE with their alarm/trip setpoints set to ensure that the limits of Specification 3.11.2.1 are not exceeded. The alarm/trip setpoints of these channels shall be determined and adjusted in accordance with the methodology and parameters in the GDCN.

APPLICABILITY: As shown in Table 3.3-13

ACTION:

- a. With a radioactive gaseous effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above Specification, without delay suspend the release of radioactive gaseous effluents monitored by the affected channel, or declare the channel inoperable, or change the setpoint so it is acceptably conservative.
- b. With less than the minimum number of radioactive gaseous effluent monitoring instrumentation channels OPERABLE, take the ACTION shown in Table 3.3-13. Exert best efforts to return the instruments to OPERABLE status within 30 days and, if unsuccessful, explain in the next Semiannual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner.
- c. The provisions of Specifications 3.0.3, 3.0.4, and 6.9.1.9.b are not applicable.

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SURVEILLANCE REQUIREMENTS

4.3.3.11 Each radioactive gaseous effluent monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK, SOURCE CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations at the frequencies shown in Table 4.3-13.

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ENC-575-1

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9/3/82

Major Discrepancies

1. Licensee has not addressed addressed Action b of the model RETS with regard to the reporting requirements.

Licensee's Justification

- I. None

Reviewer's Comments

1. Licensee should address the issue prescribed by action b. of the model RETS

LIMITING CONDITIONS FOR OPERATION

INSTRUMENTATION

3.8.E Radioactive Gaseous Effluent Instrumentation

Applicability

As shown in Table 3.8.E-1.

1. The radioactive gaseous process and effluent monitoring instrumentation channels shown in Table 3.8.E-1 shall be OPERABLE with their alarm/trip setpoints set to ensure that the limits of Specification 3.8.D.1 are not exceeded.

Action

- a. With a radioactive gaseous process or effluent monitoring instrumentation channel alarm/trip setpoints less conservative than a value which will ensure that the limits of 3.8.D.1 are met, declare the channel inoperable.
- b. With one or more radioactive gaseous process or effluent monitoring instrumentation channels inoperable, take the ACTION shown in Table 3.8.E-1.

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SURVEILLANCE REQUIREMENTS

4.8.E Radioactive Gaseous Effluent Instrumentation

1. The setpoints shall be determined in accordance with GDCN.
2. Each radioactive gaseous process or effluent monitoring instrumentation channel shall be demonstrated OPERABLE at the frequencies shown in Table 4.8.E-2.

Draft # 2 of NUREG-0473, Rev. 3, December 1983

Comments

Licensee RETS Submittal

TABLE 3.3.2.12-1
RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

| INSTRUMENT | MENTOR CHANNELS OPERABLE | APPLICABILITY | ACTION |
|---|--------------------------|---------------|--------|
| 3. REACTOR BUILDING VENTILATION/PURGE MONITORING SYSTEM | | | |
| a. Noble Gas Activity Monitor | (1) | * | 126 |
| b. Iodine Sampler | (1) | * | 127 |
| c. Particulate Sampler | (1) | * | 127 |
| d. Effluent System Flow Rate Monitor | (1) | * | 122 |
| e. Sampler Flow Rate Monitor | (1) | * | 122 |
| 4. MAIN STACK MONITORING SYSTEM | | | |
| a. Noble Gas Activity Monitor | (1) | * | 123 |
| b. Iodine Sampler | (1) | * | 127 |
| c. Particulate Sampler | (1) | * | 127 |
| d. Effluent System Flow Rate Monitor | (1) | * | 122 |
| e. Sampler Flow Rate Monitor | (1) | * | 122 |
| 5. TURBINE BUILDING VENTILATION MONITORING SYSTEM | | | |
| a. Noble Gas Activity Monitor | (1) | * | 123 |
| b. Iodine Sampler | (1) | * | 127 |
| c. Particulate Sampler | (1) | * | 127 |

Major Discrepancies

Licensee has not addressed the Turbine Building ventilation monitoring system.

Licensee's Justification

None

Reviewer's Comments

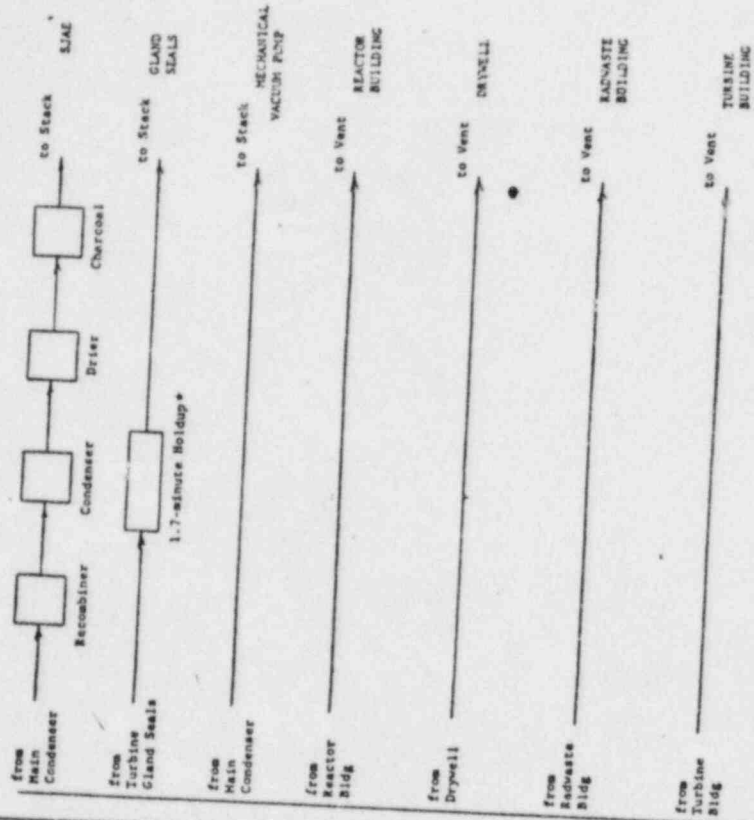
Although Licensee has indicated in the proposed Figure 4.8.F.1 (see attached in p. 21-A) that turbine building "vent" is a sub-system to "vent", however it is not clear if this "vent" is meant for the reactor building vent. Licensee should clarify this issue.

TABLE 3.3.2.13-1
RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

| Instrument | Monitor Channel's Operable | APPLICABILITY | Parameter | ACTION |
|--|----------------------------|---------------|--------------------------------|--------|
| 1. Main Stack Effluent Monitoring System | | | | |
| a. Noble Gas Activity Monitor | (1) | * | Radioactivity Rate Measurement | 3 |
| b. Iodine Sampler Cartridge | (1) | * | Collect Halogen Sample | 4 |
| c. Particulate Sampler Filter | (1) | * | Collect Particulate Sample | 4 |
| d. Effluent System Flow Rate Measuring Device | (1) | * | System Flow Rate Measurement | 2 |
| e. Sampler Flow Rate Measuring Device | (1) | * | Sampler Flow Rate Measurement | 2 |
| 2. Reactor Building Ventilation Effluent Monitoring System | | | | |
| a. Noble Gas Activity Monitor | (1) | * | Radioactivity Rate Measurement | 3 |
| b. Iodine Sampler Cartridge | (1) | * | Collect Halogen Sample | 4 |
| c. Particulate Sampler Filter | (1) | * | Collect Particulate Sample | 4 |
| d. Effluent System Flow Rate Measurement Device | (1) | * | System Flow Rate Measurement | 2 |
| e. Sampler Flow Rate Measurement Device | (1) | * | Sampler Flow Rate Measurement | 2 |

Comments

Licensee RETS Submittal



* No significant effect in reducing effluent doses when compared to transit time required for releases to reach site boundary.

Figure 4.8.F.1. Reactor Effluent Treatment System Schematic

TABLE 3.3.7.12-1 (Continued)

TABLE NOTATION

* At all times.

** During main condenser offgas treatment system operation.

*** During operation of the main condenser air ejector.

ACTION 121 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, the contents of the tank(s) may be released to the environment for up to 72 hours provided:

- a. The offgas system is not bypassed, and
- b. The offgas delay system noble gas activity effluent (downstream) monitor is OPERABLE;

① →

Otherwise, be in at least HOT STANDBY within 12 hours.

ACTION 122 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided the flow rate is estimated at least once per 4 hours.

ACTION 123 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided grab samples are taken at least once per 12 hours and these samples are analyzed for gross activity within 24 hours.

② →

ACTION 124 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, suspend release of radioactive effluents via this pathway.

ACTION 125 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, operation of main condenser offgas treatment system may continue provided grab samples are collected at least once per 4 hours and analyzed within the following 4 hours.

ACTION 126 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, operation of this system may continue for up to 14 days.

ACTION 127 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided samples are continuously collected with auxiliary sampling equipment as required in Table 4.11-2.

BWR-ST5-1

3/4 3-84

5/12/82

Major Discrepancies

1. Licensee has made no commitment on "Hot Standby" if Action 1 of its proposed RETS not satisfied.
2. For noble gas monitor of the reactor building ventilation system, Action 124 of the model RETS calls for immediate suspension of release whereas Action 3 of the licensee's proposal specifies the time limit.

Licensee's Justification

1,2, Non

Reviewer's Comments

1,2, Licensee should follow the model RETS provisions.

TABLE 3.8.E-1
(Continued)

TABLE NOTATION

*During releases via this pathway.

**During augmented offgas treatment system operation.

***During operation of the steam jet air ejector.

ACTION 1 With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, gases from the steam jet air ejector may be released to the offgas system for up to 72 hours provided:

- a. The augmented offgas treatment system is not bypassed, and
- b. The offgas delay system noble gas activity effluent (downstream) monitor is OPERABLE; otherwise, be in at least HOT STANDBY within 12 hours.

ACTION 2 With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 30 days provided the flow rate is estimated at least once per 4 hours.

ACTION 3 With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 30 days provided grab samples are taken at least once per 12 hours and these samples are analyzed for activity within 24 hours.

ACTION 4 With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 30 days, provided samples are continuously collected with auxiliary sampling equipment as required in Table 4.8.E-1.

ACTION 5 With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, operation of this waste gas holdup system may continue provided grab samples are collected at least once per 24 hours and analyzed within the following 4 hours and proper function of the recombiner is assured by monitoring recombiner temperature.

Comparison of Plant Radiological Effluent Technical Specifications
With NUREG-0673 (Model RETS for BOR)

Draft # 7th of NUREG-0673, Rev. 3, December 1983

Plant: Pligrit 1

Page 26 of 83

Licensee RETS Submittal

Comments

WORDS IN WHICH
SHORTILLANCE
REQUIRED

TABLE 4.3.7.2-1 (Continued)

| INSTRUMENT | CHECK | SOURCE | CHAMBER | CALIBRATION | FUNCTIONAL | LIST |
|---|-------|--------|---------|-------------|------------|------|
| 3. REACTOR BUILDING VENTILATION/PURGE MONITORING SYSTEM | | | | | | |
| a. Mobile Gas Activity Monitor | 0 | N | RC(3) | | Q(1) | * |
| b. Iodine Sampler | V | N.A. | | | N.A. | * |
| c. Particulate Sampler | V | N.A. | | | N.A. | * |
| d. Effluent System Flow Rate Monitor | 0 | N.A. | | | Q | * |
| e. Sampler Flow Rate Monitor | 0 | N.A. | | | Q | * |
| 4. MAIN STACK MONITORING SYSTEM | | | | | | |
| a. Mobile Gas Activity Monitor | 0 | N | RC(3) | | Q(2) | * |
| b. Iodine Sampler | V | N.A. | | | N.A. | * |
| c. Particulate Sampler | V | N.A. | | | N.A. | * |
| d. Effluent System Flow Rate Monitor | 0 | N.A. | | | Q | * |
| e. Sampler Flow Rate Monitor | 0 | N.A. | | | Q | * |

Major Discrepancies
1,2, Licensee's frequencies for channel check are not consistent with the model RETS.

