BRISTOL-MYERS PRODUCTS
A DIVISION OF BRISTOL-MYERS COMPANY

225 LONG AVENUE
HILLSIDE, NEW JERSEY 07207

May 30, 1985

Ms. Marlene Taylor
United States Nuclear Regulatory Commission
Region 1
631 Park Avenue
King of Prussia, PA 19406

Dear Ms. Taylor:

As per your request via telecom earlier today, enclosed please find copies of the two final Radioactive Waste Shipment and Disposal forms dated 2/11/85 and 6/3/83. The latter is so illegible that I have made a second copy with the data overwritten in red.

Should you require more information on the Nickel^{63} detector, please contact me or Heinz Ederma (x6744).

Sincerely yours,

BRISTOL-MYERS PRODUCTS

S. Mark Henry

S. M. Henry, Ph.D.
Manager, Clinical Research Services

Enclosures

cc*: V. Cotty
F. Ellerbush
G. Blewitt
W. Chambers

*letter only

SMH/ld
0339m

GENERATOR NUMBER [illegible]

GENERATOR NAME B[illegible] Myers [illegible]

ADDRESS [illegible]

CITY [illegible] STATE [illegible]

CONTACT [illegible]

PHONE [illegible]

USER PERMIT NO. [illegible] SHIPMENT NO.

RADIOACTIVE WASTE SHIPMENT & DISPOSAL FORM

US ECOLOGY, INC.

EXECUTIVE OFFICE: (502) 426-7160
P.O. BOX 7246 • LOUISVILLE, KENTUCKY 40207
Illinois Office: (815) 454-2376

(2) Consigned To:

☒ P.O. Box 638
Richland, WA 99352
(509) 377-2411

☐ P.O. Box 578
Beatty, NV 89003
(702) 553-2203

USE THIS NO. ON ALL CONTINUATION PAGES **No. 22462** PAGE 1 OF 1

(3) AGENT/BROKER [illegible] Isotopes

ADDRESS [illegible]

CITY [illegible] STATE [illegible] Jersey

CONTACT [illegible]

PHONE USER PERMIT NO.

(4) CARRIER TSMI SHIPPING DATE:

TYPE OF CASK: RADIATION READING:

(5) Item No.	(6) Container Type	(7) Container Volume (Cu. Ft.)	(8) Container Weight (pounds)	(9) Physical Form	(10) Waste Description	(11) Solidification or Absorbent Media	(12) Chemical Form	(13) Radionuclide	(14) Activity ☐ Curies ☒ Millicuries	(15) Special Nuclear Material (Grams)	(16) Source Material (Kilograms)	(17) Radiation Levels mR/HR Container Surface	(18) Radiation Levels mR/HR 3 Ft. (1)	(19) Transport Group	(20) Radio Class	(21) Label
1	DRU	7.5	250	ABSORBED LIQUID	ABSORBED LIQUID	ZONOLITE	Saline	H3	10	N/A	N/A	<5	<1		N/A	Radioactive - LSA
								C14	0.00922							Radioactive –
								X	X							Radioactive –
																Radioactive –
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1		7.5	250	(22) TOTALS					10.00922							

(23)

PROPER SHIPPING NAME & HAZARD CLASS (PER 49 CFR 172.101)	IDENTIFICATION NUMBER	TOTAL WEIGHT IN POUNDS
Radioactive Device, N.O.S. — Radioactive Material	UN2911	
Radioactive Material, Fissile, N.O.S. — Radioactive Material	UN2918	
Radioactive Material, Low Specific Activity, N.O.S. — Radioactive Material	UN2912	250
Radioactive Material, N.O.S. — Radioactive Material	NA9181	
Radioactive Material, Limited Quantity, N.O.S. — Radioactive Material	UN2910	
Radioactive Material, Special Form, N.O.S. — Radioactive Material	NA9182	

6/2/83

(24)

Total # of Pkgs. This Shipment	Total Activity This Shipment	Total Volume This Shipment
1	10.00922 ☐ ci ☐ mci	75 cu ft.

(25) THIS IS TO CERTIFY THAT THE ABOVE-NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED AND LABELED AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION AND ARE IN COMPLIANCE WITH ALL REGULATIONS APPLICABLE AT THE DESIGNATED DISPOSAL SITE.

S Mark Harry [illegible]
Authorized Signature Title

CUSTOMER COPY

picked up by Dave Peterson

GENERATOR NUMBER NJR 197 604 8368

(1) GENERATOR NAME Bristol Myers Co

ADDRESS 1350 Liberty Ave

CITY Hillside STATE NJ

CONTACT Dr Mark Henry

PHONE 201-926-6734

USER PERMIT NO. 1011 SHIPMENT NO.

RADIOACTIVE WASTE SHIPMENT & DISPOSAL FORM

US ECOLOGY, INC.

EXECUTIVE OFFICE: (502) 426-7160

P.O. BOX 7246 • LOUISVILLE, KENTUCKY 40207

Illinois Office: (815) 454-2378

USE THIS NO. ON ALL CONTINUATION PAGES **No. 15533** PAGE 1 OF 1

(2) Consigned To:

☒ P.O. Box 638, Richland, WA 99352, (509) 377-2411

☐ P.O. Box 578, Beatty, NV 89003, (702) 553-2203

(3) AGENT/BROKER Teledyne Isotopes

ADDRESS 50 Van Buren Ave

CITY Westwood STATE NJ

CONTACT Steven Block

PHONE 664-7070 USER PERMIT NO. 6870

(4) CARRIER CSMI SHIPPING DATE

TYPE OF CASK: RADIATION READING:

(5) Item No.	(6) Container Type	(7) Container Volume (Cu. Ft.)	(8) Container Weight (pounds)	(9) Physical Form	(10) Waste Description	(11) Solidification or Absorbent Media	(12) Chemical Form	(13) Radionuclide	(14) Activity ☐ Curies ☒ Microcuries	(15) Special Nuclear Material (Grams)	(16) Source Material (Kilograms)	Radiation Levels mR/HR (17) Container Surface	(18) 3 Ft. (TI)	(19) Transport Group	(20) Radio Class	(21) Label
1	DRUM	7.5	225	ANIMAL CARCASS	ANIMAL CARCASS	ZONOLITE	LIKE	H3	15	N/A	N/A	4.5	4.1	III	I/II	Radioactive - LSA
																Radioactive -
																Radioactive -
																Radioactive -
																Radioactive -
																Radioactive - LSA
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																Radioactive -
			450	(22) TOTALS												

(23) TOTAL QUANTITY	PROPER SHIPPING NAME & HAZARD CLASS (PER 49 CFR 172, 101)	IDENTIFICATION NUMBER	TOTAL WEIGHT IN POUNDS
	Radioactive Devices, N.O.S. – Radioactive Material	UN2910	
	Radioactive Material, Fissile, N.O.S. – Radioactive Material	UN2918	
1	Radioactive Material, Low Specific Activity, N.O.S. – Radioactive Material	UN2912	
	Radioactive Material, N.O.S. – Radioactive Material	NA9189	
	Radioactive Material, Limited Quantity, N.O.S. – Radioactive Material	UN2910	
	Radioactive Material, Special Form, N.O.S. – Radioactive Material	NA9188	

2/11/83

(24) Total # of Pkgs. This Shipment	Total Activity This Shipment	Total Volume This Shipment
1	☒ ci ☐	7.5

(25) THIS IS TO CERTIFY THAT THE ABOVE-NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED AND LABELED AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION AND ARE IN COMPLIANCE WITH ALL REGULATIONS APPLICABLE AT THE DESIGNATED DISPOSAL SITE.

Authorized Signature Title

CUSTOMER COPY

Additional correspondence was included in memoranda dated June 10, June 21, July 2, July 17, August 5 and August 14, 1985 from W. Butler to Central Files.

Original signed by:

Walter R. Butler, Chief
Licensing Branch No. 2
Division of Licensing

Enclosure:
As stated

DISTRIBUTION
Docket File
LB#2 Reading
PRC System
DWagner
EHylton
PDR
LPDR

M. Haughey
for

LB#2/DL/PM	LB#2/DL/BC
DWagner:lb	WButler
08/22/85	08/22/85

WB

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

AUG 23 1985

Docket No. 50-354

MEMORANDUM TO: Central Files

FROM: Walter R. Butler, Chief
Licensing Branch No. 2
Division of Licensing

SUBJECT: HOPE CREEK INDEPENDENT DESIGN VERIFICATION PROGRAM (IDVP)

Public Service Electric & Gas Company has contracted Sargent & Lundy to perform an IDVP of Hope Creek. Bechtel is the architect-engineer for Hope Creek. The following correspondence (enclosed) has been generated by the IDVP efforts:

Enclosure 1: Observation/Resolution/Completion (O/R/C) Reports 62, 125, 129 and 182 and 8/9/85 and 8/7/85 telecon notes

Enclosure 2: O/R/C Reports 221 and 8/7/85, 8/8/85 and 8/9/85 telecon notes

Enclosure 3: 7/25/85, 7/29/85, 7/30/85 and 8/2/85 telecon notes

Enclosure 4: O/R/C Reports 18 and 124

Enclosure 5: 7/26/85, 7/30/85, 7/31/85 and 8/5/85 telecon notes

Enclosure 6: O/R/C/ Reports 96, 144, 147, 149, 165, 186, and 214

Enclosure 7: 8/2/85 telecon notes

Enclosure 8: O/R/C 214

Enclosure 9: 3/6/85 telecon notes

Additional correspondence was included in memoranda dated June 10, June 21, July 2, July 17, August 5 and August 14, 1985 from W. Butler to Central Files.

W R Butler

Walter R. Butler, Chief
Licensing Branch No. 2
Division of Licensing

Enclosure:
As stated

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Project No. 7212-30

OBSERVATION REPORT

OR No. 221, Rev. 0, Date ____

1. **Structure(s), system(s), or component(s) involved:**
Bailey Meter Company Logic Systems
BPC Drawing Nos. J-11-0, Sheets 1-33 and J-00-0, Sheet 1, Rev. 9
General Plant Design Criteria 10855-D5.1, Rev. 4, dated 8/23/84

2. **Description of Observation:**
General Plant Design Criteria 10855-D5.1 indicates that GDC 23 has direct applicability to HCGS. HCGS FSAR Chapter 7 indicates that SACS among other systems is a protection system and therefore, GDC 23 applies. (continued on next page)

3. **Significance of Observation:**
In the absence of objective evidence that the requirements of the GDC have been implemented, the adequacy of the design cannot be determined.

4. Recommendation for resolution (optional):
BPC should provide objective evidence that the design requirement described in the General Plant Design Criteria 10855-D5.1 and GDC 23 and note 6 of Drawing J-00-0 has been implemented in the HCGS design. (Continued on next page)

5. Internal Review Committee classification of Observation:
_____ Not significant to safety (See Item 6)
__X__ Additional information required (See Item 6)
_____ Potentially Significant to Safety (See Item 8)

6. Internal Review Committee reason for non-safety-significance of Observation or additional information required:
Additional information is required to evaluate safety significance. Provide information requested in Item 4.

7. Internal Review Commitee Signatures:

D. S. Taylor
Chairman

E E Smith
Mechanical Representative

L. R. Stensland
Electrical Representative

B C Fuller
Structural Representative

K L Irwin
Control and Instrumentation Representative

OBSERVATION REPORT

OR No. 221 Rev. 0, Date_____

2. Description of Observation: (continuation)

GDC 23, in part, states that "the protection system shall be designed to fail into a safe state or into a state demonstrated to be acceptable on some other defined basis if conditions such as disconnection of the system, loss of energy (e.g., electric power, instrument air), ...are experienced." General note 6 on Bechtel Drawing J-00-0 also states "Process equipment will be de-energized during loss of power and will not be re-energized on restoration of power unless the state of the inputs results in a completed train."

Objective evidence has not been provided for review which sufficiently demonstrates that this Bailey Meter Company Logic System meets the GDC 23 requirements. The documentation provided indicates the inter-channel interfaces but does not provide conclusions or justifications that the overall system effects are acceptable.

4. Recommendation for Resolution (optional): (continuation)

Specifically, BPC should address the effects on systems connected to the Bailey Meter Company Logic System as a result of 1.) loss of power to logic cabinets, 2.) restoration of power, 3.) equipment failures within the logic cabinets. In addition, conclusions should be reached as to the acceptability of these effects and the basis for these conclusions.

SARGENT & LUNDY
ENGINEERS
CHICAGO

J. Milhoan

FROM: D. P. White
Sargent & Lundy
18P15
312-269-6419

TSB- 459
Date: August 9, 1985
Project: Hope Creek
7212-30

TO: L. C. Oesterich
Bechtel Task Leader
Bechtel Power Corporation
San Francisco, California
Telecopy No.: 415-882-3211
Confirmation No.: 415-882-1672

CC: W. F. Bauer
Principal Engineer
Public Service Electric and Gas Company
Newark, New Jersey
201-621-2150

W. A. Bloss (2)
J. Milhoan
T. DelGaizo
H. Wang

2 pages to follow.

Attached is a revised copy of a telecon memorandum between Y. J. Yaworsky (PSE&G), and L. C. Oesterich, M. R. Custer, T. Ferenchak, P. W. Schuetz (BPC), and H. Wang (NRC), and W. A. Bloss, E. B. Branch, L. L. Fergusson, B. Obersnel, H. S. Taylor, D. P. White (S&L), dated August 6, 1985. This memorandum has been revised as of August 9, 1985.

DPW:cdj
Attachment

Memorandum of Telephone Conversation **SARGENT & LUNDY**

Revised 8/9/85

Date 8/6/85 Time 10:00 a.m

Person Called	Company
see listing below	see listing below
Person Calling	**Company**
see listing below	see listing below
Project	**Project No.**
Hope Creek	7212-30

Subject Discussed
R/CR-166 and OR-125

Summary of Discussion, Decisions and Commitments

Person Called: Y. J. Yaworsky) Public Service Electric & Gas (PSE&G)

L. C. Oesterich)
M. R. Custer) Bechtel Power Corporation (BPC)
T. Ferenchak)
P. W. Schuetz)

H. Wang) U. S. Nuclear Regulatory Commission (NRC)

Person Calling: W. A. Bloss)
E. B. Branch)
L. L. Fergusson) Sargent & Lundy (S&L)
B. Obersnel)
H. S. Taylor)
D. P. White)

BPC will provide a draft Resolution Report by noon on August 7, 1985, on OR-166 which will cover the following areas:

1. Data sheet 530516 will be revised to address both hangers. BPC will commit to either a) calculations by section 2.4.2c of G052, b) documentation of the logic used for acceptance per section 2.3.8 of G052, or c) documentation of the judgement used per revised section 2.4.2c of G052.

2. Revise G052, section 2.4.2 to allow judgement to be made when determining the

cc W. F. Bauer, Y. J. Yaworsky, L. C. Oesterich, M. R. Custer, T. Ferenchak, P. W. Schuetz, J. Milhoan, T. DelGaizo, H. Wang, W. A. Bloss (2), H. S. Taylor, E. B. Branch, L. L. Fergusson, B. Obersnel

File Telecon - Technical
Category 4

Signature

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load on a support.

3. Include in the revised G052 guidelines and criteria (example of, not all inclusion) for the use of judgement.

4. Provide a survey of other data sheets to provide generic assurance that other Non-Q_s or Non-Q_{sh} supports are evaluated and documented on the data sheets per 2.4.2c or 2.3.8 of G052.

BPC will provide a draft Resolution Report by the end of the day on August 6, 1985, for OR-125, that will explain that the 150°F temperature is not applicable as an operating temperature for the entire system, but is used for flexibility analysis. They will state that this gives enough margin so that the unanalyzed Δ 31°F is ok.

S&L will review BPC's revised Resolution Report and advise to their acceptance.

DPW:cdj

J. L. Milhoan

SARGENT & LUNDY
ENGINEERS
CHICAGO

FROM: H. S. Taylor
Sargent & Lundy
18D02
312-269-6371

TSB- 460
Date: 8/8/85
Project: Hope Creek
7212-30

TO: L. C. Oesterich
Bechtel Task Leader
Bechtel Power Corporation
San Francisco, California
Telecopy No.: 415-882-3211
Confirmation No.: 415-882-1672

CC: W. F. Bauer
Principal Engineer
Public Service Electric and Gas Company
Newark, New Jersey
201-621-2150

W. A. Bloss (2) H. Wang
J. L. Milhoan
T. DelGaizo
1 page to follow.

Attached is a copy of a telecon memorandum between Y. J. Yaworsky (PSE&G); L. C. Oesterich, P. T. Sheh, Tuholski, and Bhatt, (BPC); H. Wang (NRC); and W. A. Bloss, E. B. Branch, R. L. Givan, R. M. Schiavoni, L. R. Stensland and H. S. Taylor (S&L); dated August 7, 1985.

HST:nd
Attachment

Memorandum of Telephone Conversation **SARGENT & LUNDY**

Date 8/7/85 Time 3:00 p.m

Person Called	Company
see listing below	see listing below
Person Calling	**Company**
see listing below	see listing below
Project	**Project No.**
Hope Creek	7212-30

Subject Discussed
BPC was called to discuss Calculation C678(Q)-97, Rev. 0, supporting BPC's R/R 182.

Summary of Discussion, Decisions and Commitments

Person Called: Y. J. Yaworsky) Public Service Electric & Gas (PSE&G)
L. C. Oesterich)
Tuholski)
Bhatt) Bechtel Power Corporation (BPC)
P. T. Sheh)
H. Wang) U. S. Nuclear Regulatory Commission (NRC)

Person Calling: W. A. Bloss)
E. B. Branch)
R. L. Givan)
R. M. Schiavoni) Sargent & Lundy (S&L)
L. R. Stensland)
H. S. Taylor)

1. It was agreed that the calculation for the mitigating friction forces between the side rails and bottom rails and the battery case is reasonable.

2. BPC agreed to revise the calculation to demonstrate that the stresses in the copper tie bar are acceptable.

3. BPC agreed to revise the calculation to demonstrate that the stress from the applied load on the battery post is not only within the allowable stress for lead, but also to demonstrate that the post material is the weak link and that the applied force will not damage the battery case around the post.

cc W. G. Bauer, Y. J. Yaworsky, J. L. Milhoan, T. DelGaizo, W. A. Bloss (2), H. S. Taylor, E. B. Branch, R. L. Givan, R. M. Schiavoni, L. R. Stensland, L. C. Oesterich

File Telecon - Technical Category 4

H. S. Taylor
Signature

SL-F713 10/84—F3

J. L. Milhoan
H. Wang

SARGENT & LUNDY
ENGINEERS
CHICAGO

FROM: H. S. Taylor
Sargent & Lundy
18D02
312-269-6371

TSB- 462
Date: 8/9/85
Project: Hope Creek
7212-30

TO: L. C. Oesterich
Bechtel Task Leader
Bechtel Power Corporation
San Francisco, California
Telecopy No.: 415-882-3211
Confirmation No.: 415-882-1672

CC: W. F. Bauer
Principal Engineer
Public Service Electric and Gas Company
Newark, New Jersey
201-621-2150

W. A. Bloss (2) H. Wang
J. L. Milhoan
T. DelGaizo
2 pages to follow.

Attached is a copy of a telecon memorandum between R. C. Kirk and Y. J. Yaworsky, (PSE&G); G. D. Pedersen, J. Frane, H. R. Shah, W. R. Goyal, K. W. Burrowes and P. W. Schuetz (BPC); H. Wang (NRC); and W. A. Bloss, E. B. Branch, T. J. Duffy, B. A. Erler and H. S. Taylor (S&L); dated August 8, 1985.

HST:nd
Attachment

Memorandum of Telephone Conversation **SARGENT & LUNDY**

Date 8/8/85 Time 1:00 p.m

Person Called	Company
see listing below	see listing below
Person Calling	**Company**
see listing below	see listing below
Project	**Project No.**
Hope Creek	7212-30

Subject Discussed
R/CR 44 and 100

Summary of Discussion, Decisions and Commitments

Person Called: G. D. Pedersen)
J. Frane)
H. R. Shah)
W. R. Goyal) Bechtel Power Corporation (BPC)
K. W. Burrowes)
P. W. Schuetz)

R. C. Kirk)
Y. J. Yaworsky) Public Service Electric & Gas (PSE&G)

H. Wang) U. S. Nuclear Regulatory Commission (NRC)

Person Calling: W. A. Bloss)
E. B. Branch)
T. J. Duffy) Sargent & Lundy (S&L)
B. A. Erler)
H. S. Taylor)

The call was made to gain an understanding of BPC's method of handling friction loads on supports induced by pipe thermal growth.

BPC stated that they considered friction loads on pipe supports to exist during normal loading conditions and supports are designed for this effect. However, during upset, emergency and faulted loading conditions they assume that friction loads from pipe thermal growth are totally relieved by the seismic motion and that no additional friction forces on the support due to pipe seismic motion arise.

S&L stated that it is probably reasonable to assume that the thermal friction is partially relieved, but that new friction forces probably also arise during the seismic event. Because the degree of relief of thermal motion friction cannot be quantified and because the level of seismic friction forces cannot be reliably estimated, it would be

cc W. F. Bauer, T. DelGaizo, E. B. Branch, Y. J. Yaworsky, H. Wang, T. J. Duffy, L. C. Oesterich, W. A. Bloss(2), B. A. Erler, J. L. Milhoan, H. S. Taylor

File
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Category 4

E B Branch
Signature

SL-F713 10/84—F3

prudent to account for the full thermal induced friction forces in the upset, emergency and faulted loading conditions.

