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June 5, 2008

Via Electronic and U.S. Mail

Public Utility Commission

Attn: Filing Center

550 Capitol St. NE #215

P.O. Box 2148

Salem OR 97308-2148

Re: In the Matter of PORTLAND GENERAL ELECTRIC COMPANY
Application to Amortize the Boardman Deferral.
Docket No. UE 196

Dear Filing Center:

Enclosed please find an original and five copies of the Confidential Surrebuttal Testimony and Exhibits of John R. Martin on behalf of the Industrial Customers of Northwest Utilities ("ICNU") in the above-referenced docket. The confidential pages and exhibits are inserted in separate envelopes and sealed pursuant to the protective order in this proceeding. Also enclosed, is a complete Redacted Version of the testimony.

Thank you for your assistance.

Sincerely yours,

/s/ Brendan E. Levenick

Brendan E. Levenick

Enclosures

cc: Service List

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that I have this day served the foregoing Confidential Surrebuttal Testimony and Exhibits of John R. Martin on behalf of the Industrial Customers of Northwest Utilities upon the parties, on the official service list shown below for UE 196, via U.S. Mail. All parties in this proceeding are authorized, pursuant to the protective order. A Redacted Version of the testimony and exhibits was served via electronic mail.

Dated at Portland, Oregon, this 5th day of June, 2008.

/s/ Brendan E. Levenick
Brendan E. Levenick

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**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

UE 196

In the Matter of)
)
)
PORTLAND GENERAL ELECTRIC)
COMPANY)
)
Application to Amortize the Boardman)
Deferral.)
_____)

SURREBUTTAL TESTIMONY OF

JOHN R. MARTIN, P.E.

ON BEHALF OF

THE INDUSTRIAL CUSTOMERS OF NORTHWEST UTILITIES

REDACTED VERSION

June 5, 2008

1 **Q. PLEASE STATE YOUR NAME AND THE PARTY THAT YOU ARE**
2 **REPRESENTING.**

3 **A.** My name is John R. Martin, and I am appearing in this proceeding on behalf of
4 the Industrial Customers of Northwest Utilities (“ICNU”).

5 **Q. HAVE YOU PREVIOUSLY SUBMITTED TESTIMONY IN THIS**
6 **PROCEEDING?**

7 **A.** Yes. I submitted direct testimony in this proceeding on February 20, 2008.

8 **Q. WHAT IS THE PURPOSE OF THIS SURREBUTTAL TESTIMONY?**

9 **A.** This Surrebuttal Testimony responds to the Rebuttal Testimony of Portland
10 General Electric (“PGE”) witness Stephen Quennoz (PGE/300-301), which was
11 submitted on April 24, 2008.

12 **Q. MR. QUENNOZ STATES THAT PGE STAFF PROVIDED**
13 **INDEPENDENT QUALITY ASSURANCE AND QUALITY CONTROL OF**
14 **SIEMENS’ WORK DURING INSTALLATION OF THE LOW PRESSURE**
15 **TURBINES IN 2000 AND THE HP/IP TURBINES IN 2004, AS WELL AS**
16 **DURING SUBSEQUENT MAINTENANCE OF THAT EQUIPMENT.**
17 **PGE/300, QUENNOZ 12-13. DO YOU AGREE WITH THIS?**

18 **A.** No. I previously testified that PGE did not have a Quality Assurance/Quality
19 Control (“QA/QC”) program in place at any time from the installation of the low-
20 pressure turbines in 2000, through the installation of the HP/IP turbine in 2004,
21 and the subsequent failure in 2005. ICNU/100, Martin/18. The installation of a
22 new turbine is a major plant modification. As noted below, the design of the new
23 turbine was significantly different from the original turbine. As a result, PGE
24 should have had an active QA/QC program in place to review and check the
25 installation and maintenance work being performed by Siemens. Primary features
26 of any QA/QC program are written procedures and written records. Attached as
27 Exhibit ICNU/201 is a PGE data response demonstrating that PGE does not have

1 any written procedures or records to substantiate its position that PGE had an
2 active QA/QC program to review the work performed by Siemens. [REDACTED]

3 [REDACTED]

4 [REDACTED] ICNU/202, Martin/7, 11.

