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September 3, 2008

Via Electronic Mail and U.S. Mail

Public Utility Commission
Attn: Filing Center
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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 the original and five copies of the confidential Opening Brief on behalf of the Industrial Customers of Northwest Utilities ("ICNU") in the above-captioned Docket. Also included is a redacted version of the same. All confidential material has been sealed under separate envelope.

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 Opening Brief of the Industrial Customers of Northwest Utilities upon the parties, on the official service list shown below for UE 196, via U.S. Mail and electronic mail.

Dated at Portland, Oregon, this 3rd day of September, 2008.

/s/ 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.)
_____)

**OPENING BRIEF OF THE
INDUSTRIAL CUSTOMERS OF NORTHWEST UTILITIES**

REDACTED VERSION

September 3, 2008

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I. INTRODUCTION

The Industrial Customers of Northwest Utilities (“ICNU”) requests that the Public Utility Commission of Oregon (“OPUC” or the “Commission”) deny Portland General Electric Company’s (“PGE” or the “Company”) Application for approval to amortize the excess net variable power costs (“NVPCs”) associated with the 2005 outage at the Boardman generating plant. The Commission should reject PGE’s request to recover the deferred Boardman outage costs for the following reasons:

1. In 2001, PGE entered into a joint venture with Siemens Westinghouse (“Siemens”) to install an experimental turbine design at Boardman. PGE assumed all responsibility for any consequential damages resulting from the failure of the new turbine.
2. PGE contracted with Siemens to install and maintain the new turbine; however, PGE imprudently failed to conduct a quality assurance and quality control program to review and monitor the work of Siemens.
3. The Boardman outage was caused by a crack in the low-pressure steam turbine 1 rotor (“LP1 Rotor”). The crack resulted from a misalignment of the turbine drive train due to improper alignment of the rotor and a loose bearing pedestal. PGE has failed to satisfy its burden of proof to show that it prudently operated and maintained the Boardman plant to prevent these conditions.
4. PGE operated the Boardman plant at excessive levels, which contributed to the failure of the LP1 turbine.
5. Despite claims that it was doing so, PGE failed to obtain an independent root cause analysis to provide an unbiased evaluation of the cause of the Boardman outage.

PGE has not carried its burden of proof in this proceeding to show that the excess power costs related to the Boardman outage were prudently incurred; accordingly, the Commission should deny PGE's UE 196 Application.

While it may be perceived that customers are better off with the new experimental turbine design at Boardman as compared to the status quo, this is not the correct analysis. Ratepayers have invested hundreds of millions of dollars into Boardman and PGE has an obligation to make sound, prudent investments in the continued operation of the plant. Now that it is clear that PGE did not make sound and prudent decisions surrounding the operation and maintenance of Boardman, PGE is attempting to shift this risk on to ratepayers.

II. BACKGROUND

On February 9, 1999, PGE entered into a turbine upgrade contract with Siemens, pursuant to which Siemens agreed to install a new low pressure steam rotor design at the Boardman generating plant ("Turbine Upgrade Contract"). PGE/101, Quennoz/3. The Turbine Upgrade Contract characterized the agreement as a [REDACTED]. Confidential Exhibit ICNU/305 at 3.

Pursuant to the Turbine Upgrade Contract, Siemens replaced the two existing low-pressure rotors and inner cylinders with new double flow low-pressure rotors. PGE/101, Quennoz/3. Siemens manufactured the new rotor design in 1999-2000 and completed the turbine upgrade in June 2000. PGE/101, Quennoz/3. Under the Turbine Upgrade Contract, Siemens was generally responsible for the maintenance of the LP1 Rotor. Confidential Exhibit ICNU/103, Martin/13. For example, [REDACTED]. [REDACTED]. Confidential Exhibit ICNU/100, Martin/10. The turbine upgrade increased the capacity of the Boardman plant by

23MW to 580MW. Staff /102, Durrenberger/7. The new rotors have a design life of ■ years. Confidential Exhibit ICNU/100, Martin/9 at line7.

In 2004, Siemens performed an upgrade on the HP/IP turbine, which increased the design capacity of the Boardman generating plant from 580 MWs to 617 MWs. Confidential Exhibit ICNU/100, Martin/15; Confidential Exhibit ICNU/305 at 12.

In July 2005, vibration levels for the LP1 Rotor showed a slight upward trend. PGE/101, Quennoz/4. On October 22, 2005, the vibrations became more severe, and PGE decided to take the LP1 turbine offline. PGE/102, Quennoz/1. After taking the LP1 turbine offline, PGE purchased 375 MWs of replacement power on a forward basis for the expected outage period. PGE/101, Quennoz/7. PGE is seeking to recover \$24.6 million in excess costs related to the replacement power in this proceeding.