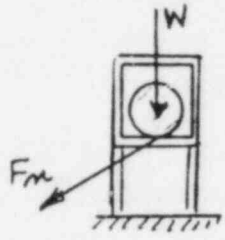
The following illustrates the BPC and S&L positions:

<u>Normal Loads</u>

Friction Force on support:

$F_n = uW$

u = friction factor
W = weight of pipe on support



<u>Upset Emergency, Faulted (Seismic)</u>

Friction force on support:

$F_{uef} = K_1 uW + K_2 u\overline{W}$

K_1 = (is probably less than 1.0 and may even be zero)

K_2 = a number between zero and 1

$\overline{W}$ = additional normal force between pipe and support due to seismic excitation

Now $F_{uef} = uW \left[K_1 + K_2 \frac{\overline{W}}{\overline{W}}\right]$

BPC says Fuef is always zero
This would require that:

$$\left[K_1 + K_2 \frac{\overline{W}}{\overline{W}}\right] = 0$$

This means that either:

K_1 and $K_2 = 0$

or $K_2 \frac{\overline{W}}{\overline{W}} = -K_1$

Neither condition is likely to always be true.

In fact $\left[K_1 + K_2 \frac{\overline{W}}{\overline{W}}\right]$ probably lies between zero and 1

Therefore, Fuef $\neq$ 0. In view of the uncertainties, a more prudent assumption would be to consider that

$$\left[K_1 + K_2 \frac{\overline{W}}{\overline{W}}\right] = 1.0$$

Then Fuef = Fn which is the S&L position.

BPC agreed to quantify the expected values of Fn. This will allow an assessment of the effect on overall support design of neglecting the friction load in the upset, emergency and faulted condition.

Memorandum of Telephone Conversation

SARGENT & LUNDY

Date 8/9/85 Time 3:15 p.m.

Person Called	Company
~~See Below~~	-
Person Calling	**Company**
See Below	-
Project	**Project No.**
Hope Creek	7212-30

Subject Discussed

BPC's Resolution Report No. 44

Summary of Discussion, Decisions and Commitments

Participants

J. Milhoan - NRC

Y. J. Yaworsky — PSE&G

R. C. Kirk — PSE&G

J. Frane — BPC

R. Goyal — BPC

N. Senn — BPC

L. Oesterich — BPC

W. A. Bloss — S&L

E. Branch — S&L

S. Taylor — S&L

T. Duffy — S&L

R. Givan — S&L

L. Stensland — S&L

1. BPC indicated that they had telexed a revised resolution report for OR-44. S&L had not received it.

cc: W. F. Bauer (PSE&G)
Y. J. Yaworsky (PSE&G)
J. Milhoan (NRC)
T. DelGaizo (NRC)
W. A. Bloss (2)
H. S. Taylor
~~M. D. Crumpacker (C&I related)~~
~~T. J. Duffy (Structural related)~~
~~H. G. McCullough (Design Process/Document Request/QA related)~~
~~R. M. Schiavoni (Electrical related)~~
~~D. P. White (Mechanical related)~~
~~BPC distribution only as required~~
L. Oesterich

File

Telecon - Technical
Category 4

Signature

T. Duffy

SL-5312 10/84 52

2. BPC indicated that the punch line of the response was that when they use the higher allowables of the 1983 NF Code, they will also include the effects of self-weight and friction loads considering the reduction of the friction loads due to dynamic loading.

   S&L indicated that this appears acceptable.

3. S&L indicated that the main purpose of having BPC study 10 hangers was to quantitatively determine the effects of self-weight and to compare this with a quantitative determination of the conservatism in BPC existing design. Reports from S&L personnel reviewing calculations in BPC's San Francisco offices appear favorable. This will be confirmed on Monday, August 13, 1985.

4. BPC was requested to expedite the transmittal of revisions to Resolution Reports No. 44 and 100.

Memorandum of Telephone Conversation **SARGENT & LUNDY**

Date 8/7/85 Time 11:15 a.m

Person Called	Company
See Below	-
Person Calling	**Company**
See Below	-
Project	**Project No.**
Hope Creek	7212-30

Subject Discussed
S&L's Comments on BPC's Resolution Reports

Summary of Discussion, Decisions and Commitments
Participants

J. Milhoan - NRC
Y. J. Yaworsky - PSE&G
J. Frane - BPC
R. Goyal - BPC
N. Senn - BPC
H. Shah - BPC
L. Oesterich - BPC

W. A. Bloss - S&L
E. B. Branch - S&L
H. S. Taylor - S&L
T. J. Duffy - S&L
R. Givan - S&L
H. Singh - S&L

1. BPC's Resolution Reports for Nos. 125 and 129 are acceptable to S&L as previously discussed.

cc: W. F. Bauer (PSE&G)
Y. J. Yaworsky (PSE&G)
J. Milhoan (NRC)
T. DelGaizo (NRC)
W. A. Bloss (2)
H. S. Taylor
~~W. D. Crumpacker (C&I related)~~
~~T. J. Duffy (Structural related)~~
~~H. G. McCullough (Design Process/Document Request/QA related)~~
~~R. M. Schiavoni (Electrical related)~~
~~D. P. White (Mechanical related)~~
BPC distribution only as required
L. Oesterich

File
Telecon - Technical
Category A

Signature

2. The following summarizes the discussion regarding BPC's resolutions to OR-40 and 100, and specifically the conservatism in BPC's existing design to accept the increase in loads when self-weight and self-weight excitation of hanger components and auxiliary support steel are considered:

a. BPC has agreed to revise their FSAR to indicate that the 1983 ASME NF will be used. The 1983 code permits a 1.33 stress limit factor for Service Level B loadings which includes OBE versus a 1.0 factor in the older code. The higher stress limit factor, use of actual accelerations and the SRSS of seismic loads reportedly provide adequate margin to accept the increase in loads due to self-weight effects.

b. BPC agrees that when the new code is used, that all loads will be considered as primary. However, their company position is that friction loads need not be considered with seismic loads as the seismic loads could relieve the friction load. BPC does not believe that the code requires combining friction with seismic loads. S&L indicated several sections of the code that they interpret to require the addition of friction and seismic loads.

BPC agreed to revise their resolution reports to discuss their justification for not combining friction and thermal loads.

c. Since S&L has only seen a summary of the final results of BPC's assessment of 10 hangers for the effects of self-weight, they could not quantify the separate effects of self-weight and friction forces. Copies of the detailed calculations were requested for review.

BPC indicated that due to the reported use of a proprietary computer program, that the calculations could not be sent to S&L for review, but would have to be reviewed in BPC's offices.

S&L would get back to BPC to let them know when people would be at BPC's offices to review the calculations. This was subsequently determined to be the following day in order to expedite the closure of these OR's.

d. S&L requested that BPC revise their resolution reports to indicate that when the higher allowables of the new code are specifically used, that the effects of self-weight be considered. BPC tentatively agreed but would confirm this later.

J. L. Milhoan
H. Wang

SARGENT & LUNDY
ENGINEERS
FOUNDED 1891
55 EAST MONROE STREET
CHICAGO, ILLINOIS 60603
(312) 269-2000
TWX 910-221-2807

H. STEPHEN TAYLOR
ASSOCIATE
312-269-6371

LSP-109
August 12, 1985
Project No. 7212-30

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Independent Design Verification Program
Resolution/Completion Reports

Mr. W. F. Bauer
Principal Engineer
Public Service Electric and Gas Company
80 Park Plaza
Newark, New Jersey 07101

Dear Mr. Bauer:

Enclosed for your information and records is one copy each of Resolution/Completion Report Nos. 62, 125, 129 and 182. These Observation Reports are considered closed. Please note Completion Report Nos. 62 and 125 have been revised and Observation Report No. 62 is considered invalid. Completion Report No. 62 was only revised to reflect Revision 2 of the Resolution/Completion Report dated July 15, 1985.

Yours very truly,

H. S. Taylor

H. S. Taylor
Chairman, Internal Review Committee

HST:nd
Enclosures
Copies:
T. DelGaizo
J. L. Milhoan
L. C. Oesterich
P. L. Wattelet
W. A. Bloss (2)
O. Zaben
W. D. Crumpacker
T. J. Duffy
H. G. L. McCullough
R. M. Schiavoni
D. P. White

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Project No. 10855-013

RESOLUTION/COMPLETION REPORT

OR No. 62	Rev. 0	Date 6/7/85
R/CR No. 62	Rev. 0	Date 6/14/85
R/CR No. 62	Rev. 1	Date 7/12/85
R/CR No. 62	Rev. 2	Date 7/15/85

1. Classification of Observation (by S&L):
   ____ Not significant to safety
   ____ Significant to safety
   X Additional Information required

2. Reviewee proposed resolution:

   See Sheet 2.

3. Reviewee resolution report by:

   A. J. Shane/BCF — Discipline Group Supervisor — Date: July 15, 1985

   for [signature] — Bechtel Project Engineer — Date: 7/15/85

4. Public Service Electric and Gas Company review:

   for W. Gailey/gyy — Chief Project Engineer — Date: 7/15/85

5. S&L's disposition of Resolution/Completion Report:
   X Observation invalid and withdrawn. See attached Completion Report
   ____ Proposed resolution/future action acceptable, observation closed.
   ____ Additional action to be taken by Reviewee (provide additional information).

6. Final classification of observation by Review Committee:
   X Not significant to safety
   ____ Significant to safety

7. Review Committee signatures:

   H. S. Taylor
   E B Brazeh
   BAEilan
   R L [signature]
   T R [signature]

RESOLUTION/COMPLETION REPORT
(Continuation sheet)

OR No. 62 Rev. 0 Date 6/7/85
R/CR No. 62 Rev. 0 Date 6/14/85
R/CR No. 62 Rev. 1 Date 7/12/85
R/CR No. 62 Rev. 2 Date 7/15/85

Response to Observation Report No. 62

4.a & 4.c Bechtel has reviewed the wall thickness measurement records of all safety-related large pipe bends fabricated by Dravo Corporation for the Hope Creek Project, and compared them to the required wall thicknesses. Results of our review indicate that all safety-related pipe bends meet the after-bending thickness requirements of the ASME Section III Code. Also, our review revealed that no 2-1/2" NPS pipe bend has been used.

4.a Since a review of all safety-related large pipe bend wall thickness measurement records revealed that no 2-1/2" NPS pipe bends have been made and the bend tables contain no requirements for 2-1/2" NPS pipe bends, it follows that no 2-1/2" NPS pipe bends were designed.

4.b A copy of the wall thickness measurement record for the bend on line 1-EG-HBC-153 is being sent to you separately. 87-1/2% of the nominal wall thickness was the acceptance criteria utilized by Dravo. This acceptance criteria is invoked in Note 22, page 15 of 21 of Material Requisition 10855-P-201(Q) and in paragraph 5.9.2 of Technical Specification 10855-P-201(Q). (The tabulation, "Minimum Wall for Bends", covers all exceptions to the 87-1/2% requirement.)

4.d Attached are copies of the wall thickness measurements for Pipe Class DB, sizes 10" and 14" NPS as listed on page 131 of Calc. 1(Q). These wall thickness measurement records demonstrate that the minimum wall thickness documented in Revision 6 of Calculation 1(Q), Sheet 131, have been met. There are no 12" pipe bends included in the listing on page 131 of Calc. 1(Q).

Calculation 1(Q), Sheet 150, is intended for those HBC class pipes whose design pressures are in excess of the 163 psi design pressure shown in Sheet 80. These lines are 1-EG-157, 158, 797, 801 and 816 as per Line Index, Dwg. No.10855-P-0501, Rev.17. Lines 1-EG-157 and 158 do not have bend sections as documented in Isometric Dwg. No.1-P-EG-13, Rev.12; lines 1-EG-797, 801, 815 and 816 are all 1" NPS and do not contain any bends.

Lines listed on pages 131 of Calc. 1(Q) have no 12" pipe bends.

RESOLUTION/COMPLETION REPORT
(Continuation Sheet)

OR No. 62	Rev. 0	Date 6/7/85
R/CR No. 62	Rev. 0	Date 6/14/85
R/CR No. 62	Rev. 1	Date 7/12/85
R/CR No. 62	Rev. 2	Date 7/15/85

4.e Changes affecting fabrication are normally incorporated into the applicable fabrication specification. In this particular instance, the resulting increases in minimum wall thickness were not reflected in the bend table for the following reasons:

1. The resulting increase in the required minimum wall thickness did not change the schedule number of the pipe specified in the Piping Class sheets, Dw. No.10855-P-0500.

2. Fabrication was complete when the changes were made and the wall thickness of bends as measured meets or exceeds the new minimum wall required.

The increase in minimum wall did not require an increase in pipe schedule. The P-201(Q) tabulation was for shop fabrication and since fabrication was already complete when the changes were made, there was no purpose in revising the table. In the summer of 1982, Bechtel implemented a wall thickness verification program for all bend sections in the Hope Creek Project. This verification consisted of comparing the wall thickness measurement records of all bends fabricated by Dravo Corporation against the pipe minimum wall requirements. There were no violations of the minimum wall requirements. It is clear that this verification occurred prior to OR No.62.

It is an ongoing effort of the cognizant engineer on the project to make sure that future increases in calculated minimum wall are compared with the wall thickness measurement records.

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

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COMPLETION REPORT

OR No. 62 Rev. 0 Date 6/7/85
R/CR No. 62 Rev. 2 Date 7/15/85
CR No. 62 Rev. 1 Date 8/12/85

Describe resolution/future action to close observation:

This Observation Report is considered invalid because BPC has provided a discussion that demonstrates that no pipe sizes called out in the observation report violated the minimum wall thickness requirements for bends.

AUG -8 '85 0286300

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Project No. 10855-013
Page 1 of 3

RESOLUTION/COMPLETION REPORT

OR No. 125	Rev. 0	Date 6/24/85
R/CR No. 125	Rev. 0	Date 7/09/85
R/CR No. 125	Rev. 1	Date 7/18/85
R/CR No. 125	Rev. 2	Date 8/8/85

1. Classification of Observation (by S&L):
   ____ Not significant to safety
   ____ Significant to safety
   _X_ Additional Information required

2. Reviewee proposed resolution:

   See Sheet 2.

3. Reviewee resolution report by:

   J. T. Keane /BCF ____ August 8, 1985
   Discipline Group Supervisor ____ Date

   [signature] ____ 8/8/85
   Bechtel Project Engineer ____ Date

4. Public Service Electric and Gas Company review:

   W. Gailey ____ 8-7-85
   Chief Project Engineer ____ Date

5. S&L's disposition of Resolution/Completion Report:
   ____ Observation invalid and withdrawn.
   _x_ Proposed resolution/future action acceptable, observation closed. See attached Completion Report.
   ____ Additional action to be taken by Reviewee (provide additional information).

6. Final classification of observation by Review Committee:
   _x_ Not significant to safety
   ____ Significant to safety

7. Review Committee signatures:

   H. S. Taylor
   E. B. Branch
   B. A. Ehle
   R. L. Gwin
   L. R. Stender

RESOLUTION/COMPLETION REPORT
(Continuation sheet)

OR No. 125 Rev. 0 Date 6/24/85
R/CR No. 125 Rev. 0 Date 7/09/85
R/CR No. 125 Rev. 1 Date 7/18/85
R/CR No. 125 Rev. 2 Date 8/8/85

4.a The HPCI process diagram (GE document 761E270AC, Revision 4), states that the information contained in the "Design Conditions" box on the upper left-hand corner is "for information only". GE Specification 21A9243BT, Rev. 4, states that the maximum fluid temperature is 140°F, which agrees with the FSAR. The 170°F temperature was an upper bound temperature used by GE in their early equipment design. However, the design specification is the governing document for stating design temperatures and the GE process diagram table in the upper left corner need not be revised since the data thereon are for information only.

Drawing 10855-P-0501 will be revised to reflect the FSAR and Design Specification maximum temperature of 140°F by July 20, 1985.

4.b Reanalysis of Calculation C33 including the 40° operating mode demonstrates that there is not an adverse effect on pump nozzle loads, pipe support structures or piping stress levels. The maximum increase in any component of the force and moment loads on the pump was limited to less than 1 %. Support loads were also all within 1% of the support reaction loads calculated using only a 140°F operating mode. The maximum calculated thermal expansion stress per ASME equation 10 likewise did not change as a result of the 40° operating mode. The impact of the 40°F thermal analysis is not significant but nonetheless will be included in the next revision of Calculation C33.

4.c Drawing 10855-P-0501 (Line Index) specifies the service normal operating condition of the system. For instance, the service water and chilled water system list temperatures below 70°F. These thermal conditions are analyzed in accordance with the Code to account for the stress range of thermal expansion. The 40°F mode is also addressed in the core spray and feedwater systems, as shown on the appropriate histograms contained in Specification M-067(Q). All systems where temperature below 70°F can be encountered have been identified to the plant design group. These are: A

1. Service water used as an emergency crossover to the RHR system.

2. Service water used to supply emergency makeup water to SACS expansion tank and the fuel pool (small piping).

3. Flushing/testing mode for core spray piping during outages.

4. Cask washdown and reactor well filling during refueling.

5. RHR pipe flushing prior to the start of Shutdown Cooling Mode of RHR.

RESOLUTION/COMPLETION REPORT
(Continuation Sheet)

OR No. 125	Rev. 0	Date 6/24/85
R/CR No. 125	Rev. 0	Date 7/09/85
R/Cr No. 125	Rev. 1	Date 7/18/85
R/Cr No. 125	Rev. 2	Date 8/8/85

6. HPCI/RCIC injection of condensate storage tank water at 40°F.

7. HPCI/RCIC test condition with supply and return to condensate storage tank.

Item 1 is the only mode of operation for this piping. This piping has been analyzed for a ΔT of 80°F (150°F - 70°F) which accounts for local temperature effects in the piping system flexibility analysis. The actual maximum service water temperature range seen by this piping system is≃54°F (85°F - 31°F, per service water DITS 3.9, paragraph 1.3.m). Therefore, the effects of the cold fluid on the piping system are adequately addressed by the existing pipe flexibility analysis. Reaction on supports will be judged acceptable because support design loads are based on maximum temperature. The probability of Item 2 occurring is remote. Also small piping standards have adequate gaps to negate effect of T=39°F. Item 4 is used during refueling outages. This piping has been analyzed for a ΔT of 80°F (150°F - 70°F) which accounts for local temperature effects in the piping system flexibility analysis. The actual maximum condensate fluid temperature range seen by this piping system is≃68°F (108°F - 40°F, per Line Index for condensate transfer piping and DITS 3.7 paragraph 2.2.1, respectively). Therefore, the effects of cold fluid on the piping system are adequately addressed by the existing piping system flexibility analysis. Calculations affected by Items 3, 5, 6 and 7 will be reviewed for Equation 10 and 11 stress margins. If existing margins can sustain additional ΔT=30°F, such calculation will be considered acceptable. If not, 40°F mode will be accounted for in the analysis.

4.d For systems that operate in varied operating modes (e.g., reactor building nuclear Class 2 and 3 ECCS systems), specific thermal operating modes are developed that identify the flow paths and associated temperature conditions. In cases of an isolation mode, also referred to as a "dead leg". the appropriate non-flow temperature is included in the analysis. The majority of the process piping has only one significant operating condition that is analyzed pursuant to 10855-P-0501 maximum thermal conditions. If service normal conditions less than 70°F are specified, both the maximum and the minimum are analyzed.

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Project No. 7212-30
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COMPLETION REPORT

OR No. 125 Rev. 0 Date 6/24/85
R/CR No. 125 Rev. 2 Date 8/8/85
CR No. 125 Rev. 1 Date 8/12/85

Describe resolution/future action to close observation:

BPC's response to this Observation Report is acceptable because: | R

BPC has committed to revise Drawing 10855-P-501 to reflect the FSAR and design specification maximum temperature of 140°F.

BPC has committed to revise Calculation C33 to include the 40° operating mode.

BPC has committed to a full review of 10855-P-501 and applicable system operating conditions to ensure that all feasible cold modes are adequately reflected in the design basis calculations. | R

BPC has stated that for systems that operate in varied operating modes specific thermal modes are developed.

AUG - 8 85 J: 85300

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Project No. 10855-013
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RESOLUTION/COMPLETION REPORT

OR No. 129 Rev. 0 Date 6/26/85
R/CR No. 129 Rev. 0 Date 7/9/85
R/CR No. 129 Rev. 1 Date 7/18/85
R/CR No. 129 Rev. 2 Date 8/8/85

1. Classification of Observation (by S&L):
   ____ Not significant to safety
   ____ Significant to safety
   X Additional Information required

2. Reviewee proposed resolution:

   See Sheet 2.

3. Reviewee resolution report by:

   J. I. Kane/BCF
   Discipline Group Supervisor — Date August 5, 1985

   Bechtel Project Engineer — Date 8/5/85

4. Public Service Electric and Gas Company review:

   W. Gailey/bmg
   Chief Project Engineer — Date 8/6/85

5. S&L's disposition of Resolution/Completion Report:
   ____ Observation invalid and withdrawn.
   X Proposed resolution/future action acceptable, observation closed. See attached Completion Report.
   ____ Additional action to be taken by Reviewee (provide additional information).

6. Final classification of observation by Review Committee:
   X Not significant to safety
   ____ Significant to safety

7. Review Committee signatures:

   H. S. Taylor
   E B Brandt
   B A Siller

   E F Harrison
   R Stevens

RESOLUTION/COMPLETION REPORT
(Continuation sheet)

OR No. 129 Rev. 0 Date 6/26/85
R/CR No. 129 Rev. 0 Date 7/9/85
R/CR No. 129 Rev. 1 Date 7/18/85
R/CR No. 129 Rev. 2 Date 8/8/85

Response to Description of Observation

A design specification is not required for flued head fittings. Flued head fittings are classified as material in accordance with NA-1220. Design specifications are required only for components, appurtenances and component supports per NA-3251.

The design process for penetration design discussed in response to OR-17 Item 4.a identifies that the following information be provided to the vendor for Class 1 fittings via Appendix F in Technical Specification 10855-P-404(Q).

2.a.1 The Class 2 flued head fittings are analyzed to ASME Section III (design, normal/upset, emergency and faulted) through the application of tapered transition joints (TTJ) stress intensification factors in Bechtel's piping system calculation, using ME-101. The TTJs attached to the process piping are the weakest sections of the flued head fittings. The faulted load (pipe failure load) which is the governing load for the primary load case is used only for sizing the fitting.

2.a.2 The Class 2 piping reactions acting on the flued head fittings for design, normal/upset, emergency and faulted are evaluated as described in 2.a.1 above.

