

# NRC AI Workshop

## Event Management Response Tool (EMRT) Project Relief Request Index Project

**Nick Mohr, Senior Technical Leader,  
EPRI Welding and Repair Technology Center (WRTC)**

June 29, 2021





# Event Management Response Tool (EMRT)

**Nick Mohr, Senior Technical Leader, EPRI**

**Kriti Dhaubhadel, Sparkcognition**

**Abubaker Sheikh, Sparkcognition**

**Prateek Jindal, Sparkcognition**

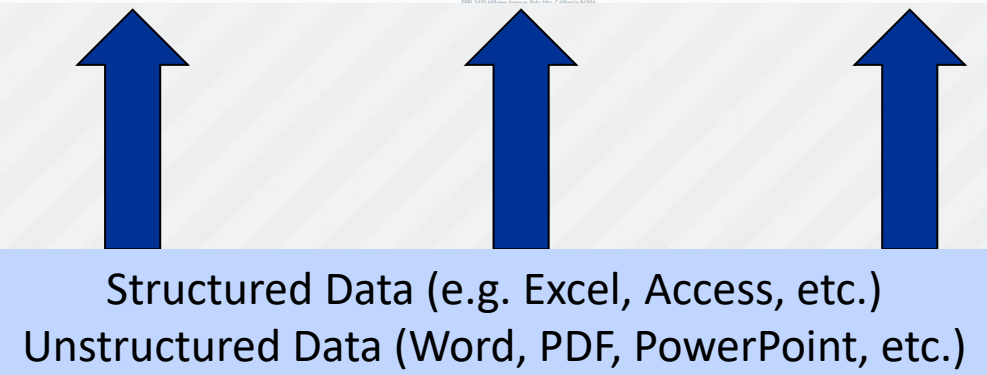
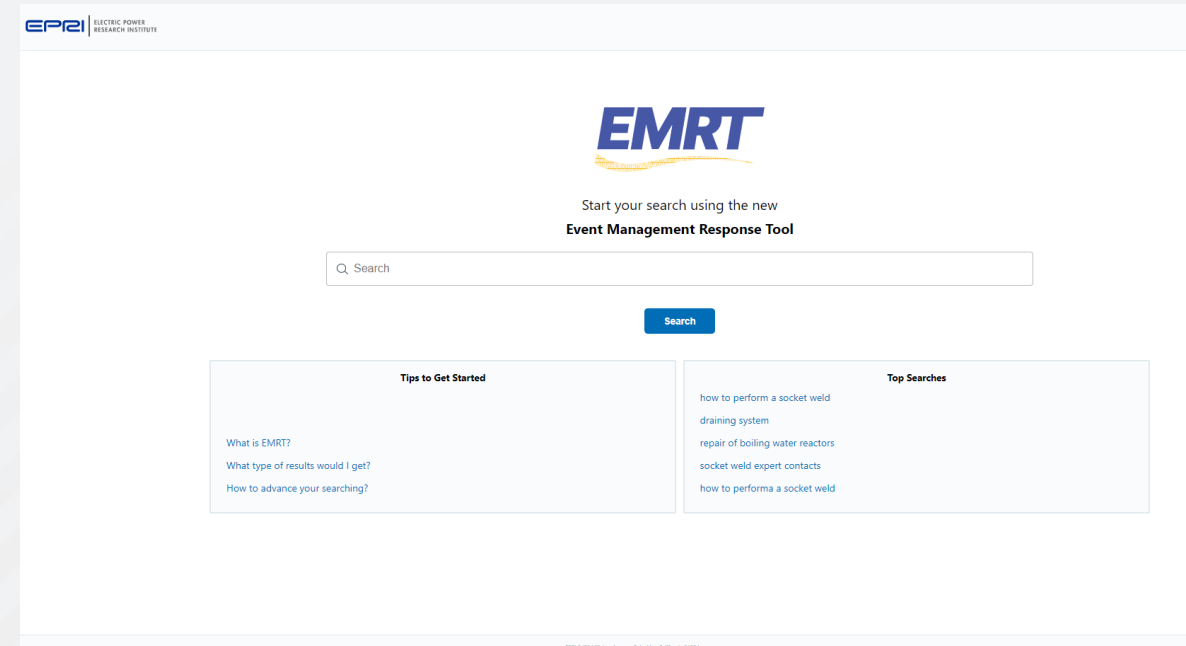
**Chris Taylor, Sparkcognition**