Licensee's Justification
1, 2, None

Reviewer's Comments
1,2, Licensee should provide justification for the deviation or follow the model RETS

TABLE 4.0.E-2
RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

| Instrument | Check | Source | Chamber | Calibration | Functional Test |
|---|-------|---------|---------|-------------|-----------------|
| 2. Reactor Building Ventilation Monitoring System | | | | | |
| a. Mobile Gas Activity Monitor | Daily | Monthly | N.A. | | Quarterly |
| b. Iodine Sampler Cartridge | N.A. | N.A. | N.A. | | Quarterly |
| c. Particulate Sampler Filter | N.A. | N.A. | N.A. | | Quarterly |
| d. Effluent System Flow Rate Measuring Device | Daily | Daily | N.A. | | Quarterly |
| e. Sampler Flow Rate Measuring Device | Daily | Daily | N.A. | | Quarterly |
| 1. Main Stack Effluent Monitoring System | | | | | |
| a. Mobile Gas Activity Monitor (two channels) | Daily | Monthly | N.A. | | Quarterly |
| b. Iodine Sampler Cartridge | N.A. | N.A. | N.A. | | Quarterly |
| c. Particulate Sampler Filter | N.A. | N.A. | N.A. | | Quarterly |
| d. Effluent System Flow Rate Measuring Device | Daily | Daily | N.A. | | Quarterly |
| e. Sampler Flow Rate Measuring Device | Daily | Daily | N.A. | | Quarterly |

BOR-158-1

3/8 3-86

3/12/82

CHANNEL SOURCE CHANNEL SOURCE CHANNEL SOURCE CHANNEL SOURCE CHANNEL SOURCE
FUNCTIONAL TEST CHANNEL CALIBRATION CHANNEL SOURCE CHANNEL SOURCE CHANNEL SOURCE CHANNEL SOURCE
POINTS IN WHICH MONITORING IS REQUIRED

| Instrument | Channel | Source | Channel | Source | Channel | Source | Channel | Source | Channel | Source |
|---|------------------------------|--------|---------|--------|---------|--------|---------|--------|---------|--------|
| 5. PRIMARY BUILDING VENTILATION MONITORING SYSTEM | a. Sampler Flow Rate Monitor | D | N.A. | N | D | N.A. | N | D | N.A. | N |
| | b. Inlet Sampler | N | N.A. | N | D | N.A. | N | D | N.A. | N |
| | c. Particulate Sampler | N | N.A. | N | D | N.A. | N | D | N.A. | N |
| | d. Flow Rate Monitor | D | N.A. | N | D | N.A. | N | D | N.A. | N |
| | e. Sampler Flow Rate Monitor | D | N.A. | N | D | N.A. | N | D | N.A. | N |
| 6. SECONDARY BUILDING VENTILATION MONITORING SYSTEM | a. Sampler Flow Rate Monitor | D | N.A. | N | D | N.A. | N | D | N.A. | N |
| | b. Inlet Sampler | N | N.A. | N | D | N.A. | N | D | N.A. | N |
| | c. Particulate Sampler | N | N.A. | N | D | N.A. | N | D | N.A. | N |
| | d. Flow Rate Monitor | D | N.A. | N | D | N.A. | N | D | N.A. | N |
| | e. Sampler Flow Rate Monitor | D | N.A. | N | D | N.A. | N | D | N.A. | N |

20/21/83 10/1/83

Major Discrepancies

Licensee has not addressed the Turbine Building Ventilation Monitoring system.

Licensee's Justification

None

Reviewer's Comments

Clarification needed from the Licensee (please see page 21).

Comments

TABLE 4.1.7.12-1 (Continued)
RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

1-113-000

Draft # 7 of NUREG-0473, Rev. 3, December 1983

Licensee REIS Submittal

Plant: Pligym 1

Comments

TABLE 4.3.12-1 (Continued)
 RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

| INSTRUMENT | CHANGE CHECK | SOURCE CHECK | CHANGE CALIBRATION | GENERAL FUNCTIONAL TEST | NOTES IN WHICH REQUIREMENTS |
|---|--------------|--------------|--------------------|-------------------------|-----------------------------|
| 9. TURBINE OIL SEAL CONDENSER VENT AND MICHIGAN VACUUM PUMP EXHAUST MONITORING SYSTEM | | | | | |
| a. Mobile Gas Activity Monitor | D | N | Q(2) | N.A. | |
| b. Ionize Sampler | N | N.A. | N.A. | N.A. | |
| c. Particulate Sampler | N | N.A. | N.A. | N.A. | |
| d. Flow Rate Monitor | D | N.A. | R | Q | |
| e. Sampler Flow Rate Monitor | D | N.A. | R | Q | |
| 10. CONDENSER AIR EJECTOR RADIOACTIVITY MONITOR | | | | | |
| a. Mobile Gas Activity Monitor | D | N | Q(2) | N.A. | |

Major Discrepancies
 Licensee's frequency for check source is not consistent with the model REIS.

Licensee's Justification
 None

Reviewer's Comments
 The Licensee should provide justification for the deviation or follow the model REIS.

TABLE 4.3.2
 RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

| Instrument | Instrument Check | Source Check | Instrument Calibration | Instrument Functional Test | Operating Cycle |
|--|------------------|--------------|------------------------|----------------------------|--------------------------|
| 3. Steam Jet Air Ejector Radioactivity Monitor | | | | | Quarterly |
| 4. Mobile Gas Activity Monitor | | N.A. | | | Once per operating cycle |

800-575-1

3/4 3-88

3/12/82

Draft # 7" of NUREG-0473, Rev. 3, December 1983

Comments

Licensee RETS Submittal

TABLE 4.3.7.12-1 (Continued)

TABLE NOTATION

- * All times.
- ** During main condenser offgas treatment system operation.
- *** During operation of the main condenser air ejector.
- (1) The CHANNEL FUNCTIONAL TEST shall also demonstrate that automatic isolation of this pathway and control room alarm annunciation occurs if any of the following conditions exists:
 1. Instrument indicates measured levels above the alarm/trip setpoint.
 2. Circuit failure.
 3. Instrument indicates a downscale failure.
 4. Instrument controls not set in operate mode.
- (2) The CHANNEL FUNCTIONAL TEST shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exists:
 1. Instrument indicates measured levels above the alarm setpoint.
 2. Circuit failure.
 3. Instrument indicates a downscale failure.
 4. Instrument controls not set in operate mode.
- (3) The initial CHANNEL CALIBRATION shall be performed using one or more of the reference standards certified by the National Bureau of Standards or using standards that have been obtained from suppliers that participate in measurement assurance activities with NBS. The standards shall permit calibrating the system over its intended range of energy and measurement range. For subsequent CHANNEL CALIBRATION, sources that have been related to the initial calibration shall be used. (Operating plants may substitute previously established calibration procedures for this requirement.)
- (4) The CHANNEL CALIBRATION shall include the use of standard gas samples containing a nominal:
 1. One volume percent hydrogen, balance nitrogen, and
 2. Four volume percent hydrogen, balance nitrogen.
- (5) The CHANNEL CALIBRATION shall include the use of standard gas samples containing a nominal:
 1. One volume percent oxygen, balance nitrogen, and
 2. Four volume percent oxygen, balance nitrogen.

Major Discrepancies

The Licensee has not provided table notations for the proposed Table 4.8.E-2.

Licensee's Justifications

None

Reviewer's Comments

The Licensee should provide table notations applicable to the proposed Table 4.8.E-2.

***During operation of the Steam Jet Air Ejector.

Draft 2nd of NUREG-0473, Rev. 3, December 1983

Comments

Licensee RETS Submittal

TABLE 4.11-1

RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM

| Liquid Release Type | Sampling Frequency | Minimum Analysis Frequency | Type of Activity Analysis | Lower Limit of Detectable (LLD) (uCi/ml) |
|------------------------------|-------------------------|-----------------------------|--|--|
| A. Batch Waste Release Tanks | P Each Batch | P Each Batch | Principal Gamma Emitters | 5×10^{-7} |
| | | | I-131 | 1×10^{-6} |
| | P One Batch/M | N | Dissolved and Entrained Gases (Gamma Emitters) | 1×10^{-5} |
| | P Each Batch | N Composite ^d | H-3 | 1×10^{-5} |
| | P Each Batch | Q Composite ^d | Gross Alpha | 1×10^{-7} |
| B. Continuous Releases | Continuous ^f | Composite ^f | Principal Gamma Emitters | 5×10^{-7} |
| | | | I-131 | 1×10^{-6} |
| | N Grab Sample | N | Dissolved and Entrained Gases (Gamma Emitters) | 1×10^{-5} |
| | Continuous ^f | N Composite ^f | H-3 | 1×10^{-5} |
| | Continuous ^f | Q Composite ^f | Gross Alpha | 1×10^{-7} |
| C. Continuous Releases | Continuous ^f | Q Composite ^f | Sr-89, Sr-90 | 5×10^{-8} |
| | | | Fe-55 | 1×10^{-9} |
| | | | | |

BWR-STG-1
PWR-STG-1

3/8 11-2

5/3/82

TABLE 4.8-1
RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM

| Liquid Release Type | Sampling Frequency | Minimum Analysis Frequency | Type of Activity Analysis | Lower Limit of Detection (LLD) (uCi/ml) |
|---|-----------------------------|----------------------------------|--|---|
| A. Batch Waste Release Tanks ^(e) | Each Batch | Prior to Release Each Batch | Principal Gamma Emitters ^(f) | 5×10^{-7} (g) |
| | | | I-131 | 1×10^{-6} |
| | | | Dissolved and Entrained Gases | 1×10^{-5} |
| | | | H-3 | 1×10^{-5} |
| | | | Gross alpha | 1×10^{-7} |
| B. Continuous Releases ^(d) | Composite from Each Batch | Monthly Composite ^(c) | Sr-89, Sr-90 | 5×10^{-8} |
| | | | Fe-55 | 1×10^{-9} |
| 1. Discharge Canal | Continuous Compositd sample | Monthly Composite ^(c) | Principal Gamma Emitters | 5×10^{-7} |
| | | | I-131 | 1×10^{-6} |
| 2. Salt Service Water | Weekly grab sample | Weekly | Dissolved and Entrained Gases (Gamma Emitters) | 1×10^{-5} |
| | | | H-3 | 1×10^{-5} |

Major Discrepancies

1. Licensee's composite frequency for principal gamma emitters and I-131 is monthly rather than weekly as specified by the model RETS
2. Licensee's composite frequency is quarterly instead of monthly. Gross alpha analysis not addressed.
3. Licensee has not specified Sr-89 Sr-90 and Fe-55 in the analysis program.

Licensee's Justification

1,2,3, None

Reviewer's Comments

1,2,3, Licensee should follow the model RETS or provide justification.