The Class 1 piping reactions acting on the flued head fittings for design, normal/upset, emergency and faulted will be supplied for analysis as identified in Appendix F of Specification 10855-P-404(Q).

2.a.3 The guard pipe reactions acting on the Class 1 flued head fittings will be supplied for analysis as identified in Appendix F of Specification 10855-P-404(Q). The Class 2 guard pipe reactions on the flued head fittings are analyzed in Bechtel's piping system Calculation SC-26-1, using ME-101.

2.a.4 The pressure, temperature and time history input for Class 1 flued head fittings will be supplied for analysis as identified in Appendix F of Specification 10855-P-404(Q). In addition, Appendix F will define how these pressure and temperature transients are to be considered in the upset condition evaluation and in the fatigue evaluation. 2

2.a.5 The break exclusion criteria for the flued head fittings will be supplied as identified in Appendix F of Specification 10855-P-404(Q). It should be noted that the break exclusion 2

Public Service Electric and Gas Company
Hope Creek Generating Stating - Unit 1

Project No. 10855-013

RESOLUTION/COMPLETION REPORT
(Continuation Sheet)

OR No. 129	Rev. 0	Date 6/26/85
R/CR No. 129	Rev. 0	Date 7/9/85
R/CR No. 129	Rev. 1	Date 7/18/85
R/CR No. 129	Rev. 2	Date 8/8/85

criteria is only applicable for flued heads P-2A, 2B, 7, 9, 11, 12. The other Class 1 flued heads are classified as moderate energy lines (FSAR Section 3.6.2.1.2), for which breaks do not have to be postulated, only cracks. However, the piping stress analysis demonstrates that cracks need not be postulated (i.e., the stress limits for postulating cracks in moderate energy piping have not been exceeded). 2

2.a.6 The loading combinations for each condition for the Class 1 flued head fittings will be included in Appendix F of Specification 10855-P-404(Q). To clarify loads to be considered under faulted conditions (both under pipe failure and plant faulted condition), Section 4.2.1.4 of Specification 10855-P-404(Q) will be revised to identify the appropriate loads to be considered for each faulted condition case. 2

2.b The Class 1 and Class 2 flued heads are designed in accordance with the rules of NB or NC, respectively. However, for faulted conditions the analysis uses the more conservative stress allowables of NF. 2

Response to Recommendation for Resolution

4.a
4.b
&
4.c As identified in Appendix F of the Technical Specification, the load histogram, load tables, primary loading combinations, and no-break criteria will be provided at a later date. A sample copy of Appendix F, without load table and load histograms, will be sent to you for your records by July 12, 1985. BTI's Class 1 Flued Head Stress Report will be revised to incorporate the requirements of Appendix F. The Class 2 flued head analyses are included in the piping system calculations (see Item 2.a.1). No revision to the technical specification is required for the Class 2 flued head fittings.

COMPLETION REPORT

OR No. 129 Rev. 0 Date 6/26/85
R/CR No. 129 Rev. 2 Date 8/8/85
CR No. 129 Rev. 0 Date 8/12/85

Describe resolution/future action to close observation:

BPC's response to this Observation Report is acceptable because:

BPC has committed to revise Technical Specification 10855-P-404(Q) to provide all design information/requirements identified in items 2.a.2 through 2.a.6 of the Observation Report.

BPC has provided an explanation stating that per the ASME B&PV Code Section III, Subsection NA-3250, a separate design specification for parts is not required provided that the design requirements for such parts are adequately identified on a design drawing which is referenced in the component design specification. Per Subsection NA-1262 of the code, penetration assemblies are defined as "mechanical parts or appurtenances." Piping Design Specification 10855-P-0500(Q) references the containment penetration drawing P-3001-1, which identifies the design requirements.

BPC has provided assurance that the applicable subsections, NB or NC, will be used for the analysis of Class 1 and Class 2 head fittings.

It is noted that the faulted condition stress allowables defined in Technical Specification 10855-P-404(Q) are not in accordance with NB or NC; however, they are acceptable because they are more conservative

BPC has committed that they will require the BTI Report to be revised to address the ASME design requirements for Class 1 head fittings. However, since BPC's piping analysis will address the ASME design requirements for the Class 2 head fittings, it is not necessary for the BTI Report to also address the Class 2 requirements.

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Project No. 10855-013

RESOLUTION/COMPLETION REPORT

OR No. 182 Rev. 0 Date 6/28/85
R/CR No. 182 Rev. 0 Date 7/19/85

1. Classification of Observation (by S&L):
   ____ Not significant to safety
   ____ Significant to safety
   X Additional Information required

2. Reviewee proposed resolution:

   See Sheet 2.

3. Reviewee resolution report by:

   [signature] 7/18/85
   Discipline Group Supervisor — Date

   KB/JD Padusa [signature] 7/19/85
   Bechtel Project Engineer — Date

4. Public Service Electric and Gas Company review:

   William Bailey [signature] 7-19-85
   Chief Project Engineer — Date

5. S&L's disposition of Resolution/Completion Report:
   ____ Observation invalid and withdrawn.
   X Proposed resolution/future action acceptable, observation closed. See attached Completion Report.
   ____ Additional action to be taken by Reviewee (provide additional information).

6. Final classification of observation by Review Committee:
   X Not significant to safety
   ____ Significant to safety

7. Review Committee signatures:

   H. S. Taylor [signature]
   [signature]
   [signature]
   [signature]
   L. R. Stenslar [signature]

RESOLUTION/COMPLETION REPORT (Continuation sheet)

OR No. 182 Rev. 0 Date 6/28/85
R/CR No. 182 Rev. 0 Date 7/19/85

Response to Description of Observation

The class 1E 125V batteries were installed per vendor installation instructions. The observed approximately 2-1/4" gap between the end cell and the end restraining wall will not affect the seismic qualification of the battery/battery rack system. The primary load path for horizontal battery inertia forces along the longitudinal axis of the rack is through lateral strut members installed between batteries.

In addition, Bechtel will finalize an analysis demonstrating that the bus bar and side rail tie rods can adequately transfer the inertial loads into the rack. This analysis will be referenced in the Seismic Qualification package for the subject purchase order. The above action will be completed by August 2, 1985.

Therefore, bearing of the end battery against the end railing is not a design load and as such no tolerances are provided for in the vendor's installation instructions.

Response to Recommendation for Resolution

4.a BPC's above-reterenced calculation demonstrates that no hardware modifications are required.

4.b The as-built battery installation (absence of wood blocking at end of battery train which was included in the generic seismic qualification test) is not signiticant as demonstrated by the above referenced calculation. The vendor did not identify the need for blocking in his installation details. Therefore, BPC concluded that there was no need for blocking, nor was there any breakdown in the qualification process.

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Project No. 7212-30
Page 1 of 1

COMPLETION REPORT

OR No. 182 Rev. 0 Date 6/28/85
R/CR No. 182 Rev. 0 Date 7/19/85
CR No. 182 Rev. 0 Date 8/12/85

Describe resolution/future action to close observation:

The BPC resolution is acceptable for the following reasons:

BPC has provided a discussion indicating that an adequate load path for horizontal battery inertia forces along the longitudinal axis of the rack is through lateral tie rod members installed between groups of batteries. Therefore, it is not necessary to transfer any load to the end rails.

BPC will finalize an analysis demonstrating that the intercell connectors and side rail tie rods can transfer the net inertia loads to the rack frame, with no dependence on the end rails. This analysis will confirm that the as-installed battery/rack system, with the 2-1/4" gap between the end cell and the end rail, is qualified by the seismically tested configuration that contained wood blocking between the end cell and the end rail.

TSB-457

Memorandum of Telephone Conversation

SARGENT & LUNDY

Date 8/2/85 Time 12:30 p.m.

Person Called	Company
see listing below	see listing below
Person Calling	**Company**
see listing below	see listing below
Project	**Project No.**
Hope Creek	7212-30

Subject Discussed
OR Nos. 129 and 125

Summary of Discussion, Decisions and Commitments

L. C. Oesterich)
H. S. Boolani)
K. Burrows) Bechtel Power Corporation (BPC)
C. Chern)
J. Frane)

J. Milhoan) U. S. Nuclear Regulatory Commission (NRC)

W. A. Bloss)
H. S. Taylor)
E. B. Branch)
R. Givan) Sargent & Lundy (S&L)
A. P. Dimopoulos)
R. M. Tjernlund)
D. P. White)

The responses to OR Nos. 129 and 125 were discussed. See TSB-456 for the topics discussed.

cc W. F. Bauer, K. Burrows, T. Del Gaizo, R. Givan
Y. J. Yaworsky, C. Chern, W. A. Bloss (2), A. P. Dimopoulos
L. C. Oesterich, J. Frane, H. S. Taylor, R. M. Tjernlund
H. S. Boolani, J. Milhoan, E. B. Branch, D. P. White

File Telecon - Technical
Category 4

Signature

SL-F713 10/84—F3

TSB-451

Memorandum of Telephone Conversation **SARGENT & LUNDY**

Date 7/29/85 Time 3:45 p.m.

Person Called	Company
S. Bhattacharya	Bechtel Power Corporation (BPC)
Person Calling	**Company**
R. M. Tjernlund	Sargent & Lundy (S&L)
Project	**Project No.**
Hope Creek	7212-30

Subject Discussed
Calculations Submitted in Response to OR Nos. 36, 129 and 144

Summary of Discussion, Decisions and Commitments

S&L asked that approved copies of the following calculations be submitted:

- 678-68Q and 678-69Q, regarding analysis of yokes for P-305(Q) valves
- 678-81Q, regarding clearance requirement for Class 1E panels
- 678-95Q, regarding analysis of SAC pump flanges

The copies of these calculations which were submitted to S&L are not approved. S&L's Internal Review Committee requires approved calculations in order to close out OR Nos. 36, 129 and 144.

cc W. F. Bauer, Y. J. Yaworsky, L. C. Oesterich, S. Bhattacharya, T. DelGaizo, J. Milhoan, W. A. Bloss (2), H. S. Taylor, D. P. White

File Telecon - Technical Category 3

Signature

SL-F713 10/84—F3

TSB-446

Memorandum of Telephone Conversation **SARGENT & LUNDY**

Date 7/25/85 Time 1:00 p.m.

Person Called	Company
P. W. Schuetz	Bechtel Power Corporation (BPC)
Person Calling	**Company**
R. M. Tjernlund	Sargent & Lundy (S&L)
Project	**Project No.**
Hope Creek	7212-30

Subject Discussed

Follow-up to TSB-445

Summary of Discussion, Decisions and Commitments

1) S&L informed BPC that the calculation justifying the gap on the battery racks would have to be submitted for S&L review. S&L cannot close out OR-182 until the calculation has been submitted and reviewed.

2) S&L advised BPC that the conference call to discuss OR-18, 97 and 129, has been scheduled for 1:00 p.m. CDT, Friday, July 26, 1985.

cc W. F. Bauer, Y. J. Yaworsky, L. C. Oesterich, P. W. Schuetz, J. Milhoan, T. DelGaizo, W. A. Bloss (2), H. S. Taylor, R. M. Schiavoni, D. P. White

File Telecon - Technical Category 3

Signature

SL-F713 10/84—F3

TSB-446

Memorandum of Telephone Conversation **SARGENT & LUNDY**

Date 7/25/85 Time 1:00 p.m.

Person Called	Company
P. W. Schuetz	Bechtel Power Corporation (BPC)
Person Calling	**Company**
R. M. Tjernlund	Sargent & Lundy (S&L)
Project	**Project No.**
Hope Creek	7212-30

Subject Discussed

Follow-up to TSB-445

Summary of Discussion, Decisions and Commitments

1) S&L informed BPC that the calculation justifying the gap on the battery racks would have to be submitted for S&L review. S&L cannot close out OR-182 until the calculation has been submitted and reviewed.

2) S&L advised BPC that the conference call to discuss OR-18, 97 and 129, has been scheduled for 1:00 p.m. CDT, Friday, July 26, 1985.

cc W. F. Bauer, Y. J. Yaworsky, L. C. Oesterich, P. W. Schuetz, J. Milhoan, T. DelGaizo, W. A. Bloss (2), H. S. Taylor, R. M. Schiavoni, D. P. White

File Telecon - Technical Category 3

Signature

SL-F713 10/84—F3

Memorandum of Telephone Conversation

SARGENT & LUNDY

Date 7/30/85 Time 11:15

Person Called	Company
G. Luh	PSE&G
Person Calling	**Company**
T. J. Duffy	Sargent & Lundy
Project	**Project No.**
Hope Creek	7212-30

Subject Discussed

Sagent & Lundy's comments on BPC's Resolution Reports Nos. 165 and 186.

Summary of Discussion, Decisions and Commitments

I returned G. Luh's call. He is now at the site.

He asked what response we were looking for regarding our comments on RR 165 and 186 which were telexed to BPC on July 26, 1985.

I stated that if BPC concurs with our comments that they should revise the resolution reports. As most of PSE&G's personnel are no longer at BPC, I suggested that the revised resolution reports be telexed for PSE&G's signature prior to being telexed to Sargent & Lundy.

I also indicated that we do have some additional comments on the calculations submitted with BPC's responses to OR-44 & 100 (Pipe Supports) and OR-165 (Pipe whip restraints). These comments would be telexed to BPC this afternoon.

Gary asked if I had received BPC's write-up on the Reactor Building mat reanalysis (2 pages + 2 figures). I stated that I had not received them but had a phone message from BPC that they were being telexed. I told Gary that after I receive the information that I would let him know when our formal comments could be sent to BP

cc: W. F. Bauer (PSE&G) B.A. Erler
Y. J. Yaworsky (PSE&G) H. Singh
J. Milhoan (NRC)
T. DelGaizo (NRC) S. Putman
W. A. Bloss (2)
H. S. Taylor

File
Telecon - Technical
Category 3

Signature T. J. Duffy

21-F713 10-84—F3

SARGENT & LUNDY
ENGINEERS
CHICAGO

FROM: D. P. White
Sargent & Lundy
18P15
312-269-6419

TSB- 456
Date: August 2, 1985
Project: Hope Creek
7212-30

TO: L. C. Oesterich
Bechtel Task Leader
Bechtel Power Corporation
San Francisco, California
Telecopy No.: 415-882-3211
Confirmation No.: 415-882-1672

CC: W. F. Bauer
Principal Engineer
Public Service Electric and Gas Company
Newark, New Jersey
201-621-2150

W. A. Bloss (2)
Y. J. Yaworsky
J. Milhoan
T. DelGaizo

3 pages to follow.

Attached are items we discussed in our August 2, 1985 telephone conversation.

DPW:cdj
Attachment
Telecon - Technical
Category 4

Items in BPC Telecon of 8/1/85 - OR-129

Item 1) Revise item 2b of the resolution report to read:

"The Class 1 and Class 2 flued heads are designed in accordance with the rules of NB and NC, respectively. However, for faulted conditions the analysis uses the more conservative stress allowables of NF."

Item 2) Revise item 2.a.6 of the resolution report to read:

"The loading combinations for each condition for the Class 1 flued heads will be included in Appendix F of Specification 10855-P-404(Q).

To clarify loads to be considered under faulted conditions (both under pipe failure and plant faulted condition), Section 4.2.1.4 of Specification 10855-P-404(Q) will be revised to identify the appropriate loads to be considered for each faulted condition case."

Item 3) Response is acceptable.

Item 4) Revise item 2.a.4 of the resolution report to read:

"The pressure, temperature and time history input for Class 1 flued head fittings will be supplied for analysis as identified in Appendix F of Specification 10855-P-404(Q). In addition, Appendix F will define how these pressure and temperature transients are to be considered in the upset condition evaluation and in the fatique evaluation."

Item 5) Revise item 2.a.5 of the resolution report to read:

"The break exclusion criteria for the flued head fittings will be supplied as identified in Appendix F of Specification 10855-P-404(Q).

It should be noted that the break exclusion criteria is only applicable for Flued Heads P-2A, 2B, 7, 9, 11, 12. The other Class 1 flued heads are classified as moderate energy lines (FSAR Section 3.6.2.1.2), for which breaks do not have to be postulated, only cracks. However, the piping stress analysis demonstrates that cracks need not be postulated (i.e., the stress limits for postulating cracks in moderate energy piping have not been exceeded)."

Recommended Revision to Resolution Report for OR-125

2nd page, 1st sentence change to read:

"Item 1 is the only mode of operation for this piping. Since the maximum ΔT is only $\approx 55^{\circ}F$ (85-32) (from Environmental Report Sec. 2.4) the effect of this cold mode may be neglected by engineering jusgement."

2nd page, 4th sentence change to read:

"Item 4 mode is used during refueling outages. This mode is the only change in temperature from _____ for this piping system. Therefore, the effects of a ΔT of _____ on this system can be neglected by engineering judgement."

2nd page, 5th sentence change to read:

"Calculations affected by items 3, 5, 6 and 7..."

BPC To Verify

TSB- 452
Date: 7/30/85
Project: Hope Creek
7212-30

From: T. J. Duffy
Sargent & Lundy
29D21
312-269-7315

TO: L. C. Oesterich
Bechtel Task Leader
Bechtel Power Corporation
San Francisco, California
Telecopy No.: 415-882-3211
Confirmation No.: 415-882-1672

AND

TO: W. F. Bauer
Principal Engineer
Public Service Electric and Gas Company
Newark, New Jersey
201-621-2150

B. A. Erler (1) - 18
E. B. Branch (1) - 23
W. A. Bloss (2) - 18
H. G. McCullough (1) - 18

2 pages to follow. Attached are comments on calculations supporting BPC responses to OR-44 and 100 (Auxiliary steel for pipe supports) and OR-165 (Pipe whip restraints). Please provide copy to S. Bhattacharya (OR-165) and J. Frane (OR-44 and 100).

T. J. Duffy

CC: J. Milhoan - NRC

OR-44 & 100 (Auxiliary Steel for Pipe Supports)
Comments on Calculation OR-44-C1

We have reviewed calculation OR-44-C1, Rev. O, sheets 1 thru 4, which addresses the following concerns regarding the design of auxiliary steel for pipe supports:

1. Self weight and self weight excitation of component hardware and supplementary steel in all three directions.

2. Torsional effects due to eccentric friction forces.

3. Permitted field tolerances.

The following are S&L's comments:

1. Please confirm that loads due to self weight and self weight excitation of component hardware and auxiliary support steel have been considered in all three directions.

2. Subject calculations only give final margin factors (allowable/actual) for ten hangers, four of which have margin factors below 1.1 with a lowest value of 1.005. While these margin factors are still adequate, the results may not lead to the conclusion in all cases that "the current design method is adequate and meets FSAR commitments."

3. Of greater generic significance than the final margin factors for a sample of ten hangers is the maximum percentage increase in design load due to the concerns addressed in the OR's and the availability of current design margins of all hangers to accept the increase.

It is recommended that BPC revise their reponses to OR's 44 and 100 to address one of the following:

1. That the maximum percentage increase in design load due to the concerns addressed in the OR's has been determined based on a study of 10 hangers and that the final design margins of all hangers can accept this increase.

2. That the maximum percentage increase in design load due to the concerns addressed in the OR's has been determined based on a study of ten hangers. For situations where the maximum percentage increase in design load cannot be accepted on a generic basis (i.e., pipe supports with large auxiliary steel systems or with component hardware large auxiliary steel weights to hanger load ratios), the concerns addressed in the OR's will be considered as part of the final as-built review of the pipe supports.

OR-165 (Pipe Whip Restraints)

Comments on Calculation 625-224(Q)

1. Calculations for DLF given on sheets 16 thru 23 should consider the effect of steady state jet force in addition to only the impulse loading utilized in the subject calculations.

2. The use of Figure 2-23 of "Introduction to Structural Dynamics," by Biggs to compute DLF does not appear to be appropriate for elastic systems such as the members connections. Figure 2-23 provides the response of elasto-plastic systems and does not give the value of Dynamic Load Factor for elastic systems.

SARGENT & LUNDY
ENGINEERS
CHICAGO

FROM: R. M. Schiavoni
Sargent & Lundy
18P15
(312) 269-6221

TSB- 450
Date: July 29, 1985
Project: Hope Creek
7212-30

TO: L. C. Oesterich
Bechtel Task Leader
Bechtel Power Corporation
San Francisco, California
Telecopy No.: 415-882-3211
Confirmation No.: 415-882-1672

CC: W. F. Bauer
Principal Engineer
Public Service Electric and Gas Company
Newark, New Jersey
201-621-2150

W. A. Bloss (2)
J. Milhoan (NRC)
T. DelGaizo (Westec)
2 pages to follow.

Attached is a copy of a telecon memorandum between H. S. Taylor, L. R. Stensland, R. L. Givan, and R. M. Schiavoni (S&L), H. Wong (NRC), and K. Cooke, L. Lew (BPC) dated July 29, 1985.

RMS:smg
Attachments

Memorandum of Telephone Conversation **SARGENT & LUNDY**

Date 7/29/85 Time 1:00 p.m.

Person Called	Company
(see listing below)	(see listing below)
Person Calling	**Company**
(see listing below)	(see listing below)
Project	**Project No.**
Hope Creek IDVP	7212-30

Subject Discussed
Electrical Resolution/Completion Reports

Summary of Discussion, Decisions and Commitments
Those participating in this conference call:

H. Wong) NRC

K. Cooke)
L. Lew) BPC

H. S. Taylor)
L. R. Stensland) S&L
R. L. Givan)
R. M. Schiavoni)

OR-214

S&L asked the status of the listing of all Class 1E valves vs. the enveloping case(s) as noted in the resolution report. (Previously discussed in telecon of July 24, 1985; TSB-443.)

