

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

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Hon. Rafael Moure-Eraso
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Hon. John S. Bresland
Board Member

Hon. Mark Grilffon
Board Member



Mr. Allen Smith
Rolls-Royce
9545 Cote de Liesse
Dorval, Quebec H9P 1 A5

MAR 12 2012

Dear Mr. Smith:

As you know, the U.S. Chemical Safety and Hazard Investigation Board (CSB) issued two recommendations to Rolls-Royce pursuant to its investigation of the February 7, 2010 natural gas explosion at Kleen Energy, a natural gas-fueled, combined-cycle power plant under construction in Middletown, CT.

These recommendations read as follows:

Recommendation No. 2010-07-I-CT-UR9:

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. 2010-07-I-CT-UR15:

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 February 22, 2012 to designate Recommendation No. 2010-07-I-CT-UR15 with the status "**Closed- Acceptable Action.**" This status reflects the Board's determination that Rolls-Royce has met the intent of this recommendation and that no additional action is necessary. The Board was pleased to learn that Rolls-Royce collaborated with the Electric Power Research Institute in the production of its recently published *Guidelines for Fuel Gas Line Cleaning Using Compressed Air or Nitrogen.*

With regard to Recommendation No. 2010-07-I-CT-UR9, this recommendation retains the status "Open- Acceptable Response", as we notified you in my September 22, 2011 letter. **Before the Board may consider this recommendation for closure, we request that you provide us with the additional information.** As stated in my September 22, 2011 letter, we appreciate

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Rolls-Royce's new policy to prohibit gas blows where Rolls-Royce is contractually responsible for pipe cleaning operations and to strongly discourage the practice where Rolls-Royce customers are responsible for these operations. As Recommendation No. 2010-07-I-CT-UR9 also calls for Rolls-Royce to distribute guidance to its turbine customers on alternative pipe cleaning methodologies, we would appreciate your clarifying what procedures Rolls-Royce uses where it is contractually responsible for pipe cleaning operations at its customers' facilities. Where Rolls-Royce is not contractually responsible for pipe cleaning operations, we would ask that the company refer its clients to EPRI's *Guidelines for Fuel Gas Line Cleaning Using Compressed Air or Nitrogen*.

Thank you for your efforts to protect the safety and health of workers and the public at large. Ms. Christina Morgan, Recommendations Specialist, remains the point of contact for CSB Recommendation No. 2010-07-I-CT-UR9. She may be reached at +1 202-261-7642, or Christina.Morgan@csb.gov.

Sincerely,

Daniel Howowitz for RME

Rafael Moure-Eraso, PhD, CIH
Chairperson

CC: Thomas Scarinci, Rolls-Royce
Don Holmstrom, Director of the Western Regional Office of Investigations, CSB
Manuel R. Gomez, Director of Recommendations, CSB
Christina Morgan, Recommendations Specialist, CSB