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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSIONBefore the Atomic Safety and Licensing Board

In the Matter of

Public Service Electric and  
Gas Company

(Hope Creek Generating Station)

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Docket No. 50-354 OL

APPLICANT'S RESPONSE TO  
PUBLIC ADVOCATE'S FIRST SET OF  
INTERROGATORIES AND  
REQUEST FOR PRODUCTION OF DOCUMENTS

Pursuant to the rules of practice of the Nuclear Regulatory Commission ("NRC"), 10 C.F.R Section 2.740(b), and the Order of the Atomic Safety and Licensing Board of December 21, 1983 and the special prehearing conference of November 22, 1983, Applicant, Public Service Electric and Gas Company ("PSE&G") hereby responds to the interrogatories and requests for production of documents propounded by the Public Advocate of New Jersey, Joseph H. Rodriguez.

Two matters require discussion. Several documents listed herein are proprietary and protected pursuant to 10 CFR 2.790 of the Commission's Regulations. If the intervenors desire to review these documents, it will be necessary to enter into an appropriate protective agreement with the designated company.

Second, the scope of the request for documents, eg., "all...reports...associated with...welding of piping at Hope Creek," involve numerous documents precluding any attempt at listing.

These documents will be made available for inspection by the intervenors at the Hope Creek Site if necessary.

Contention 1: Pipe Cracks

1. Specify each section of the Hope Creek Final Safety Analysis Report ("FSAR"), including Applicant's response to staff questions, and any amendments or updates thereof which Applicants assert are applicable to the consideration of the Public Advocate's Contention.

RESPONSE

Those sections of the Hope Creek FSAR, including Applicant's response to staff questions, applicable to the Public Advocate's contention are as follows:

<u>FSAR Section</u>	<u>FSAR Amendment No.</u>
1.) Table 1.3-8 - Significant Design Changes from PSAR to FSAR	0
2.) 1.8.1.31 - Conformance to RG 1.31	0
3.) 1.8.1.36 - Conformance to RG 1.36	0
4.) 1.8.1.37 - Conformance to RG 1.37	0
5.) 1.8.1.38 - Conformance to RG 1.38	0
6.) 1.8.1.39 - Conformance to RG 1.39	0
7.) 1.8.1.44 - Conformance to RG 1.44	0
8.) 1.12.1 - Unresolved Generic Safety Issues	0
9.) 1.14.1.86 - Generic Licensing Issues - Stress Corrosion Cracking of Stainless Steel	1
10.) 5.2.3.2.2 - BWR Chemistry of Reactor Coolant	0

11.) 5.2.3.4.1 - Avoidance of Stress Corrosion Cracking	0
12.) 5.2.3.5.1.2 - SRP Rule Review	0
13.) QR 250.2	2
14.) QR 281.10	2
15.) QR 281.12	2

2. Identify and specify all meetings, conferences, studies, reports, or other documentation relied upon by Applicants in considering the problem of intergranular stress corrosion cracking ("IGSCC"). Provide copies of all such materials together with transcripts, minutes or notes taken during any meeting, proceedings, or other discussions related to the Applicant's response to the phenomenon of IGSCC.

#### RESPONSE

Submitted herewith are listings of meetings, conferences and studies and indices of other documentation relied upon by Applicant in considering the problem of intergranular stress corrosion cracking. Applicant will make copies of the documents available for review and reproduction in accordance with the Commission's regulations at the office of Richard Fryling, Jr., Associate General Solicitor, Public Service Electric and Gas Company, 80 Park Plaza - T5E, Newark, New Jersey 07101. In as much as the search for further documentation is continuing, the response to this interrogatory and document production request may be supplemented if necessary.

3. Identify all persons, officials, or consultants now or formerly employed by PSE&G to advise the Applicants on the phenomenon is IGSCC.

Provide copies of any reports, studies, or correspondence wherein these persons describe, analyze, or offer recommendations upon IGSCC.

RESPONSE

The persons named below have been involved with the issue of IGSCC on the Hope Creek Project:

PSE&G EMPLOYEES

P. Landrieu  
W. Gailey  
G. J. Schnabel  
J. E. Rogozenski  
R. F. Brandt  
D. Sachs  
R. Dunn

GENERAL ELECTRIC EMPLOYEES

J. P. Higgins  
J. Atwell  
J. P. Clark  
R. A. Proebstle  
S. Ranganath  
J. N. Kass  
H. H. Klepfer  
G. M. Gordon  
E. Kiss

BECHTEL POWER CORPORATION EMPLOYEES

B. Hackney	R. C. Bertossa	W. R. Smith
H. L. Leichter	D. S. Kerr	F. Breismeister

See Answer to Interrogatory 2 on Contention 1.