BPC responded that the requested listing will be supplied by August 5, 1985. The revised resolution report committing to preparation of this listing will be issued by August 2, 1985.

cc W. F. Bauer, Y. J. Yaworsky, L. C. Oesterich, K. Cooke, L. Lew, J. Milhoan, T. DelGaizo, C. M. Chiappetta, W. A. Bloss (2), L. R. Stensland, H. S. Taylor, R. L. Givan

File Telecon - Technical
Category 3

Signature

SL-F713 10/84—F3

OR-149

To close this OR, S&L needs assurance from BPC that the occurrence is an isolated one. S&L suggested that this assurance may be provided through a commitment by BPC to review a sample of Mechanical Specifications with electrical input, as well as, a sample of Electrical Specifications, for this problem. Other approaches may also be acceptable, as long as, BPC provides the basis for this acceptability.

RMS:smg

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Project No. 10855-013

RESOLUTION/COMPLETION REPORT

OR No. 18	Rev. 0	Date 5/20/85
R/CR No. 18	Rev. 0	Date 5/28/85
R/CR No. 18	Rev. 1	Date 7/18/85
R/CR No. 18	Rev. 2	Date 7/30/85

1. Classification of Observation (by S&L):
   ____ Not significant to safety
   ____ Significant to safety
   X Additional Information required

2. Reviewee proposed resolution:

   See Sheet 2.

3. Reviewee resolution report by

   B. S. Bhattacharya
   Discipline Group Supervisor — Date 7/30/85

   G. M. Kapandritis
   Bechtel Project Engineer — Date 7/30/85

4. Public Service Electric and Gas Company review:

   W. Gailey
   Chief Project Engineer — Date 7/30/85

5. S&L's disposition of Resolution/Completion Report:
   X Observation invalid and withdrawn. See attached Completion Report.
   ____ Proposed resolution/future action acceptable, observation closed.
   ____ Additional action to be taken by Reviewee (provide additional information).

6. Final classification of observation by Review Committee:
   X Not significant to safety
   ____ Significant to safety

7. Review Committee signatures:

   H. S. Taylor — L. R. Stensland / C. W. Chiappetta
   [signature] — [signature]
   [signature]

RESOLUTION/COMPLETION REPORT
(Continuation sheet)

OR No. 18 Rev. 0 Date 5/20/85
R/CR No. 18 Rev. 0 Date 5/28/85
R/CR No. 18 Rev. 1 Date 7/18/85
R/CR No. 18 Rev. 2 Date 7/30/85

Response to Description of Observation

2.a The intent of Bechtel's letter dated September 16, 1983 (Attachment 1) was only to solicit the vendor's (Eaton's) impact due to the revised response spectra. The letter did not authorize or instruct Eaton to proceed. The Material Requisition (M/R) was revised and issued prior to the vendor submitting any documents based on this new data. The sequence of events was as follows:

- o Bechtel sent letter to Eaton requesting an assessment of revised spectra on September 16, 1983 (Attachment 1).
- o Eaton responded in a letter on September 22, 1983 that there was no impact (Attachment 2).
- o Bechtel revised the M/R (Revision 18) to incorporate the new spectra. M/R was issued on October 5, 1983.
- o On December 12, 1983, Eaton's sub-contractor (Patel) completed and submitted the analysis based on response spectra that were identical to those contained in the new revision to M/R.
- o Bechtel reviewed testing plan and released vendor to proceed with qualification testing on March 1, 1984.

2.b The seismic criteria contained in the Revision 18 of the material requisition merely compiles information provided to Eaton via Bechtel letter of September 16, 1983. Since the test procedure uses the correct spectra, it was determined that it could be used "as is".

Response to Recommendation for Resolution

4.a Based on the above, we conclude that there was no breakdown in the design process for transmitting revised RRS information to the contractor, Eaton, or for reviewing subcontractor seismic reports to current requirements.

4.b Engineering Department Procedure 4.55 describes the BPC method for control of material requisition including transmittal of revised engineering documents to the bidder/supplier. This procedure is applicable to Hope Creek project.

In reply reference CCN: SEP 16 8JU2JUJU7

ATTACHMENT 1

JUL 18 850285338

Bechtel Power Corporation
Engineers—Constructors

Fifty Beale Street
San Francisco, California
Mail Address: P.O. Box 3965, San Francisco, CA 94119

bcc
Purchasing
Purchasing Supv.
Engr. Grp. Supv.

September 16, 1983

Reply Required: 9/23/83

EATON/CUTLER-HAMMER
4201 N. - 27th Street
Milwaukee, WI 53216

Attention: Mr. Al Gram

Subject: Job 10855, Public Service Electric & Gas Co.
Hope Creek Generating Station
Purchase Order 10855-E-118(Q)-AC
Motor Control Centers

Gentlemen:

Per our telecon, attached is the revised RRS curves for the seismic test procedure.

The RRS has been revised to reduce conservatisms and to include the effects of variations in soil properties.

We believe this should have no impact on the seismic qualification procedure being prepared by Eaton. Our specifications will be revised accordingly.

By September 23rd, please indicate receipt of the revised curves and if there will be any impact.

Very truly yours,
BECHTEL POWER CORPORATION

Bob Levitt

Bob Levitt
Hope Creek Procurement
(415) 882-1298

BL/lcv
Attach.
Sent by Federal Express

Eaton Corporation
Operations & Technical Center
4201 North 27th Street
Milwaukee, Wisconsin 53216
Telephone (414) 449-6000

ATTACHMENT 2

September 22, 1983

Bechtel Power Corporation
P.O. Box 3965
San Francisco, CA 94119

Attention: Mr. Bob Levitt
Hope Creek Procurement

EATON

Subject : Job 10855 PSE&G
Hope Creek Generating Station
Purchase Order 10855-E-118(Q)AC
Motor Control Centers

Reference: CCN 0250507

Gentlemen:

There will be no cost impact at this time for revision of the RRS curves submitted with your letter of September 16, 1983.

Very truly yours,

EATON CORPORATION

B. M. Horter, Consultant
CDC Division

BMH/mbk
cc: Mr. A. E. Grams
Mr. R. J. Fritsch

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Project No. 7212-30
Page 1 of 1

COMPLETION REPORT

OR No. 18 Rev. 0 Date 5/20/85
R/CR No. 18 Rev. 2 Date 7/30/85
CR No. 18 Rev. 0 Date 8/1/85

Describe resolution/future action to close observation:

BPC has demonstrated that the correct response spectra were submitted to the vendor (Eaton) via revision to the Material Requisition. This method of transmitting design information to vendors is in accordance with Engineering Department Procedure 4.55.

The fact that BPC requested the vendor to assess the impact of the revised response spectra prior to formally imposing the revised response spectra (via revision to the Material Requisition) is an acceptable engineering practice.

The chronological sequence of events provided in the resolution report demonstrates that Revision 18 of the Material Requisition, which imposes the revised spectra as a requirement was issued to the vendor prior to his completion of the test procedure.

This Observation Report is considered invalid.

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Project No. 10855-013

RESOLUTION/COMPLETION REPORT

OR No. 124 Rev. 0 Date 6/24/85
R/CR No. 124 Rev. 0 Date 7/2/85
R/CR No. 124 Rev. 1 Date 7/17/85
R/CR No. 124 Rev. 2 Date 7/30/85

1. Classification of Observation (by S&L):
   ____ Not significant to safety
   ____ Significant to safety
   X Additional Information required

2. Reviewee proposed resolution:

   See Sheet 2.

3. Reviewee resolution report by:

   CB J C Ostrowski for [illegible]
   Discipline Group Supervisor — Date 7/30/85

   [illegible]
   Bechtel Project Engineer — Date 7/30/85

4. Public Service Electric and Gas Company review:

   W. Gailey/[illegible]
   Chief Project Engineer — Date 7/30/85

5. S&L's disposition of Resolution/Completion Report:
   ____ Observation invalid and withdrawn.
   X Proposed resolution/future action acceptable, observation closed. See attached Completion Report.
   ____ Additional action to be taken by Reviewee (provide additional information).

6. Final classification of observation by Review Committee:
   X Not significant to safety
   ____ Significant to safety

7. Review Committee signatures:

   H. S. Taylor
   [illegible]
   [illegible]

   L. R. STENSLAND/by C. M. Chappelear
   [illegible]

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Project No. 10855-013
Page 2 of 3

RESOLUTION/COMPLETION REPORT
(Continuation sheet)

OR No. 124 Rev. 0 Date 6/24/85
R/CR No. 124 Rev. 0 Date 7/2/85
R/CR No. 124 Rev. 1 Date 7/17/85
R/CR No. 124 Rev. 2 Date 7/30/85

Response to Description of Observation

2. Calculation 12-118(Q), Rev. 1, dated 5/5/83, does not satisfy ANSI N45.2.11 as an "analysis" because it was not intended to be an "analysis". It is merely a compilation of data from other sources, which was intended to be used for convenient reference by persons performing jet impingement analyses in the drywell. It was put into calculation form and checked to provide assurance that this reference tool correctly reflected design information gathered from other sources. As noted in the "Purpose" statement on page 1 of 12-118(Q), "Break locations are based on plant design stress analysis". However, the specific memoranda which are traceable to plant design stress calculation (stresses and usage factors) are not cited. This calculation has been voided as it is not a design basis for HCGS.

The observation that the break locations differ from those in the FSAR is not correct except for the recirculation system (FSAR Figure 3.6-12). GE Design Report 23A1850, Rev. 0, dated August 23, 1983, deleted some break locations for the recirculation system. FSAR Figure 3.6-12 (Amendment 6, 6/84) reflects these deleted break locations. Because 12-118(Q) reflects the locations on which the jet impingement analysis was actually performed and because the only effect of 23A1850 was to delete postulated break locations, 12-118(Q) was not updated at that time.

A careful review of calculation 12-118(Q) against the FSAR figures showing break locations inside containment (3.6-2, -12, -13, -15, -18, -22, -30, -31, -32 and -33) did not reveal any other actual discrepancies. There are, however, some notational differences. The breaks at the RHR to recirculation system interfaces are shown on the RHR figures in the FSAR while they are shown either on recirculation or RHR or both in 12-118(Q). Also, the FSAR figures in some cases only show one break node at an elbow where 12-118(Q) shows either 2 or 3 nodes, depending on whether or not a slot break is postulated. Calculation 12-118(Q) simply shows more detail than was provided in the FSAR. There are 3 cases in 12-118(Q) where only one break node is shown at an elbow because the elbow itself was part of the "no break zone" (see RWCU, RCIC and HPCI). Calculation 12-118(Q) does not address the main steam drains, RPV head vent and spray, or SLC injection because these lines postulate breaks at each fitting, as noted on FSAR Figures 3.6-26, -28, -29 and -36.

Response to Recommendation for Resolution

4.a As noted in item 2 above, calculation 12-118(Q), Rev. 1, has been voided. This calculation would have been voided in the course of hazards review documentation closeout and calculation turnover from BPC to PSE&G.

BPC has provided an example (Calculation SS-10) of the Plant Design stress calculation for S&L review that detailed the stress analysis results and break locations. These calculations were performed in accordance with EDP-4.37. In addition, the memorandum that formally transmitted these locations to the Mechanical disciplines was provided. Although no problems were identified in the provided example, BPC will review all of the remaining stress analyses for the high energy piping systems in the drywell to provide further assurance that all break locations have been identified and transmitted to the other disciplines for their use. This review will be complete by August 15, 1985.

BPC provided, in addition, a recent memo and drawing (attached) as an example of the current program which establishes a set of project design drawings reviewed and signed by the Civil and Mechanical disciplines which document the piping break locations.

On receipt of the NRC response to the HCGS request to delete arbitrary intermediate breaks, submitted June 11, 1985, the FSAR will be revised to reflect the break locations discussed above. When the ABR is completed, these break locations will be finalized and any required changes to the FSAR will be submitted to the NRC.

4.b This observation was caused by improper classification of this document by Bechtel as a calculation which would be subject to the requirements of EDP 4.37 which governs preparation of design calculations. The EDP requirements were overlooked because this document was intended to be used as a convenient reference tool rather than as a design basis for selecting break locations.

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Project No. 7212-30
Page 1 of 1

COMPLETION REPORT

OR No. 124 Rev. 0 Date 6/24/85
R/CR No. 124 Rev. 2 Date 7/30/85
CR No. 124 Rev. 1 Date 8/1/85

Describe resolution/future action to close observation:

The BPC resolution is acceptable for the following reasons:

BPC has voided Calculation 12-118(Q).

R BPC provided a sample of current stress calculations and documentation of break location determination as well as the memorandum transmitting the information from the stress analysis to the design discipline for their use. Calculation SR 10855-SS-10, Rev. 2, provides the break location determination for the HPCI system.

BPC will review all high energy system piping stress analyses in the Drywell to provide additional assurance that the process discussed above is adequate. BPC will also review and if necessary, revise the FSAR data regarding the break locations once the break locations are finalized.

Memorandum of Telephone Conversation **SARGENT & LUNDY**

Date 7/26/85 Time 1:00 p.m.

Person Called	Company
See Attached List	See Attached List
Person Calling	**Company**
See Attached List	See Attached List
Project	**Project No.**
Hope Creek	7212-30

Subject Discussed
Observation Report Nos. 88, 18, 182, 129 and 97

Summary of Discussion, Decisions and Commitments

OR-88 - S&L advised BPC that Rev. 1 to R/CR-88, was acceptable.

OR-18 - Key issue is whether BPC sent Eaton Rev. 18 of material requisition E-118(Q), prior to Patel Engineers issuing of Test Procedure PEI-TR-833504-1. BPC stated that the purchase order transmitting the revised M/R was dated October 14, 1983. On December 1, 1983, Eaton signed a receipt acknowledgement form documenting that they did indeed receive the revised material requisition prior to BPC's review of the Patel Engineers test procedure.

BPC agreed to revise the fourth bullet item of their resolution report - response to description of observation to read:

Eatons subcontractor (Patel) completed and submitted the test procedure on December 12, 1983, using RRS which were identical to those contained in the new revision to the M/R.

OR-182 - S&L requested BPC to provide the calculation justifying the gaps in the battery rack. BPC stated that this calculation has already been sent by express mail.

cc W. F. Bauer, H. S. Boolani, J. Milhoan, H. S. Taylor, R. M. Schiavor
Y. J. Yaworsky, J. Frane, T. DelGaizo, E. B. Branch, L. R. Stensla
L. C. Oesterich, P. W. Schuetz, H. Wang, A. P. Dimopoulos, R. M. Tjernlu
J. Bhatt, R. Sorenson, W. A. Bloss (2), R. L. Givan

File Telecon - Technical
Category 4

Signature

OR-129 - In item 2.2.6, BPC stated that Section 4.2.1.1 and 4.2.1.3 of the specification do not require revision as they will not contradict or overlap what BPC will provide in Appendix F. The information provided in the specification was intended to be used by the Vendor (National Forge) to size the flued heads. It is not intended to define the flued head design requirements. Rather,the design requirements (i.e., load histograms, load combinations, and no break criteria) will be defined in Appendix F. BPC stated that on July 15, 1985, a draft of Appendix F was submitted to S&L. S&L was not aware of receiving it, but committed to check and review it.

In item 2.b, BPC stated that in their resolution report, the last sentence of their response to item 2.b was incorrect. Instead of reading "...the flued head fitting is also considered to be a component support", it should read "...the flued head fitting is analyzed using the allowables for a component support which are more conservative than those of NB or NC".

OR-97 - BPC stated that the upset condition piping reactions are acceptable using the following reasons:

1) When BPC found that the calculated piping reactions exceeded the specification defined allowables, they requested the Vendor (Pittsburgh-Des Moines or PDM) to evaluate them. These piping reactions are defined in Section NOZ to the PDM report.

2) BPC specification defined service level B allowables for both the upset and faulted conditions. Since the faulted condition loads enveloped the upset condition loads, PDM did not analyze the upset condition case. PDM analysis determined that the faulted condition loads needed to be reduced by 34% to meet the allowables. The controlling load was the moment M_z associated with nozzle 30 on tank BT-412.

3) BPC reanalyzed the piping for the faulted condition. Normal and upset condition loads remained unchanged. The revised loads were sent to PDM on 8/21/84, via BPC letter BLC-1483. PDM's letter CLB-152-3398, dated 12/12/84, documents that the new faulted loads are acceptable.

4) The acceptability of the upset condition loads can be seen by comparing the magnitude of the upset condition piping reactions against the original faulted condition piping reactions. Since the upset condition reactions are much less than the faulted (especially moment M_z for tank BT-412, nozzle 30), they would not have resulted in exceeding the service level B allowables as the original faulted condition piping reactions.

S&L asked if the technical specification would be revised, as the allowable nozzle loads now defined in the specification are no longer valid. BPC replied that they had sufficient controls to insure that the piping analyst will know what are the current allowable nozzle reactions.

DPW:cdj

Person Called :	J. Bhatt	)	Bechtel Power Corporation (BPC)
	H. S. Boolani	)	
	J. Frane	)	
	L. C. Oesterich	)	
	P. W. Schuetz	)	
	R. Sorenson	)	
	H. Wang	)	U. S. Nuclear Regulatory Commission (NRC)
Person Calling:	E. B. Branch	)	Sargent & Lundy (S&L)
	A. P. Dimopoulos	)	
	R. L. Givan	)	
	R. M. Schiavoni	)	
	L. R. Stensland	)	
	H. S. Taylor	)	
	R. M. Tjernlund	)	
	D. P. White	)	

SARGENT & LUNDY
ENGINEERS
CHICAGO

FROM: D. P. White
Sargent & Lundy
18P15
312-269-6419

TSB-TSB-455
Date: August 5, 1985
Project: Hope Creek
7212-30

TO: L. C. Oesterich
Bechtel Task Leader
Bechtel Power Corporation
San Francisco, California
Telecopy No.: 415-882-3211
Confirmation No.: 415-882-1672

CC: W. F. Bauer
Principal Engineer
Public Service Electric and Gas Company
Newark, New Jersey
201-621-2150

W. A. Bloss (2)
J. Milhoan
T. DelGaizo

3 pages to follow.

Attached is a copy of a revised telecon memorandum between Y. J. Yaworsky (PSE&G), and L. C. Oesterich, H. S. Boolani, P. W. Schuetz, D. Sorenson (BPC), and H. Wang (NRC), and E. B. Branch, A. P. Dimopoulos, L. L. Fergusson, R. L. Givan, R. M. Tjernlund, D. P. White (S&L), dated July 31, 1985. Please note this telecon has been revised as of August 5, 1985.

DPW:cdj
Attachment

Memorandum of Telephone Conversation **SARGENT & LUNDY**

Date 7/31/85 Time 12:30 p.

Person Called	Company
see listing below	see listing below
Person Calling	**Company**
see listing below	see listing below
Project	**Project No.**
Hope Creek	7212-30

Subject Discussed
Conference Call of July 31, 1985

Summary of Discussion, Decisions and Commitments

Y. J. Yaworsky) Public Service Electric & Gas (PSE&G)

L. C. Oesterich)
H. S. Boolani) Bechtel Power Corporation (BPC)
P. W. Schuetz)
D. Sorenson)

H. Wang) U. S. Nuclear Regulatory Commission (NRC)

E. B. Branch)
A. P. Dimopoulos)
L. L. Fergusson) Sargent & Lundy (S&L)
R. L. Givan)
R. M. Tjernlund)
D. P. White)

OR-147 - BPC committed to revise the resolution report to indicate that technical specification C-406 will be revised to provide justification that seismic interaction of large Category I mechanical equipment is not critical.

OR-129 - TSB-453, Item 1, BPC committed to revise Item 2b of their resolution report to identify the basis for the faulted condition allowables. BPC committed to revise section 4.2.1.4 of specification to indicate that the evaluation for the faulted condition shall consider two loading conditions, the

cc W. F. Bauer, P. W. Schuetz, H. Wang, A. P. Dimopoulos, D. P. White, Y. J. Yaworsky, D. Sorenson, W. A. Bloss (2), L. L. Fergusson, L. C. Oesterich, J. Milhoan, H. S. Taylor, R. L. Givan, H. S. Boolani, T. DelGaizo, E. B. Branch, R. M. Tjernlund

File Telecon - Technical Category 4

Signature

SL-F713 10/84—F3

failure loads defined in BPC drawing P-3001-1, and faulted load combination defined in Appendix F. The resolution report will be revised accordingly.

TSB-453, Item 2, BPC stated that GE has total responsibility for mainsteam head fitting 1A through 1D, therefore, the requirements for these Class 1 penetrations is defined by GE not BPC specification P-404(Q). S&L noted that there will be interfaces between BPC and GE in which BPC will have to provide design information to GE. S&L asked where these interfaces are defined. BPC committed to provide GE documentation identifying the information to be provided by BPC.

TSB-453, Item 3, BPC committed to provide a response by noon (San Francisco time), Thursday, August 1, 1985.

TSB-453, Item 4, BPC stated that the no break criteria is not applied to the other Class 1 flued heads (i.e., RHR, core spray, LPCI) on basis of the 2% rule defined in the SRP. S&L asked if cracks could occur in the annulus area between the process pipe and guardpipe which would result in jet impingement upon the guardpipe. BPC replied yes. S&L then noted that the guardpipe design basis did not consider such impingement loads. It was S&L's understanding that such impingement loads were excluded on basis of the no break criteria. BPC said they wanted to discuss this internally and committed to provide a response by noon (San Francisco time), Thursday, August 1, 1985.

Resolution Report for OR-96

S&L asked why the reanalysis of C1750 dropped from BPC's resolution? S&L noted that between the two calculations, C1750 is a more severe case.

It was S&L's understanding that both cases would be rerun.

BPC stated that C1750 was a very large calculation with numerous supports and a reanalysis of this calculation would be very expensive.

BPC further stated that they felt C33 was sufficient to represent HCGS support weights which were neglected.

S&L stated that one calculation would not be sufficient to represent HCGS support weights. S&L recommended that BPC select two calculations which established a representative sample of support weights.

BPC stated that C33 would be one calculation and the other would be equivalent in the amount of neglected weight as C1750, but would be selected from calculations outside of the IDVP. This calculation will be identified in the revised resolution report. Also, a detailed discussion of how these calculations

establish a representative sample, and therefore justify BPC's engineering judgement for all similar calculations, would be presented in the resolution report.

