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Public Service Electric and Gas Company 80 Park Plaza Newark, N.J. 07101 Phone 201/430-7000

February 10, 1983

Director of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
7920 Norfolk Avenue
Bethesda, Maryland 20014

Attention: Mr. Albert Schwencer, Chief
Licensing Branch 2
Division of Licensing

Gentlemen:

HOPE CREEK GENERATING STATION
DOCKET NO. 50-354
CODES AND STANDARDS FOR REACTOR
COOLANT PRESSURE BOUNDARY EQUIPMENT

This letter is in response to NRC staff request, dated November 4, 1981, for further information relating to Public Service Electric and Gas Company's request for authorization to use certain components in its Hope Creek Generating Station Unit 1, which were designed to codes which differ from those specified in subsections (c) through (f) of 10CFR50.55a.

Public Service Electric and Gas Company's initial request of January 30, 1979, provided a listing of the reactor coolant pressure boundary components for the Hope Creek Generating Station Unit 1, and indicated the purchase order date and the codes each component is constructed to. As requested by the NRC staff, the attachment to this letter provides additional information to indicate the codes which are permitted by 10CFR50.55a, and the results of our analysis which identifies and summarizes for each component the requirements contained in the codes permitted by 10CFR50.55a which are interpreted as being different than the requirements in the code edition and addenda used for construction of the components. As used in Attachment I, the term "Code of Construction" shall mean the code used in the construction, and the term "Code of Comparison" shall mean the code edition and addenda of ASME Section III permitted by 10CFR50.55a. Code paragraph references and titles listed in Attachment I are from the code edition and addenda of ASME Section III permitted by 10CFR50.55a for each component.

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The Energy People

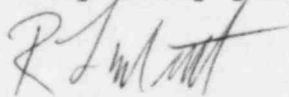
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The design, fabrication, and testing of these components are in accordance with the recognized codes and standards in effect at the time the components were ordered and provide an acceptable level of quality and safety. Public Service Electric and Gas Company believes that the revisions identified to the "Code of Construction" do not increase the level of quality and safety to compensate for the severe hardship that would be encountered in meeting all requirements of the later codes.

We trust that this transmittal fulfills the NRC staff's request for additional information on this matter and will enable resolution of Public Service Electric and Gas Company's request for an authorization from the Commission in accordance with Section 50.55a(a) (2) (i) and (ii) of 10CFR Part 50 to use the codes referenced for the components listed in the attachment to this letter.

Very truly yours,



R. L. Mittl
General Manager -
Nuclear Assurance and Regulation

DJD:df
Attachment

CC: D. H. Wagner
USNRC Licensing Project Manager

Mr. W. H. Bateman
USNRC Senior Resident Inspector

BD25 1-2

A. Equipment: Reactor Pressure Vessel

Purchase Order Date: May 7, 1970

Code of Construction: ASME III, 1968 Edition with
Winter 1969 Addenda

Code of Comparison: ASME III, 1971 Edition with Summer
1972 Addenda

Analysis of Difference:

GENERAL REQUIREMENTS

- a. Stress Reports: NA-3260 (a) - Incorporated additional requirement for review of RPV manufacturer's stress report.
- b. Responsibilities for QA: NA-3361 (a) - Incorporated additional requirement for RPV manufacturer to survey and qualify his subcontractor's QA program.

MATERIALS

- c. Welding Material Identification: NB-2152 - Incorporated specific requirements to provide marking on packages and containers to insure positive identification of the material.
- d. Number of Impact Test Specimens: NB-2323 - Increased the number of tests for heavy plates from one to two.
- e. Fracture Toughness Requirements: NB-2300 - Incorporates alternative test procedures for determining fracture toughness characteristics.
- f. Bolting Material Test Results: NB-2333 (2) - Introduced Charpy V-notch test acceptance criteria in terms of mils lateral expansion in lieu of ft.-lb. absorbed energy requirements.
- g. Design Stress Intensity Values: - No change in design stress intensity values for RPV plate material.

DESIGN

- h. Loading Criteria: NB-3114 - Clarifies that "Testing Conditions" are tests in addition to the ten (10) hydrostatic or pneumatic tests permitted by the Code, and requires that stress analysis cover the hydrostatic testing load condition.
- i. Protection Against Nonductile Fracture: NB-3211(d) - Incorporates additional requirement to provide protection against nonductile fracture.
- j. Thermal Stress Ratchet: NB-3222.5 - Provided a new approach to analyzing and evaluating stress.
- k. Design Methods: - Incorporates revised design and analysis requirements.

FABRICATION AND INSTALLATION

- l. Procedure Qualification Test: NB-4213.2 - Incorporates a comprehensive and detailed procedure for these tests.
- m. Qualification Requirements for Welding Specially Designed Welded Seal: NB-4360(a) - Incorporates new welding procedure not previously covered.