② ③ →

Comparison of Plant Radiological Effluent Technical Specifications with NUREG-0473 (Model RETS for 307)

Draft # 7th of NUREG-0473, Rev. 3, December 1983

Comments

Licensee RETS Submittal

TABLE 4.11-1 (Continued)
TABLE NOTATION

The LLD is defined, for purposes of these specifications, as the smallest concentration of radioactive material in a sample that will yield a probability of 95% of detecting the sample as being above the LLD, with only 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system, which may include radiochemical separation:

$$LLD = \frac{4.66 \lambda}{E \cdot V \cdot 2.22 \times 10^6 \cdot Y \cdot \exp(-\lambda t)}$$

where:

LLD is the "3-sigma" lower limit of detection as defined above, as microcuries per unit mass or volume.

λ is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate, as counts per minute.

E is the counting efficiency, as counts per disintegration.

V is the sample size in units of mass or volume.

2.22×10^6 is the number of disintegrations per minute per microcurie.

Y is the fractional radiochemical yield, when applicable.

λ is the radioactive decay constant for the particular radionuclide, and

t is the elapsed time between the midpoint of sample collection and time of counting.

Typical values of E, V, Y, and λ should be used in the calculation.

It should be recognized that the LLD is defined as an α priori (before the fact) limit representing the capability of a measurement system and not as a β posteriori (after the fact) limit for a particular measurement.

β priori release is the discharge of liquid wastes of a discrete volume. Prior to sampling for analysis, each batch shall be isolated, and then thoroughly mixed to assure representative sampling.

Major Discrepancies
Licensee has not documented LLD definition in their proper RETS

Licensee's Justification
Licensee return to ODCN where the information is provided.

Reviewer's Comments
Licensee should document the LLD definition in the RETS

4.8.A-1 (Continued)
TABLE NOTATION

- 1. Refer to ODCN for LLD definition.
- 2. Refer to ODCN for LLD exceptions.

3. A batch release is the discharge of liquid wastes of a discrete volume.

Draft # 7th of NUREG-0473, Rev.3, December 1983

Comments

Licensee EETS Submittal

TABLE 4.11-1 (Continued)

TABLE NOTATION

^aThe principal gamma emitters for which the LLD specification applies exclusively are the following radionuclides: Mn-54, Fe-55, Co-58, Co-60, Zn-65, Mo-99, Cs-137, Cs-137, Cs-141, and Ce-144. This list does not mean that only these nuclides are to be considered. Other gamma emitters that are identified, together with those of the above nuclides, shall also be analyzed and reported in the Semiannual Radioactive Effluent Release Report pursuant to Specification 4.9.1.12.

^bA composite sample is one in which the quantity of liquid sampled is proportional to the quantity of liquid waste discharged and in which the method of sampling employed results in a specimen that is representative of the liquids released.

^cA continuous release is the discharge of liquid wastes of a nondiscrete volume, e.g., from a volume of a system that has an input flow during the continuous release.

^dTo be representative of the quantities and concentrations of radioactive materials in liquid effluents, samples shall be collected continuously in proportion to the rate of flow of the effluent stream. Prior to analyses, all samples taken for the composite shall be thoroughly mixed in order for the composite sample to be representative of the effluent release.

Major Discrepancies

1. Licensee has not defined the principal gamma emitters in the table notations.

Licensee's Justification

1. None

Reviewer's Comments

1. Licensee should properly identify the principal gamma emitters as noted in Table notation 4.11-1 (C) of the model EETS.

- c. A composite sample is one in which the quantity of liquid sampled is proportional to the quantity of liquid waste discharged and in which the method of sampling employed results in a specimen which is representative of the liquids released.
- d. To be representative of the quantities and concentrations of radioactive materials in liquid effluents, samples shall be collected continuously. Prior to analyses, all samples taken for the composite shall be thoroughly mixed in order for the composite sample to be representative of the effluent release.
- f. Refer to ODCM for the principal gamma emitters for which the LLD specification applies.

BWR-ST5-1
PWR-ST5-1

3/4 11-4

9/1/82

Draft # 7" of NUREG-0473, Rev.3, December 1983

Comments

Licensee RETS Submittal

RADIOACTIVE EFFLUENTS

3.4.11.2 GASEOUS EFFLUENTS

DOSE RATE

LIMITING CONDITION FOR OPERATION

3.11.2.1 The dose rate due to radioactive materials released in gaseous effluents from the site to areas at and beyond the SITE BOUNDARY (see Figure 5.1-3) shall be limited to the following:

- a. For noble gases: Less than or equal to 500 mrem/yr to the total body and less than or equal to 3000 mrem/yr to the skin, and
- b. For iodine-131, for tritium, and for all radionuclides in particulate form with half lives greater than 8 days: Less than or equal to 1500 mrem/yr to any organ.

APPLICABILITY: At all times.

ACTION:

- a. With the dose rate(s) exceeding the above limits, without delay restore the release rate to within the above limit(s).
- b. The provisions of Specification 6.9.1.5.B are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.1.1 The dose rate due to noble gases in gaseous effluents shall be determined to be within the above limits in accordance with the methodology and parameters in the ODCM.

4.11.2.1.2 The dose rate due to iodine-131, tritium, and all radionuclides in particulate form with half lives greater than 8 days in gaseous effluents shall be determined to be within the above limits in accordance with the methodology and parameters in the ODCM by obtaining representative samples and performing analyses in accordance with the sampling and analysis program specified in Table 4.11-2.

BWR-ST5-1

PAR-ST5-1

3/4 11-8

9/3/82

Major Discrepancies

The Licensee has not included I-133 in the dose estimation.

Licensee's Justification

None

Reviewer's Comments

Licensee should include I-133 in the dose estimation.

LIMITING CONDITIONS FOR OPERATION

RADIOACTIVE EFFLUENTS

3.8.D Gaseous Effluents Dose Rate

Applicability:

At all times.

- 1. The instantaneous dose rate due to radioactive materials released in gaseous effluents from the site to areas at and beyond the SITE BOUNDARY (see Figure 1.1 page 5c) shall be limited to the following:

a. For noble gases: Less than or equal to 500 mrem/yr to the total body and less than or equal to 3000 mrem/yr to the skin, and

b. For iodine-131, for tritium, and for all radionuclides in particulate form with half lives greater than 8 days: Less than or equal to 1500 mrem/yr to any organ.

Action

With the instantaneous dose rate(s) exceeding the above limits, without delay restore the release rate within the above limits(s).

SURVEILLANCE REQUIREMENTS

4.8.D Gaseous Effluents Dose Rate

- 1. The instantaneous dose rate due to noble gases in gaseous effluents shall be determined continuously* to be within the limits of 3.8.D.1.a in accordance with the ODCM.
- 2. The instantaneous dose rate due to iodine-131, tritium, and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents shall be determined to be within the above limits in accordance with the ODCM by obtaining representative samples and performing analyses in accordance with the sampling and analysis program specified in Table 4.8.E-1.

*By utilizing the Noble Gas Activity Monitors and their appropriate setpoints.

Draft # 7 of NUREG-0473, Rev. 3, December 1983

Comments

Licensee RETS Submittal

TABLE 4.11-2 (Continued)

TABLE NOTATION

The LLD is defined, for purposes of these specifications, as the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system, which may include radiochemical separation:

$$LLD = \frac{4.66 \lambda_b}{E \cdot V \cdot 2.22 \times 10^6 \cdot Y \cdot \exp(-\lambda \Delta t)}$$

where:

LLD is the "a priori" lower limit of detection as defined above, as microcuries per unit mass or volume.

λ_b is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate, as counts per minute.

E is the counting efficiency, as counts per disintegration.

V is the sample size in units of mass or volume.

2.22×10^6 is the number of disintegrations per minute per microcurie.

Y is the fractional radiochemical yield, when applicable.

λ is the radioactive decay constant for the particular radionuclide, and

Δt for plant effluents is the elapsed time between the midpoint of sample collection and time of counting.

Typical values of E, V, Y, and Δt should be used in the calculation.

It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as an a posteriori (after the fact) limit for a particular measurement.

TABLE NOTATION (4.8.E-1)

- a. Refer to OCM for LLD definition.
- b. Refer to ODCM for LLD exceptions.



Major Discrepancies

Licensee has not documented LLD definition in the proposed RETS

Licensee's Justification

Licensee refers to ODCM where the information is provided.

Reviewer's Comments

Licensee should document the LLD definition in the RETS.

- a. For the Xe-133 isotope as determined using a solid source equivalent to a volume gaseous source.

181d

Draft # 7th of NUREG-0473, Rev. 3, December 1983

Comments

Licensee RETS Submittal

TABLE 4.11-2 (Continued)

TABLE NOTATION

^aThe principal gamma emitters for which the LLD specification applies exclusively are the following radionuclides: Kr-87, Kr-88, Xe-133, Xe-135m, Xe-135, and Xe-138 for gaseous emissions and Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-137, Cs-134, Ce-141 and Ce-144 for particulate emissions. This list does not mean that only these nuclides are to be considered. Other gamma peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Semiannual Radioactive Effluent Release Report pursuant to Specification 4.9.1.1.

^cSampling and analysis shall also be performed following shutdown, startup, or a THERMAL POWER change exceeding 15 percent of RATED THERMAL POWER within one hour unless: (1) analysis shows that the DOSE EQUIVALENT I-131 concentration in the primary coolant has not increased more than a factor of 3; and (2) the noble gas activity monitor shows that effluent activity has not increased by more than a factor of 3.

^dNot Applicable.

^eTritium grab samples shall be taken at least once per 7 days from the ventilation exhaust from the spent fuel pool area, whenever spent fuel is in the spent fuel pool.

^fThe ratio of the sample flow rate to the sampled stream flow rate shall be known for the time period covered by each dose or dose rate calculation made in accordance with Specifications 3.11.2.1, 3.11.2.2 and 3.11.2.3.

^gSamples shall be changed at least once per 7 days and analyses shall be completed within 48 hours after changing, or after removal from sampler. Sampling shall also be performed at least once per 24 hours for at least 7 days following each shutdown, startup or THERMAL POWER change exceeding 15 percent of RATED THERMAL POWER in one hour and analyses shall be completed within 48 hours of changing. When samples collected for 24 hours are analyzed, the corresponding LLDs may be increased by a factor of 10. This 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 (2) the noble gas monitor shows that effluent activity has not increased more than a factor of 3.

Major Discrepancies

1. Licensee has not defined the principal gamma emitters in the table notations.
2. Licensee's proposed rate of power increase (50 percent) is higher than specified by the model RETS.
3. Table notation 'g' (Table 4-11-2 of model RETS), which is applicable to weekly charcoal and particulate samples, is not addressed.

Licensee's Justification

1. Licensee refers to OF-2 where the information is provided.
- 2,3 None

Reviewer's Comments

1. Licensee should properly identify the principal gamma emitters as noted in Table notation 'C' of table 4-11-1 of the model RETS.
2. Licensee should provide justification the deviation.
3. Licensee should show the model RETS on table notation, or provide justification.

- c. When the average daily gross radioactivity release rate increases by 50 percent (after factoring out power level changes) over the previous day, the iodine and particulate filters shall be analyzed to determine the release rate for iodines and particulates.
- d. The ratio of the sample flow rate to the sampled stream flow rate shall be known for the time period covered by each dose or dose rate calculation made in accordance with Specifications 3.8.D.