5 **Q. MR. QUENNOZ STATES THAT THE ONLY SIGNIFICANT**
6 **DIFFERENCES BETWEEN THE ORIGINAL LP TURBINE AND THE**
7 **NEW LP TURBINE ARE THE LAST STAGE BLADES AND A SO**
8 **CALLED "RUGGEDIZED" SHAFT. PGE/300, QUENNOZ/5-6. DO YOU**
9 **AGREE WITH THIS STATEMENT?**

10 **A.** No. This statement is extremely misleading. The new LP turbines are a totally
11 different design in all dimensional respects. This includes the design of the rotor,
12 all rotating blades, all stationary blades, seals, and bearings. The maximum
13 diameter of the new rotor was increased from 100 inches on the original LP
14 turbine to 126 inches on the new LP turbine. The weight of each new LP rotor
15 was increased from 60,000 pounds to over 100,000 pounds. This huge increase in
16 the weight of the turbine must be accounted for in installing the new turbine.

17 The new LP turbines are a completely new design. The original LP
18 turbines were designed and manufactured by Westinghouse Electric in Lester,
19 Pennsylvania in 1977. Siemens Westinghouse designed the new LP turbines in
20 Orlando, Florida in 1999. It is ludicrous to suggest that the designs are the same
21 except for the design of the last stage blades and "Ruggedized" shaft.

1 **Q. MR. QUENNOZ STATES THAT THERE IS NO EVIDENCE LINKING**
2 **THE EXPERIMENTAL LAST-STAGE BLADES WITH THE CRACK IN**
3 **THE LP1 TURBINE. PGE/300, QUENNOZ/6. ARE THERE ANY OTHER**
4 **ASPECTS OF THE NEW TURBINE DESIGN THAT COULD HAVE**
5 **CONTRIBUTED TO THE FAILURE?**

6 **A.** I agree that there is no reason to suggest the so-called “experimental” last-stage
7 blades caused the crack in the LP1 turbine rotor. Before going any further,
8 however, I should reiterate that the new LP turbine was a totally new design in all
9 dimensional respects.

10 The elements of the LP turbine design that may have contributed to the
11 failure are the increased weight of the rotor and the way the turbine is aligned and
12 supported. Due to the high weight of the LP turbine, it sags slightly between the
13 bearings that support each end of the rotor. Because of this, the turbine bearing
14 elevations are designed to minimize this effect. The turbine rotor assembly is
15 essentially designed with a very slight curve to minimize the cyclical stressing
16 that occurs as the shaft rotates. The design rotor sag is as important to the
17 development of high cycle fatigue as the physical dimensions of the rotor. If the
18 sag design is incorrect or if the bearing elevations are incorrect, then high cycle
19 fatigue can develop. [REDACTED]

20 [REDACTED]

21 [REDACTED]

22 [REDACTED]

23 [REDACTED]

24 [REDACTED]

25 [REDACTED]

1 Another problem that exacerbated the cyclical stressing of the LP1 rotor is
2 the fact that two of the nuts (nuts 25 and 26) that attach the Bearing No. 2 pedestal
3 to the LP1 soleplate and foundation were discovered to be missing by PGE staff
4 on June 28, 2006. ICNU/203, Martin/1-7. Several other nuts that attach the LP1
5 soleplate were also found to be loose. The missing nuts 25 and 26 were critical to
6 securing bearing No. 2 and caused additional misalignment of the LP1 rotor. I
7 believe this was a significant contributing factor to the failure of the LP1 rotor.

8 PGE stated that during the installation of the new LP turbines the LP1
9 soleplate and soleplate attachments were not inspected. ICNU/204, Martin/1. It
10 is my opinion that the soleplates and the nut/bolt attachments should have been
11 inspected because the nuts can become loose and result in shaft misalignment. In
12 addition, the grout that is placed under the soleplate can crack and weaken. This
13 can result in a loosening of the attachment to the foundation and additional
14 misalignment of the rotor shaft. Turbines experience significant dynamic loads
15 during full-load trips and other transient conditions. These dynamic loads can
16 cause the grout under the soleplate to crack and the attaching nuts to loosen. The
17 original LP turbine was in place for over 20 years. Not inspecting the soleplates
18 and attaching nuts when the new LP turbine was installed is a significant quality
19 control failure by PGE.

20 The two missing Bearing No. 2 attachment nuts would have been visible
21 at the time the new LP turbine was installed in 2000. The two missing Bearing
22 No. 2 attachment nuts would have also been visible at the time the new HP/IP
23 turbine was installed in 2004. The two missing nuts would have been visible and

1 certainly should have been checked in 2005 after the LP1 turbine failed.
2 However, PGE has stated that the soleplate and attaching nuts were not inspected
3 in 2000, 2004, or after the failure in 2005. A PGE technician visually observed
4 the missing nuts in 2006 and took action to correct the problem. ICNU/203,
5 Martin/1. PGE has suggested that the two missing nuts were buried deep in the
6 foundation and could not be observed. ICNU/203, Martin/1. However, this is not
7 true. ICNU/203, Martin/1-7, shows that nut 25 is clearly visible to an observer
8 located on the turbine operating deck after it was replaced.