**Bryan Corralejo, Sparkcognition**

**Jaidev Amrite, Sparkcognition**

# What is the Event Management Response Tool (EMRT)

- Single location to consolidate various data sources for searching and correlation
  - Uses machine learning to refine and make future searches better
- Ingests various file formats (Excel, PDF, PowerPoint, etc.) to make unstructured data structured
- Allows previews of relevant locations within the document to ensure downloading is valuable



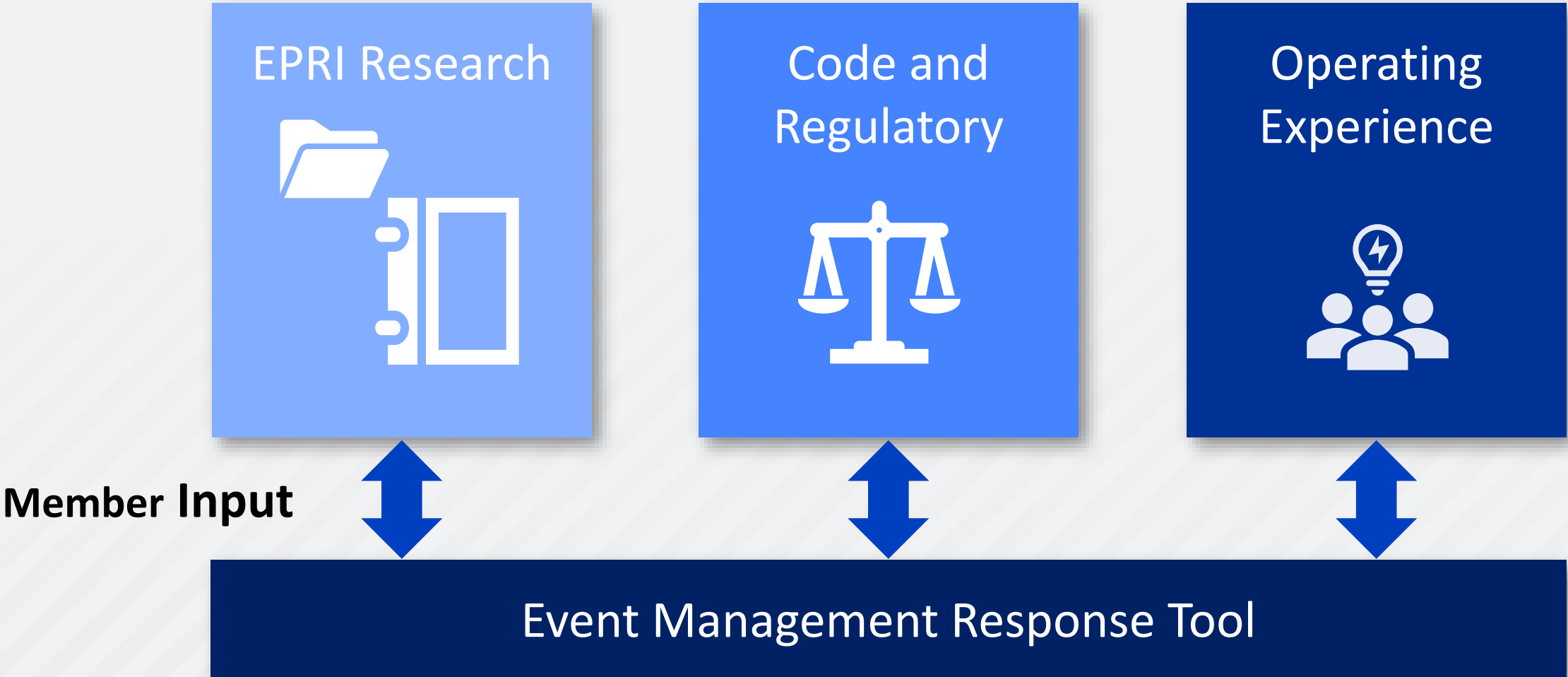
# Purpose and Objectives

- Goal to increase productivity by:
  - Reduction of time associated with finding the needed research products
    - Display the most relevant information based on a member search within research products
  - Reduction of time associated with finding Code and Regulatory information (e.g. regulatory submittals, content within Nuclear Regulatory Research, etc. )
  - Reduction of time associated with find operating experience and lessons learned from other EPRI members related to event



**Value/Objective:**  
**Provide EPRI members the needed information to make informed decisions in one location in reduced time**