BWR-S7S-1
PWR-S7S-1

3/4 11-11

9/3/83

Draft # 7th of NUREG-0473, Rev. 3, December 1983

Comments

Licensee RETS Subtitle

RADIOACTIVE EFFLUENTS ¹⁰⁰¹⁰⁶⁻¹⁹⁷

DOSE - IODINE-131, TRITIUM, AND RADIONUCLIDES IN PARTICULATE FORM

LIMITING CONDITION FOR OPERATION

3.11.2.3 The dose to a MEMBER OF THE PUBLIC from iodine-131, tritium, and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents released, from each reactor unit, to areas at and beyond the SITE BOUNDARY (see Figure 5.1-3) shall be limited to the following:

- a. During any calendar quarter: Less than or equal to 7.5 mrem to any organ and,
- b. During any calendar year: Less than or equal to 15 mrem to any organ.

APPLICABILITY: At all times.

ACTION:

- a. With the calculated dose from the release of iodine-131, tritium, and radionuclides in particulate form with half lives greater than 8 days, in gaseous effluents exceeding any of the above limits, in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, pursuant to Specification 5.9.2, a Special Report that identifies the cause(s) for exceeding the limit 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.
- b. The provisions of Specifications 3.8.3 and 3.1.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.3 Cumulative dose contributions for the current calendar quarter and current calendar year for iodine-131, tritium, and radionuclides in particulate form with half lives greater than 8 days shall be determined in accordance with the methodology and parameters in the ODCM at least once per 31 days.

DWR-S75-1
PWR-S75-1

3/4 11-13

9/3/82

Major Discrepancies

The Licensee has not included I-133 in the dose estimation.

Licensee's Justification

None

Reviewer's Comments

Licensee should include I-133 in the specification.

OPERATIONAL OBJECTIVES

7.4 Dose-Iodine 131, Radioactive Material in Particulate Form, AND TRITIUM

Applicability

At all times

- A. The dose to a MEMBER OF THE PUBLIC from iodine-131, radioactive materials in particulate form, with half-lives greater than 8 days, and tritium in gaseous effluents released to areas at and beyond the SITE BOUNDARY shall be limited to the following:

- (1) During any calendar quarter to < 7.5 mrem to any organ; and,
- (2) During any calendar year to < 15 mrem to any organ.

Action

- (1) With the calculated dose from the release of iodine-131, radioactive materials in particulate form, or tritium in gaseous effluents exceeding any of the above limits, in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, a Special Report which identifies the cause(s), corrective actions taken, and the corrective actions to be taken.

SURVEILLANCE REQUIREMENTS

8.4 Dose-Iodine-131, Radioactive Material in Particulate Form, AND TRITIUM

- A. Dose Calculations - Cumulative Dose Contributions for the total time period shall be determined for iodine-131, radioactive material in particulate form, with half-lives greater than eight (8) days, and tritium in accordance with the ODCM for each calendar month during which releases occurred.

Draft # 7" of NUREG-0473, Rev. 3, December 1983

Comments

Licensee RETS Submittal

RADIOACTIVE EFFLUENTS

GASEOUS RADWASTE TREATMENT

LIMITING CONDITIONS FOR OPERATION

3.11.2.4 The GASEOUS RADWASTE TREATMENT SYSTEM shall be in operation.

APPLICABILITY: Whenever the main condenser air ejector (evacuation) system is in operation.

ACTION:

- a. With gaseous radwaste from the main condenser air ejector system being discharged without treatment for more than 7 days, in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, pursuant to Specification 4.9.2, a Special Report that includes the following information:
 1. Identification of the inoperable equipment or subsystems and the reason for inoperability.
 2. Action(s) taken to restore the inoperable equipment to OPERABLE status, and
 3. Summary description of action(s) taken to prevent a recurrence.
- b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.4 The readings of the relevant instruments shall be checked every 12 hours when the main condenser air ejector is in use to ensure that the gaseous radwaste treatment system is functioning.

BWR-RTS-1

1/4 11-14

3/12/82

Major Discrepancies

The intent of this specification is to operate the Gaseous Radwaste Treatment System whenever the main condenser is in operation. The Licensee has used the projected dose limits to determine the use of waste treatment system. Also operation will start within 4 hrs. after placing the Reactor Mode switch to Run position.

Licensee's Justification

None

Reviewer's Comments

Licensee should follow the model RETS.

LIMITING CONDITIONS FOR OPERATION

RADIOACTIVE EFFLUENTS

3.8.F Gaseous Effluent Treatment*

Applicability

Within 4 hrs after placing the Reactor Mode Switch to "Run" position.

1. The gaseous effluent treatment system shall be maintained and used to reduce radioactive materials in gaseous wastes prior to their discharge when the estimated gaseous effluent air doses due to gaseous effluent releases to UNRESTRICTED AREAS when averaged over 31 days would exceed 0.2 mrad for gamma radiation and 0.4 mrad for beta radiation.

Action

- a. With gaseous effluents being discharged for more than 31 days without treatment and in excess of the above limits, in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, a Special Report which includes the following information:
 1. Explanation of why gaseous radwaste was being discharged without treatment, identification of any inoperable equipment or subsystems, and the reason for the inoperability.
 2. Action(s) taken to restore the non-operable equipment to OPERABLE STATUS, and
 3. Summary description of action(s) taken to prevent a recurrence.

SURVEILLANCE REQUIREMENTS

4.8.F Gaseous Effluent Treatment*

1. Doses due to gaseous releases from the site shall be projected at least once per 31 day period in accordance with the ODCM.

*The gaseous effluent treatment schematic is shown in Figure 4.8.F.1.

Draft # 7th of NUREG-0473, Rev. 3, December 1993

Comments

Licensee RETS Submittal

REDUCTIVE EFFLUENTS

EXPLOSIVE GAS MIXTURE (Systems not designed to withstand a hydrogen explosion)

Appropriate alternatives to the ACTIONS below can be accepted if they provide incentive for timely repair to monitors and for compliance with QDC 3 (Fire Protection).

LIMITING CONDITION FOR OPERATION

3.11.2.6A The concentration of hydrogen and/or oxygen in the main condenser offgas treatment system shall be limited to less than or equal to 2% by volume.

APPLICABILITY: At all times.

ACTION:

- a. With the concentration of hydrogen and/or oxygen in the main condenser offgas treatment system greater than 2% by volume but less than or equal to 4% by volume, restore the concentration of hydrogen and/or oxygen to within the limit within 48 hours.
- b. With the concentration of hydrogen and/or oxygen in the main condenser offgas treatment system greater than 4% by volume, immediately suspend all additions of waste gases to the system and reduce the concentration of hydrogen and/or oxygen to less than or equal to 2% within 48 hours.
- c. With continuous monitors inoperable, utilize grab sampling procedures for a period not to exceed 30 days.
- d. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.6B The concentrations of hydrogen and/or oxygen in the main condenser offgas treatment system shall be determined to be within the above limits by continuously monitoring the waste gases in the main condenser offgas treatment system with the hydrogen and/or oxygen monitors required OPERABLE by Table 3.2.7.12-1 of Specification 3.3.7.12.

Not applicable for main condenser offgas treatment system as specified.



Major Discrepancies

Licensee has not addressed the necessary action to be taken when hydrogen/oxygen concentrations exceed 4.1. in the AOC system.

Licensee's Justification

None

Reviewer's Comments

Licensee should follow the model RETS.

- 2. The concentration of hydrogen in the augmented offgas treatment system shall be limited to less than or equal to 2 percent by volume at the outlet of the recombiner.

Action

- a. With the concentration of hydrogen in the augmented offgas treatment system greater than 2 percent by volume but less than or equal to 4 percent by volume, restore the concentration of hydrogen to within the limit within 48 hr or be in a cold shutdown condition within 24 hrs.

- 3. Where the augmented offgas treatment system is bypassed, minimum dilution air flow to the stack shall be maintained.

- 2. The concentration of hydrogen in the augmented offgas treatment system shall be determined to be within the above limits by continuously monitoring the waste gases in the augmented offgas treatment system with the hydrogen monitors required OPERABLE by Table 3.3.7.12.

Draft # 1 of NUREG-0473, Rev. 3, December 1983

Comments

Licensee RETS Submittal

RADIOACTIVE EFFLUENTS

MAIN CONDENSER

LIMITING CONDITIONS FOR OPERATION

3.11.2. The gross radioactivity (beta and/or gamma) rate of noble gases* measured at the main condenser air ejector shall be limited to less than or equal to 100 microcuries/sec per MW (after 30 minutes decay).

APPLICABILITY: At all times.

ACTION:

With the gross radioactivity (beta and/or gamma) rate of noble gases at the main condenser air ejector exceeding 100 microcuries/sec per MW (after 30 minutes decay), restore the gross radioactivity rate to within its limit within 72 hours or be in at least HOT STANDBY within the next 12 hours.

SURVEILLANCE REQUIREMENTS

4.11.2.7.1 The radioactivity rate of noble gases at (near) the outlet of the main condenser air ejector shall be continuously monitored in accordance with Specification 3.11.2.12.

4.11.2.7.2 The gross radioactivity (beta and/or gamma) rate of noble gases* from the main condenser air ejector shall be determined to be within the limits of Specification 3.11.2.7 at the following frequencies by performing an isotopic analysis of a representative sample of gases taken at the discharge (prior to dilution and/or discharge) of the main condenser air ejector:

- a. At least once per 31 days.
- b. Within 4 hours following an increase, as indicated by the Condenser Air Ejector Noble Gas Activity Monitor, of greater than 50% after factoring out increases due to changes in the BWR power level, in the normal steady state fission gas release from the primary coolant.

*Plants using gamma scintillation detector(s) to measure the Kr-85m, Rn-85 and Xe-133, 135, 138 contribution after 30 minutes decay may substitute the words "release rate of the sum of the activities from the noble gases" for the words "gross radioactivity rate of noble gases" in this specification.

ERT-SIS-1

3/4 11-19

3/12/81

Major Derogancies

Licensee has exceeded release rate limit which is not consistent with the design power (1998 MW_e) as specified by the model RETS.

Licensee's Justification

None

Reviewer's Comments

Licensee's should follow the specification of model RETS or provide justification.

LIMITING CONDITIONS FOR OPERATION

SURVEILLANCE REQUIREMENTS

RADIOACTIVE EFFLUENTS

3.8.G Main Condenser

Applicability

At all times when steam is available to the air ejectors.

1. The gross radioactivity (beta and/or gamma) release rate of noble gases measured at the steam jet air ejector shall be limited to 500,000 uCi/sec (referenced to a 30 minute holdup).

Action

With the gross radioactivity (beta and/or gamma) rate of noble gases at the steam jet air ejector exceeding 500,000 uCi/sec (referenced to a 30 minute holdup), restore the gross radioactivity rate to within its limit within 72 hours or be in at least HOT STANDBY within the next 12 hours.

4.8.G Main Condenser

1. The gross radioactivity (beta and/or gamma) rate of noble gases from the steam jet air ejector shall be determined to be within the limit of 3.8.G.1 at the following frequencies by performing an isotopic analysis of a representative sample of gases taken at the discharge (prior to dilution and/or discharge) of the steam jet air ejector:
 - a. At least once per 31 days.
 - b. When the average daily gross activity release rate increases by 50 percent over the previous day.

Draft # 7th of NUREG-0473, Rev. 3, December 1983

Plant: P4grm1

Licensee NRTS Submittal

Comments

RADIOACTIVE EFFLUENTS

PART I OF II CONTAINMENT

VENTING CONDITIONS FOR OPERATION

3.11.2.8 VENTING or PURGING of the Mark I or II containment drywell shall be through the Standby Gas Treatment System.

APPLICABILITY: whenever the drywell is vented or purged.

