Public Service
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Company

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January 31, 1986

Director of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
7920 Norfolk Avenue
Bethesda, Maryland 20814

Attention: Ms. Elinor Adensam, Director
Project Directorate 3
Division of BWR Licensing

Dear Ms. Adensam:

RESPONSE TO INITIAL TEST PROGRAM REQUEST
FOR ADDITIONAL INFORMATION
HOPE CREEK GENERATING STATION
DOCKET NO. 50-354

Public Service Electric and Gas Company (PSE&G) hereby submits the attached marked-up FSAR pages in response to the NRC request for additional information pertaining to the Hope Creek Initial Test Program as documented in letter from E.G. Adensam (NRC) to C.A. McNeill (PSE&G) dated January 14, 1986 and discussed via telephone conference between PSE&G and the NRC on January 23, 1986. PSE&G will include these pages in a forthcoming amendment to the Hope Creek FSAR.

In the event you require additional information or clarification, do not hesitate to contact us.

Sincerely,

Attachment

C D.H. Wagner
USNRC Licensing Project Manager

R.W. Borchardt
USNRC Senior Resident Inspector

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filter plenum since the tank vent has only 1000 cfm per filter plenum.

Regulatory Guide 1.140 references ANSI N510-1975. HCGS will ~~follow~~ use the ANSI N510-1980 issue.

For further discussion of the atmosphere cleanup systems, see Section 9.4.

1.8.1.141 Conformance to Regulatory Guide 1.141, Revision 0, April 1978: Containment Isolation Provisions for Fluid Systems

Although Regulatory Guide 1.141 is not applicable to HCGS, per its implementation section, HCGS complies with the requirements of ANSI N271-1976 (ANS-56.2) as modified and interpreted by Regulatory Guide 1.141, with the exceptions and clarifications discussed below:

ANSI Section 3.1, General, references an American National Standard and a draft standard for guidance on the development of quality group classifications. The criteria for quality group classifications at the HCGS is based on the guidelines of Regulatory Guide 1.26.

When it is not practical to provide one isolation valve inside and one outside containment, and both valves are located outside primary containment, Section 3.6.4 requires that the valve nearest primary containment be enclosed in a protective leak-tight or controlled-leakage housing to prevent leakage to the atmosphere. Similarly, when greater safety is achieved by the use of a single isolation valve, Section 3.6.5 requires that the isolation valve be enclosed in a protective housing. In the HCGS design, no protective housing is provided. Nonetheless, the design is adequate in that any leakage will be collected within the reactor building, prior to filtration, dilution, and final release to the environment. Also, extensive leakage will trip sump level alarms, which will alert the main control room operators.

Appendix A depicts typical isolation valve arrangements for BWRs. The arrangements are applicable to Mark III containment designs and do not apply to HCGS.

For further discussion of containment isolation, see Section 6.2.4. ANSI Section 3.6.2, Instrument Lines, states that NRC Regulatory Guide 1.11 provides suitable bases for

4. Radwaste pressure with respect to outside ambient is negative with the system in operation.

5. Fan operating capacity is as specified by Table 9.4-10.

6. Balancing of air flows and exhaust filtration and adsorption unit testing has been completed. The filtration and adsorption unit testing has met the recommendations of NRC Regulatory Guide 1.140, ~~which endorses~~ using ANSI N510-1980, including:

   (a) Visual inspection.

   (b) Air flow distribution test.

   (c) DOP test for HEPA filters.

   (d) Carbon adsorber leak test with halogenated hydrocarbon refrigerant.

14.2.12.1.18 GJ-Control Area Chilled Water

a. Objective

1. The test objective is to demonstrate the capability of the chilled water system to supply and maintain the appropriate water temperatures within design specifications.

2. Instrumentation, alarms, and annunciators shall function in accordance with the system electrical schematics.

b. Prerequisites

1. All permanently installed equipment, relays, and instrumentation have been functionally operated and calibrated.

5. The main control room shall be maintained at a positive pressure, with respect to surrounding areas, as specified in Section 6.4.

6. Main control room air shall be maintained within the limits specified in Section 6.4.

7. Balancing of airflows and exhaust filtration and adsorption unit testing has been completed. The filtration and adsorption unit test shall have met the recommendations of NRC Regulatory Guide 1.140, ~~which endorses~~ using ANSI N510-1980, including:

   (a) Visual inspection

   (b) Air flow distribution test

   (c) DOP test for HEPA filters

   (d) Carbon adsorber leak test with halogenated hydrocarbon refrigerant.