4. Specify and describe in detail any mitigation measures, plans, or programs developed or under consideration by the Applicants for the prevention and/or mitigation of IGSCC.

RESPONSE

See Answer to Interrogatory 2 on Contention 1; particularly Folder 1, Items 4, 8, and 10; Folder 2, Items 11, 13, 14, and 15; Folder 3, Item 3.

5. Identify any experts, employees, or consultants of the Applicants that have advised or in the future will advise the company on IGSCC, and/or will testify for the Applicants in hearings on this contention. Provide copies of their resumes and work product.

RESPONSE

See Answer to Interrogatory 3 on Contention 1. Applicant will identify prospective witnesses if other than those listed and resumes of prospective witnesses will be provided.

6. Identify and describe any and all "non-conformance reports" ("NR"), surveillance reports ("SR"), or other reports provided by contractors, subcontractors, inspectors, or other personnel associated with the purchase, delivery, installation and welding of piping at Hope Creek.

RESPONSE

Submitted herewith are indices of Nonconformance Reports, Quality Control Inspection Records, Quality Surveillance Reports and Quality Assurance Surveillance and Audit Activities associated with the Recirculation Piping and connections thereto related to Contention 1. Also included with the indices are lists of personnel involved with inspection, surveillance,

monitoring and audit activities. Applicant will make copies of the documents available for review and reproduction in accordance with the Commission's Regulations at the office of Richard Fryling, Jr., Associate General Solicitor, Public Service Electric and Gas Company, 80 Park Plaza - T5E, Newark, New Jersey 07101 and at the Hope Creek site as appropriate. See also Answer to Interrogatory 2 on Contention 1.

7. Identify all inspectors currently or formerly employed by the Applicants to examine Type 304 stainless steel piping or any other form of piping which carries coolant water.

RESPONSE

See Answer to Interrogatory 6 on Contention 1.

8. Identify the location of all NR's, SR's, or other inspection reports specified in Interrogatory 6, supra.

RESPONSE

See Answer to Interrogatory 6 on Contention 1.

Contention 2: Management Qualification

1. Provide a table of organization, showing the chain of communication and command, which the Applicants employ to manage the operation of nuclear plants.

RESPONSE

The table of organization is included in Chapter 13 "Conduct of Operation" of the HCGS FSAR. Specifically, figures 13.1-1, 13.1-2, 13.1-6, 13.1-7, 13.1-8, 13.1-9, 13.1-10, 13.1-11, 13.1-12, and 13.1-13, detail the organization. Also, figure 17.2-1 in Chapter 17.2 "Quality Assurance During the Operations Phase" details the Manager - Quality Assurance Nuclear Operations organization.

2. Identify all persons, employees, officials, or consultants currently or formerly employed by the Applicants who reviewed and/or participated in the Applicants' response to the ATWS incidents at the Salem Nuclear Generating Station in February, 1983. Provide copies of all reports, studies, recommendations, correspondence or other material which sets forth their analysis and/or recommendations regarding the Salem ATWS.

## RESPONSE

The following personnel not including counsel were involved in the Reactor Trip Breaker Incident Response:

R. I. Smith  
R. M. Eckert  
R. A. Uderitz  
R. A. Boettger  
J. M. Zupko  
H. J. Midura  
A. Nassman  
D. J. Jagt  
J. D. Driscoll  
E. A. Liden  
P. M. Krishna  
R. P. Douglas  
R. L. Mittl  
R. D. Rippe  
C. P. Johnson

R. MacWatters  
V. Getzinger  
R. E. Schaeffer  
E. S. Rosenfeld  
R. A. Burricelli  
H. D. Hanson  
R. E. Gehret  
S. LaBruna  
J. Gallagher  
L. M. Fry  
L. K. Miller  
T. N. Taylor  
L. A. Reiter  
R. Gura  
R. Stanley

R. Skibinski  
E. Renaud  
R. A. Burke  
D. K. Hsu  
J. C. Lai  
B. E. Hall  
J. P. Corletto  
L. Leitz  
F. Sullivan  
L. Griffis  
M. Morroni  
M. Shedlock  
R. Diaz  
L. Santonastaso  
J. Fitzgerald