ACTION:

- a. With the requirements of the above specification not satisfied, suspend all VENTING and PURGING of the drywell.
- b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

PERFORMANCE REQUIREMENTS

4.11.2.8 The containment drywell shall be determined to be allowed for VENTING or PURGING through the Standby Gas Treatment System within 4 hours prior to start of and at least once per 12 hours during VENTING or PURGING of the drywell.

Major Discrepancies

Licensee has not addressed this section on drywell purge.

Licensee's Justifications

Licensee stated in Reference that this section is optional.

Reviewer's Comments

Since NUREG-0473, Rev. 3 has not specified this section as "optional", Licensee should address this section accordingly.

PNR-1702

3/4 13-20

3/12/82

Draft # 7" of NUREG-0473, Rev. 3, December 1983

Comments

Licensee RETS Submittal

RADIOACTIVE EFFLUENTS

3/4 11.3 SOLID RADIOACTIVE WASTE

LIMITING CONDITION FOR OPERATION

3.11.3 The solid rad-waste system shall be used in accordance with a PROCESS CONTROL PROGRAM to process wet radioactive wastes to meet shipping and burial ground requirements.

APPLICABILITY: At all times.

ACTION:

- a. With the provisions of the PROCESS CONTROL PROGRAM not satisfied, suspend shipments of defectively processed or defectively packaged solid radioactive wastes from the site.
- b. The provisions of Specifications 3.0.3, 3.0.4, and 6.9.1.9.b are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.3 THE PROCESS CONTROL PROGRAM shall be used to verify the SOLIDIFICATION of at least one representative test specimen from at least every tenth batch of each type of wet radioactive waste (e.g., filler sludges, spent resins, evaporator bottoms, boric acid solutions, and sodium sulfate solutions).

- a. If any test specimen fails to verify SOLIDIFICATION, the SOLIDIFICATION of the batch under test shall be suspended until such time as additional test specimens can be obtained, alternative SOLIDIFICATION parameters can be determined in accordance with the PROCESS CONTROL PROGRAM, and a subsequent test verifies SOLIDIFICATION. SOLIDIFICATION of the batch may then be resumed using the alternative SOLIDIFICATION parameters determined by the PROCESS CONTROL PROGRAM.
- b. If the initial test specimen from a batch of waste fails to verify SOLIDIFICATION, the PROCESS CONTROL PROGRAM shall provide for the collection and testing of representative test specimens from each consecutive batch of the same type of wet waste until at least 3 consecutive initial test specimens demonstrate SOLIDIFICATION. The PROCESS CONTROL PROGRAM shall be modified as required, as provided in Specification 6.13, to assure SOLIDIFICATION of subsequent batches of waste.

Major Discrepancies

Licensee has not addressed Solid Radioactive Waste specification.

Licensee's Justification

The Licensee has stated that "PNPS does not have a Process Control Program", in Attachment "A" of the RETS (April 15, 1983).

Reviewer's Comments

Licensee should commit to a P.C.P. in a Solid Radioactive Waste Tech. Spec.

DWR-STS-1
PWR-STS-1

3/4 11-19

9/3/82

Draft # 7th of NUREG-0473, Rev. 3, December 1983

Comments

Licensee RETS Submittal

RADIOACTIVE EFFLUENTS

3.11.4 TOTAL DOSE

LIMITING CONDITION FOR OPERATION

3.11.4 The annual (calendar year) dose or dose commitment to any MEMBER OF THE PUBLIC due to releases of radioactivity and to radiation from uranium fuel cycle sources shall be limited to less than or equal to 25 mrem to the total body or any organ, except the thyroid, which shall be limited to less than or equal to 75 mrem.

APPLICABILITY: All sites.

ACTION:

- a. With the calculated doses from the release of radioactive materials in liquid or gaseous effluents exceeding twice the limits of Specification 3.11.4.2.a, 3.11.4.2.b, 3.11.4.2.c, 3.11.4.2.d, 3.11.4.2.e, or 3.11.4.2.f, calculations should be made including direct radiation contributions from the reactor units and from auxiliary systems (such as to determine whether the above limits of Specification 3.11.4 have been exceeded. If such is the case in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report that defines the corrective action to be taken to reduce subsequent releases to prevent recurrence of exceeding the above limits and includes the schedule for achieving conformance with the above limits. This Special Report, as defined in 40 CFR Part 20.405c, shall include an analysis that estimates the radiation exposure (dose) to a MEMBER OF THE PUBLIC from uranium fuel cycle sources, including all effluent pathways and direct radiation, for the calendar year that includes the release(s) covered by this report. It shall also describe levels of radiation and concentrations of radioactive material involved, and a 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 Special 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.
- b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.4.1 Cumulative dose contributions from liquid and gaseous effluents shall be determined in accordance with Specifications 4.11.1.2, 4.11.2.2, and 4.11.2.3, and in accordance with the methodology and parameters in the ODOM.

4.11.4.2 Cumulative dose contributions from direct radiation from the reactor units and from remote storage tanks shall be determined in accordance with the methodology and parameters in the ODOM. This requirement is applicable only under conditions set forth in Specification 3.11.4.a.

BWR-SIS-1
PWR-SIS-1

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9/3/82

Major Discrepancies

Licensee has not included doses from direct radiation in this spec. and in the ODOM.

Licensee's Justification

None

Reviewer's Comments

Direct radiation should be included in the total dose calculation, especially for a BWR such as Pilgrim Unit 1.

OPERATIONAL OBJECTIVES

7.5 Total Dose

Applicability

At all times

- A. The dose or dose commitment to any MEMBER OF THE PUBLIC from Pilgrim Station sources is limited to < 25 mrem to the total body or any organ (except the thyroid, which is limited to < 75 mrem) over a period of 12 consecutive months.

Action

- (1) With the calculated dose from the release of radioactive materials in liquid or gaseous effluents exceeding twice the limits of Specifications 7.2.A.1, 7.2.A.2, 7.3.A.1, 7.3.A.2, 7.4.A.1 or 7.4.A.2 in lieu of a Licensee Event Report, prepare and submit a Special Report to the Commission and limit the subsequent releases such that the dose or dose commitment to any MEMBER OF THE PUBLIC from all uranium fuel cycle sources is limited to < 25 mrem to the total body or any organ (except thyroid, which is limited to < 75 mrem) over 12 consecutive months. This Special Report shall include an analysis which demonstrates that radiation exposures to all MEMBERS OF THE PUBLIC from all uranium fuel cycle sources (including all effluent pathways and direct radiation) are less than the 40 CFR Part 190 Standard. Otherwise, obtain a variance from the Commission to permit releases which exceed the 40 CFR Part 190 Standard.

SURVEILLANCE REQUIREMENTS

7.5 Total Dose

- A. Dose Calculations - Cumulative dose contributions from liquid and gaseous effluents shall be determined in accordance with Specifications 7.2.A.1, 7.2.A.2, 7.3.A.1, 7.3.A.2, 7.4.A.1, and 7.4.A.2 and in accordance with the Offsite Dose Calculation Manual (ODCM).

Draft # 7th of NUREG-0473, Rev. 3, December 1983

Comments

Licensee EITS Submittal

TABLE 8.1.A.1
OPERATIONAL RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

| Exposure Pathway or Sample Type | Number of Representative Samples and Sample Locations | Sampling and Collection Frequency | Type and Frequency of Analysis |
|---------------------------------|---|-----------------------------------|--------------------------------|
| 1. DIRECT MONITORING | 40 routine monitoring stations (20-100) either with two or four detectors or with one detector and the monitor and recorder operating continuously, placed as follows: an inner ring of stations, one in each meteorological sector in the general area of the SIF boundary (081-0818); an outer ring of stations, one in each meteorological sector, in the 8° to 9° range from the site (0817-0822); the balance of the stations (20-100) are to be placed in social gathering areas such as population centers, day care residences, schools, and in 1 or 2 areas to serve as control stations. | Quarterly | Gamma dose quarterly. |

The number, size, frequency, and location of samples may vary from site to site. This table presents an acceptable minimum program for a site at which such entry is applicable. Local site characteristics must be examined to determine if changes are not covered by this table may significantly contribute to an individual's dose and should be included in the sampling program. For each letter in parentheses, e.g., 081, 81, specify the way of defining groups. Specify the location in this specification that can be used to identify the specific locations in the map(s) and table in the book.

Major Discrepancies

Although Licensee has proposed sufficient station numbers, the Licensee has not followed the model RETS format for presenting these stations.

Licensee's Justifications

Licensee elected to detail the station description in Table 8.1.A.2 (see pp.63A-63C) of the RETS proposal.

Reviewer's Comments

Comment 1: It is easier to follow the model RETS to present the locations; the reviewer has difficulty identifying the sample locations (Table 8.1.A.2) to fit the model RETS descriptions.

Comment 2: Table 8.1.A.2 should belong to ODCM rather than in RETS.

Note: According to the Licensee (See bases 7.1.A/8.1A) the Licensee has agreement with Massachusetts Wildlife Federation in this Table. In this case comment 2 would meet the intent of the model RETS.

TABLE 8.1.A-1 (Continued)
OPERATIONAL RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

| Exposure Pathway or Sample Type | Locations (Direction-Distance) from Reactor | Sampling and Collection Frequency | Type and Frequency of Analysis |
|---------------------------------|---|-----------------------------------|--|
| DIRECT | 40 (See Table 8.1.A-2) Plymouth Beach and Priscilla/White Horse Beach | Quarterly Annually (Spring) | Gamma exposure quarterly, (1) Gamma exposure survey (1) |

TABLE 3.12-2
REPORTING LEVELS FOR RADIOACTIVITY CONCENTRATIONS IN ENVIRONMENTAL SAMPLES

| Reporting Levels | Water (pCi/l) | Airborne Particulate or Gases (pCi/m ³) | Fish (pCi/kg, wet) | Milk (pCi/l) | Food Products (pCi/kg, wet) |
|------------------|---------------|---|--------------------|--------------|-----------------------------|
| M-3 | 20,000 | | | | |
| Mn-54 | 1,000 | | | | |
| Fe-59 | 400 | | | | |
| Co-58 | 1,000 | | | | |
| Co-59 | 300 | | | | |
| Zn-65 | 300 | | | | |
| Zr-95 | 400 | | | | |
| I-131 | 2 | 0.9 | | 2 | 100 |
| Ca-134 | 20 | 10 | 1,000 | 60 | 1,000 |
| Ca-137 | 50 | 20 | 2,000 | 70 | 2,000 |
| Ba-140 | 200 | | | | 300 |

For drinking water samples, this is 60 CFR Part 161 value. If no drinking water pathway exists, a value of 20,000 pCi/l may be used.

1-81-1
M-81-1

9/2/86

TABLE 7.1.A
REPORTING LEVELS FOR RADIOACTIVITY CONCENTRATIONS IN ENVIRONMENTAL SAMPLES

| Reporting Levels | Water (pCi/l) | Airborne Particulate or Gases (pCi/m ³) | Fish (pCi/kg, wet) | Milk (pCi/l) | Vegetables (pCi/kg, wet) |
|------------------|---------------------|---|---------------------|--------------|--------------------------|
| M-3 | 2 x 10 ⁴ | | | | |
| Mn-54 | 1 x 10 ³ | | | | |
| Fe-59 | 4 x 10 ² | | | | |
| Co-58 | 1 x 10 ³ | | | | |
| Co-59 | 3 x 10 ² | | | | |
| Zn-65 | 3 x 10 ² | | | | |
| Zr-95 | 4 x 10 ² | | | | |
| I-131 | 2 | 0.9 | | 2 | 1 x 10 ² |
| Ca-134 | 20 | 10 | 1 x 10 ³ | 60 | 1 x 10 ³ |
| Ca-137 | 50 | 20 | 2 x 10 ³ | 70 | 2 x 10 ³ |
| Ba-140 | 2 x 10 ² | | | | 3 x 10 ² |

Major Discrepancies

1,2 Licensee has not included Nb-95 and La-140 in the Table as proposed.