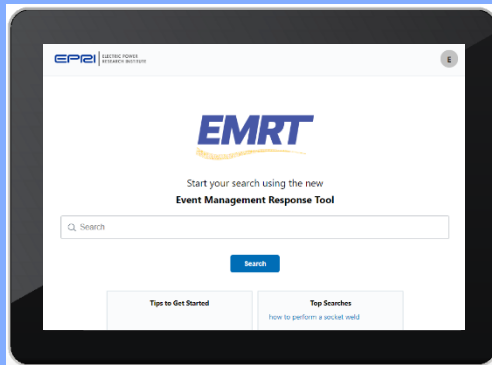
# Event Management Response Tool (EMRT)



**OBJECTIVE: Provide members needed info in one location to make informed decisions in reduced time**

# EMRT: Natural Language Processing & Access Full Data Library

## Input

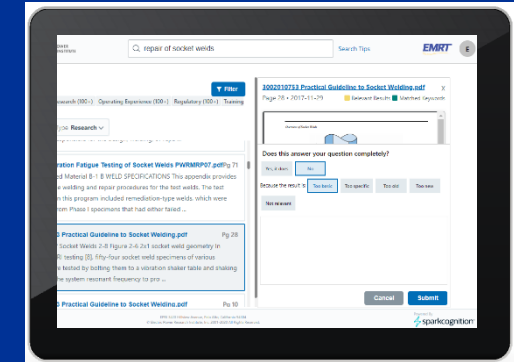


Typeahead search based on prior search terms

## Display of Output



## Feedback Loop

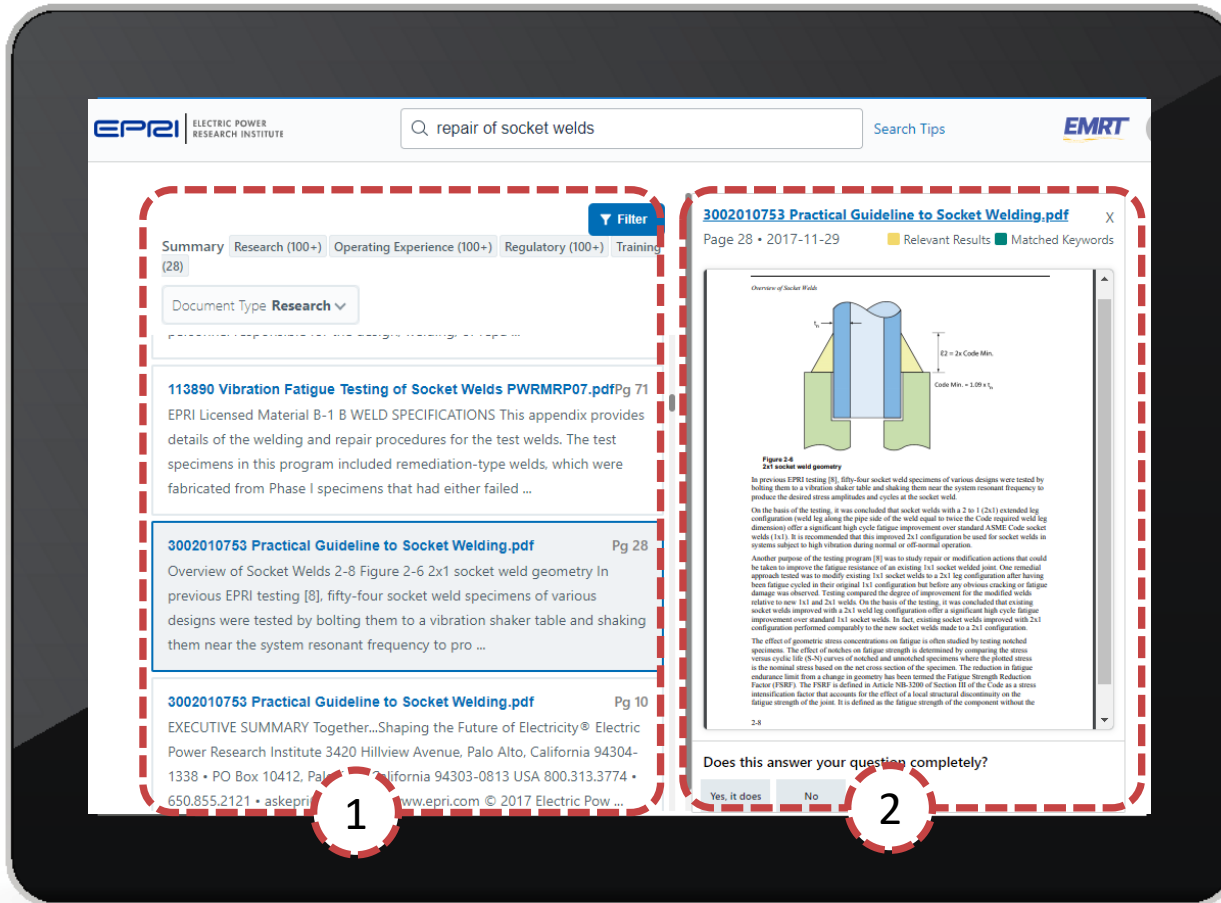


Machine Learning & Refinement of Output

Current input is text string but we would like to also use other input methods in the future