R. S. Salvesen	H. Baranek	M. Allicock
F. Meyer	R. P. Surman	R. Settle
W. L. Britz	R. W. Beckwith	R. Matts
J. A. Nichols	D. Bhavani	P. Mirchandani
R. J. DeSanctis	L. Hajos	J. Quather
E. Rozovski	H. Lowe	R. W. Hunsinger
D. Namit	D. Harding	R. E. Tierney
A. Sternberg	M. Swann	R. Namit
W. Pavincich	R. Franz	O. Lee
R. Bashall	E. Crandall	T. N. Cocco
J. Wroblewski	L. Trow	W. Nevins
A. Gilrain	R. Oaks	D. Perkins
R. D'Orazio	G. Kapp	J. Barger
M. O. Banderia	J. Cortez	DiCecca
H. G. Berrick	L. Catalfomo	J. M. DeStefano
H. N. Trenka	J. Gueller	J. R. Franks
A. P. Graham	J. Hagan	J. Gomeringer
M. E. Gibbons	J. Jackson	B. Leap
M. R. Danak	R. Newman	B. K. Patrick
J. C. Chamberlin	R. VanderDecker	J. Lark
J. Owens	B. Gadzinski	A. Seibert
J. Wang	N. Gerrity	J. Tully
W. E. Reiber	V. Polizzi	S. Skabicki
A. F. Fernandez	A. Orticelli	A. Darelius
S. Makam	D. E. Berry	A. W. Robinson
K. King	R. Newman	R. Jorgenson
R. Minikel	R. Frahm	C. Kinsley
K. Whitcomb	M. Zeigler	M. Rosenzweig
W. Schultz	W. Reuther	

Copies of reports, studies, recommendations and correspondence have been previously served upon the Department of the Public Advocate In the Matter of the Motion of Public Service Electric and Gas Company to reduce the Level of the Levelized Energy Adjustment Clause, before the State of New Jersey Board of Public Utilities, Docket No. 831-25 and are not being resubmitted herewith since they are in your possession and are quite bulky and numerous.

In addition to the foregoing, the following will be made available for review and reproduction in accordance with the Commission's Regulations at the office Richard Fryling, Jr., Associate General Solicitor,



Public Service Electric and Gas Company, 80 Park Plaza - T5E, Newark, New Jersey 07101.

1. Nuclear Oversight Committee Quarterly Report submitted to the NRC by letter of January 26, 1984.
2. Letter to Eisenhut, re: Corrective Action Program, dated December 19, 1983.
3. Nuclear Oversight Committee Charter submitted to the NRC by letter of December 8, 1983.
4. Letter to Eisenhut, re: Corrective Action Program, dated November 14, 1983.
5. Supplemental Response to Generic Letter 83-28, dated November 7, 1983.
6. PSE&G Action Plan dated August 26, 1983.
7. BETA Corporation Reports submitted to the NRC by letter dated April 27, 1983.
8. Management Analysis Company Report submitted to the NRC by letter dated June 29, 1983.
9. Management Analysis Company Report (QA) submitted to the NRC by letter dated July 29, 1983.

3. Identify and describe the Applicant's program for management of the operation and maintenance of the Hope Creek Nuclear Generating Station. Include the names and qualifications of all personnel in a management capacity and with authority to operate or oversee the operation of the Hope Creek Generating Station.

RESPONSE

Chapter 13 "Conduct of Operation" of the HCGS FSAR describes the program for management of the operation and maintenance of HCGS. Chapter 13, table 13.1-1 and table 13.1-4 provides the resumes of personnel in a management capacity and with authority to operate or oversee the operation of the HCGS.

4. Describe any and all operational and/or management changes instituted by the Applicants at the Salem Generating Station following the ATWS of February, 1983. Identify and describe any way in which these changes will be applied to Hope Creek.

RESPONSE

The Maintenance Department made changes to their Department Procedures and recommended changes to the Administrative Procedures.

The rewriting of these procedures incorporated materials given in Westinghouse Information Bulletins and incorporated more quality assurance involvement. The new procedures defined Post Maintenance Testing in greater detail. There have been increased manpower requirements and staffing levels in the Nuclear Operations Quality Assurance Department. The initiation of more intense training for Supervisors created four (4) new supervisor positions, which help support work load during training periods. A Computer Work Order Tracking System was developed with cooperation of Operations Department and I&C Department. Indirectly related to the ATWS incident, the Maintenance Department added a Licensed Operator position to their staff of supervisory personnel.

The I&C Department made changes to their Department Procedures and recommended changes to the Administrative Procedures. The changes to the procedures also incorporated Westinghouse Information Bulletin material and developed clarification of testing and re-testing of components in procedures.

The I&C Department worked with Maintenance and Operations Department in developing Work Order Tracking Systems, which clearly defines testing and retesting procedures. In supervision, a licensed operator was added to the staff and the addition of another position for a supervisor is in the making.