On November 18, 2005, PGE discovered that a crack in the LP1 Rotor was the source of the high vibration levels. PGE/102, Quennoz/1. On December 1, 2005, PGE transported the cracked rotor to Alstom Power, Inc. (“Alstom”) for the necessary repairs following bids from Alstom and Siemens. Id. On January 25, 2006, the repaired rotor arrived at Boardman and was re-installed by Siemens personnel. Id. The outage ended on February 5, 2006, following re-installation and testing. Id. A second failure occurred when PGE attempted to restart the plant; however, PGE is not seeking recovery of the costs of that outage. PGE/101, Quennoz/6. An independent engineer’s review of this second failure found that the root cause of the failure was PGE’s failure to adequately train and supervise its Staff. Staff/203, Durrenberger/4.

Following the outage, PGE contracted with Alstom to perform a root cause analysis for the Boardman outage and contracted with an “independent firm,” later identified as

M&M Engineering, to conduct an independent root cause analysis. Siemen’s conducted its own root cause analysis, and PGE also performed its own investigation of the Boardman outage. Id. During the root cause reviews, PGE was able to provide comments and suggestions on draft analyses to both Siemens and Alstom, potentially influencing the outcome of those reports. See, Confidential Exhibit 311. No “independent” root cause analysis was ever performed. ^{1/}

PGE filed its Application for deferred accounting on November 18, 2005, twenty-six days after the Company took Boardman off line. The Commission granted PGE’s deferral Application, in part, on June 8, 2007. UM 1234, Order No. 07-049. On October 9, 2007, PGE filed an Application in this docket to amortize the Boardman deferral and recover from ratepayers \$26.4 million in excess NVPCs associated with the Boardman outage. See UE 196 Application. PGE also proposes to offset the proposed rate surcharge with certain credits otherwise due to customers.

III. STANDARD OF REVIEW

The Oregon deferred accounting statute provides that the “commission’s final determination on the amount of deferrals allowable in the rates of the utility is subject to a finding by the commission that the amount was prudently incurred by the utility.” OR. REV. STAT. § 757.259(5) (2007). Thus, the purpose of this proceeding is to determine whether the Boardman outage costs that were deferred pursuant to Order No. 07-049 were prudently incurred. This prudence standard is analogous to the reasonableness standard applied by the courts in negligence cases. See Re Pacific Power and Light Co., UE 170, Order No. 05-1050 at

^{1/} The minutes from the Boardman Owner’s Committee meetings show that [REDACTED] (Confidential Exhibit ICNU 302 at 5-6) [REDACTED] ICNU 302 at 5. These statements were not accurate.

23 (Sept. 28, 2005) (“Prudence is determined by the reasonableness of the actions based on the information that was available (or could reasonably have been available) at the time”).

In a prudence review under ORS § 757.259(5), the utility “is *solely* responsible for justifying whether its strategy was prudent.” Re Avista Corp., UG 176/ UM 1279, Order No. 06-610 at App. A, 15 (Oct. 30, 2006) (emphasis added). As a result, ICNU’s role in this proceeding is responsive. ICNU is not required to show that PGE and/or Siemens were *imprudent* to prevail. In UM 1147, the Commission explained the utility’s burden in a deferred accounting proceeding as follows:

[A]n applicant is initially responsible for both the burden of persuasion and the burden of production in support of a deferred accounting request. The burden of production shifts to other parties to present evidence that rebuts what an applicant presented. However, the burden of persuasion always rests with the applicant, regardless of opposition to the filing. Thus, for example, an applicant does not necessarily meet its burden merely by presenting un rebutted evidence. The evidence must be persuasive enough to satisfy all requirements required by statute.

Order No. 05-1070 at 5-6.

IV. ARGUMENT

PGE has not established that its operation and maintenance of the Boardman plant were reasonable and prudent. To carry its burden of proof, PGE must establish that: 1) Siemens prudently installed and maintained the LP1 Rotor; or, in the alternative, that PGE prudently monitored Siemens’ work; 2) that PGE prudently operated the LP1 Rotor; and 3) that PGE prudently mitigated the risk associated with installation of a new and unproven rotor design.