14.2.12.1.20 GL-Service Area HVAC

a. Objective

1. The test objective is to demonstrate the capability of the service area heating, ventilation, and air conditioning (HVAC) systems.

2. Instrumentation, alarms, and annunciators shall function in accordance with the system electrical schematics.

b. Prerequisites

3. The vacuum relief system is verified to perform according to design specifications.

4. The hydrogen recombiner system is verified to perform according to design specifications.

5. The hydrogen/oxygen analyzing system is checked.

6. Containment isolation valve operability is checked.

d. Acceptance Criteria

1. All controls, logic, and interlocks function as specified by the system electrical schematics.

2. The Hydrogen Recombiner System operation is as specified below: per Section 6.2.5.2.1 and

   (a) Upon startup, each recombiner will increase the temperature of the process gas to it's design value.

   (b) Each recombiner can be heated up to operating temperature within the design specified time.

   (c) The recombiner effluent is cooled to its design temperature.

3. The Nitrogen Vaporizer System operation is as follows: per Section 6.2.5.2.1 and

   (a) Supplies nitrogen at a rate at least equal to the minimum design flow during makeup.

   (b) Supplies nitorgen at a rate at least equal to the minimum design flow during inerting.

(c) Supplies nitrogen at design temperatures.

4. The Combustible Gas Analyzer operation is as specified below: per Section 6.2.5.2.5 and

(a) The Combustible Gas Analyzer can sample for H_2 and O_2 from the required locations.

(b) Combustible Gas Analyzer Sample lines isolation valves operate per system design logic.

(c) The Combustible Gas Analyzer can accurately sample H_2 and O_2.

(d) The analyzer sample stream identifier will indicate the sample stream selected when only one stream is selected. When more than one stream is selected, the stream identifier will not indicate.

(e) The sample lines are heat traced and maintain required sample gas temperature.

5. Containment isolation valves closure times are as specified in FSAR Table 6.2-16.

6. The Suppression Chamber to the Reactor Building and Drywell to Suppression Chamber vacuum relief valves (VRV) function as specified below.

per Section 6.2.5.2.3 and the Design Installation and Test Specification D3.40.

(a) The Reactor Building to Suppression Chamber VRV isolation valves will fully open within the design specified time when the accumulator tanks are at design specified value while isolated from their compressed air supply.

(b) The Reactor Building to Suppression Chamber and Drywell to Suppression Chamber VRV will

4. Demonstrate the operation of the cooling coils in the recirculation units to limit temperatures during reactor building isolation.

5. Demonstrate the operation of the moisture separator and heating coils in each unit to reduce the relative humidity to acceptable levels prior to entering the charcoal filters.

d. Acceptance Criteria

1. Fans, dampers, isolation valves, permissives, interlocks, and controls shall function in accordance with system electrical schematics.

2. Filter train trips, permissives, interlocks, and controls shall function in accordance with the system electrical schematics.

3. System dampers and valves shall isolate within the operating times specified in Section 9.4.2.

4. The reactor building shall be maintained at a slightly negative pressure with respect to outside atmospheric pressure, as specified in Section 6.8.

5. Systems, unit heaters, coolers, and moisture separation equipment is demonstrated to operate in accordance with the manufacturer's technical instruction manual.

6. Balancing of airflows, and exhaust filtration and adsorption unit testing has been completed. The filtration and adsorption unit test shall have met the recommendations of NRC Regulatory Guide 1.140, ~~which endorses~~ using ANSI N510-1980, including:

   (a) Visual inspection

   (b) Air flow distribution test

2. All containment isolation valves and other equipment that starts or stops automatically upon receipt of a containment isolation signal must be operable and in their untripped position.

c. Test Method

1. The isolation valves are checked to ensure that automatic closure times are within design requirements by inserting simulated signals and measuring the closure times.

2. All logic combinations initiating automatic closure are verified.

3. Auxiliary actions, including fan starts, and damper action are checked.

d. Acceptance Criteria

1. Containment isolation valves shall close automatically upon receipt of their isolation signals.

2. Valve closure times shall be within the requirements of Table 6.2-16.

3. On removal of actuating signal (ESF) and/or resetting of the isolation or actuation signal, equipment remains in emergency mode.

4. Interlocks shall function in accordance with the system electrical schematics.

14.2.12.1.46 SP-Process Radiation Monitoring

a. Objective

1. The test objective is to verify the capability of the process radiation monitoring system to detect radioactivity in the monitored process lines.