9 In my prior testimony, I have stated my opinion that PGE did not provide
10 proper quality control for work performed on its facilities. The missing and loose
11 attaching nuts described above are examples of this lack of quality control. Both
12 PGE and Siemens should have found the missing and loose nuts in 2000, 2004,
13 and 2005 and taken corrective action. PGE has stated that it was relying on
14 Siemens. It is my opinion that PGE is ultimately responsible for the integrity of
15 its facilities and cannot delegate that responsibility to Siemens. This is
16 particularly true when the contract between PGE and Siemens relieves Siemens of
17 responsibility for consequential damages.

18 **Q. MR. QUENNOZ'S REBUTTAL TESTIMONY STATES THAT, UNDER**
19 **INDUSTRY STANDARDS, TURBINES ARE DESIGNED TO OPERATE**
20 **AT 105-PERCENT OF THE DESIGN MAXIMUM OUTPUT. PGE/300,**
21 **QUENNOZ/15. DO YOU AGREE WITH THIS STATEMENT?**

22 **A.** No. There is no industry standard for turbines operating at 105-percent of rated
23 output. Each turbine and generator is a different design, and all have their
24 individual limits. For example, [REDACTED]

25 [REDACTED]

1

[REDACTED]

2

ICNU/202, Martin/14. [REDACTED]

3

[REDACTED]

4

[REDACTED] Id. (emphasis added). The maximum output rating of the Boardman

5

turbine after the 2005 HP/IP upgrade was 617 MW, so it would be expected that

6

Boardman would not be operated above 617 MW except in an emergency.

7

[REDACTED]

8

[REDACTED]

9

[REDACTED]

10

ICNU/205, Martin/Attachments A-B.

11

In 2000, the LP turbines were designed to operate at 580-Megawatts with

12

the valves wide open and 103-percent over pressure. I believe that the operation

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above this level was imprudent. Mr. Quennoz stated that the equipment should be

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able to operate regularly at 601-Megawatts. PGE/300, Quennoz/15. However,

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this is inconsistent with the specifications for the HP/IP improvements as noted

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above.

17

In conclusion, the Boardman Plant was operated above its specified rating.

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As stated in my original testimony, I do not believe this operation caused the

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failure. However, it would have been a contributing factor in the failure.

1 **Q. IN YOUR PRIOR TESTIMONY, YOU STATED THAT THE PLANT**
2 **RARELY OPERATED ABOVE 617 MW DURING THIS TIME PERIOD.**
3 **NOW YOU ARE SAYING THAT IT OPERATED ABOVE 617 MW 44-**
4 **PERCENT OF THE TIME BETWEEN AUGUST 9, 2004 UNTIL THE**
5 **FAILURE IN NOVEMBER 2005. WHY IS YOUR TESTIMONY**
6 **DIFFERENT NOW?**

7
8 A. My original testimony was based on data supplied by PGE in response to
9 ICNU Data Request No. 4.1. ICNU/206, Martin/1-2; ICNU/104, Martin/1, 7.
10 PGE's response was PGE Confidential Attachment-019A. The information
11 provided in PGE Confidential Attachment-019A was used in my prior testimony
12 and indicated that the units rarely operated above 617 MW. However, the
13 information provided by PGE in Confidential Attachment-019A did not provide
14 hourly output as requested by ICNU DR No. 4.1 and PGE was again requested to
15 provide "hourly gross output." PGE subsequently provided additional data in
16 PGE Data Response 30A, which is the basis for my testimony here. ICNU/205,
17 Martin/1-3. The data is significant, because it shows the plant was operated 44-
18 percent of the time above 617 MW (the "emergency operating" level) during the
19 period from August 2004 until the failure in November 2005. The results are
20 obviously different and PGE will have to explain the differences.

21 **Q. HAS PGE BEEN CONSISTENT IN ITS DESCRIPTIONS REGARDING**
22 **THE OPERATING LEVEL OF BOARDMAN?**

23
24 A. No. In UM 1234, PGE stated that since 2001, Boardman has not operated above
25 585 MW. ICNU 207, Martin/1-2. PGE also stated that the industry standard is
26 2400 psi (100% of operating pressure). Id. Both statements are inconsistent with
27 Mr. Quennoz's Rebuttal Testimony in this case.