The evidence shows instead that the Boardman plant was not prudently maintained (by Siemens), and was not prudently operated (by PGE). Further, PGE has not

established that it prudently monitored Siemens' work. PGE also has not established that it prudently mitigated the risks associated with the turbine upgrade. Similarly, because of the benefits of the Turbine Upgrade Contract were intended in part to benefit PGE's shareholders, it is unjust for PGE to put the risk associated with the turbine upgrade on ratepayers. Finally, because the facts underlying the Boardman outage are distinguishable from those underlying the 1999 outage at the Hunter 1 plant ("Hunter 1 outage"), this proceeding is not controlled by the Commission's final order granting Pacific Power and Light Co. ("PacifiCorp") permission to amortize the deferred costs associated with the Hunter 1 outage. Accordingly, the Commission should deny PGE's Application for approval to amortize the deferred excess NVPCs associated with the Boardman outage.

A. PGE Cannot Contract Away its Statutory Burden to Prudently Operate and Maintain its Facilities

PGE relies on the fact that it contracted with Siemens to install and maintain the LP1 turbine to demonstrate prudence. The fact that PGE entered into a contract with Siemens to install and maintain the LP1 Rotor does not relieve PGE of its burden of establishing prudence. Under Oregon law, there is a presumption "that contracts do not create immunity from liability." Koch v. Spann, 193 Or. App. 608, 619 (2004). If the Commission allows PGE to escape its burden of establishing that the LP1 Rotor was prudently maintained simply because it had a contract with Siemens to perform maintenance, PGE would essentially be granted immunity from the statutory requirement of demonstrating prudence. This result would contravene Oregon public policy and encourage utilities to enter into contracts as a way of avoiding responsibility. Accordingly, the Commission should not allow PGE to contract around its statutory burden of establishing that the LP1 Rotor was prudently maintained.

Further, in a prudence review, the Commission generally does not permit utilities to contract around a statutory burden. For example, in Re Northwest Natural Gas, Co., UG 132, Order No. 99-697 (Nov. 12, 1999), Northwest Natural Gas, Co. (“NW Natural”) sought Commission approval of certain rate schedules. In arguing its case before the Commission, NW Natural claimed that certain cost information was not available because the work was performed under a fixed-price contract. See Re Northwest Natural Gas, Co., UG 132, Order No. 99-697 at 132 (Nov. 12, 1999). In rejecting NW Natural’s argument, the Commission held that the fact that NW Natural’s contract prevented NW from compiling the required information “does not eliminate NW Natural’s burden of proof to establish that its expenditures were prudently incurred.” Id. In effect, even though NW Natural’s contract made it difficult for NW Natural to carry its burden of proof, the Commission refused to relieve NW Natural of that burden.

Consistent with this policy, the mere fact that PGE had a maintenance contract with Siemens does not relieve PGE from its burden of showing that the Boardman plant was prudently maintained. Similarly, even if it was Siemens rather than PGE that acted imprudently in maintaining the LP1 turbine, PGE should be held responsible, because Siemens was acting on behalf of PGE. Nevertheless, PGE has not established that Siemens properly maintained the LP1 turbine. Also, the contract between Siemens and PGE relieved Siemens of liability. Finally, PGE did not provide oversight of the quality of Siemen’s work, and it does not have records to substantiate that Siemen’s work was properly performed.

B. PGE is Required to Establish that it Prudently Monitored Siemens' Work, Prudently Operated the LP1 Rotor, and Prudently Mitigated the Risk Associated with the Turbine Upgrade

If the Commission relieves PGE of its burden of establishing that Siemens prudently maintained the LP1 Rotor, PGE is still required to demonstrate that it prudently monitored Siemens' work. Essentially, PGE must establish that its quality assurance and quality control ("QA/QC") program was sufficient to prevent imprudent maintenance practices. Further, because PGE was *solely* responsible for operating the LP1 turbine, PGE must establish that it prudently operated the LP1 turbine. Finally, because the new LP1 Rotor was unproven, PGE must establish that it prudently mitigated the risk associated with the turbine upgrade.

1. Siemens Installed a New and Experimental LP1 Rotor

The experimental nature of the new rotor design is confirmed by the language of the Turbine Upgrade Contract: "[REDACTED]

[REDACTED]

[REDACTED] See Confidential Exhibit ICNU/305 at 3.

(emphasis added). This language establishes that PGE was the [REDACTED]

[REDACTED]. Id. Similarly, the characterization of the Turbine

Upgrade Contract as a [REDACTED] supports the argument that

Siemens and PGE worked together to develop and implement an experimental rotor design. Id.

Finally, PGE acknowledges that entering into the Turbine Upgrade Contract with Siemens was a

"business risk." See Hearing Transcript ("Tr.") at 102-103 (July 23, 2008).