2. INSTRUMENTATION, ALARMS AND ANNUCIATORS SHALL function IN ACCORDANCE WITH DESIGN AND logic SPECIFICATIONS.

2. Demonstrate the ability of filters to be precoated, backwashed, recirculated, and placed in normal operation.

3. Demonstrate the ability to transfer solids to the solid radwaste system after the RWCU phase separators have been decanted, using representative waste streams.

4. Demonstrate that filters, demineralizers, and evaporators produce acceptable water quality, using representative waste streams.

5. Demonstrate flow capacities and flow paths of liquid radwaste components and subsystems.

6. Demonstrate the isolation features of the waste stream in conjunction with the process radiation monitoring system.

d. Acceptance Criteria

1. Flow capacities of pumps are consistent with the rated values listed in Chapter 11, Table 11.2-14. meet the requirements within industry standards

2. Controls, logic, and interlocks, function as specified by the system electrical schematics.

3. Containment isolation valve closing time is as specified in Table 6.2-16.

4. Filter and demineralizer precoat and backwash performance is as specified in the vendor technical instruction manual.

5. Waste demineralizer effluent quality is as specified in the GE preoperational test specification.

6. The liquid radwaste system isolates as specified by the system electrical schematics and Section 11.5.

5. All applicable instrumentation has been calibrated.

c. Test Method

1. Check all controls, interlocks, and logic, associated with containment instrument gas.

2. Check compressor operation, including unloading/loading cycles for lead/lag compressors.

3. Demonstrate that the system can provide dry, oil-free gas.

4. Demonstrate that the system can provide compressed gas to main steam SRVs, main steam MSIVs, TIP drive mechanisms, drywell/suppression chamber vacuum breakers, main steam sealing system, and other gas operated valves inside containment.

5. Demonstrate that plant instrument air can be lined up to the containment instrument gas system from a remote location.

d. Acceptance Criteria

1. Controls, interlocks, and logic, function as specified in the system electrical schematics.

2. The containment instrument gas compressor provides compressed air with a 20 scfm capacity as specified in the Design Installation and Test Specification D3.42 and table 9.3-6 page 2 of 3 as the dryer nominal capacity.

3. Tne dryer and filter efficiency is as specified in Section 9.3, Table 9.3-6 as determined by measurement to meet the criteria of ANSI MC 11.1-1975.

4. The containment instrument gas system can provide compressed gas to the components stated in Section 9.3.6 as evidenced by the ability to increase the receiver pressure from 25 to 85 psig in 2 hours or less with the discharge valve closed.

5. RBVS isolates on high containment pressure, reactor water low level 2, and high building radiation signal.

6. The RBVS can maintain negative pressure between the minimum and maximum values stated in Table 3.11-2a.

7. Equipment area unit coolers will remove design heat loads (RHR, core spray, HPCI, RCIC, SACS, steam tunnel).

8. Balancing of air flows and exhaust filtration and adsorption unit testing has been completed. The filtration and adsorption unit test shall have met the recommendations of Regulatory Guide 1.140 ~~which endorses~~ using ANSI N510-1980.

14.2.12.1.69 Condensate Storage and Transfer

a. Objectives

1. To verify the condensate transfer system can provide water to the refueling floor subsystems such as the reactor cavity and dryer/separator storage pool.

2. To verify the operation of the condensate transfer pumps and jockey pumps.

3. The condensate storage tank as a source to HPCI and RCIC is verified in the HPCI and RCIC preoperational tests.

4. Alarms shall function in accordance with the system electrical schematics.

b. Prerequisites

1. All permanently installed equipment and instrumentation has been functionally checked and calibrated.

2. AC power is available.

3. Demineralized water is available to fill the condensate storage tank.

4. Verification of flow paths to be accomplished during system flush.

c. Test Method

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~~1. Flow paths for all modes of operation are checked. Many of these flow paths will be verified during the flushing program.~~

1. ~~2.~~ Valve logic and valve operating times are checked.

2. ~~3.~~ Logic, and interlocks are checked.

3. ~~4.~~ Pump performance is checked.

d. Acceptance Criteria

1. Logic, and interlocks function as specified in the system electrical schematics.

2. Pump performance is comparable to the head flow curves specified in the vendor technical instruction manual.

14.2.12.1.70 Steam Extraction and Feedwater Heater and Drains

a. Objectives

1. To verify the operation of the extraction non-return check valves.

2. To verify the operation of the low and high pressure heater level control system.

3. To verify the integrated logic associated with a turbine trip signal.

b. Prerequisites

1. Instrument calibration and loop checks have been completed.