1 **Q. IN MR. QUENNOZ'S REBUTTAL TESTIMONY, HE SUGGESTS THAT**
2 **THE ROOT CAUSE ANALYSES THAT WERE COMPLETED BY**
3 **SIEMENS WESTINGHOUSE WERE COMPLETE AND REACHED**
4 **CORRECT CONCLUSIONS. PGE/300, QUENNOZ/13. DO YOU AGREE**
5 **WITH THIS STATEMENT?**

6 **A.** No. As I mentioned in my original testimony, I believe that a number of factors
7 also should have been considered. ICNU/100, Martin/14. There is no need to
8 repeat them here. However, many of these factors were not included in the scope
9 of the Siemens and Alstom Root Cause Analyses. See Id. at Martin/12-17.

10 **Q. HAS PGE BEEN INCONSISTENT IN ITS DESCRIPTIONS OF THE**
11 **ROOT CAUSE ANALYSES?**

12 **A.** Yes. [REDACTED]
13 [REDACTED]
14 [REDACTED] ICNU/208, Martin/4-5. [REDACTED]
15 [REDACTED]
16 [REDACTED]
17 [REDACTED]
18 [REDACTED]
19 [REDACTED] PGE
20 did produce a draft report from Siemens and a final report from Siemens. Both
21 reports were dated March 8, 2007. PGE stated, however, that it received the
22 preliminary draft Siemens report on March 16, 2007, and the final Siemens root
23 cause analysis on approximately May 22, 2007. ICNU/209, Martin/1. The
24 conclusions in the reports are different as summarized below:

25 [REDACTED]
26 [REDACTED]

1 [REDACTED] Id. at Martin/10 (emphasis added). [REDACTED]

2 [REDACTED]

3 [REDACTED]

4 [REDACTED]

5 [REDACTED]

6 [REDACTED]

7 [REDACTED] PGE/105C-C, Quennoz/2 (emphasis added). [REDACTED]

8 [REDACTED] The rotor can be

9 misaligned because the Siemens' design alignment was incorrect or the

10 subsequent alignment changes made by Siemens were incorrect. It can also be

11 misaligned because of missing and loose nuts/bolts that attach the turbine to its

12 foundation, which was a "known" operating condition.

13 PGE was asked whether it influenced the changes to the Siemens' report.

14 PGE has stated that [REDACTED]

15 [REDACTED]

16 [REDACTED] ICNU/210, Martin/4. [REDACTED]

17 [REDACTED]

18 [REDACTED]

19 [REDACTED]

20 [REDACTED]

21 [REDACTED] ICNU/209, Martin/11;

22 PGE/105C-C, Quennoz/35.

1

[REDACTED]

2

[REDACTED]

3

[REDACTED]

4

[REDACTED]

5

6

7

8

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12

13

14

ICNU/209, Martin/7-8.

15

[REDACTED]

16

[REDACTED]

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[REDACTED]

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Id. at Martin/7-8 (emphasis added).

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5 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

6 **A.** Yes.

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

UE 196

In the Matter of)
)
PORTLAND GENERAL ELECTRIC)
COMPANY)
)
Application to Amortize the Boardman)
Deferral.)
_____)

SURREBUTTAL TESTIMONY OF

JOHN R. MARTIN, P.E.

ON BEHALF OF

THE INDUSTRIAL CUSTOMERS OF NORTHWEST UTILITIES

ICNU/201

PGE RESPONSE TO

ICNU DATA REQUEST NO. 10.11

June 5, 2008

May 14, 2008

TO: Melinda Davison
Industrial Customers of NW Utilities

FROM: Patrick G. Hager
Manager, Regulatory Affairs

**PORTLAND GENERAL ELECTRIC
UE 196
PGE Response to ICNU Data Request 10.11
Dated April 30, 2008
Question No. 073**

Request:

Referring to page 12, lines 25-26, and page 13, lines 1 through 4, of PGE's Rebuttal Testimony, please provide a description of the Quality Control (QC) program that PGE implemented with respect to the "manufacturing, installation and maintenance of both the LP turbines installed in 2000 and the HP/IP turbine installed in 2004." Please provide a copy of all QC records that PGE created with respect to the 2000 and 2004 turbine modifications.

Response:

PGE objects to this request because it is overly broad and unduly burdensome. Without waiving its objection, PGE responds as follows:

In the general course of business, PGE does not keep records from as far back as 8 years ago. However, in the process of our search for materials responsive to ICNU Data Request No. 071, we also found some materials that may be responsive to this request. In particular, Attachment 071-A to PGE's Response to ICNU Data Request No. 071 contains a file, HP_IP QualityPlan.pdf, which has information about Siemens QC program for the HP/IP upgrade. See also PGE's Response to ICNU Data Request No. 018.

**BEFORE THE PUBLIC UTILITY COMMISSION
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UE 196

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SURREBUTTAL TESTIMONY OF

JOHN R. MARTIN, P.E.