EXAMINATION

- n. Examination of Specially Designed Welded Seals: NB-5370 - Incorporates examination requirements for welding procedure not previously covered.
- o. Examination After Hydrostatic Test: NB-5410 - Incorporates new requirement to examine, by magnetic particle or liquid penetrant methods, welds subsequent to hydrostatic or pneumatic tests.

TESTING

- p. Testing of Specially Designed Welded Seals: NB-6127 - Incorporates testing requirements for welding procedure not previously covered.

B. Equipment: Control Rod Drive Housings

Purchase Order Date: January 5, 1971

Code of Construction: ASME III, 1968 Edition with
Summer 1970 Addenda

Code of Comparison: ASME III, 1971 Edition
with Winter 1972 Addenda

Analysis of Difference:

General Requirements

- a. Stress Reports - See Reactor Pressure Vessel
- b. Responsibilities for QA - See Reactor Pressure Vessel

Materials

- c. Welding Material Identification - See Reactor Pressure Vessel
- d. Design Stress Intensity Values - Stress Intensity Values were increased 0.8 Ksi at 600F for the flange and 0.9 ksi at 600F for the cape materials.

Design

- e. Loading Criteria - See Reactor Pressure Vessel
- f. Design Methods - See Reactor Pressure Vessel.

C. Equipment: Control Rod Drive

Purchase Order Date: August 18, 1971

Code of Construction: ASME III, 1968 Edition with
Winter 1970 Addendum.

Code of Comparison: ASME III, 1971 Edition with Winter
1972 Addenda.

Analysis of Difference: Code of Comparison as outlined
for the CRD Housings is applicable to the CRD, except that
design stress intensity values for the CRD material did not
change.

D. Equipment: Power Range Monitor Incore Housings

Purchase Order Date: January 5, 1971

Code of Construction: ASME III, 1968 Edition with
Summer 1970 Addenda.

Code of Comparison: ASME III, 1971 Edition with Winter 1972 Addenda.

Analysis of Difference: Code of Comparison as outlined for the CRD Housings is applicable to the Power Range Monitor Incore Housing.

E. Equipment: Jet Pump Instrumentation Penetration

Purchase Order Date: January 5, 1971

Code of Construction: ASME III, 1968 Edition with Summer 1970 Addenda.

Code of Comparison: ASME III, 1971 Edition with Winter 1972 Addenda.

Analysis of Difference: Code of Comparison as outlined for the CRD Housings is applicable to the (JPIP).

F. Equipment: Main Steam Line Safety Relief Valves

Purchase Order Date: January 28, 1971

Code of Construction: Nuclear Pump and Valve Code, 1968 Edition with 1970 Addenda.

Code of Comparison: ASME III, 1971 Edition with Winter 1972 Addenda.

Analysis of Difference:

General Requirements

- a. Stress Reports - See Reactor Pressure Vessel
- b. Manufacturer's Responsibilities: NA-3320 - Upgraded requirements for having a documented QA program and for qualification of material manufacturer's QA programs.
- c. Quality Assurance: NA-4100 - Sets forth requirements for planning, managing, and conducting QA programs and the rules governing the evaluation of such program prior to issuance of Certificate of Authorization for the manufacture and installation of Class 1, 2, and MC components.
- d. N-Type Symbol Stamp: NA-8220 - Incorporates requirement for the N-Type Symbol Stamp.

Materials

- a. Heat Treatment of Test Coupons: NB-2211 - Incorporates guidelines for heat treatment of test specimens, not previously covered.
- b. Impact Testing Requirements: NB-2300 - Sets forth requirement for impact testing of Class 1 components, previously established as optional.
- c. Impact Testing - Number of Tests and Locations: NB-2332 - Sets forth requirement for impact testing of pressure retaining materials with nominal thickness 2-1/2 inch and less, previously established as optional.
- d. Bolting Materials - Charpy V-Notch Testing: NB-2333(2) - Incorporates additional requirement for Charpy V-Notch testing bolting materials, not previously required.
- e. Documentation and Maintenance of QA Program: NB-2610 - Establishes documentation and qualification requirements for the QA program of the material manufacturer, not previously required.
- f. Design Stress Intensity Values - No change in design stress intensity values for valve body material.

Design

- a. Standard and Alternate Design Rules: NB-3512.1 and .2 - Incorporates additional acceptance criteria for minimum valve body thickness, in lieu of the criteria contained in USAS B16.5.
- b. Prevention of Nonductile Failure: NB-3511 - Incorporates additional requirements for prevention of nonductile failure, not previously established.

