FENOC

Industry Perspective: Mitigating Strategies (FLEX)

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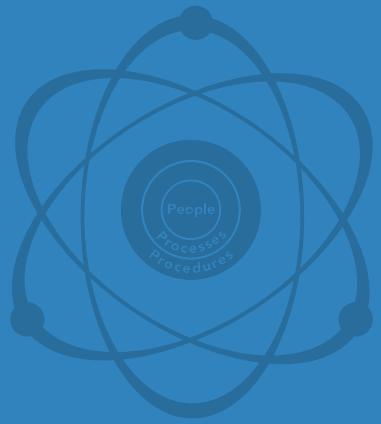
FENOC



Objective:

To provide industry perspective on challenges and success towards station blackout and mitigating strategies (i.e., FLEX).

Fundamental Problem Statement:

Decay heat removal during extended loss AC power (ELAP)

- Solutions needed regardless of initiating event
- Solution must maintain adequate core cooling
- Solution must maintain containment integrity

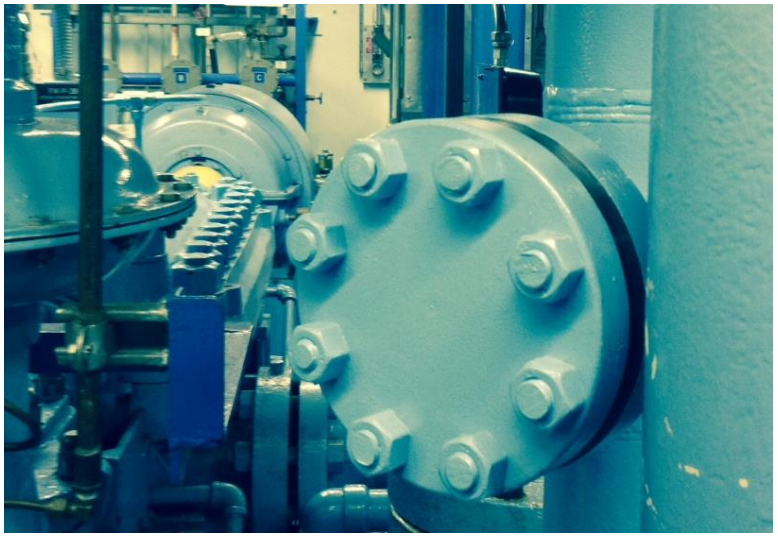
FLEX Solution:

- Build upon existing strategies to prevent core damage
- Build upon existing knowledge & training base
- Apply industry's continuous learning culture
- Build upon industry's existing margin improvement culture
- Leverage existing industry leadership capability

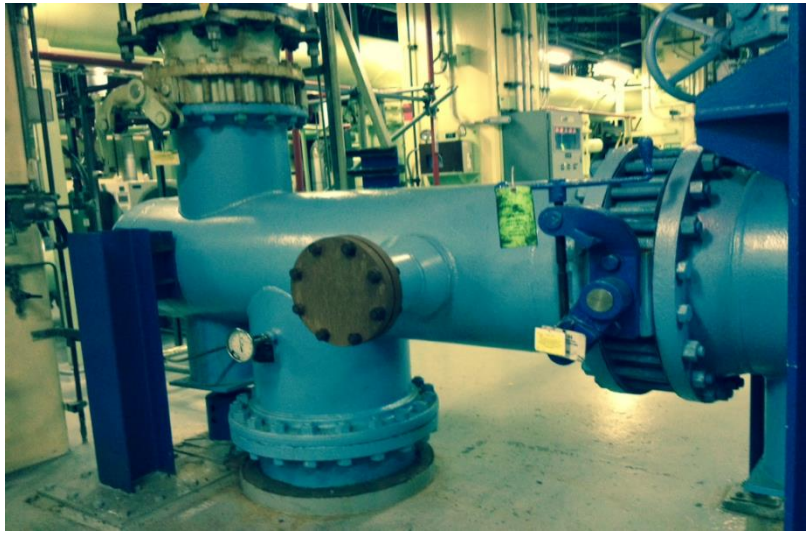
Identify and Solve Weak Links

- Power & Water
  - Portable backup sources upon existing backup sources
  - Redundancy: onsite, at additional nuclear sites, at National Response Center
  - Numerous plant modifications underway
  - Rigorous defense in depth philosophy