The Turbine Upgrade Contract states: [REDACTED]

[REDACTED]

[REDACTED]

█ Confidential Exhibit ICNU/305 at 3. PGE argues that the upgrade was undertaken to improve efficiency for customers; however, PGE admits that one motivation for entering into the contract was the potential for deregulation of its generating assets. Tr. at 104. In sum, PGE entered into a risky contract with Siemens hoping that the █ would financially benefit both companies. Confidential Exhibit ICNU/305 at 3.

Contrary to PGE's assertions, the new LP1 Rotor was an entirely *new* rotor.

Specifically, █

█

█ Confidential Exhibit ICNU/200, Martin/2; see also Confidential Exhibit ICNU/306 at 2-4. In addition, "[t]he new LP turbines are a completely new design. The original LP turbines were designed and manufactured by Westinghouse Electric in Lester, Pennsylvania in 1977. Siemens Westinghouse designed the new LP turbines in Orlando, Florida in 1999." Confidential Exhibit ICNU/200, Martin/2. Finally, PGE acknowledges that "this was a new design[,] it was "unproven," there "were risks involved," and that the new blades "look[ed] *markedly* different." Tr. at 100-101 (emphasis added).

Siemens provided PGE with an incentive to agree to this risky turbine upgrade.

Specifically, under the Turbine Upgrade Contract, █

█.

Confidential Exhibit ICNU/103, Martin/9. █

█ Confidential Exhibit, ICNU/100, Martin/4. Accordingly, because the turbine upgrade was a risky endeavor, PGE must establish that it monitored Siemens' work and prudently mitigated the risk.

2. PGE Has Not Carried its Burden of Establishing that the LP1 Rotor was Prudently Maintained and Operated

The Turbine Upgrade Contract declared that the new LP1 Rotor had a specified design life of [REDACTED]. Confidential Exhibit ICNU/103, Martin/8. Because the LP1 Rotor failed after a mere 5^{1/2} years, “or [after] about [REDACTED] percent of the expected stress cycles[,]” it is clear that something went very wrong with the LP1 Rotor. Confidential Exhibit ICNU/100, Martin/9. Following the Boardman outage, Siemens, Alstom and M&M Engineering, which PGE characterized as an “independent” firm, allegedly were conducting root cause analyses. ICNU/301. PGE also allegedly planned on conducting its own in-house root cause analysis. Id. Only Siemens and Alstom, however, actually conducted root cause analyses for the Boardman outage. See Confidential Tr. at 18. See also Confidential Exhibit PGE/105C-A. [REDACTED] [REDACTED] and M&M Engineering did not perform its own independent root cause analysis. Confidential Tr. at 18. M&M Engineering produced a two page report that is unquestionably not a root cause analysis. PGE/105-D.

Although PGE bears the burden of proof in this proceeding, PGE made little effort to discover the root cause of the crack in the LP1 Rotor, primarily relying on the root cause analyses prepared by Siemens and Alstom. If the Commission finds that the Alstom and Siemens reports are not reliable, the Commission should disregard those reports and, consequently, find that PGE has not submitted sufficient evidence to carry its burden of proof.

Even if the Commission accepts the Alstom and Siemens reports, they *do not* support PGE’s argument that the LP1 turbine was prudently maintained and operated. As explained below, neither Siemens nor Alstom conducted a complete analysis sufficient to show that the LP1 turbine was prudently maintained and operated. If the Commission finds that the

Alstom and Siemens reports do not support PGE's position, the Commission should find that PGE has failed to carry its burden of proof.

3. The Root Cause Analyses Performed by Siemens and Alstom are Flawed and Potentially Biased

PGE relies substantially on the reports of Alstom and Siemens to support its claim that LP1 turbine was properly maintained and operated. The reports, however, are incomplete and biased. PGE initially made much of its plan to conduct an "independent" root cause analysis. Confidential Exhibit ICNU 302 at 5-6. The fact that PGE characterized M&M Engineering as "independent" suggests that PGE felt that Alstom and Siemens were not independent firms. Unfortunately, no independent root cause analysis of the first Boardman outage was ever prepared.

Siemens manufactured and maintained the LP1 Rotor and, therefore, had an interest in the outcome of the root cause analysis. More importantly, PGE acknowledges that Siemens worded its report "[t]o some extent" as a way of "avoiding placing blame" and "had a lot at stake" in conducting the root cause analysis. Tr. at 27-29. PGE also acknowledges that Siemens "tried[] to protect [itself] from design issues." *Id.* at 27. PGE also potentially influenced the outcome of the Siemens report. The evidence shows that PGE was given a draft of the report and was allowed to make comments. PGE provided a list of questions to Siemens and had at least one meeting to talk about the questions. Confidential Exhibit ICNU/210, Martin/1; ICNU/200, Martin/9. The meeting included discussion of the ultimate conclusions of the report, which were subsequently changed by Siemens in its final report.

