



# **Chloride-Induced Stress Corrosion Cracking (CISCC) Regulatory Issue Resolution Protocol (RIRP) Closure Meeting**

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NRC/NEI/EPRI Public Meeting  
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# Regulatory Issue Resolution Protocol

- Nuclear Energy Institute, NEI 14-14 (NRC ADAMS ML 1433A180)
- A Methodology for Resolving Regulatory Issues with Generic Implications for Fuel Cycle Facilities
- RIRP Phases
  - Identification
  - Screening
  - Planning
  - Implementation
  - Closure



# CISCC RIRP

- Initiated in February 2010
- Purpose: Address CISCC as a potential aging mechanism for welded stainless steel canisters
- Participants:
  - Nuclear Energy Institute (NEI)
  - Electrical Power Research Institute (EPRI)
  - Dry storage system vendors
  - NRC licensees
  - NRC staff
  - Public



# Public and Industry Meetings

- NRC sponsored public meetings
  - Multiple CISCC RIRP meetings
  - Independent spent fuel storage installation (ISFSI) license renewals
  - Certificate of Compliance (CoC) renewals
  - Regulatory Information Conference (RIC)
  - Division of Spent Fuel Management Regulatory Conference (REG CON)
- Industry sponsored meetings
  - NEI Used Fuel Management Conference
  - EPRI Extended Storage Collaboration Program (ESCP)



# NRC Publications

- NUREG/CR-7030, “Atmospheric Stress Corrosion Cracking Susceptibility of Welded and Unwelded 304, 304L, and 316L Austenitic Stainless Steels Commonly Used for Dry Cask Storage Containers Exposed to Marine Environments,” (ML103120081) October 2010.
- NRC Information Notice 2012-20: Potential Chloride-Induced Stress Corrosion Cracking Of Austenitic Stainless Steel and Maintenance Of Dry Cask Storage System Canisters (ML12319A4400) November 14, 2012.
- NUREG/CR-7170, “Assessment of Stress Corrosion Cracking Susceptibility for Austenitic Stainless Steels Exposed to Atmospheric Chloride and Non-Chloride Salts,” (ML14051A417) February 2014.
- NUREG-1927, Rev. 1, “Standard Review Plan for Renewal of Specific Licenses and Certificates of Compliance for Dry Storage of Spent Nuclear Fuel,” Draft Report for Comment (ML15180A011) June 2015.
- NUREG-#TBD Managing Aging Processes in Storage (MAPS) Report (in development).



# EPRI, NEI and INPO Products



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## Electrical Power Research Institute (EPRI)

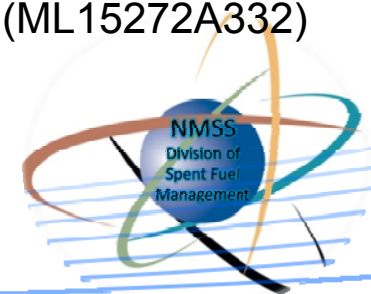
- Failure Modes and Effects Analysis (FMEA) of Welded Stainless Steel Canisters for Dry Cask Storage Systems, EPRI-3002000815, December 2013.
- Literature Review of Environmental Conditions and Chloride-Induced Degradation Relevant to Stainless Steel Canisters in Dry Cask Storage Systems, EPRI-3002002528, May 2014.
- Flaw Growth and Flaw Tolerance Assessment for Dry Cask Storage Canisters, EPRI-3002002785, October 2014.
- Susceptibility Assessment Criteria for Chloride-Induced Stress Corrosion Cracking (CISCC) of Welded Stainless Steel Canisters for Dry Cask Storage Systems, EPRI-3002005371, September 2015

## Nuclear Energy Institute (NEI)

- Format, Content and Implementation Guidance for Dry Cask Storage Operations-Based Aging Management, NEI 14-03 Rev 1, September 2015 (ML15272A332)

## Institute of Nuclear Power Operations (INPO)

- Industry Dry Cask Storage OE Database (in development)



# RIRP Closure

- Work conducted has led to a significantly improved understanding of the potential for CISCC of welded stainless steel canisters
- Aging Management Programs (AMPs) have been developed to address CISCC
- Operating experience database is key to learning aging management