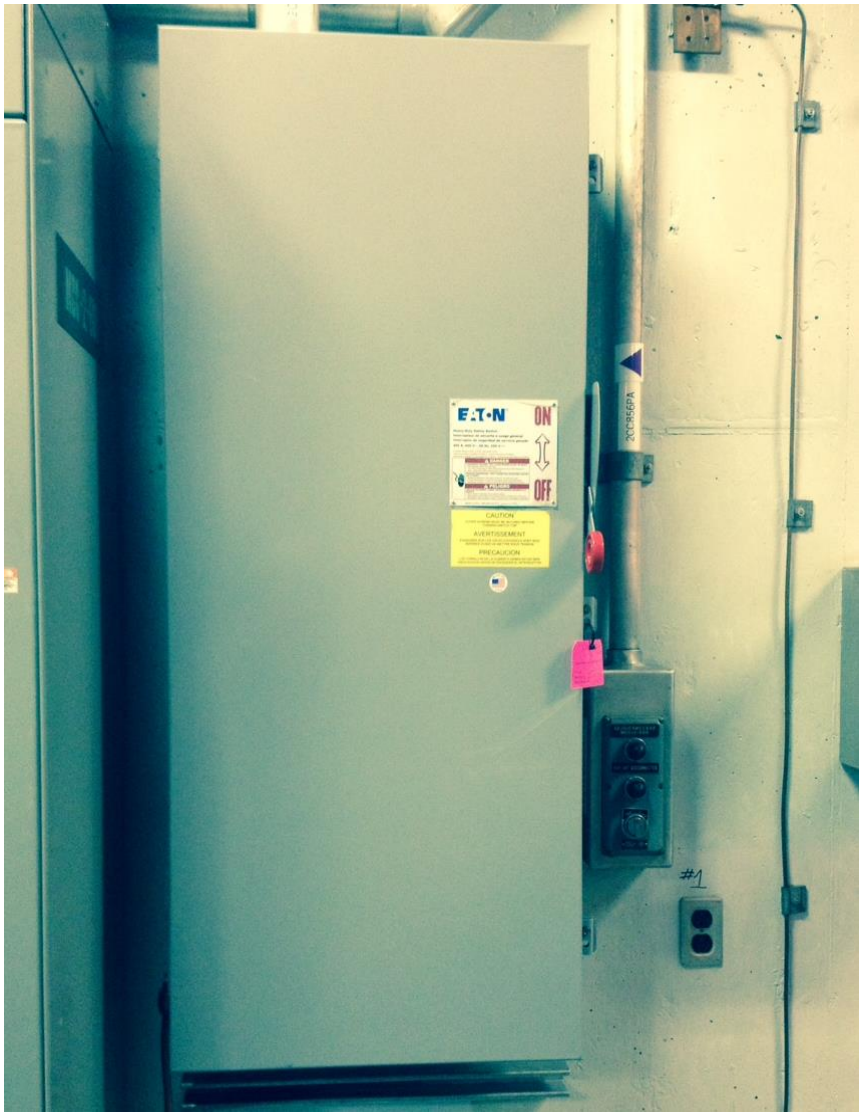
Standard Connections



Auxiliary Feedwater Connection



River Water Connection



AC Power Quick Connection

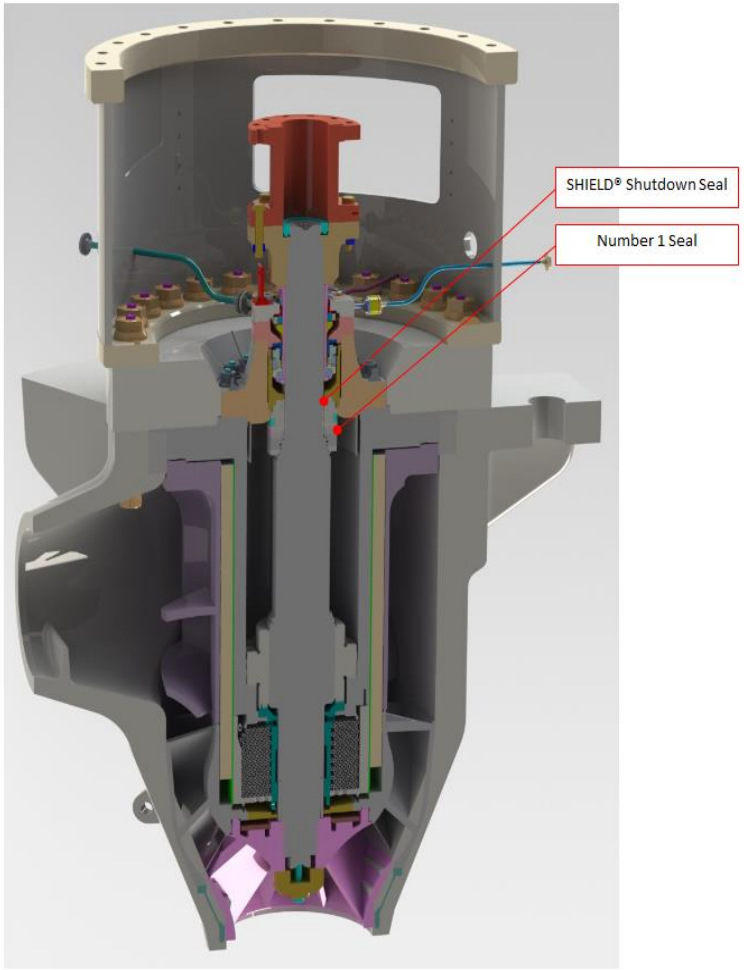
Site Portable Equipment

Simplicity in deployment and implementation is key.

Godwin Pump

480 Volt Generator

Identify and Solve the Weak Link:



RCP Seal Integrity

- Low leakage seals
  - Flow Serve N9000
  - Westinghouse Gen III
- RCS inventory maintained
- Containment integrity never challenged post ELAP

(ex., BVPS <4.5 psig at t + 7 days)

Substantial Financial Investments

Four nuclear units:

36 physical plant modifications

Total estimated cost for modifications $96 million

Robust storage facilities $11million

Purchased equipment housed locally $18 million

Total Investment $125 million

Substantial Leadership Investment

- Individual leadership “shaped the outcome” at Fukushima Daini
- US industry leadership has shaped the FLEX strategy
- US industry leadership is committed to the on-time implementation of the FLEX strategy
- Peer-to-Peer industry accountability via INPO

Remaining Challenges

- Fast track modifications
- Competition with plant “reliability” improvements
- Post installation testing of GEN III shutdown seal Spring 2015.