PGE contracted with Alstom to conduct its root cause analysis *after* PGE agreed to pay Alstom to repair the cracked LP1 Rotor, hence, it is possible that PGE influenced Alstom's report. In addition, PGE commented on the Alstom root cause analysis, at least orally.

See ICNU/209, Martin/1. Thus, “[n]either Alstom nor Siemens is a truly independent and unbiased firm.” Confidential Exhibit ICNU/100, Martin/6.

In addition, Siemens and Alstom root cause analyses are flawed because neither “considered the full range of factors that lead to the failure.” Id. Specifically, Siemens and Alstom did not fully consider “business issues, management actions or inactions, technical design, maintenance, quality control, and other contributing factors.” Id. Alstom failed to consider the following issues:

1. Was the design of the LP1 turbine a contributing factor?
2. Did PGE modify the unit alignment and contribute to the failure?
3. Did the upgrade to the HP/IP turbine in 2004 contribute to the failure?
4. Did the high operating capacity of the unit contribute to the failure?

Id. at 11-12. Ultimately, Mr. Martin concluded that “the Alstom and Siemens root cause analyses are incomplete because they did not fully investigate the source and cause of the misalignment, the adequacy of the design, and other related issues that led to the failure.” Id. at 7, 15. Accordingly, the Commission should disregard the Alstom and Siemens reports as self-serving and incomplete.

C. [REDACTED]

[REDACTED]

In the alternative, if the Commission considers the Alstom report in making its determination, the Alstom report *does not* support PGE’s position. According to Alstom, the primary propagation factor of the cracked rotor was [REDACTED]” Confidential Exhibit PGE/105C-B, Quennoz/41. Further, [REDACTED]

[REDACTED] Id. (emphasis

added). Essentially, the LP1 Rotor failed after experiencing bending loads likely caused by a

[REDACTED]

[REDACTED]” Id.

a.

[REDACTED]

Siemens significantly changed the bearing elevations on the LP1 Rotor several times between the time of installation in 2000 and the time of the failure in 2005. Confidential Exhibit ICNU/100, Martin/9. These changes in bearing elevation raise two questions: “1) Why were the elevations changed; and 2) What are the correct elevation settings?” Id. Essentially, the bearing elevations were either incorrect at the time of installation in 2000, or incorrect in 2005 following the adjustments.

The Alstom report contains a detailed chart documenting the height of each bearing over the course of several years. For example, the No. 3 bearing height decreased from [REDACTED] to [REDACTED] after the failure. Confidential Exhibit PGE/105C-B, Quennoz/27. It is clear that Siemens changed the bearing heights at the request of PGE. Confidential Tr. at 38. Additionally, [REDACTED]

[REDACTED]

[REDACTED].” Confidential Exhibit ICNU/100, Martin/9-10 (citing PGE/105C-B, Quennoz/35). The crack in the LP1 Rotor is a “classic example of [such] a fatigue failure[.]” Confidential Exhibit ICNU/100, Martin/7. In sum, Alstom concluded that: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Id. at 11. Because Siemens was responsible for setting the bearing heights, it follows that Siemens did not prudently maintain the LP1 Rotor.

b. [REDACTED]

Alstom also concluded that [REDACTED]

[REDACTED] Confidential Exhibit PGE/105C-B, Quennoz/41. Essentially, because the bearing structure of the LP1 Rotor was not prudently secured, the shaft did not rotate properly. According to Alstom, this [REDACTED] that eventually caused the crack in the LP1 Rotor. Confidential Exhibit PGE/105C-B, Quennoz/41.

Alstom’s conclusion that the sole plate was loose is supported by the evidence in this proceeding. For example, PGE acknowledges that there were [REDACTED]

[REDACTED] which [REDACTED]

[REDACTED] ICNU/203, Martin/1 Representatives from PGE discussed the impact of the missing nuts at the February 20, 2007 Boardman Owners’ Meeting. According to the Owners’ Meeting minutes, [REDACTED]

[REDACTED] Confidential Exhibit ICNU/312 at 4 (emphasis added). The Owners’ Meeting minutes further state that “[REDACTED]

[REDACTED]” Id. (emphasis added). PGE asserts that because the missing bolts are “[REDACTED]