# EMRT Search Results – 3 Locations Display Content



- 1) Tabulated search results
- 2) Preview of user-selected search result within the respective document

- 3) Preview of user-selected search result with ability to scroll to different pages within the respective document

# EMRT-Regulatory Information Example

EPRI ELECTRIC POWER RESEARCH INSTITUTE weld overlay  [How to advance your searching?](#)

**Search Results** Sort By Select location

Research Operating\_Experience **Regulatory** Training

ML101260540-Assessment of Weld overlay as a Mitigation.pdf Pg 94  
84 Figure 73 Surge Nozzle FSWOL Through Thickness Axial Stress Results from Simultaneous Weld Deposition Analysis It is important to note that changes in weld sequencing in the field from that which was analyzed can negate any claimed weld residual stress be ...

ML101260540-Assessment of Weld overlay as a Mitigation.pdf Pg 59  
49 Figure 35 Safety Nozzle Inner Diameter Axial Stresses After SS Weld After Weld Overlay After INCO Weld

ML101260540-Assessment of Weld overlay as a Mitigation.pdf Pg 63  
53 Figure 39 Safety Nozzle Inner Diameter Hoop Stresses After SS Weld After Weld Overlay After INCO Weld

ML101260540-Assessment of Weld overlay as a Mitigation.pdf Pg 49  
39 Figure 24 Surge Nozzle Through Thickness Hoop Stresses After SS Weld After Weld Overlay After INCO Weld

**Relevant topics that others also ask**

- ["socket weld overlay"](#)
- [assessment of weld overlays for mitigating primary water stress](#)
- [calvert cliffs manual weld overlay](#)
- [ferrite number and overlay](#)

4

4) Suggested relevant topics on initial search screen and for specific searches

EPRI ELECTRIC POWER RESEARCH INSTITUTE weld overlay  [How to advance your searching?](#)

**ML101260540-Assessment of Weld overlay as a Mitigation. ...** Download Close

**Search Results** Research Operating\_Experience

ML101260540-Assessment of Weld overlay as a 84 Figure 73 Surge Nozzle FSWOL Through Thick Simultaneous Weld Deposition Analysis It is impo sequencing in the field from that which was analy stress be ...

ML101260540-Assessment of Weld overlay as a 49 Figure 35 Safety Nozzle Inner Diameter Axial S After INCO Weld

ML101260540-Assessment of Weld overlay as a 53 Figure 39 Safety Nozzle Inner Diameter Hoop After INCO Weld

ML101260540-Assessment of Weld overlay as a 39 Figure 24 Surge Nozzle Through Thickness Ho Overlay After INCO Weld

ML101260540-Assessment of Weld overlay as a 90 The effect is even more dramatic when one lo diameter of the surge nozzle. Figure 81 shows th shows that the beneficial compressive stress of t

ML101260540-Assessment of Weld overlay as a 97 Figure 90 Cold Leg Nozzle Weld Overlay Layer stress results through the thickness at the interfa weld for the layers as defined in Figure 90. The graph shows a similar oscillati ...

**Figure 72 Surge Nozzle FSWOL Axial Stress Results from Simultaneous Weld Deposition Analysis**

**Figure 73 Surge Nozzle FSWOL Through Thickness Axial Stress Results from Simultaneous Weld Deposition Analysis**

It is important to note that changes in weld sequencing in the field from that which was analyzed can negate any claimed weld residual stress benefit predicted for the weld overlay. Several sensitivity studies were conducted to evaluate the effect of weld overlay weld sequencing on the resulting weld residual stress field. Some sequence changes evaluated created large changes in the resulting weld residual stress field. In designing a full structural weld overlay or an optimized weld overlay for a certain geometry it is crucial that the design that is evaluated and approved is the design that is actually created in the field.

Ability to Scroll within document to determine if it is valuable to download. Download button takes user to NRC site.



