BWROG – Emergency Core Cooling System (ECCS) Suction Strainers

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History

Boiling Water Reactor (BWR) strainer concerns first addressed in mid-1990's

Discoveries from Pressurized Water Reactor (PWR) strainer project prompted new questions for BWR strainers

ECCS Suction Strainer performance during accidents is the subject of new analysis

BWR Industry Response

BWR Owners' Group (BWROG) charged with updating validation of strainer performance based on recent PWR analyses

ECCS Suction Strainer Committee was created to drive resolution of new issues

BWROG Project Structure

Four subcommittees created:

- Source Term
- Downstream Effects – Fuel
- Downstream Effects – Components
- Strainer Head Loss

Source Term Issues

Latent debris

Zone-of-Influence issues

- Size of destructive zone
- Coatings

Spherical Zone-of-Influence assumption

Chemical effects

Downstream Effects – Fuel Issues

BWR industry uses fuel from three vendors; all must be analyzed for:

- Fuel bundle inlet debris filter plugging
- Local bundle plugging
- Debris deposition on fuel cladding
- Consequences for cladding temperature

Downstream Effects – Components

Components other than fuel may be affected by debris traveling past ECCS suction strainers

BWROG analyzing for:

- Plugging of pumps, valves and fittings
- Long-term effects of abrasion

Strainer Head Loss

Near field effect

Thin bed effect

Calcium silicate and micro-porous insulations

Non-homogeneous debris beds

Path Forward

Near-term actions

- Detailed project planning effort
- Fuels test planning

Work in concert with NRC to ensure PWR lessons learned are used

Planning to complete all testing and analysis by end of 2012

Acronyms

BWR: Boiling Water Reactor

BWROG: Boiling Water Reactor Owners' Group

ECCS: Emergency Core Cooling System

GEH: GE Hitachi Nuclear Energy Americas, LLC

PWR: Pressurized Water Reactor