

**U.S. Chemical Safety and
Hazard Investigation Board**

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Hon. Rafael Moure-Eraso
Chairperson

Hon. John S. Bresland
Board Member

Hon. Mark Griffon
Board Member



Peter C. Christman, Jr., President
Pratt & Whitney Power Systems, Inc.
400 Main Street, Building G
East Hartford, CT 06108

DEC 19 2011

Dear Mr. Christman:

I am writing with regard to two CSB recommendations, Numbers 2010-07-I-CT-UR8 and UR14, issued to Pratt & Whitney pursuant to the CSB's investigation of the February 7, 2010 natural gas explosion at Kleen Energy, a power plant under construction in Middletown, CT. On that date, workers were cleaning fuel gas piping using a "gas blow"—a process that pushed natural gas through the piping at high pressure and velocity to remove debris. The gas and debris were vented outside near the facility's power generation building. The gas accumulated and ignited, triggering a massive explosion that killed six workers.

Because gas turbine manufacturers can play an important role in discouraging their customers from this inherently unsafe cleaning methodology, the CSB issued the following to Pratt & Whitney (PWPS):

Recommendation No. 2010-01-I-CT-UR8:

Provide to your customers:

- a. *Comprehensive technical guidance on inherently safer methods for cleaning fuel gas piping, such as the use of air or pigging with air.*
- b. *Comprehensive Cleaning Force Ratio (CFR) guidelines, specifying both the upper and lower limits required to obtain satisfactory cleaning for the fuel gas piping for purposes of the warranties of the turbines.*
- c. *Warnings against the use of fuel gas to clean pipes.*

Recommendation No. 2010-01-I-CT-UR14:

Work with the Electric Power Research Institute to publish technical guidance addressing the safe cleaning of fuel gas piping supplying gas turbines. At minimum:

- a. *For cleaning methodology, require the use of inherently safer alternatives such as air blows and pigging with air in lieu of flammable gas.*
- b. *Provide technical guidance for the safe and effective use of alternative methods for cleaning such as air and pigging with air.*

I am writing to inform you that the Board voted on December 6, 2011, to designate Recommendation No. 2010-07-I-CT-UR8 with the status "**Closed- Acceptable Action.**" This status reflects the Board's determination that PWPS has met the intent of the CSB's recommendation and that no additional action is necessary. The Board was pleased to learn

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that the company revised its commissioning manual and turbine installation manuals to incorporate warnings against the use of gas blows and to recommend the use of compressed air or nitrogen. We were also pleased to learn that in cases where PWPS is contracted to provide commissioning services, it will no longer permit its subcontractors to use gas blows to clean piping.

The Board also voted on December 6, 2011, to designate Recommendation No. 2010-07-I-CT-UR14 with the status "**Open- Acceptable Response**." We appreciate that PWPS is collaborating with the Electric Power Research Institute in its development of a guidance document on safe pipe cleaning methodologies. Before the Board can consider this recommendation for closure, we will need to review the published document. Therefore, please provide us with a copy when it becomes available.

Thank you again for PWPS's efforts to protect the health and safety of workers and the public at large. Please continue to keep us abreast of PWPS's efforts on this issue, and in particular, with regard to Recommendation No. 2010-07-I-CT-UR14. Please continue to copy Ms. Christina Morgan, Recommendations Specialist, in all future correspondence.

Sincerely,



Rafael Moure-Eraso, PhD, CIH
Chairperson

CC (electronic only): James Scroggins, Senior Contracts Manager and Business Practices & Compliance Officer, Pratt & Whitney
Manuel Gomez, Director of Recommendations, CSB
Don Holmstrom, Investigations Supervisor, CSB
Christina Morgan, Recommendations Specialist, CSB