Resolution Report for OR-125

R Under section 4.c, BPC has specified seven modes of operation for all HCGS systems where temperatures below 70°F may be encountered. S&L requested that a more detailed explanation be provided regarding the evaluation of items 3 and 4. S&L stated that it is not sufficient to say that since these modes occur during shutdown they need not be considered.

BPC agreed to revise their resolution report and resubmit it to S&L.

DPW:cdj

SARGENT & LUNDY
ENGINEERS
CHICAGO

FROM: B. Obersnel
Sargent & Lundy
21K11
312-269-6531

TSB- 454
Date: July 31, 1985
Project: Hope Creek
7212-30

TO: L. C. Oesterich
Bechtel Task Leader
Bechtel Power Corporation
San Francisco, California
Telecopy No.: 415-882-3211
Confirmation No.: 415-882-1672

CC: W. F. Bauer
Principal Engineer
Public Service Electric and Gas Company
Newark, New Jersey
201-621-2150

W. A. Bloss (2)
J. Milhoan
T. DelGaizo

2 pages to follow.

Attached is a copy of a telecon memorandum between H. Wang (NRC) and Y. J. Yaworsky (PSE&G) and L. C. Oesterich, H. S. Boolani, C. Bradford, J. Frane, P. W. Schuetz (BPC) and E. B. Branch, B. Obersnel, R. L. Givan, D. P. White (S&L), dated July 30, 1985.

BO:cdj
Attachment

Memorandum of Telephone Conversation **SARGENT & LUNDY**

Date 7/30/85 Time 1:00 p.m.

Person Called	Company
see listing below	see listing below
Person Calling	**Company**
see listing below	see listing below
Project	**Project No.**
Hope Creek	7212-30

Subject Discussed
R/CR-124 and R/CR-166

Summary of Discussion, Decisions and Commitments

Person Called:	H. Wang	U. S. Nuclear Regulatory Commission (NRC)
	Y. J. Yaworsky	Public Service Electric & Gas (PSE&G)
	L. C. Oesterich H. S. Boolani C. Bradford J. Frane P. W. Schuetz	Bechtel Power Corporation (BPC)
Person Calling:	E. B. Branch B. Obersnel R. L. Givan D. P. White	Sargent & Lundy (S&L)

1) R/CR-124 - S&L felt that the R/CR-124 should indicate that the FSAR data on the break locations will be reviewed and, if necessary, appropriately revised when the break locations are finalized. BPC agreed. An appropriate statement will be added to 4.a in R/CR-124.

2) R/CR-166 - S&L felt that:

- the hanger which was identified by S&L as a potential Seismic II/I item should be addressed as a Seismic II/I item, or reasons should be provided why it is not a Seismic II/I item.

cc W. F. Bauer, Y. J. Yaworsky, L. C. Oesterich, H. S. Boolani, C. Bradford, J. Frane, P. W. Schuetz, H. Wang, J. Milhoan, T. DelGaizo, W. A. Bloss (2), H. S. Taylor, E. B. Branch, L. L. Fergusson, R. L. Givan, D. P. White

File Telecon - Technical
Category 4

Brian Obersnel
Signature

- since a significant fraction of the reviewed record sheets is being revised, assurances should be provided that the observed cases are isolated cases or an appropriate sample review should be performed.

- the identification of the Seismic II/I sources does not seem to meet requirements for a design process (control, documentation). How does the process assure that all Seismic II/I items, in a given safety-related area, are indeed identified?

2.1 BPC explained that the walkdown to G-052 considers hanger a part of the Seismic II/I source due to the supported pipe. The hangers are therefore, assessed concurrently with the pipe. BPC committed to add a statement to G-052 which will clearly support this apparent practice during the walkdowns. The initial assessment whether the hanger can fail, is made based on the engineering judgement. If further analysis is necessary, this will be done too. However, there are no generic criteria provided to the walkdown team which would allow them to make the decision that a hanger indeed does not have to be analyzed for a seismic event loads and which would provide consistency in this process.

2.2 BPC felt that the committed revisions to the record sheets were not technically significant and that the changes did not have an effect on the overall adequacy of the Seismic II/I program. BPC will revise the resolution to the OR to include a statement to this effect.

2.3 Specification G-052 provides for a process to identify Seismic II/I sources as well as the targets. However, the documentation for this process is not kept on file. This pre-walkdown Seismic II/I concerns identification process is not meant to be complete; the field identification during the walkdown is intended to be all-inclusive and fully documented process.

BO:cdj

SARGENT & LUNDY
ENGINEERS
CHICAGO

FROM: D. P. White
Sargent & Lundy
18P15
312-269-6419

TSB- 455
Date: July 31, 1985
Project: Hope Creek
7212-30

TO: L. C. Oesterich
Bechtel Task Leader
Bechtel Power Corporation
San Francisco, California
Telecopy No.: 415-882-3211
Confirmation No.: 415-882-1672

CC: W. F. Bauer
Principal Engineer
Public Service Electric and Gas Company
Newark, New Jersey
201-621-2150

W. A. Bloss (2)
J. Milhoan
T. DelGaizo

3 pages to follow.

Attached is a copy of a telecon memorandum between Y. J. Yaworsky (PSE&G), and L. C. Oesterich, H. S. Boolani, P. W. Schuetz, D. Sorenson (BPC), and H. Wang (NRC), and E. B. Branch, A. P. Dimopoulos, L. L. Fergusson, R. L. Givan, R. M. Tjernlund, D. P. White (S&L), dated July 31, 1985.

DPW:cdj
Attachment

Memorandum of Telephone Conversation

SARGENT & LUNDY

Date 7/31/85 Time 12:30 p.m

Person Called	Company
see listing below	see listing below
Person Calling	**Company**
see listing below	see listing below
Project	**Project No.**
Hope Creek	7212-30

Subject Discussed
Conference Call of July 31, 1985

Summary of Discussion, Decisions and Commitments

Y. J. Yaworsky) Public Service Electric & Gas (PSE&G)

L. C. Oesterich)
H. S. Boolani) Bechtel Power Corporation (BPC)
P. W. Schuetz)
D. Sorenson)

H. Wang) U. S. Nuclear Regulatory Commission (NRC)

E. B. Branch)
A. P. Dimopoulos)
L. L. Fergusson) Sargent & Lundy (S&L)
R. L. Givan)
R. M. Tjernlund)
D. P. White)

OR-147 - BPC committed to revise the resolution report to indicate that technical specification C-406 will be revised to provide justification that seismic interaction of large Category I mechanical equipment is not critical.

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cc W. F. Bauer, Y. J. Yaworsky, L. C. Oesterich, H. S. Boolani, P. W. Schuetz, D. Sorenson, J. Milhoan, T. DelGaizo, H. Wang, W. A. Bloss (2), H. S. Taylor, E. B. Branch, A. P. Dimopoulos, L. L. Fergusson, R. L. Givan, R. M. Tjernlund, D. P. White

File Telecon - Technical Category 4

Signature

SL-F713 10/84—F3

failure loads defined in BPC drawing P-3001-1, and faulted load combination defined in Appendix F. The resolution report will be revised accordingly.

TSB-453, Item 2, BPC stated that GE has total responsibility for mainsteam head fitting 1A through 1D, therefore, the requirements for these Class 1 penetrations is defined by GE not BPC specification P-404(Q). S&L noted that there will be interfaces between BPC and GE in which BPC will have to provide design information to GE. S&L asked where these interfaces are defined. BPC committed to provide GE documentation identifying the information to be provided by BPC.

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TSB-453, Item 4, BPC stated that the no break criteria is not applied to the other Class 1 flued heads (i.e., RHR, core spray, LPCI) on basis of the 2% rule defined in the SRP. S&L asked if cracks could occur in the annulus area between the process pipe and guardpipe which would result in jet impingement upon the guardpipe. BPC replied yes. S&L then noted that the guardpipe design basis did not consider such impingement loads. It was S&L's understanding that such impingement loads were excluded on basis of the no break criteria. BPC said they wanted to discuss this internally and committed to provide a response by noon (San Francisco time), Thursday, August 1, 1985.

Resolution Report for OR-96

S&L asked why the reanalysis of C1750 dropped from BPC's resolution? S&L noted that between the two calculations, C1750 is a more severe case.

It was S&L's understanding that both cases would be rerun.

BPC stated that C1750 was a very large calculation with numerous supports and a reanalysis of this calculation would be very expensive.

BPC further stated that they felt C33 was sufficient to represent HCGS support weights which were neglected.

S&L stated that one calculation would not be sufficient to represent HCGS support weights. S&L recommended that BPC select two calculations which established a representative sample of support weights.

BPC stated that C33 would be one calculation and the other would be equivalent in the amount of neglected weight as C1750, but would be selected from calculations outside of the IDVP. This calculation will be identified in the revised resolution report. Also, a detailed discussion of how these calculations

establish a representative sample, and therefore justify BPC's engineering judgement for all similar calculations, would be presented in the resolution report.

Resolution Report for OR-125

Under section 4.c, BPC has specified seven modes of operation for all HCGS systems where temperatures below 70°F may be encountered. S&L requested that a more detailed explanation be provided regarding the evaluation of items 3 and 4. S&L stated that it is sufficient to say that since these modes occur during shutdown they need not be considered.

BPC agreed to revise their resolution report and resubmit it to S&L.

DPW:cdj

SARGENT & LUNDY
ENGINEERS
FOUNDED 1891
55 EAST MONROE STREET
CHICAGO, ILLINOIS 60603
(312) 269-2000
TWX 910-221-2807

H. STEPHEN TAYLOR
ASSOCIATE
312-269-6371

LSP-102
August 7, 1985
Project No. 7212-30

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Independent Design Verification Program
Resolution/Completion Reports

Mr. W. F. Bauer
Principal Engineer
Public Services Electric and Gas Company
80 Park Plaza
Newark, New Jersey 07101

Dear Mr. Bauer:

Enclosed for your information and records is one copy each of Resolution/Completion Report Nos. 96, 144, 147, 149, 165, 186 and 214 and all are considered closed. Please note Completion Report No. 96 has been revised

Yours very truly,

H. S. Taylor

H. S. Taylor
Chairman, Internal Review Committee

HST:nd
Enclosures
Copies:
T. DelGaizo
J. L. Milhoan
L. C. Oesterich
P. L. Wattelet
W. A. Bloss (2)
O. Zaben
W. D. Crumpacker
T. J. Duffy
H. G. L. McCullough
R. M. Schiavoni
D. P. White

AUG 1 850?85070

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Project No. 10855-013

RESOLUTION/COMPLETION REPORT

OR No. 96	Rev. 0	Date 6/12/85
R/CR No. 96	Rev. 0	Date 7/10/85
R/CR No. 96	Rev. 1	Date 7/14/85
R/CR No. 96	Rev. 2	Date 8/1/85

1. Classification of Observation (by S&L):
   ____ Not significant to safety
   ____ Significant to safety
   X Additional Information required

2. Reviewee proposed resolution:

   See Sheet 2.

3. Reviewee resolution report by:

   J. D. Deane / JCF
   Discipline Group Supervisor

   August 1, 1985
   Date

   KB/ M D Parker
   Bechtel Project Engineer

   8/1/85
   Date

4. Public Service Electric and Gas Company review:

   W. Gailey / [illegible]
   Chief Project Engineer

   8-1-85
   Date

5. S&L's disposition of Resolution/Completion Report:
   ____ Observation invalid and withdrawn.
   X Proposed resolution/future action acceptable, observation closed. See attached Completion Report.
   ____ Additional action to be taken by Reviewee (provide additional information).

6. Final classification of observation by Review Committee:
   X Not significant to safety
   ____ Significant to safety

7. Review Committee signatures:

   H. S. Taylor
   [illegible]
   B A Erler
   [illegible]
   [illegible]

RESOLUTION/COMPLETION REPORT
(Continuation sheet)

OR No. 96 Rev. 0 Date 6/18/85
R/CR No. 96 Rev. 0 Date 7/10/85
R/CR No. 96 Rev. 1 Date 7/14/85
R/CR No. 96 Rev. 2 Date 8/1/85

Response to Recommendation for Resolution

4.a The rationale provided in 4(b) and 4(c) was used in determining the exclusion of weights from the analyses of these two problems.

4.b & 4.c The effect of restraint or support hardware weight on the piping analysis is, in general, not significant. The exception to this position is the MSRV discharge lines where experience from all other BWR projects demonstrates that the combination of analytical sensitiity and concentration of heavy clamps requires inclusion of clamp weights in the piping analysis. Accordingly, the Hope Creek MSRV discharge lines piping analysis has included clamp weights. The following are additional rationale that support this position:

1. For spring hanger supports on horizontal runs of pipe, three-bolt clamps (ITT Grinnell Fig. 295) have been used. These clamps typically weigh in the range of 6.6 pounds for 3" diameter pipe to 100 pounds for 30" diameter pipe.

2. The effect of any other clamps (Fig. 295, Riser clamp or special clamps) on the dead weight analysis and spring hanger setting is accounted for by the pipe support group in the hardware design. The pipe support group includes these component weights in arriving at the total hot load setting on the spring. This negates the effect of such clamp weight on the dead weight analysis.

3. Generally, the restraining arrangement for the piping system has a combination of restraint types such as box type restraints, strut type restraints, etc. Such types of restraints with inherent conservatism in their design, coupled with lumped masses due to clamps spread over the entire calculation, help to distribute the loads uniformly on all supports from the dead weight and seismic loads standpoint.

4. The total design loads were computed by applying a larger positive thermal load in both directions, even though the thermal load may be reduced by the minus weight load. This provides conservatism in the support design, thus providing enhanced load-carrying capability.

5. The loads provided by the stress group to the pipe support group in the majority of cases include minimum design loads. These loads are more than the actual calculated loads, providing still more conservatism in load-carrying capacity of the support.

RESOLUTION/COMPLETION REPORT
(Continuation Sheet)

OR No. 96	Rev. 0	Date 6/18/85
R/CR No. 96	Rev. 0	Date 7/10/85
R/CR No. 96	Rev. 1	Date 7/14/85
R/CR No. 96	Rev. 2	Date 8/1/85

6. Although ASME Sec. III, Subsection NF, allows supports (with the exception of supports on essential systems) to be designed beyond the yield stress, supports on the Hope Creek project have not been designed beyond yield in any case.

7. To avoid the larger contribution of snubber weight on the pipe, the snubbers on the Hope Creek project are, in general, installed with the heavier portion of the snubber at the building steel attachment.

8. In the design of Hope Creek pipe supports, the friction loads were considered for all loading conditions. However, friction loads need to be considered with the normal loading condition only, thereby adding more conservatism in the design.

9. The seismic analysis of piping systems on the Hope Creek project incorporate industry practices that have been demonstrated to be very conservative. These include the use of Reg. Guide 1.61 damping and Reg. Guide 1.122 spectra peak broadening and other items addressed in NUREG 1061.

Based on discussion between S&L and Bechtel, the following action was committed to by BPC to further validate the BPC position on the effect of clamp mass:

Riser clamps are characteristically heavier types of clamps. Since the clamps mentioned in OR-96 are riser clamps, Bechtel will perform calculation C-33(Q) including the weight of the riser clamp noted in OR-96. This analysis will confirm that the effect of this clamp on the piping analysis is insignificant.

To provide further assurance, Bechtel will perform another calculation C-944(Q) from SAC system to support our position. This calculation has riser clamp with weight equal to four (4) times the per foot weight of the pipe. | A

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Project No. 7212-30

COMPLETION REPORT

OR No. 96 Rev. 0 Date 6/18/85
R/CR No. 96 Rev. 2 Date 8/1/85
CR No. 96 Rev. 1 Date 8/5/85

Describe resolution/future action to close observation:

BPC's response to this Observation Report is acceptable because:

BPC has stated that it is their judgement that support hardware mass effects do not in general contribute significantly to piping responses. BPC has demonstrated that where this mass is considered significant, due to numerous relatively large clamps on one system (the MSRVD lines), the mass has been included in the piping analysi

R | BPC has committed to rerun two calculations to include the missing support mass to demonstrate that their judgement is appropriate. Because BPC has stated that this clamp type (riser clamps) is representative of the heavier class of clamps used on the Hope Creek Project, such action is deemed sufficient to validate the BPC position.

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Project No. 10855-013
Page 1 of 2

RESOLUTION/COMPLETION REPORT

OR No. 144 Rev. 0 Date 6/27/85
R/CR No. 144 Rev. 0 Date 7/11/85
R/CR No. 144 Rev. 1 Date 7/18/85

1. Classification of Observation (by S&L):
   ____ Not significant to safety
   ____ Significant to safety
   X Additional Information required

2. Reviewee proposed resolution:

   See Sheet 2.

3. Reviewed resolution report by:

   S. Bhattacharya
   Discipline Group Supervisor — Date 7/17/85

   Bechtel Project Engineer — Date 7-18-85

4. Public Service Electric and Gas Company review:

   Chief Project Engineer — Date 7.18.85

5. S&L's disposition of Resolution/Completion Report:
   ____ Observation invalid and withdrawn.
   X Proposed resolution/future action acceptable, observation closed. See attached Completion Report.
   ____ Additional action to be taken by Reviewee (provide additional information).

6. Final classification of observation by Review Committee:
   X Not significant to safety
   ____ Significant to safety

7. Review Committee signatures:

   D. S. Taylor
   E Brough
   B Ashley
   L R Stanley

RESOLUTION/COMPLETION REPORT
(Continuation sheet)

OR No. 144 Rev. 0 Date 6/27/85
R/CR No. 144 Rev. 0 Date 7/11/85
R/CR No. 144 Rev. 1 Date 7/18/85

Response to Description of Observation

2. The nozzle loads provided in Technical Specification 10855-M-070(Q) were based on conservative estimates of upper allowable pipe strength. Actual nozzle loads obtained from appropriate piping analyses are lower than those of the Technical Specification. BPC has reanalyzed the SACS pump discharge nozzle flange bolts using the actual nozzle loads (refer to Calculation 678-95(Q)). The revised bolt stress for the faulted condition is 20.8 ksi against the normal allowable of 25.0 ksi. Therefore, the design is adequate and the FSAR and Technical Specification requirements are met. Calculation 678-95(Q) will be provided under separate cover by July 24, 1985.

Response to Recommendation for Resolution

4.a As shown in 2 above, reanalysis of the SACS pump flange bolts shows that the FSAR and technical specification requirements are met. BPC will revise the seismic package for M-070(Q) to include Calculation 678-95(Q), by August 2, 1985.

4.b Other pump flange bolt designs for similar equipment will be reviewed as the final piping analysis is completed to ensure that the FSAR and Technical Specification requirements are met. The effort is scheduled to be completed by fuel load.

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Project No. 7212-30

COMPLETION REPORT

OR No. 144 Rev. 0 Date 6/27/85
R/CR No. 144 Rev. 1 Date 7/18/85
CR No. 144 Rev. 0 Date 8/2/85

Describe resolution/future action to close observation:

The BPC response to this observation is acceptable for the following reasons:

BPC has prepared Calculation 678-95(Q) which reanalyzes the SACS pump discharge nozzle flange bolts, using the actual piping reactions. The bolt stresses calculated using the actual piping reactions are less than the 25.0 ksi allowable.

BPC committed to revise the seismic Qualification Package by August 2, 1985 to include Calculation 678-95(Q).

BPC committed to review similar pump flange bolt designs when the final piping analysis are completed. This review is scheduled for completion by fuel load.

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Project No. 10855-013
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RESOLUTION/COMPLETION REPORT

OR No. 147 Rev. 0 Date 6/27/85
R/CR No. 147 Rev. 0 Date 7/8/85
R/CR No. 147 Rev. 1 Date 7/23/85
R/CR No. 147 Rev. 2 Date 7/31/85

1. Classification of Observation (by S&L):
   ____ Not significant to safety
   ____ Significant to safety
   _X_ Additional Information required

2. Reviewee proposed resolution:

   See Sheet 2.

3. Reviewee resolution report by:

   P Schmidt for SLB
   Discipline Group Supervisor — Date 7/31/85

   H W D Paterson
   Bechtel Project Engineer — Date 7/31/85

4. Public Service Electric and Gas Company review:

   W. Farley/jjg
   Chief Project Engineer — Date 7-31-85

5. S&L's disposition of Resolution/Completion Report:
   ____ Observation invalid and withdrawn.
   _X_ Proposed resolution/future action acceptable, observation closed. See attached Completion Report.
   ____ Additional action to be taken by Reviewee (provide additional information).

6. Final classification of observation by Review Committee:
   _X_ Not significant to safety
   ____ Significant to safety

7. Review Committee signatures:

   H. S. Taylor
   E B Brandt
   B Ashley

   R J Swain
   L R Stewart

RESOLUTION/COMPLETION REPORT
(Continuation sheet)

OR No. 147 Rev. 0 Date 6/27/85
R/CR No. 147 Rev. 0 Date 7/8/85
R/CR No. 147 Rev. 1 Date 7/23/85
R/CR No. 147 Rev. 2 Date 7/31/85

Response to Description of Observation

Potential seismic interaction affecting Seismic Category I structures, systems and components has been adequately addressed for the Hope Creek Project. The details are as follows:

1. Interaction between Category I Structures, Systems and Components

a. The interaction between electrical raceway, ductwork and instrumentation tubing has been addressed in the report "Evaluation of Clearance Requirements for Bulk Commodities for Hope Creek Generating Station", dated November, 1984. This report shows that, due to inherent design margin, these systems are capable of withstanding the effect of potential seismic interactions during the SSE without loss of function.

b. The acceptability of the as-built Category I piping and supports, valves, actuators and other line-mounted components for seismic interaction effects is to be confirmed during the Stress Walkdowns as required by Project Specification 10855-P-410(Q), Rev. 1. It should be noted that these walkdowns are performed by qualified field and/or resident engineers. Specification P-410(Q) will be revised to clarify the fact that seismic as well as thermal movements will be considered.

c. The acceptability of as-built HVAC dampers, actuators and instrumentation for seismic interaction effects is to be confirmed during the HVAC instrumentation walkdown. (See walkdown list attached to BPC letter BLP-17,299 dated 3/27/85.) The walkdown basis and criteria are in preparation. The walkdown will be completed prior to fuel load.

d. Review of seismic interaction of large Category I mechanical equipment, such as pumps, fans, tanks and diesel generators, is determined by engineering judgement to not be critical based on the following:

- Layout of each equipment is engineered in the home office such that the proximity of adjacent structures, systems or components will not results in seismic interaction which could unacceptably degrade the subject equipment from performing its safety-related functions.