ON BEHALF OF

THE INDUSTRIAL CUSTOMERS OF NORTHWEST UTILITIES

ICNU/202

PGE RESPONSE TO

ICNU DATA REQUEST NO. 3.8

REDACTED

June 5, 2008

January 15, 2008

TO: Melinda Davison
Industrial Customers of NW Utilities

FROM: Patrick G. Hager
Manager, Regulatory Affairs

**PORTLAND GENERAL ELECTRIC
UE 196
PGE Response to ICNU Data Request 3.8
Dated December 28, 2007
Question No. 012**

Request:

Please provide a copy of all contracts between Portland General Electric and Siemens for all work performed by Siemens from 2000 through June 2007. This should include but not be limited to the following:

- **Installation of the Low Pressure Turbines (LPT1 and LPT2) and any other maintenance and repairs;**
- **LP turbine bearing modifications in 2002;**
- **Spring/Summer 2004 turbine generator modifications and repairs; and**
- **Evaluation of the LP No. 1 turbine rotor failure.**

Response:

PGE objects to this request because it is overly broad and unduly burdensome. Without waiving objection, PGE responds as follows:

Attachment 012-A is an electronic copy of the contract for the low pressure turbine installation. No separate contract was written for the LP turbine bearing modification, as it was done under the warranty provisions of the contract provided in Attachment 012-A. Attachment 012-B is an electronic folder containing the various sections of the contract for turbine generator modifications and repairs. No separate contract was written for the evaluation of the LP No. 1 turbine rotor failure. Attachments 012-A and 012-B are confidential and subject to Protective Order No. 07-433 and are provided under separate cover.

UE 196
Attachment 012-A

Confidential and Subject to Protective Order No. 07-433

Electronic Copy of Contract
Provided Electronically Only (CD)

UE 196
Attachment 012-B

Confidential and Subject to Protective Order No. 07-433

Electronic Contract Folder
Provided Electronically Only (CD)

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

UE 196

In the Matter of)
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SURREBUTTAL TESTIMONY OF

JOHN R. MARTIN, P.E.

ON BEHALF OF

THE INDUSTRIAL CUSTOMERS OF NORTHWEST UTILITIES

ICNU/203

PGE RESPONSE TO

ICNU DATA REQUEST NO. 3.9

REDACTED

June 5, 2008

January 15, 2008

TO: Melinda Davison
Industrial Customers of NW Utilities

FROM: Patrick G. Hager
Manager, Regulatory Affairs

**PORTLAND GENERAL ELECTRIC
UE 196
PGE Response to ICNU Data Request 3.9
Dated December 28, 2007
Question No. 013**

Request:

Please identify the location of the missing and loose fasteners described in Alstom report UTGD670154, Revision A on page 36 of 41, second paragraph, which indicates the missing fasteners were located under bearing #2 pedestal. The PGE report indicates the fasteners were missing from the LP1 sole plate. How did PGE learn about the missing fasteners? Please provide any written reports that identified the circumstances surrounding the missing and loose fasteners.

Response:

Attachment 013-A is a copy of the relevant PGE report dated June 28, 2006. Attachment 013-A is confidential and subject to Protective Order No. 07-433 and is provided under separate cover.

The missing sole plate nuts were under Bearing No. 2, which supports the HP/IP turbine. They are among the fasteners which secure a support that extends under Bearing #3 on the LP1 turbine. As stated in our testimony (Ref: Exhibit 105C-A, Quennoz/5), one of PGE's consultants observed erratic (non-repeatable) elevation measurements on the turbine. As a result, PGE determined that further testing would be required to assess the stability of the turbine. It was anticipated that this testing would require manipulation of the main turbine sole plate nuts. In preparation, the bolts were inspected to ensure access during the test. During this inspection, it was discovered that nuts from two of the sole plate bolts were missing. As the photographs contained in Attachment 013-A show, it required much work to reach the area where the two missing nuts were discovered.

UE 196
Attachment 013-A

Confidential and Subject to Protective Order No. 07-433

Copy of 06-28-06 PGE Report

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

UE 196

In the Matter of)
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PORTLAND GENERAL ELECTRIC)
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SURREBUTTAL TESTIMONY OF

JOHN R. MARTIN, P.E.

ON BEHALF OF

THE INDUSTRIAL CUSTOMERS OF NORTHWEST UTILITIES

ICNU/204

PGE RESPONSE TO

ICNU DATA REQUEST NO. 10.3

June 5, 2008

May 14, 2008

TO: Melinda Davison
Industrial Customers of NW Utilities

FROM: Patrick G. Hager
Manager, Regulatory Affairs

**PORTLAND GENERAL ELECTRIC
UE 196
PGE Response to ICNU Data Request 10.3
Dated April 30, 2008
Question No. 065**

Request:

Did Siemens or PGE inspect the LP1 turbine soleplate and the tightness of the soleplate nuts during the installation of the new LP1 turbine in 2000? Were any nuts missing or loose at that time? Does PGE have any record of such an inspection? If so, please provide copies of such records.