The Chemistry Department made changes to their Department Procedures and recommended changes to the Administrative Procedures incorporating Westinghouse Information Bulletins. They also upgraded Supervisor Training, Work Order Tracking System and added a Licensed Operator to the Department Staff Personnel.

The Operations Department made changes to Department Procedures and recommended changes to Administrative Procedures in direct response to Emergency Instruction as per Reactor Trip Procedures. The Operations Department Directive AD16 (Post Test Review) was developed as a direct result of the ATWS incident. They also were involved in the upgrading of the Work Order Tracking System.

Training for the Operations Department personnel has been increased as to ATWS. The department also assigned a specific supervisor to develop and follow the Work Order Retesting Program.

The plant has increased manning levels from 490 personnel to 558. In the Education Text TSSP (Technical Supervisory Skills Program)

training has been incorporated for all PSE&G Supervision. A PSE&G Action Plan was developed and initiated. The Nuclear Oversight Committee was formed and the Managed Maintenance Program was initiated involving the I&C Department and Maintenance Department. The General Manager - Salem Operations and the General Manager - Nuclear Services exchanged positions, duties and responsibilities.

While these Salem specific improvements will not be directly applied to Hope Creek, industry recommendations such as INPO, Good Practices, and NRC Requirements and Guidelines, many of which have been promulgated as a result of the February 19, 1983 ATWS events, are taken into consideration in the development of Hope Creek management and operational philosophies.

References to the foregoing have been previously served upon the Department of the Public Advocate as indicated in Answer to Interrogatory 2 on Contention 2 and likewise are not being submitted herewith.

### Contention 3: Environmental Qualification

1. Specify all sections of the Applicant's FSAR and any response to staff requests for information which the Applicants assert provide adequate information for the NRC to determine that safety related electrical and mechanical equipment are environmentally qualified at the Hope Creek Station.

### RESPONSE

Those sections of the Hope Creek FSAR, including responses to staff requests for information, providing information on the environmental qualification of equipment are as follows:

	<u>FSAR Section</u>	<u>FSAR Amendment No.</u>
1.)	Table 1.3-8 - Significant Design Changes from PSAR to FSAR	0
2.)	1.8.1.40 - Conformance to RG 1.40	0
3.)	1.8.1.63 - Conformance to RG 1.63	4
4.)	1.8.1.73 - Conformance to RG 1.73	0
5.)	1.8.1.89 - Conformance to RG 1.89	0
6.)	1.8.1.131 - Conformance to RG 1.131	4
7.)	Table 1.11-1 - Summary of Differences from SRP	4
8.)	1.12.1 - Unresolved Generic Safety Issues	0
9.)	1.14.1.67 - Generic Licensing Issues - Harsh Environment for Electrical Equipment Following HELB	1
10.)	1.14.1.77 - Generic Licensing Issues - Protection of Equipment in MS Pipe Tunnel	2
11.)	1.14.1.121 - Generic Licensing Issues - Environmental Qualification of Equipment	1
12.)	3.1.2.1.1 - Conformance to GDC 1	0
13.)	3.1.2.1.2 - Conformance to GDC 2	0
14.)	3.1.2.1.4 - Conformance to GDC 4	0
15.)	3.1.2.1.23 - Conformance to GDC 23	0
16.)	3.6.1 - Postulated Piping Failures in Fluid Systems	0
17.)	3.11 - Environmental Design of Mechanical and Electrical Equipment	0,1,2,4
18.)	7.1.2.2 - Conformance to GDC's	0
19.)	7.1.2.3 - Conformance to IEEE Standards	0
20.)	7.1.2.4 - Conformance to Regulatory Guides	0

<u>FSAR Section</u>	<u>FSAR Amendment No.</u>
21.) QR 270.1	4
22.) QR 270.2	2
23.) QR 271.4	4
24.) QR 430.35	4
25.) QR 430.31	4
26.) QR 430.54	4
27.) QR 430.55	4
28.) QR 430.59	4
29.) QR 440.7	2
30.) SRAI (5)	4

2. Identify any and all persons, officials, employees or consultants with responsibility, currently or formerly for the Applicant's program of environmentally qualifying safety related electrical and mechanical equipment.