RESOLUTION/COMPLETION REPORT
(Continuation Sheet)

OR No. 147 Rev. 0 Date 6/27/85
R/CR No. 147 Rev. 0 Date 7/8/85
R/CR No. 147 Rev. 1 Date 7/23/85
R/CR No. 147 Rev. 2 Date 7/31/85

- Their design features (weight, stiffness, etc.) provide them significant design margin to accommodate impact due to smaller and/or more flexible commodities;

- The as-built anchorage is verified with design drawing by Bechtel (SFHO) engineers from field walkdown per Specification C-406. Should any concern arise from these walkdowns, they are resolved on a generic basis.

Specification C-406 will be revised to clearly reflect the above.

e. Class 1E control panels, which are judged to be the most critical from the point of view of seismic interaction, have been evaluated for potential seismic interaction. Field walkdowns (Specification 10855-C-406) have been performed by Bechtel (SFHO) engineers for Balance of Plant (BOP) equipment and by GE personnel for the NSSS equipment. Field modifications have been issued as necessary. GE letter HCS-85-243, dated April 18, 1985, (Attachment 1) documents the results of GE's walkdown for NSSS racks and panels, which included an evaluation of clearances.

f. Seismic interaction between Category I structures has been addressed in FSAR Section 3.7.2.9.2.

2. Interaction between Category I and non-Category I Structures, Systems and Components (II/I review)

a. Seismic interaction between Category I and non-Category I structures has been addressed in FSAR Section 3.7.2.9.1.

b. Seismic interaction between Category I and non-Category I systems and components is evaluated via field walkdowns by the project resident engineering group. The details of the II/I program are contained in the Project Specification 10855-G-52(Q).

3. Audit by other Agencies

During the audit by the Institute of Nuclear Power Organizations (INPO) in June, 1984, this issue was reviewed. With INPO's recommendation, Item 1.a (above) was initiated. The balance of the seismic interaction program was found satisfactory to INPO.

Response to Recommendation for Resolution

Based on the above, potential seismic interaction affecting Seismic Category I structures, systems and components are addressed. Therefore, no further action is necessary.

OA No. 147 Rev. 0 Date 6/27/85
R/CR No. 147 Rev. 0 Date 7/8/85
R/CR No. 147 Rev. 1 Date 7-23-85
R/CR No. 147 Rev. 2 Date 7/31/85

GENERAL ELECTRIC
NUCLEAR ENERGY BUSINESS OPERATIONS
GENERAL ELECTRIC COMPANY • 175 CURTNER AVENUE • SAN JOSE CALIFORNIA 95125

HCS-85-243

April 18, 1985

RESPONSE: N/A

Mr. W. Mourer
Manager of Construction
Bechtel Construction, Inc.
P. O. Box "B"
Hancocks Bridge, NJ 08038

SUBJECT: INSTALLATION OF NEBO FURNISHED PANELS AND RACKS

Dear Mr. Mourer:

For two days this week two specialists have been reviewing the as-built conditions of NEBO furnished electrical control room panels and local racks. The study that they performed was a preliminary walk-down of the upcoming SQRT audit. The items listed below should be modified as they will become nonconformances during the final audit.

1. Control Room Panels - 137 ft. Elevation

   The following panels have been installed such that one side abuts a concrete wall with little clearance:

   H11-P608
   H11-P609
   H11-P611
   H11-P635

   Calculations show that under seismic loads, these panels could deflect sideways and impact the wall. This condition compromises the seismic qualification of these panels.

   ACTION: Bechtel should provide position attachment of these panels to the wall to preclude impacting of the panel under seismic loads.

2. Control Room Panels - 102 ft. Elevation

   Many of the following panels have been installed adjacent to one another without bolting them together:

H11-P617	H11-P623
H11-P618	H11-P628
H11-P620	H11-P631
H11-P621	H11-P640
H11-P622	H11-P641

NSF-1066

Calculations show that under seismic loads, these panels could deflect sideways and impact one another. This condition compromises the seismic qualification of these panels.

ACTION: Bechtel should inspect these panels and add bolts as required at the top and at the mid-elevation to tie these panels together in the side-to-side direction.

3. Local Racks

All local racks have been installed with metal shims under the base frame to aid in leveling the racks. Many of these racks have stacks of shims an inch or so high. These shims are held in place by friction only. It is possible to visualize that under seismic loads the shims might work their way loose and permit excessive vertical deflection of the rack. This condition would compromise the seismic qualification of the rack.

ACTION: Bechtel should provide a positive restraint for the shims, such as tack welding the shims together and to the base frame of the rack.

Please note that panels H11-P608, H21-P011 and H21-P026 have been selected by NRC for the SQRT audit the week of May 6, 1985. Completion of the above modifications for these panels and racks prior to May 6 would be desirable. Gus Kapondritis of Bechtel, San Francisco is also informing Bechtel site personnel of the desirability of making the above modifications on an expeditious schedule.

Very truly yours,

R. E. McKenna
Resident Site Manager

REM/bfb

cc: J. C. Larrew
C. Churchman
E. Logan
A. S. Kao
LB

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Project No. 7212-30
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COMPLETION REPORT

OR No. 147 Rev. 0 Date 6/27/85
R/CR No. 147 Rev. 2 Date 7/31/85
CR No. 147 Rev. 0 Date 8/2/85

Describe resolution/future action to close observation:

The response to Observation Report No. 147 is acceptable because:

BPC's report "Evaluation of Clearance Requirements for Bulk Commodities for Hope Creek Generating Station," dated November 1984, addresses seismic interactions between electrical raceway, ductwork and instrumentation piping.

BPC has committed to revise Specification 10855-P-410(Q) to reflect that the stress walkdown will address seismic as well as thermal interaction effects for Category I piping, supports, valves, actuators, and other line mounted components.

BPC has committed to have the HVAC instrumentation walkdown evaluate the acceptability of HVAC dampers, actuators, and instrumentation for seismic interaction effects. The criteria for this walkdown is in preparation. This walkdown is scheduled for completion prior to fuel load.

BPC's position is that seismic interaction of large Category I mechanical equipment (pumps, fans, tanks, diesel generators, etc.) is not critical. BPC has committed to revise Technical Specification 10855-C-406(Q) to document the basis for this position.

BPC has provided Calculation 678-81(Q), Rev. 0, dated 3/25/85, which documents the basis for the minimum clearance requirements for Class 1E balance of plant panels/cabinets defined in Technical Specification 10855-C-406(Q).

BPC has provided GE letter HCS-85-243, dated April 15, 1985, which documents that NSSS panels and racks have been evaluated for seismic interaction effects.

FSAR Sections 3.7.2.9.1 and 3.7.2.9.2 address seismic interactions between Category I to Non-Category I structures and Category I to Category I structures.

Seismic interactions between Category I and Non-Category I systems and components are addressed via the II/I Program controlled by Specification 10855-G-52(Q).

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Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Project No. 10855-013

RESOLUTION/COMPLETION REPORT

OR No. 149 Rev. 0 Date 6/27/85
R/CR No. 149 Rev. 0 Date 7/9/95
R/CR No. 149 Rev. 1 Date 7/16/85
R/CR No. 149 Rev. 2 Date 8/1/85

1. Classification of Observation (by S&L):
   ____ Not significant to safety
   ____ Significant to safety
   _X_ Additional Information required

2. Reviewee proposed resolution:

   See Sheet 2.

3. Reviewee resolution report by:

   K Cooke
   Discipline Group Supervisor — Date 8/1/85

   KB/WJDPeeler
   Bechtel Project Engineer — Date 8/1/85

4. Public Service Electric and Gas Company review:

   W. Gailey
   Chief Project Engineer — Date 8-1-85

5. S&L's disposition of Resolution/Completion Report:
   ____ Observation invalid and withdrawn.
   _X_ Proposed resolution/future action acceptable, observation closed. See attached Completion Report.
   ____ Additional action to be taken by Reviewee (provide additional information).

6. Final classification of observation by Review Committee:
   _X_ Not significant to safety
   ____ Significant to safety

7. Review Committee signatures:

   H. S. Taylor
   E B Brag
   B Clarke

   R J Swain
   L Rittenhouse

RESOLUTION/COMPLETION REPORT
(Continuation sheet)

OR No. 149 Rev. 0 Date 6/27/85
R/CR No. 149 Rev. 0 Date 7/9/85
R/CR NO. 149 Rev. 1 Date 7/16/85
R/CR No. 149 Rev. 2 Date 8/1/85

4.a The step load values shown in Appendix E to Specification M-018(Q) were developed in 1982 by arithmetically summing the electrical loads known to be applied to the Emergency Diesel Generators (EDG) at various time intervals. The step load values used were for EDG "D" which represents the most conservative step load values for all EDGs. This information subsequently evolved into FSAR Table 8.3-1.

These step load values were used by the EDG manufacturer to perform the EDG load acceptance tests. These tests were neither an exact duplication of the actual plant conditions nor the Appendix E load table, due to the limitations on the type and sizes of loads available for test purposes. Further, the tests served as an indication prior to shipment of the EDG's ability to accept loads of the magnitude and sequence specified.

Based on the above discussion and the fact that the EDGs have been manufactured and are currently installed, no additional analysis will be prepared to support the information shown in Appendix E. (Engineering analysis indicates no significant differences between Appendix E values and the current step loading profile.)

Final assurance of the EDG sequential load acceptance capability will be obtained by on-site testing of the EDG using actual plant loads, as stated in response to FSAR Question 430.15.

4.b Specification M-018(Q) was prepared in accordance with EDP 4.49. In particular, Section 3.2 requires the responsible discipline group supervisor to ensure subsequent coordination between disciplines.

Appendix E was developed jointly between the Mechanical and Electrical disciplines. Memos were used to transmit load data between the groups and Appendix E is signed by representatives of both disciplines. Appendix E is based on an EDG load table, which became FSAR Table 8.3-1. That table in turn is based on manufacturer's data, specifications, calculations, and other sources of information available to the engineers on the project.

A survey of mechanical specifications (24 of 120) which contain electrical components was performed to determine if electrical input criteria are supported by calculations. No cases of unsupported criteria were identified. Therefore, it is concluded that this was an isolated occurrence. (2)

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Hope Creek Generating Station - Unit 1

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COMPLETION REPORT

OR No. 149 Rev. 0 Date 6/27/85
R/CR No. 149 Rev. 2 Date 8/1/85
CR No. 149 Rev. 0 Date 8/2/85

Describe resolution/future action to close observation:

The BPC resolution is acceptable for the following reasons:

BPC has explained the process that was used to develop the sequential loading values shown in the Emergency Diesel Generator (EDG) Procurement Specification Appendix E. This process was effective, in this instance, as evidenced by the fact that the current EDG sequential loading values are not significantly different from those indicated in Appendix E. The basis for the Appendix E values was an informal calculation that subsequently evolved into FSAR Table 8.3-1. Although BPC has not formalized this calculation, (i.e., it is not prepared, checked, reviewed and approved) we agree with BPC's position that no additional analysis is warranted at this time, because final assurance of the EDG sequential load acceptance capability will be obtained by on-site testing of the EDG using actual plant loads.

The maximum continuous load applied to the EDG is adequately addressed by Calculation 9(Q).

BPC has identified EDP 4.49 as the procedure under which the specification and its appendix were reviewed and approved. In this instance, it appears that this procedure was not effective in ensuring that adequate (formal) backup documentation existed to support specific technical data included in a safety-related procurement specification.

To provide assurance that this was an isolated occurrence, BPC performed a survey of a sample of mechanical specifications which contain electrical components to determine if electrical input criteria was supported by calculations. This survey identified no cases of unsupported criteria.

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Hope Creek Generating Station - Unit 1

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RESOLUTION/COMPLETION REPORT

OR No. 165 Rev. 0 Date 6/27/85
R/CR No. 165 Rev. 0 Date 7/23/85
R/CR No. 165 Rev. 1 Date 7/30/85

1. Classification of Observation (by S&L):
   ____ Not significant to safety
   ____ Significant to safety
   __x__ Additional Information required

2. Reviewee proposed resolution:

   See attached responses to observations.

3. Reviewee resolution report by:

   S. Bhattacharya
   Discipline Group Supervisor — Date 7/30/85

   BNKapandritis
   Bechtel Project Engineer — Date 7/30/85

4. Public Service Electric and Gas Company review:

   W. Gailey
   Chief Project Engineer — Date 7/30/85

5. S&L's disposition of Resolution/Completion Report:
   ____ Observation invalid and withdrawn.
   __X__ Proposed resolution/future action acceptable, observation closed. See attached Completion Report.
   ____ Additional action to be taken by Reviewee (provide additional information).

6. Final classification of observation by Review Committee:
   __X__ Not significant to safety
   ____ Significant to safety

7. Review Committee signatures:

   H. S. Taylor
   E B Braych
   B A Ele
   R L Gwain
   L R Stewart

RESOLUTION/COMPLETION REPORT
(Continuation sheet)

OR No. 165 Rev. 1 Date 6/26/85
R/CR No. 165 Rev. 0 Date 7/23/85
R/CR No. 165 Rev. 1 Date 7/30/85

Response to Description of Observation

2. a. The pipe whip restraints are designed for the pipe break jet forces which are provided by the nuclear group, as modified for design gaps and restraint locations, based on coordination with plant design group. The restraints will be evaluated based on their final configuration, as-built piping geometry and confirmed break locations in the final assessment program, as described in R/CR 58. The specific concerns, identified in OR 165, are dependent on the final as-built information and will be addressed in the final assessment program.

b. Calculation 625-224(Q), sheets 5 through 26, includes dynamic load factor and shows that all members and connections have sufficient design margin based on a limiting basis sample.

c. No increase in reaction was considered due to possible higher material strengths in the design of pipe whip restraints. However, based on Calculations 624-20(Q), 624-28(Q) and 625-224(Q), the supporting structures and connections have sufficient design margins to accommodate the additional design loads.

d. For information on the documentation of the hazards review program, refer to R/CR 58.

e. The resistance values for restraints PR-41 and PR-49 exceed 1.44 times Fj (steady state jet force of the pipe) as summarized below:

i. Refer to civil Calcs 625-03(Q), sheet 20 for PR-41
resistance = 1134^k > 1.44 x Fj
= 1.44 x 580
= 835.2^k

ii. Refer to civil Calcs 625-03(Q), sheet 50 for PR-49
resistance = 1013^k > 1.44 x Fj
= 1.44 x 580
= 835.2^k

See Calculation 625-224(Q), sheets 5 through 13 for the ratio of resistance/Fj for a sample of 106 pipe whip restraints inside the drywell.

f. It is conservative to assume radial girders as simply supported for the calculation of resistance, when utilized as whip restraints. The radial girder end at the drywell side is simply supported. At the bioshield end the flanges are cut short and the webs are welded to the bioshield with full penetration welds. The stiffeners in the bioshield are coincident with the girder webs. A calculation is provided to show the adequacy of girder connection and the local effects on the bioshield due to shear and fixed end moment. See Calculation 625-224(Q) Rev. 0, sheets 28 through 34.

RESOLUTION/COMPLETION REPORT
(Continuation sheet)

OR No. 165 Rev. 0 Date 6/26/85
R/CR No. 165 Rev. 0 Date 7/23/85
R/CR No. 165 Rev. 1 Date 7/30/85

g. Calculation 625-03(Q) sheets 20 through 22 for PR-41 addresses the reduction in plastic capacity due to shear and axial force. However, the effects of interaction between axial/shear force on the plastic moment capacity during successive hinge formation is not addressed in referenced calculations. By comparison of the magnitude of axial/shear force during successive hinge formation with that of ultimate axial/shear capacity of the box section, it can be seen that the effects are very small and may be judged negligible. A separate analysis will be performed to confirm this judgement.

h. The calculations for resistance are based on the assumption of symmetrical loading on a simply supported beam, and hinges at two points form at the same time. This is an isolated case and is not repeated in any other calculation. The Calculation 625-224(Q) Rev. 0, sheets 35 through 42 are made based on a single hinge formation and it is found that the resistance is 1016^k compared to 1013^k as calculated in the referenced calculations.

i. The reduction on the plastic moment capacity of radial beams (18" x 24" box sections) is very small (3% maximum) and is not addressed in calculations. See Calculation 625-224(Q) Rev. 0, sheets 43 through 45.

j. Most of the pipe whip restraints are typical rigid frames having constant cross sections. The restraints are checked in the impact direction for pipe break load with design gap, and supporting structures are designed for maximum reactions based on the resistance of the frames. The stability load of 20% Fj (see Section 2.2 of Calculation 625-21(Q)), applied as static load in other than impact direction in the plane of the restraints is very small compared to the jet force/gap effects of the frames and judged to be insignificant.

k. For information on the documentation of the hazards review program, refer to R/CR 58.

l. Calculations 625-03(Q), sheets 67 through 70 are performed for the worst case basis (two bay frame) inside drywell and show that the effect of seismic loads are negligible. For beams at el. 121'-9", when used as whip restraints, seismic loads are considered in calculating resistance of restraints. This is shown in Calculation 624-28(Q), Rev. 5. Outside drywell walkdown is being performed to identify the critical restraints.

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Hope Creek Generating Station - Unit 1

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RESOLUTION/COMPLETION REPORT
(Continuation sheet)

OR No. 165 Rev. 0 Date 6/26/85
R/CR No. 165 Rev. 0 Date 7/23/85
R/CR No. 165 Rev. 1 Date 7/30/85

m. Drawing P-3003-1 shows four gaps as listed below:

Gaps	1	2	3	4
PR-48	4-1/2"	2-7/16"	4-5/16"	3-1/4"
PR-49	4-5/16"	2-7/16"	4-1/2"	3-1/4"

The impact direction for these restraints is vertically up in the direction of shim No. 2. At the time when pipe whip restraints were being designed, the impact directions were determined by Civil based on piping isometrics showing preliminary break locations. However, final impact directions will be verified with Plant Design and Nuclear groups.

For the above listed restraints the design gap in shim direction No. 2 is 2-7/16". However, civil Calculation 625-03(Q), sheet 50 and Calculation 624-28(Q), sheet 10 conservatively assume a larger gap of 3-1/4".

n. Calculation 624-28(Q), sheet 10 calculates the resistance assuming a hinge formation in the center of the beam. Based on newer criteria subsequent calculations (625-03(Q), Sheet 50) were performed to show a ductility ratio equal to 7; however, the above calculation will be modified and cross referenced for clarification. See also response to Item 'h'.

o. For information on the documentation of the hazards review program, refer to R/CR 58.

p. The beam sizes for the structural steel floor framing at el. 99'-7 1/2" between AZ 254° and 248° were based on comparison with similar beams located in other areas and subjected to similar loading. However, the final design will be reconciled under the Load Verification Program.

q. For information on the documentation of the hazards review program, refer to R/CR 58.

r. Lateral forces perpendicular to the thrust force are not addressed in our calculations because the friction between pipe and frame will be sufficient to hold the frame in a stable condition. However, based on final break location assessment, stability of pipe/pipe whip restraint will be addressed.

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Hope Creek Generating Station - Unit 1

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RESOLUTION/COMPLETION REPORT
(Continuation sheet)

OR No. 165 Rev. 0 Date 6/26/85
R/CR No. 165 Rev. 0 Date 7/23/85
R/CR No. 165 Rev. 1 Date 7/30/85

s. FCR C-11831 for PR-41 is identical to earlier received FCR C-10825 except that the bracket elevation is revised from 124'-3" to 124'-2", and PR-41 is angled at 31.5° instead of 30° to the horizontal. The Calculation 624-37(Q) Rev. 3, sheets 86 through 90 reflects the changes in the restraint design as per FCR C-10825. The subsequent minor changes as shown in FCR C-11831 have insignificant effect on the design of the restraint.

FCR C-12901 for PR-49 documents the as built condition of the restraint. Civil Calculation 625-03(Q) shows the location of the restraint with an offset angle of 4°33' from normal to the radial girder. The angle is changed from 4°33' to 3°47' per FCR C-12901. This offset will not affect the overall design of the restraint, therefore it is accepted by engineering judgement and is not addressed in our calculations.

Response to Recommendation for Resolution

4. a. The observations have been addressed with specific reference to the calculations as applicable. In those cases where interdiscipline coordination was involved, the coordination process was described. In the cases where questions on design methodology were raised, justification was given for the methodology that was used. Therefore, no revision to calculations are deemed necessary beyond the ongoing work in progress.

b. Generic justification has been given for those observations which were not specific to a unique restraint. Therefore, assurance has been given that these observation concerns are addressed for other pipe restraints.

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Project No. 7212-30

COMPLETION REPORT

OR No. 165 Rev. 0 Date 6/27/8
R/CR No. 165 Rev. 1 Date 7/30/8
CR No. 165 Rev. 0 Date 8/2/85

Describe resolution/future action to close observation:

The BPC resolution is acceptable for the following reasons:

BPC will include a pipe break analysis as part of the Final Hazards Assessment Program analysis review. This analysis will address the impack of piping geometry, length of moment arm, pipe whip restraint geometry, and the other concerns addressed in this observation. This analysis will also address the potential movement of pipe along its length as it affects the stability of pipe whip restraints in the direction normal to the plane of pipe whip restraints. The details of this hazards review are provided in the response to Observation Report No. 58.

Sample calculations have been prepared by BPC to show that the non-yielding structural elements supporting pipe whip restraints are capable of resisting the restraint reaction when a dynamic load factor is taken into consideration. These calculations also address the possible increase in restraint resistance due to a higher actual yield strength of the pipe whip restraint material. This is accounted for by utilizing only the minimum specified yield strength of the supporting structure, the available design margin in the supporting structure and the reportedly small (approximately 10%) variation between the actual and minimum specified yield strength of the pipe whip restraint material.