[REDACTED]” that failing to notice them was not imprudent. Confidential Tr. at 44. This argument is unfounded, as the missing nuts were plainly visible. See Confidential Exhibit ICNU/304 at 3-6. At the very least, the missing

nuts would have been visible in 2000, *before* Siemens put down the plywood decking for the 2004 HP/IP upgrade. Confidential Tr. at 45. Further, when the LP1 turbine upgrade was done in 2000, PGE should have determined that the bearing pedestals were secure. As Mr. Martin stated, “[i]t is my opinion that the soleplates and the nut/bolt attachments should have been inspected because the nuts can become loose and result in shaft misalignment.” ICNU/200, Martin/4, lines 9-11. “Not inspecting the sole plates and attaching nuts... is a significant quality control failure by PGE.” *Id* at 17-20. More importantly, because the burden of proof is on PGE, ICNU is not required to establish that Siemens and PGE *imprudently* failed to locate the missing bolts. Rather, PGE is required to establish that the LP1 Rotor was prudently maintained. Essentially, PGE must establish that Siemens (or PGE) prudently inspected the sole plate to ensure that it was properly secured. It is undisputed that the sole plate nuts *were not* inspected in 2000 or 2004. ICNU/204, Martin/1.

PGE mischaracterizes Alstom’s conclusions by asserting that PGE did not have any “substantive” sole plate problems and that only two of the twenty-eight nuts were missing. Tr. at 114-115. These assertions are baseless. First, because Alstom concluded that a “[REDACTED]” likely contributed to the failure of the LP1 Rotor, it is clear that PGE *did* have “substantive” sole plate problems. Confidential Exhibit PGE/105C-B, Quennoz/41; Tr. at 114. Second, according to the Boardman Owner’s meeting minutes, [REDACTED]. Confidential Exhibit ICNU/312 at 4. Obviously, each sole plate nut matters. Accordingly, the Alstom report does not support PGE’s position.

2.

[REDACTED]

The Siemens report, similarly, does not support PGE’s position that the Boardman generating plant was prudently maintained and operated. For example, in the abstract to the Siemens Report, Siemens declared that “[REDACTED]”

[REDACTED]

[REDACTED]” Confidential Exhibit PGE/105C-C, Quennoz/2 (emphasis added). Because Siemens was responsible for maintaining the LP1 Rotor—which includes setting the rotor alignment—the phrase “[REDACTED]” implicates Siemens. *Id.* Further, PGE acknowledges that PGE “has sole responsibility for operating the Boardman plant[....]” Tr. at 26. Thus, the phrase “[REDACTED]” clearly implicates PGE. PGE/105C-C, Quennoz/2 (emphasis added).

In addition, PGE acknowledges that the phrase “unknown operational condition”—as used in the Siemens report—rules out defects in “design,” defects in “fabrication,” and defects in “materials.” *See* Tr. at 26. If defects in design, fabrication and materials are ruled out, the only remaining causes are the maintenance and operation of the plant. Accordingly, the Siemens report also does not support PGE’s position.

D. PGE Has Not Carried Its Burden of Establishing that PGE Prudently Operated the LP1 Rotor at the Boardman Plant

As noted previously, the design capacity of the Boardman generating plant after the LP1 turbine upgrade in 2000 was 580 MW. Tr. at 67, lines 11-16. This design capacity increased to 617 MW in 2004, following the HP/IP turbine upgrade. *Id.* PGE, nonetheless, consistently operated Boardman [REDACTED] “from 2000, through the time of failure in 2005[....]” Confidential Exhibit ICNU/100, Martin/15. For example, in [REDACTED]

[REDACTED]

[REDACTED] of the time for each respective year. Confidential Exhibit ICNU/104, Martin/1. PGE asserts that under industry standards, turbines are designed to operate at 105% of the design maximum output. PGE/300, Quennoz/15. This assertion is false, as “[t]here is no industry standard for turbines operating at 105-percent of rated output.” Confidential Exhibit ICNU/200, Martin/5. Furthermore, PGE’s assertion defies common sense.

For example, the design specification for the 2004 HP/IP turbine modification at Boardman indicate that the maximum output for the unit would be [REDACTED] with valves wide open and 100-percent of normal pressure. Confidential Exhibit ICNU/202, Martin/14. The specifications further stated that [REDACTED]

Id. Nonetheless, [REDACTED]

[REDACTED] Confidential Exhibit ICNU/200, Martin/6; ICNU/205, Martin/Attachments A-B. PGE does not dispute this calculation. Confidential Tr. at 74, lines 8-11. Thus, PGE operated Boardman in excess of the design maximum output prior to the Boardman outage.