RESPONSE

The following is a list of personnel who have been involved in the Hope Creek Environmental Qualification Program:

PSE&G

P. Landrieu  
W. Gailey  
R. Salveson  
F. A. Christiana  
J. J. Wroblewski  
W. M. Pavincich  
R. D'Orazio  
T. Narang  
P. D. Thompson  
R. Drewnowski  
H. W. Peterson  
R. V. Snow  
R. Bashall

Proto-Power

M. Annon  
C. Hallahan  
G. Geany  
J. Lariveire  
R. Frantz  
E. Crandal  
D. Harding

Bechtel

G. Kapandritis  
R. Dusterdick  
M. Baxi  
R. Goel  
F. Borgman  
I. Sturman

General Electric

N. G. Lurie  
J. J. Jolly  
R. W. Friis  
H. P. Williams  
L. D. Test  
R. F. McClelland  
F. E. Hatch  
C. W. Dillmann  
D. W. Reigel  
P. R. Scherer  
W. M. Davis

3. Identify any and all reports, studies which the Applicants assert show the environmental qualification of safety related electrical and mechanical equipment at Hope Creek. In particular, identify all reports, including NR's, SR's, and other documentation in the possession of the Applicants which relate to environmental qualification.

RESPONSE

Listed below are indices of documentation (a) programmatic in nature (b) related to electrical equipment and (c) related to mechanical equipment concerning the environmental qualification of safety related electrical and mechanical equipment as set forth in Contention 3. See Answer to Interrogatory 2 on Contention 1. Applicant will make copies of the documents available for review and reproduction in accordance with the



Commission's regulations at the office of Richard Fryling, Jr., Associate General Solicitor, Public Service Electric and Gas Company, 80 Park Plaza - T5E, Newark, New Jersey 07101.

3(a) Following is the index of documentation programmatic in nature supporting the Hope Creek Environmental Qualification Program:

- 1) "General Electric Environmental Qualification Program"  
NEDE-24326-1-P  
Licensing Topical Report  
(Proprietary)
- 2) "General Electric Environmental Qualification Program"  
Scope of Work for Phase 1  
(Proprietary)
- 3) "General Electric Environmental Qualification Program"  
Scope of Work for Phase 2  
(Proprietary)
- 4) "General Electric Environmental Qualification Program"  
Scope of Work for Phase 3  
(Proprietary)
- 5) "General Project Requirement Environmental Qualification of Safety Related Equipment"  
10855-G-013(Q)  
(Non-Proprietary)
- 6) "Environmental Design Criteria for the Hope Creek Generating Station"  
10855-D7.5  
(Non-Proprietary)

3(b) The following reports show environmental qualification of safety related electric equipment for Hope Creek Generating Station:

- 1) "Qualification for Westinghouse Class IE Motors"  
Doc. I.D. - DO-146F  
  
(Proprietary)
- 2) "Qualification Tests of Solenoid Valves..." Test  
Report No. AQS21678/TR - Rev. A  
  
(Proprietary)
- 3) "Special 600 Volt Shielded Instrument Cable"  
Report No. 558-1088  
  
(Non-Proprietary)
- 4) "600 Volt Control Cable" Report No. HC 0579-1, Rev. 2  
  
(Non-Proprietary)
- 5) "Raychem WCSF-N Splice Kit Tubing" Report  
No. PEN-TR-8172  
  
(Non-Proprietary)
- 6) "5KV Power Cable" Report No. HC 0579-3A, Rev. 1  
  
(Non-Proprietary)
- 7) "Indoor Metal Clad Switchgear" Report No. 33-52260-QS,  
Rev. 2  
  
(Proprietary)
- 8) "Westinghouse Model 32, Series 2 Qualifications Program"  
Report No. 5519A32  
  
(Non-Proprietary)
- 9) "SMB-0-25 Valve Actuator" Report No. 600376A  
  
(Proprietary)
- 10) "Power Range Detector"  
Book #6  
DRF #A00-01482  
MPL #B11-D193  
  
(Proprietary)

- 11) "Electrical Protection Assembly"  
Book #8  
DRF #A00-01428  
MPL #C71-5003  
  
(Proprietary)
- 12) "Pressure Transmitter"  
Book #11  
DRF #A00-01428  
MPL #B21-N075, B21-N076, C71-N052  
  
(Proprietary)
- 13) "Level Transmitter"  
Book #12  
DRF #A00-01428  
MPL #E11-N008  
  
(Proprietary)
- 14) "Pressure Switch"  
Book #16  
DRF #A00-01428  
MPL #C71-N005  
  
(Proprietary)
- 15) "Temperature Switch"  
Book #18  
DRF #A00-01428  
MPL #C41-N003  
  
(Proprietary)
- 16) "Conductivity Cell"  
Book #21  
DRF #A00-01428  
MPL #E11-N001 A, B  
  
(Proprietary)

3(c) The following reports show environmental qualification of safety related mechanical equipment for HCGS:

Date: Feb., 1984

1. Index
2. Report of Hope Creek Generating Station PSE&G/NRC  
Equipment Qualification Meeting of November 29, 1983

3. Bechtel E002042 - Degradable Mechanical Parts Program

January 18, 1984

(Review of "Q" harsh environment purchase orders for non-metallic components as phase I of the degradable components review task.)