# EMRT-Regulatory Information-NRC ADAMS Document Library

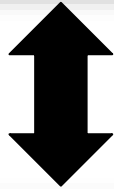
- Regulatory information is necessary to make decisions
- NRC ADAMS contains a number of **publicly** available documents (subset shown)
- Currently, users search ADAMS but finding data can be difficult
- We can use NLP and machine learning if we ingest and extract the data from these documents
- This would help members search this information more effectively
- Use of existing NRC Application Programming Interface (API) permits filtering by document type

## ADAMS Document Types

Order Suspending License  
Order, Confirmatory  
Organization Chart  
Part 21 Correspondence  
Performance Indicator  
Performance Plan  
Performance Planning and Appraisal (SES)  
Periodic Monitoring Report (Radiological/Environmental)  
Photograph  
Planning Call  
Plant Issues Matrix  
Plant Performance Review  
Plant Status Report  
Policy and Program Guidance  
Policy Statement  
Post-Shutdown Decommissioning Activities Report  
Pre-decisional Contract Action  
Preliminary Safety Analysis Report (PSAR)  
Press Release  
Privacy Impact Assessment  
Privacy Threshold Analysis  
Probabilistic Risk Assessment  
Program Review  
Project Manager (PM) List  
Project Plans and Schedules  
Project Requirement Document  
Proprietary Information Review  
Quality Assurance Program  
Radiation Overexposure Reports  
Records Retention and Disposal Authorization  
Records Transmittal and Receipt, SF Form 135  
Reference Safety Analysis Report  
Reference Safety Analysis Report, Amendment  
Regulatory Analysis  
Regulatory Guidance  
Regulatory Guide  
Regulatory Guide, Draft  
Report of Proposed Activities in Non-Agreement States, NRC Form 241  
Report, Administrative  
Report, Miscellaneous  
Report, Technical  
Request for Access Authorization  
Request for Additional Information (RAI)  
Request for OMB Review  
Request for Procurement Action (RFPA), NRC Form 400  
Request for Review of OMB Reporting Requirements  
RES Office Letter  
Research Information Letter (RIL)  
Resume  
Reviewer Comments on Conference/Symposium/Workshop Paper  
Route Approval Letter to Licensee  
Routine Status Report (Recurring Weekly/Monthly)  
Rulemaking- Final Rule  
Rulemaking- Proposed Rule  
Rulemaking-Authority Statement for EDO Signature  
Rulemaking-Comment  
Rulemaking-Environmental Assessment  
Rulemaking-Environmental Impact Statement  
Rulemaking-Plan  
Rulemaking-Regulatory Analysis  
Rulemaking-Regulatory Plan  
Safeguard Incident Report  
Safeguards Advisory  
Safety and Compliance Inspection Record, NRC Form 591  
Safety Evaluation  
Safety Evaluation Report  
Safety Evaluation Report, Draft  
Schedule and Calendars  
Security Form-Report of Security Infraction, NRC Form 183  
Security Form-Security Incident Report, NRC Form 135  
Security Frequently Asked Question (SFAQ)  
Security Incidence Report  
Security Plan  
Security Program  
Senior Management Meeting (SMM) Results Letter  
Significant Event Report  
Site Access Letter  
Site Characterization Plan  
Site Redress Plan  
Site Safety Analysis Report (SSAR)  
Slides and Viewgraphs  
Social Media-Photograph  
Social Media-Video Recording  
Software Control Documentation  
Software Documentation  
Space Management  
Space Policy  
Special Nuclear Material Physical Inventory Summary Report

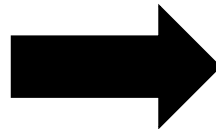
# EMRT-Regulatory Information (focus NRC ADAMS)

NRC API



Use "Document Types" to focus on desired documents

- Reference Safety Analysis Report
- Reference Safety Analysis Report, Amendment
- Regulatory Analysis
- Regulatory Guidance
- Regulatory Guide
- Regulatory Guide, Draft
- Report of Proposed Activities in Non-Agreement States, NRC Form 241
- Report, Administrative
- Report, Miscellaneous
- Report, Technical
- Request for Access Authorization
- Request for Additional Information (RAI)
- Request for OMB Review
- Request for Procurement Action (RFPA), NRC Form 400
- Request for Review of OMB Reporting Requirements
- RES Office Letter
- Research Information Letter (RIL)
- Resume
- Reviewer Comments on Conference/Symposium/Workshop Paper
- Route Approval Letter to Licensee
- Routine Status Report (Recurring Weekly/Monthly)
- Rulemaking- Final Rule
- Rulemaking- Proposed Rule



example selection (yellow highlighting)