Response:

No. No inspection of the soleplate and the tightness of the soleplate nuts was conducted during the installation of the new LP 1 turbine in 2000. Therefore, the remaining questions are not applicable.

**BEFORE THE PUBLIC UTILITY COMMISSION
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UE 196

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SURREBUTTAL TESTIMONY OF

JOHN R. MARTIN, P.E.

ON BEHALF OF

THE INDUSTRIAL CUSTOMERS OF NORTHWEST UTILITIES

ICNU/205

PGE RESPONSE TO

ICNU DATA REQUEST NO. 5.11

REDACTED

June 5, 2008

February 6, 2008

TO: Brad Van Cleve
Industrial Customers of NW Utilities

FROM: Randy Dahlgren
Director, Regulatory Policy & Affairs

**PORTLAND GENERAL ELECTRIC
UE 196
PGE Response to ICNU Data Request 5.11
Dated January 22, 2007
Question No. 030**

Request:

Please provide the hourly gross turbine generator output as measured at the generator terminals for each hour during the years 2000 through 2007 (i.e., the output for every hour of every day from 2000 - 2006).

Response:

PGE objects to this request because it is overly broad and PGE does not have all of the information in the format requested. Without waiving objection, PGE responds as follows:

Attachment 030-A provides hourly data at the generator terminals for the entire plant on an hourly basis for the period July 2000 through July 2005. PGE's share of each hourly entry is 65 percent. Attachment 030-B provides similar data for the May 2006 through January 2008 period. PGE does not have hourly data at the generator terminals for the period August 2005 through April 2006.

Attachments 030-A and 030-B are confidential and subject to Protective Order No. 07-433 and are provided electronically under separate cover. Attachment 019-A to PGE's Response to ICNU Request No. 019 also provides data for the entire period requested in a different format.

UE 196

Attachments A-B

ICNU 205/Martin/Attachments A-B

Provided Electronically

Confidential and Subject to Protective Order

Workpapers of John Martin

**BEFORE THE PUBLIC UTILITY COMMISSION
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UE 196

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SURREBUTTAL TESTIMONY OF

JOHN R. MARTIN, P.E.

ON BEHALF OF

THE INDUSTRIAL CUSTOMERS OF NORTHWEST UTILITIES

ICNU/206

PGE RESPONSE TO

ICNU DATA REQUEST NO. 4.1

June 5, 2008

January 15, 2008

TO: Melinda Davison
Industrial Customers of NW Utilities

FROM: Patrick G. Hager
Manager, Regulatory Affairs

**PORTLAND GENERAL ELECTRIC
UE 196
PGE Response to ICNU Data Request 4.1
Dated January 2, 2007
Question No. 019**

Request:

Please provide the hourly gross turbine generator output in Mega-Watts (“MW”) as measured at the generator terminals for the years 2000 through 2007.

Response:

PGE objects to this request because it is overly broad and unduly burdensome. Without waiving objection, PGE responds as follows:

Attachment 019-A provides data in electronic format that shows MW levels, durations, and load changes over the requested time period. This attachment is confidential and subject to Protective Order No. 07-433 and is provided under separate cover.

**BEFORE THE PUBLIC UTILITY COMMISSION
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SURREBUTTAL TESTIMONY OF

JOHN R. MARTIN, P.E.

ON BEHALF OF

THE INDUSTRIAL CUSTOMERS OF NORTHWEST UTILITIES

ICNU/207

PGE RESPONSE TO

ICNU DATA REQUEST NO. 3.6

June 5, 2008

May 16, 2006

TO: S. Bradley Van Cleve
Davison Van Cleve, P.C.

FROM: Patrick G. Hager
Manager, Regulatory Affairs

**PORTLAND GENERAL ELECTRIC
UM 1234
PGE Response to ICNU's Data Request 3.6
Dated May 3, 2006
Question No. 014**

Request:

Does PGE admit or deny that in UE 139 the Company presented testimony stating as follows:

Reviewing the hourly net generation from Boardman in 2001, it is apparent that for about the first four months of the year, net generation is about 10 MW higher than what we model in MONET. The reason for the higher net generation is that for several months following the turbine upgrade in 2000, we operated Boardman at higher steam pressures. We did this for two reasons: to test the performance of the turbine upgrade, and for economics due to the power market crisis and extremely high market electric prices that were hundreds of dollars per MWh. This operation could be referred to as "redlining" the plant.