BPC has performed sample calculations to show the minimum resistance of the pipe whip restraint is at least 1.4 times the jet force as required by Calculation 625-21(Q), Rev. 0, paragraph 3.7.

BPC has performed new calculations which account for the end fixity of the containment radial beams used as restraints and has found the connections adequate.

The effect of shear and axial loads due to the successive stages of loadings on the plastic moment capacity of the pipe whip restraint is judged to be negligible. A separate analysis will be performed to confirm this judgement.

The hinge mechanism used on page 50, Calculation 625-03(Q) has been corrected and found to have minimal impact on the design of the pipe whip restraint.

The effect of the stability load, defined as 20% of Fj, applied as a static load in the plane of the restraint only is judged to have no impact on the design due to the symmetry of the restraints.

COMPLETION REPORT

OR No. 165 Rev. 0 Date 6/27/8
R/CR No. 165 Rev. 1 Date 7/30/8
CR No. 165 Rev. 0 Date 8/2/85

Describe resolution/future action to close observation:

The effect of self-weight excitation of pipe whip restraints has been addressed by BPC for the worst case basis and has been shown to be negligible. For beams used as pipe whip restraints, self-weight excitation is considered.

BPC has shown that the gap utilized in the calculations on page 50 of Calculation 625-03(Q) and page 10 of Calculation 624-28(Q) is a conservative value.

The new calculations which show that the actual ductility ratio is less than 10 will be referenced in the original calculation.

The effect of the two accumulator tanks on the design of the pipe whip restraint will be confirmed as part of the hazards review.

The design of supporting beams for restraint HPCI-R4 will be formally addressed by BPC as part of the Final Load Verification Program.

The effect of FCRs C-11831 and C-12901 was evaluated on the basis of engineering judgement to be insignificant and formal calculations were not considered necessary.

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Project No. 10855-013

RESOLUTION/COMPLETION REPORT

OR No. 186 Rev. 0 Date 6/28/85
R/CR No. 186 Rev. 0 Date 7/22/85
R/CR No. 186 Rev. 1 Date 7/31/85

1. Classification of Observation (by S&L):
   ____ Not significant to safety
   ____ Significant to safety
   _X_ Additional Information required

2. Reviewee proposed resolution:

   See Sheet 2.

3. Reviewee resolution report by:

   B. Schultz/SB
   Discipline Group Supervisor — Date 7/31/85

   KB/WDP
   Bechtel Project Engineer — Date 7/31/85

4. Public Service Electric and Gas Company review:

   W. Gailey/MM
   Chief Project Engineer — Date 7/31/85

5. S&L's disposition of Resolution/Completion Report:
   ____ Observation invalid and withdrawn.
   _X_ Proposed resolution/future action acceptable, observation closed. See attached Completion Report.
   ____ Additional action to be taken by Reviewee (provide additional information).

6. Final classification of observation by Review Committee:
   _X_ Not significant to safety
   ____ Significant to safety

7. Review Committee signatures:

   D. S. Taylor
   E. B. Brandt
   B. Mehle
   R. A. Newton

RESOLUTION/COMPLETION REPORT
(Continuation sheet)

OR No. 186 Rev. 0 Date 6/28/85
R/CR No. 186 Rev. 0 Date 7/22/85
R/CR No. 186 Rev. 1 Date 7/31/85

Response to Description of Observation

2.a. 1) The radial shears determined by meridional moments from dead load, live load, abnormal pressure, thermal load, tornado and seismic loads were considered to be small by inspection. To verify this, the radial shear has been investigated per Calculation 623-76(Q), pages 159 and 160, and transmitted to you via CCN 284546 on 6/27/85. This calculation indicates the concrete shear capacity is adequate and substantiates the engineering judgement used.

2.a 2) The factored operating thermal load enters in load combinations which do not govern. One of these load combinations is shown in Calculation 623-76(Q), page 158, transmitted to you via CCN 284390 on 6/24/85.

The rebar required in Calculation 623-76(Q), table on page 122, has been determined by factored load combinations. The temperature stretching reinforcement in the table is determined by accidental temperature which has no load factors.

It is conservative to use these steel areas both for accidental and for factored operating thermal loads, since $T_a \approx 0.75 \times 1.7\ T_o = 1.28\ T_o$ (see Calculation 623-76(Q), pages 67, 68 and 69 for substantiation of this relationship).

2.a 3) The effects of thermal expansion of floor slabs relative to the cylindrical wall were considered small by inspection. Calculation 623-76(Q), Sheets 161-164 will be revised to consider the compatibility between the thermal expansion of the slab and the secondary containment wall. Moments induced due to the fixity of the slabs on the cylinder due to thermal and other appropriate loads will be reviewed under the Load Verification Program. /1

2.a 4) The reinforcement steel area of 0.98 in^2/ft in the hoop direction for accident pressure has been combined with the reinforcement required for other loadings in Calculation 623-76(Q), pages 155 to 157, transmitted to you with CCN 284390 on 6/24/85.

2.b 1) and 2.b. 2) The 3 load combinations considered combined with the accidental temperature analysis (in Calculation 623-66(Q), pages 68 to 71, transmitted to you via CCN 284390 on 6/24/85) provide an assessment for all load cases.

The seismic load in these load combinations is the S.R.S.S. of two lateral and one vertical seismic forces.

The computer output, Calculation 623-67(Q) lists moments and forces determined by the three load combinations considered

RESOLUTION/COMPLETION REPORT
(Continuation Sheet)

OR No. 186 Rev. 0 Date 6/28/85
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and has two additional cases, 4 and 5, that give envelopes of the maximum and minimum values.

Also, examples of additional load combinations that do not govern are shown on Calculation 623-66(Q), sheets 83-85. These calculations will be revised to address a negative value for the combined 3 directional seismic loading in the appropriate load combinations.

2.b 3) EDS report, Rev. 2, has been used in the original calculations. The EDS report has since been revised to Revision 5 of "Impell Seismic Analysis Report SED-76-017". The change in the North-South acceleration from 0.32g to 0.55g has negligible effect on the rebar requirement as can be seen from Calculation 623-66(Q), sheets 73 to 82. This will be further addressed in our Load Verification Program.

2.b 4) The radial shear is evaluated in the computer analysis 623-67(Q) and by inspection does not contribute to critical stresses. See Calculation 623-66(Q), Sheet 74. Therefore, concrete shear capacity is adequate.

2.b 5) The analysis and design forces of the dome and cylindrical wall at the junction point have been reconciled. The model for the dome computer analysis shown in Calculation 623-66(Q) page 22, includes the cylindrical wall down to elevation 201'-0". This analysis thus overlaps the reactor building cylindrical wall analysis by 40 feet since the cylinder wall was investigated to El. 250'-0". This assures an integrated analysis between the dome and the cylinder wall. Both analytical models were reviewed and the worst-case effects from the overlapping area were used in rebar calculations. Though the forces and moments are smaller above elevation 201'-0" than below, the same rebars have been provided and extended to the spring line of the dome at elevation 250'-0" as a conservatism.

Response to Recommendation for Resolution

4. Where required, calculations were revised to clarify design intent or to back up engineering judgement.

Reconciliation of the analysis to any revised loads will be done under existing programs. (E.g. Polar Crane.)

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Project No. 7212-30

COMPLETION REPORT

OR No. 186 Rev. 0 Date 6/28/85
R/CR No. 186 Rev. 1 Date 7/31/85
CR No. 186 Rev. 0 Date 8/2/85

Describe resolution/future action to close observation:

The BPC resolution is acceptable for the following reasons:

Additional calculations have been prepared by BPC to confirm the adequacy of the secondary containment for radial shear, thermal expansion of floor slabs relative to the cylindrical wall, and reversible seismic loads.

The design basis load combinations used have been shown to bound the load combinations specified in the FSAR.

BPC clarified that the use of an overlapping portion in the individual analytical models for the cylinder and dome insures the use of adequate design forces at the cylinder-dome junction.

The difference between the magnitude of seismic force used in the design of the dome and that given in the current EDS seismic report has been shown not to affect the design adequacy of the dome.

The change in seismic loads as well as the moments induced by the fixity of the slabs on the cylinder due to thermal and other loads will be reviewed under the Load Verification Program.

AUG 2 [illegible]

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Project No. 10855-013

RESOLUTION/COMPLETION REPORT

OR No. 214	Rev. 0	Date 7/1/85
R/CR No. 214	Rev. 0	Date 7/12/85
R/CR No. 214	Rev. 1	Date 7/19/85
R/CR No. 214	Rev. 2	Date 7/3/85
R/CR No. 214	Rev. 3	Date 8/2/85

1. Classification of Observation (by S&L):
   ____ Not significant to safety
   ____ Significant to safety
   _X_ Additional Information required

2. Reviewee proposed resolution:

   See Sheet 2.

3. Reviewee resolution report by:

   K Cooke
   Discipline Group Supervisor — Date 8/2/85

   [signature]
   Bechtel Project Engineer — Date 8/2/85

4. Public Service Electric and Gas Company review:

   W. Gailey
   Chief Project Engineer — Date 8-2-85

5. S&L's disposition of Resolution/Completion Report:
   ____ Observation invalid and withdrawn.
   _X_ Proposed resolution/future action acceptable, observation closed. See attached Completion Report.
   ____ Additional action to be taken by Reviewee (provide additional information).

6. Final classification of observation by Review Committee:
   _X_ Not significant to safety
   ____ Significant to safety

7. Review Committee signatures:

   H. S. Taylor
   [signature]
   [signature]
   [signature]
   [signature]

RESOLUTION/COMPLETION REPORT
(Continuation sheet)

OR No. 214 Rev. 0 Date 7/1/85
R/CR No. 214 Rev. 0 Date 7/12/85
R/CR No. 214 Rev. 1 Date 7/19/85
R/CR No. 214 Rev. 2 Date 7/30/85
R/CR No. 214 Rev. 3 Date 8/2/85

Response to Description of Observation

2. Calculation 15(Q) Case IV A shows when plant is running under normal condition with only one station service transformer available and grid voltage at its minimum of 0.98 P.U. At this time the steady state voltage at a 480 V MCC is 0.943. As per Design Criteria D4.1, Bechtel used the minimum 480 V MCC voltage of 0.9 P.U. for Calculation 17A(Q). This OR states the minimum bus voltage of 0.7848 P.U. at MCC per case V C of Calculation 15(Q). This transient voltage dip is due to a very conservative scenario when: a) grid voltage is at its lowest of 0.98 P.U.; b) only one station service transformer is available; c) LOCA occurred and already 4 RHR pumps are running; d) all 4 core spray pumps start simultaneously. This transient voltage dip will start recovering progressively with the time of acceleration of all four core spray pumps. The time for complete acceleration of RHR and core spray pump motors is 1.5-2.0 and 2.5-3.5 seconds, respectively. There is no calculation which shows the recovery time of voltage on the bus during starting of heavy load simultaneously. The purpose of the load flow study is to demonstrate that other motor loads and valve actuator motors have enough terminal voltage (80% for motors and 75% for MOVs) when the largest motors are started simultaneously.

The actual loading of the ECCS loads on to the DG are not as severe as the conditions postulated in Case IV A of Calculation 15(Q). In the event of a LOCA signal, the MOV MCCs are energized immediately upon the closure of the DG breaker (if a LOP had occurred) or they had remained energized in the event of a LOCA without LOP. In any event, those safety-related MOVs required to actuate under LOCA conditons would be energized six seconds (minimum) before the transient brought about by the start of the four Core Spray Pumps. Activated valve contactor coils will have no difficulty in staying picked up during the transient, and the valves would complete their safety functions in the required time. The discussion in 4.b provides the rationale on the valves during the voltage transient.

Response to Recommendation for Resolution

4.a The maximum control circuit cable lengths were based upon a steady state bus voltage. There is no calculation for the time period to recover voltage to at least .9 P.U. under the conditions stated in Case VC of Calculation 15(Q). However, it is estimated that 3.5 seconds would be the recovery time based upon the motor accelerating time of the core spray pump. The discussion in 4.b justifies the impact during the recovery period.

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

RESOLUTION/COMPLETION REPORT
(Continuation sheet)

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R/CR No. 214 Rev. 3 Date 8/2/85

4.b An analysis of every Class 1E valve was performed to show that the particular design characteristics of the valves do not prevent the safety function of the emergency systems because each of all the Class 1E valves are enveloped by one of the following: 1

- o all containment isolation valves function prior to the subject system voltage transient;
- o certain valves have long operation times, of which additional time delay has no impact on the mechanical system;
- o the mechanical system for various short operating stroke time valves has sufficient flow requirements based upon less than 100% opening or closing of the valves;
- o in the particular case VC of Calculation 15(Q), the MCC that had a .7848 P.U. voltage does not contain any valves which require change in position at the subject system voltage transient;
- o the valves that do require to be functional during the subject system voltage transient are powered from MCCs in the Reactor Building. These MCCs have a system voltage greater than the minimum pickup voltage of the motor starter for these valves.

This analysis consists of a tabulation of all the Class 1E valves with an identification of at least one of above design characteristics shown for each valve. See the attachment. 3

4.c There are no corrective actions necessary.

4.d There is no violation of engineering design procedures in this particular observation.

The design control process utilized calculations to determine bus voltage in conjunction with engineering judgement on the impact of those calculations. There was no violation of the EDPs on design calculations.

ATTACHMENT TO R/CR No. 214, REVISION 3

An analysis of each Class 1E MOV was performed per Part 4.b of the resolution. The results of the analysis are shown on the following tabulation which is arranged by Class 1E 480V AC MCCs that supply power to MOVs followed by a listing of MOVs in the same order as shown on the applicable MCC drawings. The particular design characteristic determined to be most applicable for each MOV is identified as Category 1, 2, 3, 4 or 5 which corresponds to the Part 4.b definition as follows:

Category 1

All containment isolation valves function prior to the subject system voltage transient;

Category 2

Certain valves have long operation times, of which additional time delay has no impact on the mechanical system;

Category 3

The mechanical system for various short operating stroke time valves has sufficient flow requirements based upon less than 100% opening or closing of the valves;

Category 4

In the particular case VC of Calculation 15(Q), the MCC that had a .7848 P.U. voltage does not contain any valves which require change in position at the subject system voltage transient;

Category 5

The valves that do require to be functional during the subject system voltage transient are powered from MCCs in the Reactor Building. These MCCs have a system voltage greater than the minimum pickup voltage of the motor starter for these valves.

MCC 10B212

VALVE NO.	CATEGORY
1BE-HV-F001A	1
1BC-HV-F003A	5
1BG-HV-F001	1
1BC-HV-F004A	1
1BE-HV-F004A	5
1BC-HV-F007A	1
1BC-HV-F011A	1
1BE-HV-F005A	1
1BE-HV-F015A	1
1BC-HV-F017A	1
1FD-HV-F003	1
1BC-HV-F016A	1
1ED-HV-2598	5
1ED-HV-2599	5
1BC-HV-F026A	5
1BC-HV-F027A	1
1BE-HV-F031A	1
1BC-HV-F047A	5
1BC-HV-F048A	5
1KL-HV-5152A	1
1AE-HV-F032A	5
1BC-HV-F103A	5
1BC-HV-F104A	5
OBN-HV-2069	5
1FD-HV-4922	5
1EG-HV-2314A	5
1EG-HV-7921A	5
1EG-HV-2317A	5
1BJ-HV-4803	5
1BJ-HV-4804	1
1EC-HV-4689A	5
1SK-HV-4957	1
1SK-HV-5018	1
1EC-HV-4647	5
1EG-HV-2446	5
1BC-HV-5055	5

VALVE NO.	CATEGORY
1EG-HV-7922A	5
1EA-HV-2356A	5
1EA-HV-2357A	5
1EA-HV-2371A	5
1EG-HV-2491A	5
1EG-HV-2496A	5
1EG-HV-2512A	5
1GS-HV-5741A	5
1GS-HV-4955A	1
1GS-HV-4959A	1
1GS-HV-4966A	1
1GS-HV-5019A	1
1GS-HV-5050A	1
1GS-HV-5054A	1
1AB-HV-F016	1
1KL-HV-5148	1
1BC-HV-F024A	1
1BH-HV-F006A	5
1BG-HV-F034	5
1EA-HV-2234	5
1EA-HV-2236	5
1KL-HV-5172A	5
1FD-HV-F075	1
1EA-HV-2203	5
1EE-HV-4652	1
1EG-HV-2522A	5
1EE-HV-4680	1

MCC 10B222

VALVE NO.	CATEGORY
1BE-HV-F001B	1
1BC-HV-F003B	5
1KL-HV-5126B	1
1HB-HV-F004	1
1FC-HV-F008	1
1HB-HV-F020	1
1BC-HV-F004B	1
1BC-HV-F006B	5
1BE-HV-F004B	5
1BC-HV-F007B	1
1BC-HV-F011B	1
1BE-HV-F005B	1
1BE-HV-F015B	1
1BC-HV-F017B	1
1GS-HV-5741B	5
1BC-HV-F016B	1
1BC-HV-F021B	1
1BC-HV-F024B	1
1KC-HV-3408M	5
1BC-HV-F026B	5
OAP-HV-2073	5
1EA-HV-F073	5
1BC-HV-F027B	1
1BE-HV-F031B	1
1BC-HV-F047B	5
1BC-HV-F048B	5
1BC-HV-F052B	5
1ED-HV-2553	1
1ED-HV-2555	1
1EE-HV-4681	1
1EE-HV-4679	1
1EG-HV-2447	5
1HB-HV-5262	5
1HB-HV-5275	5
1EA-HV-2238	5
1KA-HV-7626	5
1KL-HV-5172B	5
1KB-HV-7629	5
1EC-HV-4689B	5
1BC-HV-4428	5

VALVE NO.	CATEGORY
1AE-HV-F032B	5
1BC-HV-F103B	5
1BC-HV-F104B	5
1BC-HV-F075	5
1AN-HV-2600	5
1EG-HV-2314B	5
1EG-HV-7921B	5
1EG-HV-2317B	5
1EG-HV-7922B	5
1EA-HV-2356B	5
1EA-HV-2357B	5
1EA-HV-2371B	5
1EG-HV-2491B	5
1EG-HV-2496B	5
1EG-HV-2512B	5
1BC-HV-4421	5
1GS-HV-4955B	1
1GS-HV-4959B	1
1EC-HV-4648	5
1GS-HV-4966B	1
1GS-HV-5019B	1
1GS-HV-5050B	1
1GS-HV-5054B	1
1FC-HV-F062	1
OAP-HV-2072	5
1EA-HV-2204	5
1BC-HV-5055B	5

MCC 10B232

VALVE NO.	CATEGORY
1BE-HV-F001C	1
1KL-HV-5126A	1
1AB-HV-F071	5
1FD-HV-F079	1
1AB-HV-3631A	5
1BC-HV-F004C	1
1EA-HV-2355A	5
1EG-HV-2452A	5
1EG-HV-2320A	5
1BC-HV-F007C	1
1EG-HV-2453A	5
1BC-HV-F010A	1
1EG-HV-2321A	5
1BC-HV-F017C	1
1EG-HV-2494A	5
1AE-HV-4144	5
1KL-HV-5124A	5
1BJ-HV-4865	1
1BJ-HV-4866	1
1BC-HV-4420A	5
1GS-HV-4965A	1
1EA-HV-2207	5
1EA-HV-2346	5
1AB-HV-3631B	5
1GS-HV-4983A	1
1GS-HV-4984A	1
1GS-HV-5022A	1

VALVE NO.	CATEGORY
1HB-HV-F019	1
1FD-HV-F100	1
1GS-HV-5052A	1
1BF-HV-4005	5
1GS-HV-5053A	1
1KL-HV-5160A	5
1AB-HV-3631C	5
1KP-HV-5829B	5
1KP-HV-5834B	5
1KP-HV-5835B	5
1KP-HV-5836B	5
1EG-HV-2496C	5
1KP-HV-5837B	5
1GH-HV-5543	5
1KL-HV-5147	1
1GB-HV-9532-1	5
1GB-HV-9532-2	5
1HC-HV-5551	5
1AB-HV-3631D	5
1GB-HV-9531B-1	1
1GB-HV-9531B-2	1
1GB-HV-9531B-3	1
1GB-HV-9531B-4	1
1GS-HV-5057A	5
1FD-HV-F002	1

MCC 10B242

VALVE NO.	CATEGORY
1BE-HV-F001D	1
1BF-HV-3800A	1
1HB-HV-F003	1
1BC-HV-F015B	1
1BC-HV-F004D	1
1EA-HV-2355B	5
1EG-HV-2452B	5
1EG-HV-2320B	1
1BC-HV-F007D	1
1EG-HV-2453B	5
1BC-HV-F010B	1
1EG-HV-2321B	5
1BC-HV-F017D	1
1EG-HV-2494B	5
1KL-HV-5124B	5
1BC-HV-4439	5
1GS-HV-4965B	1
1BG-HV-F004	1
1BC-HV-F008	1
1AB-HV-F019	1
1BG-HV-F035	5
1GS-HV-4983B	1
1GS-HV-4984B	1
1GS-HV-5022B	1
1KL-HV-5152B	1
1FC-HV-F007	1
1FC-HV-F076	1
1KP-HV-5829A	5
1GS-HV-5052B	1

VALVE NO.	CATEGORY
1GS-HV-5053B	1
1KL-HV-5160B	5
1BC-HV-F040	5
1BG-HV-3980	5
1KP-HV-5834A	1
1Kp-HV-5835A	1
1KP-HV-5836A	1
1EG-HV-2496D	5
1KP-HV-5837A	1
1GS-HV-4951	5
1Sk-HV-4953	1
1AE-HV-F039	5
1BF-HV-3800B	1
1ED-HV-2554	1
1ED-HV-2556	1
1GB-HV-9531A-1	1
1GB-HV-9531A-2	1
1GB-HV-9531A-3	1
1GB-HV-9531A-4	1
1AB-HV-F067A	1
1AB-HV-F067B	1
1AB-HV-F067C	1
1AB-HV-F067D	1
1GS-HV-4963	5
1GS-HV-4974	1
1BH-HV-F006B	5
1FC-HV-F084	1
1SK-HV-4981	1
1KL-HV-5162	1
1GS-HV-5057B	5
1BC-HV-F023	1

MCC 10B411

VALVE NO.	CATEGORY
1BC-HV-F049	3
1BC-HV-F022	1

MCC 10B451

VALVE NO.	CATEGORY
1BC-HV-F006A	2
1BC-HV-F009	1
1BC-HV-F021A	1
1BC-HV-F052A	1

MCC 10B481:

1BC-HV-4420B	3
1BC-HV-F015A	1

MCC 10B553

VALVE NO.	CATEGORY
1EA-HV-2197A	4
1EA-HV-2198A	4
1EA-HV-2225A	4

MCC 10B563:

1EA-HV-2197B	4
1EA-HV-2198B	4
1EA-HV-2225B	4

MCC 10B573:

1EA-HV-2197C	4
1EA-HV-2198C	4
1EA-HV-2225C	4

MCC 10B583:

1EA-HV-2197D	4
1EA-HV-2198D	4
1EA-HV-2225D	4

△3

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Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Project No. 7212-30
Page 1 of 1

COMPLETION REPORT

OR No. 214 Rev. 0 Date 7/1/85
R/CR No. 214 Rev. 3 Date 8/2/85
CR No. 214 Rev. 0 Date 8/5/85

Describe resolution/future action to close observation:

The BPC resolution is acceptable for the following reasons:

BPC has provided a discussion that clarifies that the maximum control circuit cable lengths are based on a conservative design value for minimum steady-state bus voltage at 480V MCC's of 0.9pu.