Metadata

| Property     | XML Property Tag      | Type    |
|--------------|-----------------------|---------|
|              | MimeType              | String  |
|              | EstimatedPageCount    | Integer |
| CaseNumber   | CaseReferenceNumber   | String  |
|              | ContentSize           | Integer |
| Author       | AuthorAffiliation     | String  |
|              | Keyword               | String  |
| Date         | DocumentDate          | Date    |
| License      | LicenseNumber         | string  |
| Docket       | DocketNumber          | string  |
| Accession    | AccessionNumber       | string  |
| Package      | PackageNumber         | String  |
| PublishDate  | PublishDatePARS       | Date    |
|              | DocumentTitle         | String  |
| ReportNumber | DocumentReportNumber  | String  |
|              | DocumentType          | String  |
|              | AuthorName            | String  |
|              | CompoundDocumentState | Boolean |
| Address      | AddresseeAffiliation  | String  |
| Name         | AddresseeName         | String  |
|              | URI                   | URI     |
|              |                       | String  |
|              |                       | String  |



Code and Regulatory



PDF Documents

# Project Overview-High Level

2020

- Prototype was developed with small subset of information
- Alpha Version was completed late 2020 incorporating a large set of data and EPRI member and personnel feedback and suggestions

2021

- Beta Version is currently being developed that will include larger set of information (EPRI Nuclear research, EPRI OE (meeting materials, surveys, etc.), NRC ADAMS data)

2022

- Incorporate feedback from users and consider other sources of Operating Experience, etc.



# Relief Request Index Project

**Craig Harrington, Technical Executive, EPRI**

**Nick Mohr, Senior Technical Leader, EPRI**

**Jacqueline Espinoza, Beyond the Arc**

**Steven Ramirez, Beyond the Arc**

# 2020-2021: Relief Request Index-Proof Of Concept

## Research Question:

Can we apply modern text mining and natural language processing techniques to curate a body of knowledge that would be helpful to plant engineers who are addressing welding repairs and material reliability situations?

**NRC ADAMS is a large source of valuable information... but can be difficult to find desired information.**

## Value:

- **Reduce time spent finding complete series of request for alternatives “relief requests”**
- **The curated index assists users in understanding:**
  - **Where code cases have been used**
  - **Any potential conditions that should be addressed when a similar request is being submitted**
  - **Identify new trends**