Fabrication and Installation

- a. Impact Tests: NB-4121.2 - Incorporates additional requirements for the repeat of tensile and impact tests, not previously covered.
- b. Qualification of Forming and Bending Process: NB-4213 - Incorporates requirement for procedure qualification tests to determine impact properties after straining, not previously covered.

- c. Impact Tests of Weld Deposits: NB-4335.1 - Incorporates requirement for impact tests of welding deposit for welding - procedures qualification not previously covered.
- d. Time Temperature Recordings: NB-4632.2 - Incorporates requirement for a time-temperature recording of all postweld heat treatments, not previously covered.

Testing

- a. Hydrostatic Testing: NB-6111(b) - Introduces requirement that hydrostatic testing of subject components be witnessed by the Authorized Inspector.

G. Equipment: Main Steam Line Isolation Valves

Purchase Order Date: October 8, 1969

Code of Construction: Nuclear Pump and Valve Code,
1968 Edition.

Code of Comparison: ASME III, 1971 Edition with Winter
1972 Addenda.

Analysis of Difference:

General Requirements

- a. Stress Reports - See Reactor Pressure Vessel
- b. Manufacturer's Responsibilities: See Main Steam
Line Safety Relief Valves.
- c. Quality Assurance: See Main Steam Line Safety
Relief Valves.
- d. N-Type Symbol Stamp: See Main Steam Line Safety
Relief Valves.

Materials

- a. Heat Treatment of Test Coupons - See Main Steam
Line Safety Relief Valves.
- b. Impact Testing Requirements - See Main Steam Line
Safety Relief Valves.
- c. Impact Testing - Number of Tests and Locations -
See Main Steam Line Safety Relief Valves.

- d. Bolting Materials - Charpy V-Notch Testing - See Main Steam Line Safety Relief Valves.
- e. Documentation and Maintenance of QA Program: See Main Steam Line Safety Relief Valves.
- f. Design Stress Intensity Values - No change in design stress intensity values for valve body material.

Design

- a. Standard and Alternate Design Rules - See Main Steam Line Safety Relief Valves.
- b. Prevention of Nonductile Failure - See Main Steam Line Safety Relief Valves.

Fabrication and Installation

- a. Impact Tests - See Main Steam Line Safety Relief Valves.
- b. Qualification of Forming and Bending Process - See Main Steam Line Safety Relief Valves.
- c. Impact Tests of Weld Deposits - See Main Steam Line Safety Relief Valves.
- d. Time Temperature Recordings - See Main Steam Line Safety Relief Valves.

Testing

- a. Hydrostatic Testing - See Main Steam Line Safety Relief Valves.

H. Equipment: Main Steam Line Pipe

Purchase Order Date: January 27, 1972

Code of Construction: ASME III, 1971 Edition with Summer 1971 Addenda.

Code of Comparison: ASME III, 1971 Edition with Winter 1972 Addenda.

Analysis of Difference:

- a. Fracture Toughness - (1) NB-2311 - Requires additional pressure - retaining components be impact tested.

(2) NB-2322.2 - Outlines impact test specimen orientation requirements for each product form in addition to plate forms.

(3) NB-2332 - Requires impact testing at or below the lowest service temperature, except that bolting shall be tested at 40°F or lower; in lieu of previous requirement for impact testing at 60°F below the lowest service metal temperature or lower.

(4) NB-2332 (a) (1) - Sets forth acceptance of impact test data based on mils lateral expansion, in lieu of previously used absorbed energy.

(5) NB-2332 (a) (2) - Adds impact testing for the heat affected zone and weld metal from weld procedure qualification tests, in addition to previous requirement to test base materials and weld metal.

(6) NB-2360 - Specified calibration frequency requirements for instruments and test machines in lieu of previously specified intervals.

- b. Chemical Analysis: NB-2432 - Incorporates requirement for chemical analysis on all weld filler metals and/or deposits, in addition to previous requirement for ferrous alloy A-7 and A-8 materials.

Design

- a. Nonductile Failure: NB-3611.5 - Introduces requirement for prevention of nonductile failure at emergency and faulted loading conditions.
- b. Qualification by Burst Tests: NB-3612.1(b) - Introduces specific requirement for maintenance of burst test records.
- c. Stress Indices: NB-3683.2-1 - Introduced revised or added values for stress indices.

Fabrication and Installation

- a. Forming and Bending Processes: NB-4212 - Established requirements for qualification and requalification of procedures for bending and forming materials.
- b. Specially Designed Welded Seals: NB-4360 - Incorporates new welding procedure, not previously covered.

Examination

- a. Specially Designed Welded Seals: NB-5271 -
Incorporates examination requirements for welding
procedure not previously covered.

Testing

- a. Specially Designed Welded Seals: NB-6127 -
Incorporates testing requirements for welding
procedure not previously covered.