There has been much discussion in testimony and at the hearing about calculating the maximum plant output based on steam pressure versus electrical output. Regardless of which measure is used, PGE admits that it at times “redlined” the plant and increased the risk of adverse consequences to the plant. ICNU/314 at 1. In addition, the LP 1 turbine failed early in its design. Mr. Martin concluded based on his review that PGE’s operation of the plant did increase the stress on the turbine and was a contributing factor in the failure. Confidential Exhibit ICNU/200, Martin/6; ICNU/201; ICNU/100, Martin/16. When combined with PGE’s

other failures in management of the Boardman plant, PGE's operation of the plant was imprudent.

E. PGE Has Not Carried its Burden of Establishing that it Prudently Monitored Siemens' Work through an Independent QA/QC Program

If the Commission relieves PGE of its burden of establishing that Siemens prudently maintained the LP1 Rotor, PGE is still required to establish that it prudently monitored Siemens' work. [REDACTED] Confidential Tr. at 60-61. When Siemens installed the new LP1 Rotor in 2000, "PGE did not provide for independent [QA/QC] to monitor Siemens' installation of the new equipment." Confidential Exhibit ICNU/100, Martin/4. PGE also "did not provide for independent [QA/QC] to monitor Siemens' maintenance of the turbines." Id. Further, PGE acknowledges that it did not have a QA/QC program that was separate from Siemens' program and that it "rel[ied] on the vendor." Tr. at 63-64; ICNU/105. Because the "installation of a new turbine is a major plant modification" it was imprudent for PGE to rely exclusively on Siemens' QA/QC programs. Confidential Exhibit ICNU/200, Martin/1.

PGE asserts that Siemens "keeps a record of their activities, and they have a detailed day-by-day log." Tr. at 64. The fact that *Siemens* kept records of its work, however, does not mean that PGE prudently monitored Siemens' work. Similarly, the fact that Siemens provides PGE with "a final report for [Siemens'] maintenance efforts" does not mean that PGE prudently monitored Siemens work. Tr. at 66. Exhibit ICNU/201 is a PGE data response demonstrating that PGE "does not have any written procedures or records to substantiate its position that PGE had an active QA/QC program to review the work performed by Siemens." Confidential Exhibit ICNU/200, Martin/1-2; ICNU/201. Further, PGE admits that it has no record or inventory of the parts that were removed and replaced during the LP1 turbine upgrade.

See Tr. at 64. Such a program may have prevented the loose or missing sole plate fasteners that were identified as a contributing cause of the failure. Mr. Martin testified:

The missing and loose attaching nuts described above are examples of this lack of quality control. Both PGE and Siemens should have found the missing and loose nuts in 2000, 2004, and 2005 and taken corrective action. (is the quote confidential?) Yes

Confidential Exhibit ICNU/200, Martin/5.

Failing to maintain such basic information should be considered per se imprudent by this Commission.

It is clear that PGE imprudently relied on Siemens to document its own work and that PGE did not have an independent QA/QC program. Mr. Martin testified that PGE's failure to maintain a QA/QC program is imprudent. Id. at 1.

F. PGE Has Not Established that it Prudently Mitigated the Risks Associated with the Installation of the New and Unproven Rotor Design

The Turbine Upgrade Contract with Siemens was a risky endeavor. Despite this risk, PGE “[REDACTED]” Confidential Exhibit ICNU/100, Martin/4. Likewise, “PGE did not arrange for any risk mitigation, such as business interruption insurance, boiler and machinery insurance, or optional standby power contracts. These types of insurance and risk mitigation are available in the marketplace.” Id. In effect, PGE granted Siemens total immunity from liability for consequential damages resulting from Siemens' negligent, reckless, or illegal conduct. Because PGE could not recover the cost of replacement power from Siemens, PGE put all the risk associated with Siemens' installation and maintenance of the new and experimental rotor on ratepayers.

PGE agreed to waive consequential damages because PGE deemed the contract with Siemens to be an acceptable “business risk.” Tr. at 102-103; Confidential Exhibit ICNU/103, Martin/10. Further, PGE assumed that even if the “business risk” did not work out, that PGE could simply recover its costs from ratepayers through deferral and amortization. PGE deemed the risk to be acceptable because under the Turbine Upgrade Contract, Siemens agreed to pay PGE [REDACTED] within [REDACTED] of the Contract Award Date. Confidential Exhibit ICNU/103, Martin/9. PGE also wanted to get more output out of the Boardman generating plant in response to possible deregulation of its generating plants. Tr. at 104, lines 6-11.

PGE took no steps to mitigate the risk of the experimental turbine design, either through enhanced maintenance procedures or the purchase of insurance products in the event of an outage. Accordingly, the Commission should hold PGE responsible for taking this bad “business risk” and prevent PGE from unjustly shifting this risk to the ratepayers. Tr. at 102-103.