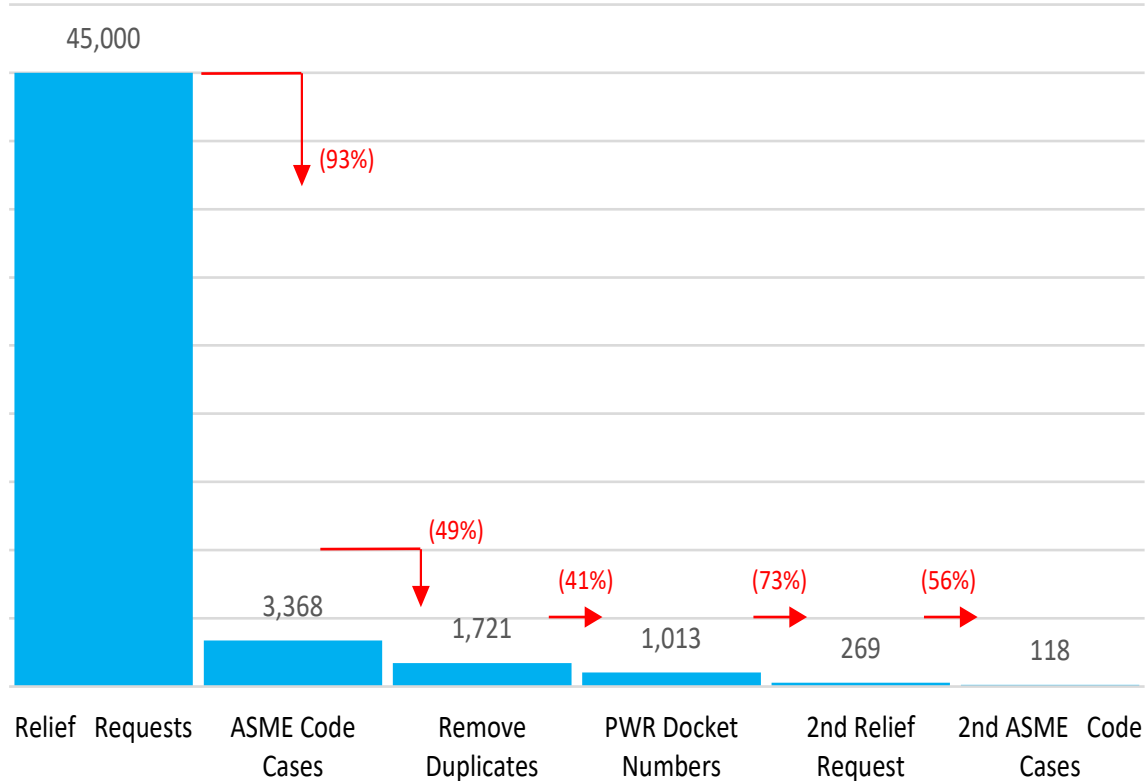


# Background

- EPRI decided to explore a proof of concept in 2021 using subset of desired code cases
- Index to filter by these topics:
  - ASME Code Case Number
  - Systems / Assets
  - Relief Requests for Inspection
  - Relief Requests for Repair
  - Plant Name
  - Operator

| ASME Code Case Number in Series |
|---------------------------------|
| N-432                           |
| N-504                           |
| N-562                           |
| N-638                           |
| N-661                           |
| N-666                           |
| N-722                           |
| N-729                           |
| N-740                           |
| N-752                           |
| N-762                           |
| N-766                           |
| N-770                           |
| N-786                           |
| N-789                           |
| N-818                           |
| N-839                           |
| N-853                           |

# Process Flow | Creating Code Relief Series



Each bar represents the number of leading documents found after applying the filters described to the right. The objective of the filters is to isolate the most relevant records.

The percentages represent the reduction in records after each filter is deployed.

Query the ADAMS database for Relief Requests (in title or document type)

Identify those Relief Requests that include ASME Code Cases of interest

Identify duplicate documents and remove them

Identify documents that include PWR plants and isolate them

Identify documents with an API document type that equals Relief Request and isolate them

Remove Relief Requests that do not include the ASME Code Cases of interest

# Process Flow | Creating Code Relief Series

## Extract More Records

- Convert PDF files to TXT
- Tag these documents as “Origin”(\*) records
- Run NLP algorithm to extract reference numbers, dates, and accession number
- Query ADAMS for additional records based on origin record

## Organize the Records

- Group records by the Origin document
- Organize by topical dataset beginning with the oldest date to most recent within dataset
- Assign each dataset a three-digit “Series” number

## Refine the Topical Datasets

- Remove records within the Series that are not related to the Relief Request for an ASME Code Case
- Remove duplicate series

**\* This designation means that these documents are the ones used to expand the search for related records.**

# Home Page

Blue buttons lead to different views of the curated data



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[How To Guide](#)

Click one of the blue buttons to view datasets by the topic listed


- ASME Code Case Number
- Systems / Assets
- Relief Requests for Inspection
- Relief Requests for Repair
- Plant Name
- Operator
- Series Number (001-118)
- Find an Abstract

## Index of Relief Request Datasets from the NRC

For Internal Use Only – Pilot Project

The EPRI Welding Repair and Technology Center (WRTC) and the PWR Materials Reliability Program (MRP) developed an Index of records for Relief Requests. The project used natural language processing/machine learning techniques to aggregate documents from the ADAMS database. Our NLP models programmatically identified topical datasets for Relief Requests.

### Beginning Record

 February 4, 2013

L-2013-044  
10 CFR 50.4  
10 CFR 50.55a

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555


Re: St. Lucie Unit 1  
Docket No. 50-335  
Inservice Inspection Plan  
Fourth Ten-Year Interval Unit 1 Relief Request No. 5, Revision 0

Pursuant to 10 CFR 50.55a(a)(3)(ii), Florida Power & Light (FPL) requests relief from the 10CFR50.55a(g)(4)(F)(4) exception to ASME Code Case N-770-1 that essentially 100% coverage be achieved for the baseline required volumetric examinations. The details and justification for this request are provided in the attachment to this letter.

FPL requests approval of this relief request to support the upcoming Unit 1 SLI-25 Fall 2013 refueling outage.

Please contact Ken Frehafer at (772) 467-7748 if there are any questions about this submittal.

