



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
WASHINGTON, D.C. 20555-0001

April 19, 2016

MEMORANDUM TO: Michael F. Weber  
Director of Nuclear Regulatory Research

FROM: Robert M. Taylor, Chair */RA/*  
Generic Issue Review Panel for Generic Issue 193

SUBJECT: RESULTS OF GENERIC ISSUE REVIEW PANEL ASSESSMENT  
OF GENERIC ISSUE 193, "BWR ECCS SUCTION CONCERNS"

The Generic Issue Review Panel (GIRP) has completed its assessment for Generic Issue (GI) 193. The GIRP concluded that the proposed issue did not present a significant safety hazard to warrant any new or revised regulatory requirements or guidance. In accordance with Management Directive (MD) 6.4, "Generic Issues Program," the proposed GI will be closed out.

The issue was proposed on May 10, 2002, by a Nuclear Regulatory Commission (NRC) Region III inspector, who identified a potential concern for the emergency core cooling system (ECCS) in boiling-water reactors (BWRs) during loss-of-coolant accidents (LOCAs). The concern focused on the force of the escaping steam from the reactor coolant system (RCS) causing a blowdown of containment gases into the suppression pool/torus, where the ECCS is designed to take suction. This proposed generic issue hypothesizes that these gases could impair operation of the low-pressure ECCS pumps if a large quantity of gas is drawn into their suctions.

A GIRP evaluated the proposed GI on October 16, 2003, and determined it met the seven screening criteria and recommended it should continue into the assessment stage as described in MD 6.4. A new GIRP was formed in September 2015 to perform an assessment to determine whether the issue presented a significant safety hazard that merits further regulatory action. Based on the information provided in the associated study performed by the Office of Nuclear Regulatory Research, the new GIRP concluded that the influx of noncondensable gas into the torus immediately following a large break LOCA is very unlikely to adversely affect the ability of low-pressure ECCS pumps to perform their safety function. A detailed assessment is in the attached enclosure. The new GIRP based their conclusion on the existing safety margin resulting from the combination of the following factors:

- The short-lived characteristics of the bubbles and their rapid dissipation.
- The reduction of gas flow to ECCS pumps' suction inlet piping due to obstruction from the physical configuration of strainers, piping, and torus geometry.
- The low approach velocity of the fluid at the suction inlet piping due to ECCS pumps operating in a minimum flow recirculation mode.
- The high survivability of ECCS pumps after short-term gas ingestion.

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Because the new GIRP could not identify any credible combination of physical and operational conditions that would jeopardize the ECCS core cooling safety function due to air entrainment following a LOCA, the new GIRP recommended closure of GI-193.

Enclosure:

Detailed Assessment of Generic Issue (GI)-193

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Enclosure:

Detailed Assessment of Generic Issue (GI)-193

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