4. General Electric GP-83-195  
Hope Creek Project  
Non-metallic material lists for Hope Creek Mechanical Equipment Environmental Qualification Program

December 29, 1983

(completed under Work Authorization No. 7, 20 dated October 21, 1983)

5. Mechanical Equipment

4. Identify and describe any studies, reports, or other documentation prepared by persons or agencies not under the control or direction of the Applicants, which the Applicants have used or relied upon in qualifying safety related electrical and mechanical equipment.

#### RESPONSE

The documents listed below represent the primary sources of regulatory requirements that the Hope Creek Environmental Qualification

program is based upon. Secondary documents that are referenced by these primary documents are not included.\* Conformance to any particular NRC Regulatory Guide can be found in Section 1.8 of HCGS FSAR.

FEDERAL REGULATIONS

10 CFR 50.49  
10 CFR 50, Appendix A, GDC 4

NRC REGULATORY GUIDES

R.G. 1.75  
R.G. 1.97  
R.G. 1.89

NUREG DOCUMENTS

NUREG-0588  
NUREG-0800, Section 3.11

INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS STANDARDS

IEEE 323-1974

\* Secondary standards are available in public libraries, technical societies, and public reading rooms.

STATE OF NEW JERSEY    )  
                                  :    ss.  
COUNTY OF ESSEX        )

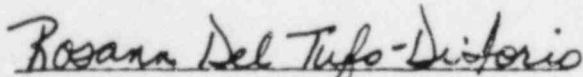
Thomas J. Martin, being first sworn, deposes and states:

That he is Vice President, Engineering and Construction of Public Service Electric and Gas Company, the Applicant herein; that he has read the foregoing Applicant's Response to Public Advocate's First Set of Interrogatories and Request for Production of Documents, and knows the contents thereof; and that the statements and matters set forth therein are true and correct to the best of his knowledge, information and belief.



Thomas J. Martin  
Vice President

Subscribed and sworn to  
before me this <sup>13<sup>th</sup></sup> day  
of February 1984.



ROSANN Del TUFO-DI IORIO  
NOTARY PUBLIC OF NEW JERSEY  
My Commission Expires April 18, 1984

PUBLIC ADVOCATE (PA) CONTENTION 1: PIPE CRACKS  
Articles 2, 3, and 4  
(PA-1 art. 2 thru 4)

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Folder 1

1. General Electric (G.E.) letter to Public Service Electric and Gas (PSE&G) dated 6/27/75 (GP-75-86) -  
"Removal of Recirculation Four-Inch Bypass Line".  
(PA-1 art. 2, 3, & 4)
2. G.E. letter to Bechtel Power Corporation (Bechtel) dated 1/7/76 (GB-76-4) -  
"G.E. Implementation Plan For Stainless Steel Pipe Fixes". (PA-1 art. 2, 3, & 4)
3. PSE&G Meeting Notes dated 8/2/76 -  
"Material Degradation in BWR Plants" (with attachments).  
(PA-1 art 2)
4. G.E. letter to Bechtel dated 1/13/78 (GB78-18) -  
"Hope Creek Project Intergranular Stress Corrosion Cracking (IGSCC) Prevention For External Jet Pump Riser Piping". (PA-1 art. 2, 3, & 4)
5. PSE&G Meeting Notes dated 3/7/78 -  
"Field Welding of NSSS Piping" (with attachments).  
(PA-1 art. 2, 3, & 4)
6. PSE&G letter to Bechtel dated 3/28/78 (PLB-2850) -  
"Recirculation Line Bypass Modification"  
(with attachments). PA-1 art. 3 & 4)
7. PSE&G letter to Bechtel dated 4/20/78 (PLB-2893) -  
"Field Welding of G.E. NSSS Piping". (PA-1 art. 3 & 4)
8. G.E. letter to Bechtel dated 7/24/78 (GB-78-158) -  
"IGSCC Countermeasures for the Hope Creek Recirculation System". (with attachments). (PA-1 art. 2, 3 & 4)
9. PSE&G Internal Memo, Chief Mechanical Engineer (CME) to General Manager Engineering (G.M. - Engg.) dated 1/25/79 -  
"Recirculation Piping Hope Creek Generating Station"  
(with attachments). (PA-1 art. 3 & 4)



