



A Brief History of Gas Accumulation and Management

RIC 2013

Christopher Jackson

Reactor Systems Branch Chief



Communications

- 20 Information Notices
- 2 Generic Letters
- NUREG
- Many Public Meetings
- Countless Inspections

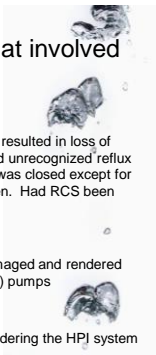




Events

Many events have occurred that involved vortexing. For example:

- **Diablo Canyon April 1987**
 - Low reactor coolant system (RCS) water level resulted in loss of shutdown cooling systems, boiling in RCS, and unrecognized reflux cooling provided by steam generators. RCS was closed except for small leakage paths and containment was open. Had RCS been open, core damage may have occurred
- **Oconee May 1997**
 - hydrogen ingestion during plant cooldown damaged and rendered nonfunctional two high-pressure injection (HPI) pumps
- **Dresden July 2001**
 - Inadequate venting led to a water hammer rendering the HPI system inoperable





Recent Resolutions

- GL 2008-01 Evaluations and Inspections
- NEI 09-10
- TSTF 523