BPC has prepared an analysis to show that each Class 1E valve, under LOCA conditions and with the minimum transient bus voltage postulated under the worst case bus loading scenario, will have sufficient voltage at the motor terminals to perform their safety function within the required times.

BPC has stated that this analysis envelopes all Class 1E valves and, therefore, demonstrates the adequacy of the design.

H. Ware

Memorandum of Telephone Conversation

SARGENT & LU

Person Called	Date 8/2/85 Time 3:00
Y. J. Yaworsky/L. Oesterich	Company PSE&G/BPC
Person Calling T. J. Duffy	Company S&L
Project Hope Creek	Project No 7212-30

Subject Discussed

Status of S&L's Comments on BPC's responses to OR-44 and 100.

Summary of Discussion, Decisions and Commitments

I called Mr. Yaworsky and then Mr. Oesterich to determine the status on S&L's comments on BPC's responses to OR-44 and 100. Mr. Oesterich indicated that they would be sending us a telex later this afternoon.

cc: W. F. Bauer (PSE&G)
Y. J. Yaworsky (PSE&G)
~~J. Milhoan (NRC)~~
T. DelGaizo (NRC)
W. A. Bloss (2)
H. S. Taylor
~~W. B. Crumpacker (C&I related)~~
T. J. Duffy (Structural related)
~~H. G. McCullough (Design Process/Document Request/QA related)~~
~~R. M. Schiavoni (Electrical related)~~
~~B. P. White (Mechanical related)~~
~~BPC distribution only as required~~
B. A. Erler
H. Singh

File

Telecon - Technical
Category 3

SL-F713 10/84-F3

Signature

T. J. Duffy

Public Service Electric and Gas Company
Hope Creek Generating Station - Unit 1

Project No. 10855-013

RESOLUTION/COMPLETION REPORT

OR No. 214 Rev. 0 Date 7/1/85
R/CR No. 214 Rev. 0 Date 7/12/85
R/CR No. 214 Rev. 1 Date 7/19/85
R/CR No. 214 Rev. 2 Date 7/3/85
R/CR No. 214 Rev. 3 Date 8/2/85

1. Classification of Observation (by S&L):
   _____ Not significant to safety
   _____ Significant to safety
   X Additional Information required

2. Reviewee proposed resolution:

   See Sheet 2.

3. Reviewee resolution report by:

   K Cooke
   Discipline Group Supervisor — Date 8/2/85

   KB/MDP
   Bechtel Project Engineer — Date 8/2/85

4. Public Service Electric and Gas Company review:

   W. Gailey/mm
   Chief Project Engineer — Date 8-2-85

5. S&L's disposition of Resolution/Completion Report:
   _____ Observation invalid and withdrawn.
   _____ Proposed resolution/future action acceptable, observation closed.
   _____ Additional action to be taken by Reviewee (provide additional information).

6. Final classification of observation by Review Committee:
   _____ Not significant to safety
   _____ Significant to safety

7. Review Committee signatures:

   _____ _____

   _____ _____

   _____

RESOLUTION/COMPLETION REPORT
(Continuation sheet)

OR No. 214 Rev. 0 Date 7/1/85
R/CR No. 214 Rev. 0 Date 7/12/85
R/CR No. 214 Rev. 1 Date 7/19/85
R/CR No. 214 Rev. 2 Date 7/30/85
R/CR No. 214 Rev. 3 Date 8/2/85

Response to Description of Observation

2. Calculation 15(Q) Case IV A shows when plant is running under normal condition with only one station service transformer available and grid voltage at its minimum of 0.98 P.U. At this time the steady state voltage at a 480 V MCC is 0.943. As per Design Criteria D4.1, Bechtel used the minimum 480 V MCC voltage of 0.9 P.U. for Calculation 17A(Q). This OR states the minimum bus voltage of 0.7848 P.U. at MCC per case V C of Calculation 15(Q). This transient voltage dip is due to a very conservative scenario when: a) grid voltage is at its lowest of 0.98 P.U.; b) only one station service transformer is available; c) LOCA occurred and already 4 RHR pumps are running; d) all 4 core spray pumps start simultaneously. This transient voltage dip will start recovering progressively with the time of acceleration of all four core spray pumps. The time for complete acceleration of RHR and core spray pump motors is 1.5-2.0 and 2.5-3.5 seconds, respectively. There is no calculation which shows the recovery time of voltage on the bus during starting of heavy load simultaneously. The purpose of the load flow study is to demonstrate that other motor loads and valve actuator motors have enough terminal voltage (80% for motors and 75% for MOVs) when the largest motors are started simultaneously.

The actual loading of the ECCS loads on to the DG are not as severe as the conditions postulated in Case IV A of Calculation 15(Q). In the event of a LOCA signal, the MOV MCCs are energized immediately upon the closure of the DG breaker (if a LOP had occurred) or they had remained energized in the event of a LOCA without LOP. In any event, those safety-related MOVs required to actuate under LOCA conditons would be energized six seconds (minimum) before the transient brought about by the start of the four Core Spray Pumps. Activated valve contactor coils will have no difficulty in staying picked up during the transient, and the valves would complete their safety functions in the required time. The discussion in 4.b provides the rationale on the valves during the voltage transient.

Response to Recommendation for Resolution

4.a The maximum control circuit cable lengths were based upon a steady state bus voltage. There is no calculation for the time period to recover voltage to at least .9 P.U. under the conditions stated in Case VC of Calculation 15(Q). However, it is estimated that 3.5 seconds would be the recovery time based upon the motor accelerating time of the core spray pump. The discussion in 4.b justifies the impact during the recovery period.

Public Service Electric and Gas Company — Project No. 10855-013
Hope Creek Generating Station - Unit 1 — Page 3 of 3

RESOLUTION/COMPLETION REPORT
(Continuation sheet)

OR No. 214 Rev. 0 Date 7/1/85
R/CR No. 214 Rev. 0 Date 7/12/85
R/CR No. 214 Rev. 1 Date 7/19/85
R/CR No. 214 Rev. 2 Date 7/30/85
R/CR No. 214 Rev. 3 Date 8/2/85

4.b An analysis of every Class 1E valve was performed to show that the particular design characteristics of the valves do not prevent the safety function of the emergency systems because each of all the Class 1E valves are enveloped by one of the following: 1 3

- o all containment isolation valves function prior to the subject system voltage transient;
- o certain valves have long operation times, of which additional time delay has no impact on the mechanical system;
- o the mechanical system for various short operating stroke time valves has sufficient flow requirements based upon less than 100% opening or closing of the valves;
- o in the particular case VC of Calculation 15(Q), the MCC that had a .7848 P.U. voltage does not contain any valves which require change in position at the subject system voltage transient;
- o the valves that do require to be functional during the subject system voltage transient are powered from MCCs in the Reactor Building. These MCCs have a system voltage greater than the minimum pickup voltage of the motor starter for these valves.

This analysis consists of a tabulation of all the Class 1E valves with an identification of at least one of above design characteristics shown for each valve. See the attachment. 1 3 | 3

4.c There are no corrective actions necessary.

4.d There is no violation of engineering design procedures in this particular observation.

The design control process utilized calculations to determine bus voltage in conjunction with engineering judgement on the impact of those calculations. There was no violation of the EDPs on design calculations.

ATTACHMENT TO R/CR No. 214, REVISION 3

An analysis of each Class 1E MOV was performed per Part 4.b of the resolution. The results of the analysis are shown on the following tabulation which is arranged by Class 1E 480V AC MCCs that supply power to MOVs followed by a listing of MOVs in the same order as shown on the applicable MCC drawings. The particular design characteristic determined to be most applicable for each MOV is identified as Category 1, 2, 3, 4 or 5 which corresponds to the Part 4.b definition as follows:

Category 1

All containment isolation valves function prior to the subject system voltage transient;

Category 2

Certain valves have long operation times, of which additional time delay has no impact on the mechanical system;

Category 3

The mechanical system for various short operating stroke time valves has sufficient flow requirements based upon less than 100% opening or closing of the valves;

Category 4

In the particular case VC of Calculation 15(Q), the MCC that had a .7848 P.U. voltage does not contain any valves which require change in position at the subject system voltage transient;

Category 5

The valves that do require to be functional during the subject system voltage transient are powered from MCCs in the Reactor Building. These MCCs have a system voltage greater than the minimum pickup voltage of the motor starter for these valves.

MCC 10B212

VALVE NO.	CATEGORY
1BE-HV-F001A	1
1BC-HV-F003A	5
1BG-HV-F001	1
1BC-HV-F004A	1
1BE-HV-F004A	5
1BC-HV-F007A	1
1BC-HV-F011A	1
1BE-HV-F005A	1
1BE-HV-F015A	1
1BC-HV-F017A	1
1FD-HV-F003	1
1BC-HV-F016A	1
1ED-HV-2598	5
1ED-HV-2599	5
1BC-HV-F026A	5
1BC-HV-F027A	1
1BE-HV-F031A	1
1BC-HV-F047A	5
1BC-HV-F048A	5
1KL-HV-5152A	1
1AE-HV-F032A	5
1BC-HV-F103A	5
1BC-HV-F104A	5
OBN-HV-2069	5
1FD-HV-4922	5
1EG-HV-2314A	5
1EG-HV-7921A	5
1EG-HV-2317A	5
1BJ-HV-4803	5
1BJ-HV-4804	1
1EC-HV-4689A	5
1SK-HV-4957	1
1SK-HV-5018	1
1EC-HV-4647	5
1EG-HV-2446	5
1BC-HV-5055	5

VALVE NO.	CATEGORY
1EG-HV-7922A	5
1EA-HV-2356A	5
1EA-HV-2357A	5
1EA-HV-2371A	5
1EG-HV-2491A	5
1EG-HV-2496A	5
1EG-HV-2512A	5
1GS-HV-5741A	5
1GS-HV-4955A	1
1GS-HV-4959A	1
1GS-HV-4966A	1
1GS-HV-5019A	1
1GS-HV-5050A	1
1GS-HV-5054A	1
1AB-HV-F016	1
1KL-HV-5148	1
1BC-HV-F024A	1
1BH-HV-F006A	5
1BG-HV-F034	5
1EA-HV-2234	5
1EA-HV-2236	5
1KL-HV-5172A	5
1FD-HV-F075	1
1EA-HV-2203	5
1EE-HV-4652	1
1EG-HV-2522A	5
1EE-HV-4680	1

(3)

MCC 10B222

VALVE NO.	CATEGORY
1BE-HV-F001B	1
1BC-HV-F003B	5
1KL-HV-5126B	1
1HB-HV-F004	1
1FC-HV-F008	1
1HB-HV-F020	1
1BC-HV-F004B	1
1BC-HV-F006B	5
1BE-HV-F004B	5
1BC-HV-F007B	1
1BC-HV-F011B	1
1BE-HV-F005B	1
1BE-HV-F015B	1
1BC-HV-F017B	1
1GS-HV-5741B	5
1BC-HV-F016B	1
1BC-HV-F021B	1
1BC-HV-F024B	1
1KC-HV-3408M	5
1BC-HV-F026B	5
OAP-HV-2073	5
1EA-HV-F073	5
1BC-HV-F027B	1
1BE-HV-F031B	1
1BC-HV-F047B	5
1BC-HV-F048B	5
1BC-HV-F052B	5
1ED-HV-2553	1
1ED-HV-2555	1
1EE-HV-4681	1
1EE-HV-4679	1
1EG-HV-2447	5
1HB-HV-5262	5
1HB-HV-5275	5
1EA-HV-2238	5
1KA-HV-7626	5
1KL-HV-5172B	5
1KB-HV-7629	5
1EC-HV-4689B	5
1BC-HV-4428	5

VALVE NO.	CATEGORY
1AE-HV-F032B	5
1BC-HV-F103B	5
1BC-HV-F104B	5
1BC-HV-F075	5
1AN-HV-2600	5
1EG-HV-2314B	5
1EG-HV-7921B	5
1EG-HV-2317B	5
1EG-HV-7922B	5
1EA-HV-2356B	5
1EA-HV-2357B	5
1EA-HV-2371B	5
1EG-HV-2491B	5
1EG-HV-2496B	5
1EG-HV-2512B	5
1BC-HV-4421	5
1GS-HV-4955B	1
1GS-HV-4959B	1
1EC-HV-4648	5
1GS-HV-4966B	1
1GS-HV-5019B	1
1GS-HV-5050B	1
1GS-HV-5054B	1
1FC-HV-F062	1
OAP-HV-2072	5
1EA-HV-2204	5
1BC-HV-5055B	5

△3

MCC 10B232

VALVE NO.	CATEGORY
1BE-HV-F001C	1
1KL-HV-5126A	1
1AB-HV-F071	5
1FD-HV-F079	1
1AB-HV-3631A	5
1BC-HV-F004C	1
1EA-HV-2355A	5
1EG-HV-2452A	5
1EG-HV-2320A	5
1BC-HV-F007C	1
1EG-HV-2453A	5
1BC-HV-F010A	1
1EG-HV-2321A	5
1BC-HV-F017C	1
1EG-HV-2494A	5
1AE-HV-4144	5
1KL-HV-5124A	5
1BJ-HV-4865	1
1BJ-HV-4866	1
1BC-HV-4420A	5
1GS-HV-4965A	1
1EA-HV-2207	5
1EA-HV-2346	5
1AB-HV-3631B	5
1GS-HV-4983A	1
1GS-HV-4984A	1
1GS-HV-5022A	1

VALVE NO.	CATEGORY
1HB-HV-F019	1
1FD-HV-F100	1
1GS-HV-5052A	1
1BF-HV-4005	5
1GS-HV-5053A	1
1KL-HV-5160A	5
1AB-HV-3631C	5
1KP-HV-5829B	5
1KP-HV-5834B	5
1KP-HV-5835B	5
1KP-HV-5836B	5
1EG-HV-2496C	5
1KP-HV-5837B	5
1GH-HV-5543	5
1KL-HV-5147	1
1GB-HV-9532-1	5
1GB-HV-9532-2	5
1HC-HV-5551	5
1AB-HV-3631D	5
1GB-HV-9531B-1	1
1GB-HV-9531B-2	1
1GB-HV-9531B-3	1
1GB-HV-9531B-4	1
1GS-HV-5057A	5
1FD-HV-F002	1

△3

MCC 10B242

VALVE NO.	CATEGORY
1BE-HV-F001D	1
1BF-HV-3800A	1
1HB-HV-F003	1
1BC-HV-F015B	1
1BC-HV-F004D	1
1EA-HV-2355B	5
1EG-HV-2452B	5
1EG-HV-2320B	1
1BC-HV-F007D	1
1EG-HV-2453B	5
1BC-HV-F010B	1
1EG-HV-2321B	5
1BC-HV-F017D	1
1EG-HV-2494B	5
1KL-HV-5124B	5
1BC-HV-4439	5
1GS-HV-4965B	1
1BG-HV-F004	1
1BC-HV-F008	1
1AB-HV-F019	1
1BG-HV-F035	5
1GS-HV-4983B	1
1GS-HV-4984B	1
1GS-HV-5022B	1
1KL-HV-5152B	1
1FC-HV-F007	1
1FC-HV-F076	1
1KP-HV-5829A	5
1GS-HV-5052B	1

VALVE NO.	CATEGORY
1GS-HV-5053B	1
1KL-HV-5160B	5
1BC-HV-F040	5
1BG-HV-3980	5
1KP-HV-5834A	1
1Kp-HV-5835A	1
1KP-HV-5836A	1
1EG-HV-2496D	5
1KP-HV-5837A	1
1GS-HV-4951	5
1Sk-HV-4953	1
1AE-HV-F039	5
1BF-HV-3800B	1
1ED-HV-2554	1
1ED-HV-2556	1
1GB-HV-9531A-1	1
1GB-HV-9531A-2	1
1GB-HV-9531A-3	1
1GB-HV-9531A-4	1
1AB-HV-F067A	1
1AB-HV-F067B	1
1AB-HV-F067C	1
1AB-HV-F067D	1
1GS-HV-4963	5
1GS-HV-4974	1
1BH-HV-F006B	5
1FC-HV-F084	1
1SK-HV-4981	1
1KL-HV-5162	1
1GS-HV-5057B	5
1BC-HV-F023	1

(3)

MCC 10B411

VALVE NO.	CATEGORY
1BC-HV-F049	3
1BC-HV-F022	1

3

MCC 10B451

VALVE NO.	CATEGORY
1BC-HV-F006A	2
1BC-HV-F009	1
1BC-HV-F021A	1
1BC-HV-F052A	1

MCC 10B481:

1BC-HV-4420B	3
1BC-HV-F015A	1

MCC 10B553

VALVE NO.	CATEGORY
1EA-HV-2197A	4
1EA-HV-2198A	4
1EA-HV-2225A	4

MCC 10B563:

1EA-HV-2197B	4
1EA-HV-2198B	4
1EA-HV-2225B	4

MCC 10B573:

1EA-HV-2197C	4
1EA-HV-2198C	4
1EA-HV-2225C	4

MCC 10B583:

1EA-HV-2197D	4
1EA-HV-2198D	4
1EA-HV-2225D	4

(3)

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SARGENT & LUNDY
ENGINEERS
CHICAGO

FROM: D. P. White
Sargent & Lundy
18P15
312-269-6419

TSB- 459
Date: August 7, 1985
Project: Hope Creek
7212-30

TO: L. C. Oesterich
Bechtel Task Leader
Bechtel Power Corporation
San Francisco, California
Telecopy No.: 415-882-3211
Confirmation No.: 415-882-1672

CC: W. F. Bauer
Principal Engineer
Public Service Electric and Gas Company
Newark, New Jersey
201-621-2150

W. A. Bloss (2)
J. Milhoan
T. DelGaizo
H. Wang

2 pages to follow.

Attached is a copy of a telecon memorandum between Y. J. Yaworsky (PSE&G), and L. C. Oesterich, M. R. Custer, T. Ferenchak, P. W. Schuetz (BPC), and H. Wang (NRC), and W. A. Bloss, E. B. Branch, L. L. Fergusson, B. Obersnel, H. S. Taylor, D. P. White (S&L), dated August 6, 1985.

DPW:cdj
Attachment

Memorandum of Telephone Conversation **SARGENT & LUNDY**

Date 8/6/85 Time 10:00 a.m.

Person Called	Company
see listing below	see listing below
Person Calling	**Company**
see listing below	see listing below
Project	**Project No.**
Hope Creek	7212-30

Subject Discussed
R/CR-166

Summary of Discussion, Decisions and Commitments

Person Called: Y. J. Yaworsky) Public Service Electric & Gas (PSE&G)

L. C. Oesterich)
M. R. Custer) Bechtel Power Corporation (BPC)
T. Ferenchak)
P. W. Schuetz)

H. Wang) U. S. Nuclear Regulatory Commission (NRC)

Person Calling: W. A. Bloss)
E. B. Branch)
L. L. Fergusson) Sargent & Lundy (S&L)
B. Obersnel)
H. S. Taylor)
D. P. White)

BPC will provide a draft Resolution Report by noon on August 7, 1985, on OR-116 which will cover the following areas:

1. Data sheet 530516 will be revised to address both hangers. BPC will commit to either a) calculations by section 2.4.2c of G052, b) documentation of the logic used for acceptance per section 2.3.8 of G052, or c) documentation of the judgement used per revised section 2.4.2c of G052.

2. Revise G052, section 2.4,2 to allow judgement to be made when determining the

cc W. F. Bauer, Y. J. Yaworsky, L. C. Oesterich, M. R. Custer, T. Ferenchak, P. W. Schuetz, J. Milhoan, T. DelGaizo, H. Wang, W. A. Bloss (2), H. S. Taylor, E. B. Branch, L. L. Fergusson, B. Obersnel

File Telecon - Technical
Category 4

Signature

SL-F713 10/84—F3

load on a support.

3. Include in the revised G052 guidelines and criteria (example of, not all inclusion) for the use of judgement.

4. Provide a survey of other data sheets to provide generic assurance that other Non-Q_s or Non-Q_{sh} supports are evaluated and documented on the data sheets per 2.4.2c or 2.3.8 of G052.

BPC will provide a draft Resolution Report by the end of the day on August 6, 1985, for OR-125, that will explain that the 150°F temperature is not applicable as an operating temperature for the entire system, but is used for flexibility analysis. They will state that this gives enough margin so that the unanalyzed Δ 31°F is ok.

S&L will review BPC's revised Resolution Report and advise to their acceptance.

DPW:cdj