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### Folder 1

10. Bechtel letter to G.E. dated 5/15/79 (BLG-938) -  
"Recirculation Piping - Mitigation of IGSCC"  
(with attachments). (PA-1 art. 3 & 4)
11. Bechtel letter to PSE&G dated 8/29/79 (BLP-8566) -  
"Recirculation System, Corrosion Resistant Cladding  
(CRC) and Solution Heat Treatment (SHT), G.E. Quotation".  
(PA-1 art. 3 & 4)
12. Bechtel letter to G.E. dated 9/6/79 (BLG-1024) -  
"Recirculation Piping Shipment". (PA-1 art 3)
13. PSE&G Internal Memo, CME to G.M. - Engg., dated 9/19/79 -  
"Recirculation Piping Recommendation for Approval of  
Funds". (PA-1 art. 3 & 4)
14. PSE&G letter to Bechtel dated 9/25/79 (PLB-3630) -  
"Recirculation Piping System CRC and SHT Approval of  
Costs". (PA-1 art. 3 & 4)
15. G.E. Specification P50YP175 dated February 1978.-  
"Corrosion Resistant Weld Deposition Requirements for  
Austenitic Stainless Steel Piping". (PA-1 art. 2 & 4)
16. PSE&G Internal Memo, Principal Engineer to CME, dated 3/8/82 -  
"Recirculation Piping Shop Work" (with attachments).  
PA-1 art. 3 & 4)
17. Associated Piping and Engineering (APE) letter to G.E.  
dated 3/28/83 -  
"Weld Repairs to Original Pipe Spool Welds After SHT  
Operations" (with attachments). (PA-1 art. 2, 3 & 4)
18. PSE&G Internal Memo, Principal Engineer to CME, dated 5/19/83 -  
"Recirculation Piping IGSCC Mitigation, Shop Work".  
(PA-1 art. 3 & 4)
19. PSE&G Internal Memo, Principal Engineer to CME, dated 5/26/83 -  
"Recirculation Piping IGSCC Mitigation, Shop Work".  
(PA-1 art. 3 & 4)
20. G.E. letter to Bechtel dated 5/26/83 (GB-83-95) -  
"Recirculation Piping Defects Discovered at Supplier's  
Shop". (PA-1 art. 3 & 4)

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21. PSE&G Internal Memo, Principal Engineer to CME, dated 6/10/83 -  
"Recirculation Piping Examination". (PA-1 art. 3 & 4)
22. PSE&G Internal Memo, Principal Engineer to CME, dated 8/14/83 -  
"Recirculation Piping Testing". (PA-1 art. 3 & 4)
23. G.E. letter to Bechtel dated 10/12/83 -  
"Recirculation Piping Defects Discovered at Supplier's  
Shop". (with attachment). (PA-1 art. 2, 3 & 4)
24. PSE&G Internal Memo, Chief Project Engineer to Manager -  
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- 1) NRC letter to PSE&G, dated February 17, 1978  
"NRC Staff Position on the use of Austenitic Stainless Steel in BWR's - Hope Creek Generating Station" with NUREG-0313 "Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping" (PA-1 Art. 2 and 4)
- 2) Bechtel letter to PSE&G dated March 7, 1978, (BLP-6528),  
"NRC staff Position on the use of Austenitic Stainless Steel" (PA-1 Art. 3 and 4)
- 3) G.E. Letter to PSE&G, dated September 18, 1978, (GB-78-44)  
"Hope Creek Project IGSCC" with "G.E. Meeting Minutes with NRC" dated September 12, 1978. (PA-1 Art. 2 & 4)
- 4) PSE&G letter to NRC, dated April 13, 1979,  
"Schedule for Response to NRC Staff Position on the use of Austenitic Stainless Steel in BWR Facilities" (PA-1 Art. 3)
- 5) Bechtel letter to PSE&G, dated September 4, 1979, (BLP-8599)  
"NRC Staff Position on the use of Austenitic Stainless Steel (NUREG-0313)" with attachment. (PA-1 Art. 3 and 4)
- 6) PSE&G letter to NRC, dated September 28, 1979,  
"Response to NRC Staff Position on the use of Austenitic Stainless Steel in BWR Facilities" with attachment  
(PA-1 Art. 3 and 4)
- 7) Office of Nuclear Reactor Regulation, NUREG-0313, Rev. 1,  
Published August, 1980, "Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping" (PA-1 Art. 2 and 4)
- 8) NRC memo to all BWR Licensees, dated February 28, 1981,  
"Implementation of NUREG-0313-Rev. 1" (PA-1 Art. 2 and 4)
- 9) PSE&G letter to Bechtel, dated April 30, 1981, (PLB-4369),  
"NRC Staff Position on the use of Austenitic Stainless Steel in BWR Facilities, NUREG-0313, Rev. 1" with attachment. PA-1 Art. 2 and 4)
- 10) Bechtel letter to PSE&G, dated June 22, 1981, (BLP-10,979)  
"NRC Staff Position on the use of Austenitic Stainless Steel in BWR Facilities, NUREG-0313, Rev. 1" with attachment,  
(PA-1 Art. 3 and 4)