Since April 2001, the plant has been operated at a gross capacity of 585 MW, which after deducting a house load of 28.3 MW yields a net capacity of 556.7 MW. The maximum continuous rating for Boardman is based on the nominal 2,400 psi industry standard pressure at the steam turbine inlet throttle valve. Boardman is capable of operating at higher pressures, but experience by other utilities in their plants shows that the result will be an increase in wear and decrease in reliability. Some of those utilities have stopped operating at the higher pressures because in their experience the gain in output was more than offset by increases in maintenance costs. However, there are times when high power costs justify the risks, such as in late 2000 and early 2001. Since that time, the Boardman plant management decided not to run the plant as hard as it ran then. Now, it may still make sense to run the Boardman plant harder for limited periods under certain conditions, such as a power crisis, rolling blackouts, or when market prices are very high. But, the

costs and risks of pushing the plant harder in this way have not been quantified, and the decision of when to do so is largely a matter of engineering and management judgement. Plant management is evaluating whether to begin gradually increasing capacity in very small steps over time, while simultaneously monitoring and testing to determine the effects on the plant. However, at this time and for the relatively low forward electric market prices in 2003, plant management feels the 556.7 MW net capacity is the best forecast to use for the RVM.

Re PGE, OPUC Docket No. UE 139, PGE/300 at 17:7 to 18:12 (emphasis added).

Response:

The quote of testimony appears to be incomplete. The full question and answer are reproduced below:

Q. Mr. Falkenberg claims that you understated Boardman's capacity (ICNU/100, RJF/21-22). Did you?

A. No, but we can understand why someone looking at actual generation in 2001 might question the capacity. Reviewing the hourly net generation from Boardman in 2001, it is apparent that for about the first four months of the year, net generation is about 10 MW higher than what we model in MONET. The reason for the higher net generation is that for several months following the turbine upgrade in 2000, we operated Boardman at higher steam pressures. We did this for two reasons: to test the performance of the turbine upgrade, and for economics due to the power market crisis and extremely high market electric prices that were hundreds of dollars per MWh. This operation could be referred to as "redlining" the plant.

Since April 2001, the plant has been operated at a gross capacity of 585 MW, which after deducting a house load of 28.3 MW yields a net capacity of 556.7 MW. The maximum continuous rating for Boardman is based on the nominal 2,400 psi industry standard pressure at the steam turbine inlet throttle valve. Boardman is capable of operating at higher pressures, but experience by other utilities in their plants shows that the result will be an increase in wear and decrease in reliability. Some of those utilities have stopped operating at the higher pressures because in their experience the gain in output was more than offset by increases in maintenance costs. However, there are times when high power costs justify the risks, such as in late 2000 and early 2001. Since that time, the Boardman plant management decided not to run the plant as hard as it ran then. Now, it may still make sense to run the Boardman plant harder for limited periods under certain conditions, such as a power crisis, rolling blackouts, or when market prices are very high. But, the costs and risks of pushing the plant harder in this way have not been quantified, and the decision of when to do so is largely a matter of engineering and management judgement.

Plant management is evaluating whether to begin gradually increasing capacity in very small steps over time, while simultaneously monitoring and testing to determine the effects on the plant. However, at this time and for the relatively low forward electric market prices in 2003, plant management feels the 556.7 MW net capacity is the best forecast to use for the RVM.

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

UE 196

In the Matter of)
)
PORTLAND GENERAL ELECTRIC)
COMPANY)
)
Application to Amortize the Boardman)
Deferral.)
_____)

SURREBUTTAL TESTIMONY OF

JOHN R. MARTIN, P.E.

ON BEHALF OF

THE INDUSTRIAL CUSTOMERS OF NORTHWEST UTILITIES

ICNU/208

PGE RESPONSE TO

ICNU DATA REQUEST NO. 10.22

REDACTED

June 5, 2008

May 14, 2008

TO: Melinda Davison
Industrial Customers of NW Utilities

FROM: Patrick G. Hager
Manager, Regulatory Affairs

**PORTLAND GENERAL ELECTRIC
UE 196
PGE Response to ICNU Data Request 10.22
Dated April 30, 2008
Question No. 084**

Request:

Please provide copies of all minutes of all Boardman Owners Committee meetings that occurred between October 1, 2005 and the present.

Response:

Attachment 084-A provides copies of minutes that PGE has from Owners' Committee meetings that occurred between October 1, 2005 and the present. See also Attachment 054-A of PGE's Response to ICNU Data Request No. 054. Attachment 084-A is confidential and subject to the protective order in this docket (Order No. 07-433).