Licensee's Justification

1,2 None

Reviewer's Comments

1,2 Licensee should include Nb-95 and La-140 in Table 7.1.A

Comments

Major Discrepancies

1. It is not clear whether the Licensee intends to replace fish and sediment by wet solid and dry solid, respectively.
- 2,3. Licensee has not included Nb-95 and La-140 in the Table as proposed.

Licensee's Justifications

1,2,3. None

Reviewer's Comments

1. Licensee should clarify the consistency of the samples listed.
2. Licensee should include Nb-95 and La-140 in Table B.1.A.4.

TABLE 4.12-1
PERMISSION CAPABILITIES FOR ENVIRONMENTAL SAMPLE ANALYSIS

| Analysis (L/T) | Al airborne particulate or Gas (pCi/m ³) | Fish (pCi/kg wet) | Milk (pCi/g) | Food Products (pCi/kg wet) | Sediment (pCi/kg dry) |
|----------------|--|-------------------|--------------|----------------------------|-----------------------|
| Gross beta | 4 | 0.01 | | | |
| M-3 | 2000 ^a | | 130 | | |
| M-54 | 15 | | 260 | | |
| F-59 | 30 | | 130 | | |
| Ca-58,60 | 15 | | 260 | | |
| Zn-65 | 30 | | 130 | | |
| 2-10-95 | 15 | | | | |
| 1-131 | 1 ^b | 0.07 | 1 | 60 | 150 |
| Ca-134 | 15 | 0.05 | 15 | 60 | |
| Ca-137 | 15 | 0.06 | 150 | 80 | 180 |
| B-10-149 | 15 | | 15 | | |

^aIf no drinking water pathway exists, a value of 3000 pCi/l may be used.

PAR-STS-1
PAR-STS-1

8/3/82

MAXIMUM VALUES FOR THE LOWER LIMITS OF DETECTION (LLD)^a

| Analysis (pCi/kg) | Water | Al airborne particulate or Gas (pCi/m ³) | Net Solids (pCi/kg wet) | Milk (pCi/g) | Food Products (pCi/kg wet) | Dry Solids (pCi/kg dry) |
|-------------------|--------|--|-------------------------|--------------|----------------------------|-------------------------|
| gross beta | 4b | 1 x 10 ⁻² | | | | |
| M | 2000 | | 130 | | | |
| S4m | 15 | | 260 | | | |
| 54m | 30 | | 130 | | | |
| 58,60Ca | 15 | | 260 | | | |
| 69Zn | 30 | | 130 | | | |
| 95Zr | 15 | | | 1 | 60 ^c | 60 |
| 131I | 1b | 7 x 10 ⁻² | | | | |
| 134,137Cs | 15, 15 | 1 x 10 ⁻² | 130 | 15 | 15 | 15 ^d |
| 144Ce | | | | | | |

TABLE B.1.A-4

| Draft 6 7" of NUREG-0473, Rev.3, December 1983 | Comments | Licensee RETS Submittal |
|--|---|---|
| <p style="text-align: center;"><u>TABLE 4.12-1 (Continued)</u></p> <p style="text-align: center;"><u>TABLE NOTATION</u></p> <p>^aThis list does not mean that only these nuclides are to be considered. Other peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Annual Radiological Environmental Operating Report pursuant to Specification 6.9.1.11.</p> <p>^bRequired detection capabilities for thermoluminescent dosimeters used for environmental measurements are given in Regulatory Guide 4.13.</p> <p>^cThe LLD is defined, for purposes of these specifications, as the smallest concentration of radioactive material in a sample that will yield a net count above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal.</p> <p>For a particular measurement system, which may include radiochemical separation:</p> $LLD = \frac{4.66 s_b}{E \cdot V \cdot 2.22 \cdot Y \cdot \exp(-\lambda t)}$ <p>where:</p> <p>LLD is the "a priori" lower limit of detection as defined above, in picocuries per unit mass or volume,</p> <p>s_b is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate, as counts per minute,</p> <p>E is the counting efficiency, as counts per disintegration,</p> <p>V is the sample size in units of mass or volume,</p> <p>2.22 is the number of disintegrations per minute per picocurie,</p> <p>Y is the fractional radiochemical yield, when applicable,</p> <p>λ is the radioactive decay constant for the particular radionuclide, and</p> <p>t for environmental samples is the elapsed time between sample collection, or end of the sample collection period, and time of counting</p> <p>Typical values of E, V, Y, and λ should be used in the calculation.</p> <p>BWR-SFS-1 - PWR-SFS-1</p> <p style="text-align: right;">1/4 12-11 9/3/82</p> | <p style="text-align: center;"><u>Major Discrepancies</u></p> <p>Licensee has not provided detailed table notations in the proposed Table 8.1.A-4.</p> <p style="text-align: center;"><u>Licensee's Justification's</u></p> <p>Licensee has referred to ODCM for the definition of LLD.</p> <p style="text-align: center;"><u>Reviewer's Comments</u></p> <p>Licensee should provide table notations consistent with those specified by the model RETS.</p> | <p style="text-align: center;"><u>TABLE NOTATION</u></p> <p>a. Refer to ODCM for LLD definition.</p> <p>b. LLD for surface water.</p> <p>c. LLD for leafy vegetables.</p> |

Draft # 7" of NUREG-0473, Rev. 3, December 1983

Comments

Licensee RETS Submittal

RADIOLOGICAL ENVIRONMENTAL MONITORING

3/4.12.2 LAND USE CENSUS

LIMITING CONDITION FOR OPERATION

3.12.2 A land use census shall be conducted and shall identify within a distance of 8 km (5 miles) the location in each of the 16 meteorological sectors of the nearest milk animal, the nearest residence and the nearest garden^a of greater than 50 m² (500 ft²) producing broad leaf vegetation. (For elevated releases as defined in Regulatory Guide 1.111, Revision 1, July 1977, the land use census shall also identify within a distance of 5 km (3 miles) the locations in each of the 16 meteorological sectors of all milk animals and all gardens of greater than 50 m² producing broad leaf vegetation.)

APPLICABILITY: At all times.

ACTION:

- a. With a land use census identifying a location(s) that yields a calculated dose or dose commitment greater than the values currently being calculated in Specification 4.11.2.3, in lieu of a Licensee Event Report, identify the new location(s) in the next Semiannual Radioactive Effluent Release Report, pursuant to Specification 6.9.1.12.
- b. With a land use census identifying a location(s) that yields a calculated dose or dose commitment (via the same exposure pathway) 25 percent greater than at a location from which samples are currently being obtained in accordance with Specification 3.12.1, add the new location(s) to the radiological environmental monitoring program within 30 days. The sampling location(s), excluding the control station location, having the lowest calculated dose or dose commitment(s), via the same exposure pathway, may be deleted from this monitoring program after (October 31) of the year in which this land use census was conducted. In lieu of a Licensee Event Report and pursuant to Specification 6.9.1.12, identify the new location(s) in the next Semiannual Radioactive Effluent Release Report and also include in the report a revised figure(s) and table for the GDCM reflecting the new location(s).
- c. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.12.2 The land use census shall be conducted during the growing season at least once per 12 months using that information that will provide the best results, such as by a door-to-door survey, aerial survey, or by consulting local agriculture authorities. The results of the land use census shall be included in the Annual Radiological Environmental Operating Report pursuant to Specification 6.9.1.11.

^aBroad leaf vegetation sampling of at least three different kinds of vegetation may be performed at the site boundary in each of two different direction sectors with the highest predicted D/Os in lieu of the garden census. Specifications for broad leaf vegetation sampling in Table 3.12-1.4c shall be followed, including analysis of control samples.

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Major Discrepancies

Licensee designated Annual Radiological Environmental Monitoring Report in the reporting requirement of the land use census, whereas the model RETS specifies Semiannual Report.

Licensee's Justification

None

Reviewer's Comments

The Licensee should designate the Semiannual Radioactive Effluent Report for the reporting requirement.

OPERATIONAL OBJECTIVES

7.1 (Continued)

8. Land Use Census

A land use census shall be conducted and shall identify within a distance of 8 km (5 miles) the location in each of the 16 meteorological sectors of the nearest milk animal, the nearest residence and the nearest garden^a of greater than 50 m² (500 ft²) producing broad leaf vegetation. (For elevated releases as defined in Regulatory Guide 1.111, Revision 1, July 1977, the land use census shall also identify within a distance of 5 km (3 miles) the locations in each of the 16 meteorological sectors of all milk animals and all gardens of greater than 50 m² producing broad leaf vegetation.

Action

- (1) With a land use census identifying a location(s) that yields a calculated dose or dose commitment greater than the values currently being calculated in Specification 6.4.A, in lieu of a Licensee Event Report, identify the new location(s) in the next Annual Environmental Radiological Monitoring Report.
- (2) With a land use census identifying a location(s) that yields a calculated

SURVEILLANCE REQUIREMENTS

8.1 (Continued)

B. Land Use Census

The land use census shall be conducted during the growing season at least once per 12 months using that information that will provide the best results, such as by a door-to-door survey, aerial survey, or by consulting local agriculture authorities. The results of the land use census shall be included in the Annual Radiological Environmental Monitoring Report.

Broad leaf vegetation sampling of at least three different kinds of vegetation may be performed at the site boundary in each of two different direction sectors with the highest predicted D/Os in lieu of the garden census. Specifications for broad leaf vegetation sampling in Table 8.1.A-1 shall be followed, including analysis of control samples.

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| Draft # 7" of NUREG-0473, Rev.3, December 1983 | Comments | Licensee RETS Submittal |
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(See comments as in page 64)

OPERATIONAL OBLIGATIONS

SURVEILLANCE REQUIREMENTS

7.1 (Continued)

dose or dose commitment (via the same exposure pathway) 20 percent greater than at a location from which samples are currently being obtained in accordance with Specification 7.1, add the new location(s) to the Radiological Environmental Monitoring Program within 30 days. The sampling location(s), excluding the control station location, having the lowest calculated dose or dose commitment(s), via the same exposure pathway, may be deleted from this monitoring program after (October 31) of the year in which this land use census was conducted. In lieu of a Licensee Event Report, identify the new location(s) in the next Annual Environmental Radiological Monitoring Report and also include in the report a revised figure(s) and table for the CDCH reflecting the new location(s).



Draft # 7" of NUREG-0473, Rev.3, December 1983

Comments

Licensee RETS Submittal

RADIOACTIVE EFFLUENTS

BASES

The ODCM equations provided for determining the air doses at and beyond the SITE BOUNDARY are based upon the historical average atmospheric conditions.

This specification applies to the release of gaseous effluents from each reactor at the site. For units with shared radioactive treatment systems, the gaseous effluents from the shared system are proportioned among the units sharing that system.

