



U. S. Chemical Safety and Hazard Investigation Board

RECOMMENDATIONS STATUS CHANGE

SUMMARY

Report:	Kleen Energy Natural Gas Explosion
Recommendation Number:	2010-7-I-CT-UR7
Date Issued:	June 28, 2010
Recipient:	Mitsubishi Power Systems
New Status:	Closed- Acceptable Action
Date of Status Change:	February 14, 2013

Recommendation Text:

Provide to your customers:

- *Comprehensive technical guidance on inherently safer methods for cleaning fuel gas piping, such as the use of air or pigging with air.*
- *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.*
- *Warnings against the use of fuel gas to clean pipes.*

Board Status Change Decision:

A. Rationale for Recommendation

This recommendation was issued pursuant to the CSB's investigation of the February 7, 2010 explosion at Kleen Energy, a combined-cycle, natural gas-fueled power plant then under construction in Middletown, Connecticut. A catastrophic natural gas explosion occurred during the planned cleaning of fuel gas piping using natural gas. The CSB found that this practice is inherently unsafe and that safer, non-flammable cleaning methodologies are available.

B. Response to the Recommendation

Mitsubishi reported to the CSB that it provides a standard cleaning procedure for fuel gas piping to its turbine customers and contractors selected by the customer to conduct commissioning activities. This document was revised to clearly warn against the use of combustible gas for pipe cleaning and to "highly" recommend that customers use air or inert gas instead. This document also provides step-by-step directions for conducting non-flammable pipe cleaning operations, including appropriate target pressures to achieve sufficient cleaning.

C. Board Analysis and Decision

Because Mitsubishi reported actions that are consistent with the intent of this recommendation, the Board designated this recommendation with the status "Closed-Acceptable Action."