G. The Facts Underlying the Failure of the LP1 Rotor at the Boardman Plant are Distinguishable from those Underlying the Failure of the Hunter 1 Plant

On July 18, 2002, the Commission authorized PacifiCorp to amortize in rates \$130 million in deferred excess NVPCs incurred as a result of an outage at the Hunter 1 plant. PacifiCorp initially filed the deferral Application after the Hunter 1 plant “suffered a catastrophic failure on November 24, 2000.” Re PacifiCorp Application for an Accounting Order Regarding Excess Net Power Costs, UM 995/UE 121/UC 578, Order No. 02-469 at 37 (July 18, 2002) (“Hunter 1 Order”). This catastrophic failure “originated deep in the generator core” Id. Likewise, “[t]he root cause of shorting remains unknown (the evidence was destroyed in the fire).” Id. at 38. As explained below, because the facts underlying the failure of the LP1 Rotor

at the Boardman plant are distinguishable from those underlying the Hunter 1 outage, this proceeding is not controlled by the Hunter 1 Order.

The root cause of the Hunter 1 outage remained unknown largely because of “the extensive melting in the Hunter 1 core, which destroyed the evidence needed to determine what precipitated the failure.” Id. at 42. In the instant case, however, the LP1 Rotor did not melt down and two engineering firms (Alstom and Siemens) were able to perform root cause analyses. Specifically, Alstom concluded that the cracked LP1 Rotor resulted from “[REDACTED]

[REDACTED]” and that [REDACTED]

[REDACTED]. Confidential Exhibit PGE/105C-B,

Quennoz/41. Siemens, similarly, concluded that

[REDACTED]

[REDACTED]

[REDACTED] Confidential Exhibit PGE/105C-C, Quennoz/35. The words “unknown operating condition” were added to the Siemens final Root Cause Analysis report after the draft of that report was reviewed by PGE. It would appear that the use of the words “unknown operating condition” was added to make it appear that the cause of the failure was unknown, when the cause was actually well established. This language also could have been inserted to support a finding that is the Boardman outage was similar to Hunter Plant failure.

In addition, Hunter did not involve a voluntary decision to install a risky new technology, nor did it involve a decision to contract away the responsibility for prudently maintaining the plant. There was no demonstration in the Hunter case that PacifiCorp failed to maintain an adequate QA/QC program. Finally, in establishing the deferral account the Commission required PacifiCorp to absorb about 50% of the costs which weighed heavily in the

decisions of a previous commission. Accordingly, the instant case is distinguishable from Hunter 1.

H. The Turlock Litigation Demonstrates that PGE's Management of Boardman Was Inadequate

The Turlock Irrigation District has initiated litigation alleging that PGE's operation and maintenance of Boardman were negligent, resulting in both the first and second outages of the Boardman plant. See Staff/202, Durrenberger/1. Turlock attached a root cause analysis prepared by Pilot Advisors to its Complaint in Multnomah County Circuit Court Case No. 0710-12156, which addressed the second outage. Staff/203, Durrenberger/2. Pilot Advisors concluded that:

The failure of the generator was the direct result of management failing to ensure that critical personnel remained qualified to properly operate the assets. This led to ineffective supervision and accountability for performance, ultimately allowing personnel that were not qualified to perform critical activities.

Staff/203, Durrenberger/4.

While the Pilot Advisors report specifically addresses the second outage, it is symptomatic of the poor management practices that were prevalent at the Boardman plant. These same management practices undoubtedly led to the failure to detect or remedy the misalignment of the LP1 Rotor.

IV. CONCLUSION

PGE has failed to show that it prudently operated and maintained the Boardman plant. PGE voluntarily entered into an agreement to install an experimental new technology, despite acknowledging that the original plant would continue operating reliably for many years. PGE contracted with Siemens to install and maintain the technology, while relieving Siemen's from liability for consequential damages. Under such circumstances, PGE's failure to establish

an adequate QA/QC program or otherwise monitoring Siemens' work was imprudent. PGE also operated the plant at excessive levels, which contributed to the failure. PGE has sole responsibility for prudently operating and maintaining the Boardman plant, and this is a responsibility that PGE cannot contract away. Due to improper operation and maintenance, the LP1 Turbine became misaligned resulting in a failure of the turbine. [REDACTED]

[REDACTED]. PGE should have detected and remedied these conditions. PGE has failed to demonstrate that it acted prudently; therefore, its request to amortize the costs resulting from the Boardman outage should be denied. PGE must not be permitted to shift the risk of its poor decisions onto ratepayers.

Dated this 3rd Day of September, 2008.

Respectfully Submitted,

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