3/4 11 2.3 DOSE - IODINE-131, TRITIUM, AND RADIONUCLIDES IN PARTICULATE FORM

This specification is provided to implement the requirements of Sections II.C, III.A and IV.A of Appendix I, 10 CFR Part 50. The Limiting Conditions for Operation are the guides set forth in Section II.C of Appendix I. The ACTION statements provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive materials in gaseous effluents to UNRESTRICTED AREAS will be kept "as low as is reasonably achievable." The ODCM calculational methods specified in the Surveillance Requirements implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculational procedures based on models and data such that the actual exposure of a MEMBER OF THE PUBLIC through appropriate pathways is unlikely to be substantially underestimated. The ODCM calculational methodology and parameters for calculating the doses due to the actual release rates of the subject materials are consistent with the methodology provided in 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, October 1977 and Regulatory Guide 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors," Revision 1, July 1977. These equations also provide for determining the actual doses based upon the historical average atmospheric conditions. The release rate specifications for iodine-131, tritium, and radionuclides in particulate form with half lives greater than 60 days are dependent upon the existing radionuclide pathways to man, in the area at and beyond the SITE BOUNDARY. The pathways that were examined in the development of these calculations were: 1) individual inhalation of airborne radionuclides, 2) deposition of radionuclides onto green leafy vegetation with subsequent consumption by man, 3) deposition onto grassy areas where milk animals and meat producing animals graze with consumption of the milk and meat by man, and 4) deposition on the ground with subsequent exposure of man.

This specification applies to the release of gaseous effluents from each reactor at the site. For units with shared radioactive treatment systems, the gaseous effluents from the shared system are proportioned among the units sharing that system.

3/4 11 2.4 AND 3/4 11 2.5 GASEOUS RADWASTE TREATMENT AND VENTILATION EXHAUST

The OPERABILITY of the GASEOUS RADWASTE TREATMENT SYSTEM and the VENTILATION EXHAUST TREATMENT SYSTEM ensures that the systems will be available

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BASES

7.4
and
8.4

DOSE-IODINE-131, RADIOACTIVE MATERIAL IN PARTICULATE FORM AND TRITIUM

This section is provided to implement the requirements of Sections II.C, III.A and IV.A of Appendix I, 10 CFR Part 50, to assure that the releases of radioactive materials in gaseous effluents will be kept "as low as is reasonably achievable." The ODCM calculational methods specified in the surveillance requirements implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculational procedures based on models and data such that the actual exposure of a MEMBER OF THE PUBLIC through appropriate pathways is unlikely to be substantially underestimated. The ODCM calculational methods approved by NRC for calculating the doses due to the actual release rates of the subject materials are required to be consistent with the methodology provided in 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, October 1977 and Regulatory Guide 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors," Revision 1, July 1977. These equations also provide for determining the actual doses based upon the historical average atmospheric conditions. The release rate specifications for iodine-131, radioactive materials in particulate form with half-lives greater than 60 days and radionuclides other than noble gases are dependent on the existing radionuclide pathways to man, in areas at and beyond the SITE BOUNDARY. The pathways which are examined in the development of these calculations are: 1) individual inhalation of airborne radionuclides, 2) deposition of radionuclides onto green leafy vegetation with subsequent consumption by man, 3) deposition onto grassy areas where milk animals and meat producing animals graze with consumption of the milk and meat by man, and 4) deposition on the ground with subsequent exposure of man.

BASES

3.8.F
and
4.8.F

GASEOUS EFFLUENT TREATMENT

The requirement that the appropriate portions of these systems be used when specified provides reasonable assurance that the releases of radioactive materials in gaseous effluents will be kept "as low as is reasonably achievable." This specification implements the requirements of 10 CFR Part 50.26a, General Design Criterion 60 of Appendix A to 10 CFR Part 50, and design objective Section 110 of Appendix I to 10 CFR Part 50. The specified limits governing the use of appropriate portions of the systems were specified as a suitable fraction of the guide set forth in Sections II.B and II.C of Appendix I, 10 CFR Part 50, for gaseous effluents.

Maintaining the concentration of hydrogen below its flammability limits provides assurance that the releases of radioactive materials will be controlled in conformance with the requirements of General Design Criterion 60 of Appendix A to 10CFR Part 50.

Major Discrepancies

Licensee has not addressed I-133 in the bases.

Licensee's Justification

None

Reviewer's Comments

Licensee should include I-133 in the bases.

Draft # 7" of NUREG-0473, Rev. 3, December 1983

Comments

Licensee RETS Submittal

RADIOACTIVE EFFLUENTS

BASES

For use whenever gaseous effluents require treatment prior to release to the environment. The requirement that the appropriate portions of these systems be used, when specified, provides reasonable assurance that the releases of radioactive materials in gaseous effluents will be kept "as low as is reasonably achievable". This specification implements the requirements of 10 CFR Part 50.36a, General Design Criterion 60 of Appendix A to 10 CFR Part 50, and the design objectives given in Section II.D of Appendix I to 10 CFR Part 50. The specified limits governing the use of appropriate portions of the systems were specified as a suitable fraction of the dose design objectives set forth in Sections II.B and II.C of Appendix I, 10 CFR Part 50, for gaseous effluents.

3/4 11 2.5 EXPLOSIVE GAS MIXTURE

This specification is provided to ensure that the concentration of potentially explosive gas mixtures contained in the waste gas holdup system is maintained below the flammability limits of hydrogen and oxygen. (Automatic control features are included in the system to prevent the hydrogen and oxygen concentrations from reaching these flammability limits. These automatic control features include isolation of the source of hydrogen and/or oxygen, automatic diversion to recombiners, or injection of dilutants to reduce the concentration below the flammability limits.) Maintaining the concentration of hydrogen and oxygen below their flammability limits provides assurance that the release of radioactive materials will be controlled in conformance with the requirements of General Design Criterion 60 of Appendix A to 10 CFR Part 50.

3/4 11 2.7 MAIN CONDENSER

Restricting the gross radioactivity rate of noble gases from the main condenser provides reasonable assurance that the total body exposure to an individual at the exclusion area boundary will not exceed a small fraction of the limits of 10 CFR Part 100 in the event this effluent is inadvertently discharged directly to the environment without treatment. This specification implements the requirements of General Design Criteria 60 and 64 of Appendix A to 10 CFR Part 50.

3/4 11 2.8 MARK I CONTAINMENT

This specification provides reasonable assurance that releases from drywell grugging operations will not exceed the annual dose limits of 10 CFR Part 20 for unrestricted areas.

3/4 11 3 SOLID RADIOACTIVE WASTE

This specification implements the requirements of 10 CFR Part 50.36a and General Design Criterion 60 of Appendix A to 10 CFR Part 50. The process parameters included in establishing the PROCESS CONTROL PROGRAM may include, but are not limited to waste type, waste pH, waste/liquid/solidification amount, catalyst ratios, waste oil content, waste principal chemical constituents, and mixing and curing times.

PWR-ST1-1

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9/3/82

Major Discrepancies

- 1,2,3, Licensee has not provided basis, for Explosive Gas Mixture, Mark I containment and Solid Radioactive waste.

Licensee's Justification

1. None
2. Licensee has stated that "This item is optional" in Attachment 'A' of the RETS (April 15, 1983).
3. Licensee has stated that "PNPS" does not have a Process Control Program" in Attachment 'A' of the RETS (April 15, 1983)

BASES

3.8.G MAIN CONDENSER

Restricting the gross radioactivity rate of noble gases from the main condenser provides reasonable assurance that the total body exposure to a MEMBER OF THE PUBLIC at and beyond the SITE BOUNDARY will not exceed a small fraction of the limits of 10 CFR Part 100 in the event this effluent is inadvertently discharged directly to the environment without treatment. This specification implements the requirements of General Design Criteria 60 and 64 of Appendix A to 10 CFR Part 50.

Reviewer's Comments

1. Licensee should have addressed Explosive Gas Mixture in their proposed RETS.
2. Licensee's justification is not valid since it is not optional, in Draft 7" of model RETS.
3. Licensee should have addressed solid Radioactive waste, since it is part of the RETS.

Draft # 7th of NUREG-0473, Rev. 3, December 1983

Comments

Licensee RETS Submittal

This figure shall consist of a map of the site area showing the SITE BOUNDARY and locating points within the SITE BOUNDARY where radioactive gaseous and liquid effluents are released, as well as where radioactive liquid effluents leave the site. If onsite areas subject to radioactive materials in gaseous or liquid effluents are utilized by the public for recreational or other purposes, these areas shall be outlined on the map and identified by occupancy factors and the licensee's method of occupancy control (if any). The figure shall be sufficiently detailed to allow identification of structures and release point locations and elevations, as well as definition of UNRESTRICTED AREAS within the SITE BOUNDARY that are accessible to MEMBERS OF THE PUBLIC. The map scale shall be on the order of 2-3"/mile. See NUREG-0133 for additional guidance.

MAP DEFINING UNRESTRICTED AREAS FOR
RADIOACTIVE GASEOUS AND LIQUID EFFLUENTS

FIGURE S-1-3

B-1-STS-1
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S-2

9/3/82

Major Discrepancies

Licensee has not provided a scale factor in the map

Licensee's Justification

None

Reviewer's Comments

Licensee should include the scale factor in the map.

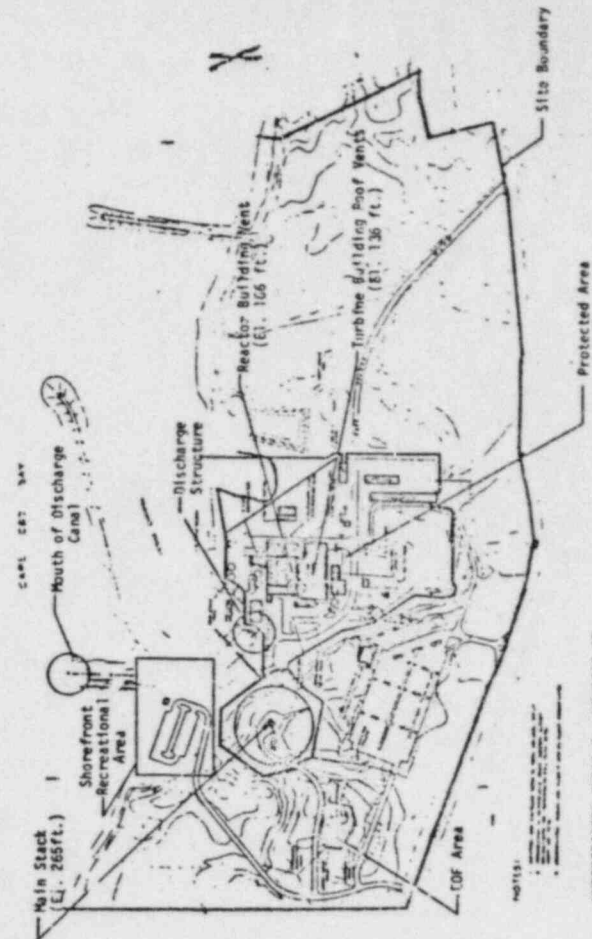


Figure S-1-1. Pilgrim Nuclear Power Station Unrestricted Areas for Liquid and Gaseous Effluents

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Draft # 7" of NUREG-0473, Rev.3, December 1983

Comments

Licensee RETS Submittal

6.0 ADMINISTRATIVE CONTROLS

6.0.1 UNIT REVIEW GROUP (URG)

RESPONSIBILITIES

6.0.1.6 The URG shall be responsible for:

- k. Review of any accidental, unplanned or uncontrolled radioactive release including the preparation of reports covering evaluation, recommendations and disposition of the corrective action to prevent recurrence and the forwarding of these reports to the (Superintendent of Power Plants) and to the (Company Nuclear Review and Audit Group).
- l. Review of changes to the PROCESS CONTROL PROGRAM and the OFFSITE DOSE CALCULATION MANUAL.