- 11) PSE&G letter to NRC, dated July 7, 1981,  
"Response to Implementation of NUREG-0313, Rev. 1" with  
attachment. (PA-1 Art. 3 and 4)
- 12) NRC IE Bulletin 83-02: Stress Corrosion Cracking in  
Large-Diameter Stainless Steel Recirculation System  
Piping at BWR Plants" dated March 4, 1983.
- 13) KMC Inc. letter to PSE&G dated July 19, 1983,  
"Report of NRC Meetings on Cracks in Large Diameter Pipes"  
with attachment (PA-1 Art. 2)
- 14) EPRI letter to BWR Owners Group Members dated December 12, 1983,  
"Procedural Guidance for Pipe Replacement at BWRs" with  
attachment. (PA-1 Art. 2)
- 15) KMC Inc. letter to PSE&G, dated November 15, 1983,  
"Report of NRC and EPRI Presentations on Status of Cracks  
in BWR Piping" with attachment. (PA-1 Art. 2)

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1. Nuclear Safety, Volumn 17, July — August 1976 -  
"Pipe Cracks in BWR".
2. G.E., "Evaluation of Near-Term BWR Piping Remedies",  
dated 10/20/78, with attachments. (PA-1 art. 2)
3. EPRI Journal, December 1982 -  
"Mitigation of IGSCC in BWR Stainless Steel Piping".  
(PA-1 art.2)
4. EPRI First Use Report, "BWR Piping: Induction Heating to  
Prevent Cracking". (PA-1 art. 2)
5. EPRI First Use Report, "Radiographic Inspection Using MINAC  
(SHRINKAC)". (PA-1 art. 2)
6. G.E. BWR Technology Report, "Hydrogen Water Chemistry"  
(PA-1 art. 2) and others , including the following  
listed EPRI Reports which are available for review at  
the PSE&G Technical Library, Newark, New Jersey:

EPRI Report Nos.

RP-WS79-174 vol. 1-4		
RP-T101-05	RP-T118-13	RP-T115-03
RP-0700-06	RP1332-02	RP-T115-02
RP-T115-01	RP-T115-04	RP-T118-04
RP-T302-02	RP-T106-02	RP-T114-02
RP2405-02	RP-T106-01	RP-T118-06
RP-T114-10	BWROG; GPU 188.312.1	RP-T109-01
RP0603-03	BWROG; NMPC GN407	RP-T118-02
RP2058-06	BWROG; L.I.C.-81-412	RP-T118-01
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	RP-T113-05	RP-T117-02
		RP-T117-01

## RECIRCULATION PIPING

### REFERENCES

J. M. Skarpelos and J. W. Bagg, Chloride Control in BWR Coolants, NEDO-10899, General Electric, June 1973.

W. L. Williams, Corrosion, Vol 13, p. 539t, 1957.

M. B. Reynolds, Failure Behavior in ASTM A106B Pipes Containing Axial Through-Wall Flows, GEAP-5620, April 1968.

Investigation and Evaluation of Cracking in Austenitic Stainless Steel Piping of Boiling Water Reactor Plants, NUREG 76/067/NRC/PCSG, October 1975.

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IX. Quality Assurance Engineers Who Performed Surveillance, Monitoring,  
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DOKETED  
USNRC

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

Public Service Electric and  
Gas Company

(Hope Creek Generating  
Station)

)  
)  
)  
)  
)

Docket No. 50-354-OL

CERTIFICATE OF SERVICE

I hereby certify that copies of "Applicant's Response to Public Advocate's First Set of Interrogatories and Request For Production of Documents," dated February 14, 1984 in the captioned matter have been served upon the following by deposit in the United States mail on this 14th day of February, 1984:

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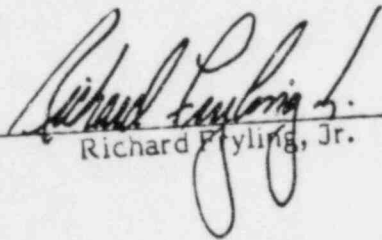
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