I. Equipment: Main Steam Line Flow Element

Purchase Order Date: February 5, 1973

Code of Construction: ASME III, 1971 Edition with
Summer 1972 Addendum.

Code of Comparison: ASME III, 1971 Edition with Winter
1972 Addenda.

Analysis of Difference:

Materials

- a. Chemical Analysis - See Main Steam Line Pipe.

Design

- a. Qualification by Burst Tests - See Main Steam Line
Pipe.

J. Equipment: Reactor Recirculation System Pump

Purchase Order Date: May 7, 1971

Code of Construction: Nuclear Pump and Valve Code,
1968 Edition with 1970 Addenda.

Code of Comparison: ASME III, 1971 Edition with Winter
1972 Addenda.

Analysis of Difference:

General Requirements

- a. Stress Reports - See Reactor Pressure Vessel
- b. Manufacturer's Responsibilities: See Main Steam
Line Safety Relief Valves.

- c. Quality Assurance: See Main Steam Line Safety Relief Valves.
- d. N-Type Symbol Stamp: See Main Steam Line Safety Relief Valves.

Materials

- a. Bolting Materials - Charpy V-Notch Testing - See Main Steam Line Safety Relief Valves.
- b. Documentation and Maintenance of QA Program: See Main Steam Line Safety Relief Valves.
- c. Design Stress Intensity Values - No change in design stress intensity values for pump body material.

Design

- a. Design of Class 1 Pumps: NB-3400 - Incorporates additional design criteria for Class 1 pumps, not previously covered.
- b. Acceptability of Large Pumps: NB-3411(a) and 3211(d) - Introduces General Design Rules and Analysis requirements, and requirements for protection against nonductile fracture, not previously covered.

Testing

- a. Hydrostatic Testing - See Main Steam Line Safety Relief Valves.

- K. Equipment: Reactor Recirculation System Shut-Off Valves

Purchase Order Date: February 23, 1971

Code of Construction: Nuclear Pump and Valve Code,
1968 Edition with 1970 Addenda.

Code of Comparison: ASME III, 1971 Edition with Winter
1972 Addenda.

Analysis of Difference:

General Requirements

- a. Stress Reports - See Reactor Pressure Vessel

- b. Manufacturer's Responsibilities: See Main Steam Line Safety Relief Valves.
- c. Quality Assurance: See Main Steam Line Safety Relief Valves.
- d. N-Type Symbol Stamp: See Main Steam Line Safety Relief Valves.

Materials

- a. Bolting Materials - Charpy V-Notch Testing - See Main Steam Line Safety Relief Valves.
- b. Documentation and Maintenance of QA Program: See Main Steam Line Safety Relief Valves.
- c. Design Stress Intensity Values - No change in design stress intensity values for valve body material.

Design

- a. Standard and Alternate Design Rules: See Main Steam Line Safety Relief Valves.
- b. Prevention of Nonductile Failure: See Main Steam Line Safety Relief Valves.

Testing

- a. Hydrostatic Testing - See Main Steam Line Relief Valves.

L. Equipment: Reactor Recirculation System Pipe

Purchase Order Date: February 25, 1971

Code of Construction: ASME III, 1968 Edition with Summer 1970 Addenda.

Code of Comparison: ASME III, 1971 Edition with Winter 1972 Addenda.

Analysis of Difference:

General Requirements

- a. Stress Reports - Incorporates additional requirements to review and certify stress reports.

- b. Responsibilities for Quality Assurance: NA-3360(a) - Incorporates additional requirements to survey and qualify subcontractor QA programs.

Materials

- a. Welding and Brazing Materials: NB-2400 - Specifies mechanical property tests and chemical analysis tests on each heat, lot and batch of welding materials.
- b. Repair by Welding: NB-2539 - Restricts the repair of weld defects to cavities which after defect removal do not exceed 1/3 of the section thickness.
- c. Required Examination: NB-2541 - Specifies use of radiography for forgings where ultrasonic methods are unacceptable.
- d. Products Welded with Filler Material: NB-2560 - Incorporates requirement for NPT Code Symbol Stamps and inspection by an authorized inspector.

Design

- a. Qualification by Burst Tests: See Main Steam Line Pipe.
- b. Emergency Conditions: NB-3655 - Incorporates pressure and stress limits for emergency conditions, not previously covered.
- c. Faulted Conditions: NB-3656 - Incorporates pressure and stress limits for evaluating faulted conditions, not previously covered.
- d. Stress Indices - See Main Line Pipe, and revised limitation for f inside and outside reinforcement.

Fabrication and Installation

- a. Specially Designed Welded Seals - See Main Steam Line Pipe.

Examination

- a. Specially Designed Welded Seals - See Main Steam Line Pipe.

Testing

- a. Specially Designed Welded Seals - See Main Steam
Line Pipe.