UE 196
Attachment 084-A

Confidential and Subject to Protective Order No. 07-433

Owners' Committee Meeting Minutes

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

UE 196

In the Matter of)
)
PORTLAND GENERAL ELECTRIC)
COMPANY)
)
Application to Amortize the Boardman)
Deferral.)
_____)

SURREBUTTAL TESTIMONY OF

JOHN R. MARTIN, P.E.

ON BEHALF OF

THE INDUSTRIAL CUSTOMERS OF NORTHWEST UTILITIES

ICNU/209

PGE RESPONSE TO

ICNU DATA REQUEST NO. 9.2

REDACTED

June 5, 2008

April 17, 2008

TO: Melinda Davison
Industrial Customers of NW Utilities

FROM: Patrick G. Hager
Manager, Regulatory Affairs

**PORTLAND GENERAL ELECTRIC
UE 196
PGE Response to ICNU Data Request 9.2
Dated April 3, 2008
Question No. 058**

Request:

Please provide all drafts or previous versions of the Siemens and Alstom root cause analyses that were provided to PGE prior to the final analyses.

Response:

PGE objects to this request because the draft versions of the Siemens and Alstom analyses are not the final work products given to PGE and are therefore not relevant to this proceeding. Without waiving its objection, PGE responds as follows:

Attachment 058-A is a copy of the preliminary draft Alstom report dated May 30, 2006. Attachment 058-B is a copy of another preliminary draft Alstom report dated February 20, 2007. Attachment 058-C is a copy of a preliminary draft Siemens report. It is dated March 8, 2007, the same date as the final Siemens root cause analysis provided as PGE Exhibit 105-C in this docket. Siemens did not change the date on the document when it was finalized. We received the preliminary draft Siemens report on March 16, 2007, and we received the final Siemens root cause analysis on approximately May 22, 2007.

PGE did not receive any other preliminary draft analyses from either Alstom or Siemens. Attachments 058-A, 058-B, and 058-C are confidential and subject to the protective order in this docket (Order No. 07-433).

UE 196
Attachment 058-B

Confidential and Subject to Protective Order No. 07-433

Provided Electronically (CD) Only

Second Draft Alstom Report

UE 196
Attachment 058-C

Confidential and Subject to Protective Order No. 07-433

Provided Electronically (CD) Only

Draft Siemens Report

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

UE 196

In the Matter of)
)
PORTLAND GENERAL ELECTRIC)
COMPANY)
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Application to Amortize the Boardman)
Deferral.)
_____)

SURREBUTTAL TESTIMONY OF

JOHN R. MARTIN, P.E.

ON BEHALF OF

THE INDUSTRIAL CUSTOMERS OF NORTHWEST UTILITIES

ICNU/210

PGE RESPONSE TO

ICNU DATA REQUEST NO. 6.6

REDACTED

June 5, 2008

February 19, 2008

TO: Brad Van Cleve
Industrial Customers of NW Utilities

FROM: Randy Dahlgren
Director, Regulatory Policy & Affairs

PORTLAND GENERAL ELECTRIC
UE 196
PGE *Second Supplemental Response to ICNU Data Request 6.6*
Dated January 24, 2007
Question No. 039

Request:

Please provide a copy of all communications, including e-mail, between PGE and Alstrom and PGE and Siemens that refer or relate to the root cause analyses of the LP #1 rotor crack.

Response (February 7, 2008):

PGE objects to this request because it is unduly burdensome. It would entail searching numerous files and archives, across numerous computer systems, hard copy files, and desks, many of which are not readily accessible.

First Supplemental Response (February 18, 2008):

Without waiving its objection, PGE responds as follows:

After discussions with ICNU, PGE made an effort to locate reasonably accessible e-mails and other communications in the time available. Attachment 039 Supp 1-A provides copies of communications found between PGE and Alstrom and PGE and Siemens that refer or relate to the root cause analyses of the LP 1 rotor crack. This attachment is confidential and subject to the Protective Order No. 07-433. It is provided electronically (CD) only due to its size under separate cover.

Second Supplemental Response (February 19, 2008):

Attachment 039 Supp 2-A provides additional e-mails and communications that PGE located.

PGE 2nd Supp. Response to ICNU Data Request No. 039
February 19, 2008
Page 2

Attachment 039 Supp 2-A is confidential and subject to Protective Order No. 07-433. It is provided electronically (CD) under separate cover.

UE 196
Attachment 039 Supp 2-A

Confidential and Subject to Protective Order No. 07-433
Provided electronically (CD)

Additional Communications Related to Root Cause Analyses