6.0.2 COMPANY NUCLEAR REVIEW AND AUDIT GROUP (CNRAG)

AUDITS

6.0.2.6 Audits of unit activities shall be performed under the cognizance of the (CNRAG). These audits shall encompass:

- k. The radiological environmental monitoring program and the results thereof at least once per 12 months.
- l. The OFFSITE DOSE CALCULATION MANUAL and implementing procedures at least once per 24 months.

① ⇒ m. The PROCESS CONTROL PROGRAM and implementing procedures for processing and packaging of radioactive wastes at least once per 24 months.

② ⇒ n. The performance of activities required by the Quality Assurance Program to meet the provisions of Regulatory Guide 1.21, Revision 1, June 1974 and Regulatory Guide 4.1, Revision 1, April 1975 at least once per 12 months.

6.0 PROCEDURES AND PROGRAMS

6.0.1 Written procedures shall be established, implemented and maintained covering the activities referenced below:

① ⇒ g. PROCESS CONTROL PROGRAM implementation.

h. OFFSITE DOSE CALCULATION MANUAL implementation.

② ⇒ i. Quality Assurance Program for effluent and environmental monitoring, using the guidance in Regulatory Guide 1.21, Revision 1, June 1974 and Regulatory Guide 4.1, Revision 1, April 1975.

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9/3/82

Major Discrepancies

1. Process Control Program (PCP) is not audited and has no approved procedures.
2. Licensee's Q.A. auditing frequency is once per two years instead of once per 12 months.

Licensee's Justification

1,2 None

Reviewer's Comments

1,2 Licensee should follow model RETS as specified or provide justification.

6.0 REVIEW AND AUDIT

A. OPERATIONS REVIEW COMMITTEE

1. FUNCTION

The ORC shall function to advise the Nuclear Operations Manager on all matters related to nuclear safety.

6. RESPONSIBILITIES

The ORC shall be responsible for:

1. Review of changes to the OFFSITE DOSE CALCULATION MANUAL (DOCM).
2. Review of every unplanned onsite release of radioactive material to the environs including the preparation and forwarding of reports covering evaluation, recommendations and disposition of the corrective action to prevent recurrence to the Vice President - Nuclear and to the Nuclear Safety Review and Audit Committee (NSRAC).

B. AUDITS

Audits of facility activities shall be performed under the cognizance of the NSRAC. These audits shall encompass:

1. The Radiological Environmental Monitoring Program and the results thereof at least once every 12 months.
2. The OFFSITE DOSE CALCULATION MANUAL and implementing procedures at least once per 24 months.

② ⇒ 3. The performance of all activities required by the Quality Assurance Program to meet the criteria of Appendix B, 10 CFR 50, at least once per two years.

4.0 PROCEDURES

- A. Written procedures and administrative policies shall be established, implemented and maintained that meet or exceed the requirements and recommendations of Sections 5.1 and 5.3 of ANSI N19.7 - 1972 and Appendix "A" of USRC Regulatory Guide 1.23, except as provided in 6.0.3 and 6.0.6 below.

Draft # 7" of NUREG-0473, Rev.3, December 1983

Comments

Licensee RETS Submittal

ADMINISTRATIVE CONTROLS

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT*

6.9.1.17 Routine Radioactive Effluent Release Reports covering the operation of the unit during the previous 6 months of operation shall be submitted within 60 days after January 1 and July 1 of each year. The period of the first report shall begin with the date of initial criticality.

The Radioactive Effluent Release Reports shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the unit as outlined in Regulatory Guide 1.21, "Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants," Revision 1, June 1974, with data summarized on a quarterly basis following the format of Appendix B thereof.

The Radioactive Effluent Release Report to be submitted within 60 days after January 1 of each year shall include an annual summary of hourly meteorological data collected over the previous year. 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.¹⁰ This same 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. This same report 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 5.1-3) 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 GAs: approximate and conservative appropriate methods are acceptable.] The assessment of radiation doses shall be performed in accordance with the methodology and parameters in the OFFSITE DOSE CALCULATION MANUAL (OSCM).

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 and other nearby uranium fuel cycle sources, including doses from primary effluent pathways and direct radiation, for the previous calendar year to show conformance with 40 CFR Part 150, Environmental Radiation Protection Standards for Nuclear Power.

*A single submittal may be made for a multiple unit station. The submittal should combine those sections that are common to all units at the station; however, for units with separate wastewater systems, the submittal shall specify the releases of radioactive material from each unit.

¹⁰In lieu of submission with the first half year Radioactive Effluent Release Report, the licensee has the option of retaining this summary of required meteorological data on site in a file that shall be provided to the NRC upon request.

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9/3/82

Major Discrepancies

Licensee has not specifically addressed many items required in the Semiannual Radioactive Effluent Release Report

Licensee's Justification

None

Reviewer's Comments

Licensee should fully address the content of the semiannual Radioactive Effluent Report in this section.

C. UNIQUE REPORTING REQUIREMENTS

1. RADIOACTIVE EFFLUENT RELEASE REPORT

A report shall be submitted to the Commission within 60 days after January, 1 and July, 1 of each year specifying the quantity of each of the principal radionuclides released to unrestricted areas in liquid and gaseous effluents during the previous 6 months. The format and content of the report shall be in accordance with Regulatory Guide 1.21 (Revision 1) dated June, 1974.

2. Reportable Occurrences

Reportable occurrences, including corrective actions and measures to prevent reoccurrences, 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. The types of events listed below shall be reported as expeditiously as possible, but within 24 hours by telephone and confirmed by teletype, mailgram, or facsimile transmission to the Director of the appropriate Regional Office, or his designate no later than the first working day following the event, with a written followup report within two weeks. The written followup 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.

Draft # 7th of NUREG-0473, Rev. 3, December 1983

Comments

Licensee RETS Submittal

ADMINISTRATIVE CONTROLS

Operation. Acceptable methods for calculating the dose contribution from liquid and gaseous effluents are given in Regulatory Guide 1.109, Rev. 1, October 1977.

The Radioactive Effluent Release Reports shall include 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,
- b. Total curie quantity (specify whether determined by measurement or estimate),
- c. Principal radionuclides (specify whether determined by measurement or estimate),
- d. Source of waste and processing employed (e.g., dewatered spent resin, compacted dry waste, evaporator bottoms),
- e. Type of container (e.g., LSA, Type A, Type B, Large Quantity), and
- f. Solidification agent or absorbent (e.g., cement, urea formaldehyde).

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.

The Radioactive Effluent Release Reports shall include any changes made during the reporting period to the PROCESS CONTROL PROGRAM (PCP) and to the OFFSITE DOSE CALCULATION MANUAL (ODCM), as well as a listing of new locations for dose calculations and/or environmental monitoring identified by the land use census pursuant to Specification 3.12.2.

SPECIAL REPORTS

Special reports may be required covering inspections, test and maintenance activities. These special reports are determined on an individual basis for each unit and their preparation and submittal are designated in the technical specifications.

6.9.2 Special reports shall be submitted to the Director of the NRC Regional Office listed in Appendix D, 10 CFR Part 20, with a copy to the Director, Office of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 within the time period specified for each report.

6.10 RECORD RETENTION

6.10.2 The following records shall be retained for the duration of the Unit Operating License:

- a. Records of analyses required by the radiological environmental monitoring program that would permit evaluation of the accuracy of the analysis at a later date. This should include procedures effective at specified times and QA records showing that these procedures were followed.

BWR-SFS-1

PWR-SFS-1^m

6-5

9/2/81

Major Discrepancies

Licensee has not addressed special Report in the RETS submittal. The special Report Section shown here are taken from the Licensee's existing spec.

Licensee's Justifications

None

Reviewer's Comments

Since the existing specification does not cover the Special Reports referenced here in the RETS, Licensee should expand Table 6.9.1 to include these reporting requirements.

3. Special Reports

Special reports shall be submitted as indicated in Table 6.9.1.

6.10 RECORD RETENTION

2. The following records shall be retained for the duration of the Operating License:
 3. Records of gaseous and liquid radioactive material released to the environs.
 9. Records of Quality Assurance activities required by the QA Manual.

Draft # 7" of NUREG-0473, Rev. 3 December 1983

Comments

Licensee RETS Submittal

ADMINISTRATIVE CONTROLS

6.13 PROCESS CONTROL PROGRAM (PCP)

6.13.1 The PCP shall be approved by the Commission prior to implementation.

6.13.2 Licensee initiated changes to the PCP:

1. Shall be submitted to the Commission in the Semiannual Radioactive Effluent Release Report for the period in which the change(s) was made. This submittal shall contain:
 - a. Sufficiently detailed information to totally support the rationale for the change without benefit of additional or supplemental information;
 - b. A determination that the change did not reduce the overall conformance of the solidified waste product to existing criteria for solid wastes; and
 - c. Documentation of the fact that the change has been reviewed and found acceptable by the (URC).
2. Shall become effective upon review and acceptance by the (URC).

① →

6.14 OFFSITE DOSE CALCULATION MANUAL (ODCM)

6.14.1 The ODCM shall be approved by the Commission prior to implementation.

6.14.2 Licensee initiated changes to the ODCM:

1. Shall be submitted to the Commission in the Semiannual Radioactive Effluent Release Report for the period in which the change(s) was made effective. This submittal shall contain:
 - a. Sufficiently detailed information to totally support the rationale for the change without benefit of additional or supplemental information. Information submitted should consist of a package of those pages of the ODCM to be changed with each page numbered and provided with an approval and date box, together with appropriate analyses or evaluations justifying the change(s);
 - b. A determination that the change will not reduce the accuracy or reliability of dose calculations or setpoint determinations; and
 - c. Documentation of the fact that the change has been reviewed and found acceptable by the (URC).
2. Shall become effective upon review and acceptance by the (URC).

② →

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5/3/82

Major Discrepancies

1. Licensee has not addressed PCP spec.
2. Licensee has not addressed ODCM spec in detail.

Licensee's Justification

1,2 None

Reviewer's Comments

1,2, Licensee should address PCP and ODCM specs as specified by the model RETS.

OFFSITE DOSE CALCULATION MANUAL (ODCM)

1. Any changes to the ODCM shall be submitted to the Commission within 50 days from which the change(s) was made effective.

Draft # 7" of NUREG-0473, Rev.3, December 1983

Comments

Licensee PETS Submittal

ADMINISTRATIVE CONTROLS

6.15 MAJOR CHANGES TO RADIOACTIVE LIQUID, GASEOUS AND SOLID WASTE TREATMENT SYSTEMS

6.15.1 Licensee initiated major changes to the radioactive waste systems (liquid, gaseous and solid):

1. Shall be reported to the Commission in the Semiannual Radioactive Effluent Release Report for the period in which the evaluation was reviewed by the (Unit Review Group). The discussion of each 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;
 - 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 license application and amendments thereto;
 - e. An evaluation of the change, which shows the expected maximum exposures to individual in the UNRESTRICTED AREA and to the general population that differ from those previously estimated in the license 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 (URG).
2. Shall become effective upon review and acceptance by the (URG).

*Licensees may choose to submit the information called for in this Specification as part of the annual FSAR update.

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6-2

9/3/82

Major Discrepancies

Licensee has not addressed the "major changes" issue.

Licensee's Justifications

None

Reviewer's Comments

Licensee should address this issue in the model RETS or in the annual FSAR update.