Sincerely,

  
Eric S. Katzman  
Licensing Manager  
St. Lucie Plant

Attachment  
ESK/KWF

### Additional Correspondence

**NRR-PMDAPEm Resource**


From: Orf, Tracy  
Sent: Friday, March 15, 2013 1:11 PM  
To: Frehafer, Ken  
Subject: St. Lucie Unit 1, Acceptance Review Regarding Relief Request No. 5 from the Amer Society of Mechanical Engineers Boiler and Pressure Vessel Code Regarding Exar Welds (TAC MFO075)

Dear Mr. Frehafer,

By letter dated February 4, 2013 (Agencywide Documents Access and Management System Accession No. ML13046A101), Florida Power & Light (the licensee) submitted a relief request for St. Lucie Unit 1. The purpose of this email is to provide the results of the U.S. Nuclear Regulatory Commission (NRC) staff acceptance review of this relief request. The submitted letter requested relief from Title 10 of the Code of Federal Regulations, Part 50, paragraph 50.55a(g)(4)(F)(4), which imposes a condition on America of Mechanical Engineers (ASME) Code Case N-770-1 requiring essentially 100-percent coverage be for the baseline volumetric examinations of dissimilar metal welds at reactor coolant pump nozzles at Unit 1. The licensee proposed an alternative to the required examination coverage for the subject we documented in Relief Request Number 5, Revision 0.

The acceptance review was performed to determine if there is sufficient technical information in scope depth to allow the NRC staff to complete its detailed technical review. The acceptance review is also to identify whether the application has any readily apparent information insufficiencies in its character the regulatory requirements or

The NRC staff has reviewed you sufficient detail to enable the N assessment regarding the acceptance review as compare impact the NRC staff's ability to

 August 30, 2013

L-2013-261  
10 CFR 50.4  
10 CFR 50.55a

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

Re: St. Lucie Unit 1  
Docket No. 50-335  
Inservice Inspection Plan  
RAI Response to Fourth Ten-Year Interval Unit 1  
Relief Request No. 7, Revision 0

References:

1. FPL Letter L-2013-240 dated August 5, 2013, "Inservice Inspection Plan Fourth Ten-Year Interval Unit 1 Relief Request No. 7, Revision 0," (ML Accession No. ML13220A029).

### Ending Record

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

December 11, 2013

Mr. Marc Nazar  
Executive Vice President and  
Chief Nuclear Officer  
Florida Power and Light Company  
P.O. Box 14000  
Juno Beach, Florida 33408-0420

SUBJECT: ST. LUCIE PLANT, UNIT NO. 1 – RELIEF REQUEST NO. 5 FOR EXAMINATION OF COLD LEG DISSIMILAR METAL WELDS (TAC NO. MFO075)

Dear Mr. Nazar:

By letter dated February 4, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML13046A101), as supplemented by letters dated July 30 and August 22, 2013 (ADAMS Accession Nos. ML13219A254 and ML13235A309, respectively), Florida Power & Light Company (the licensee) requested relief from Title 10 of the Code of Federal Regulations (10 CFR), Part 50, Section 50.55a(g)(4)(F) at the St. Lucie Plant, Unit No. 1 (St. Lucie Unit 1). This part of the regulation mandates and imposes conditions on the use of American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) Case N-770-1, "Alternative Examination Requirements and Acceptance Standards for Class 1 PWR (Pressurized-Water Reactor) Piping and Vessel Nozzle Butt Welds Fabricated With UNS N60592 or UNS W61812 Weld Filler Material With or Without Application of Listed Mitigation Activities." This ASME Code Case and the conditions require essentially 100-percent coverage be achieved for the baseline volumetric examinations of nickel-based Alloy 62/182 dissimilar metal welds (DMWs).

Specifically, pursuant to 10 CFR 50.55a(a)(3)(ii), the licensee requested to use the proposed alternative in Relief Request No. 5 on the basis that compliance with the specified ASME requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Relief Request No. 5 proposes an alternative to the required examination coverage for the subject DMWs at reactor coolant pump (RCP) nozzles at St. Lucie Unit 1. The relief request is applicable to the fourth 10-year inservice inspection interval.

On September 25, 2013, the U.S. Nuclear Regulatory Commission (NRC) staff verbally authorized (as documented in ADAMS Accession No. ML13268A510) the use of Relief Request No. 5 at St. Lucie Unit 1 for 64 months of plant operation at normal operating temperature (i.e., at Modes 1, 2, and 3) from the previous inspection of the RCP welds, which was last conducted in April 2010.

# Datasets organized by the ASME Code Case number that appears in the Relief Request

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Index of Relief Request Datasets from the NRC For Internal Use Only – Pilot Project

How To Guide

Click one of the blue buttons to view datasets by the topic listed

- ASME Code Case Number**
- Systems / Assets
- Relief Requests for Inspection
- Relief Requests for Repair
- Plant Name
- Operator
- Series Number (001-118)
- Find an Abstract

In this view, Relief Request datasets are organized by the ASME Code Case number that appears in the beginning or ending record.

Select an ASME Code Case # ▾

| ASME Code Case Number in Series | # of Series w-Code Case |
|---------------------------------|-------------------------|
| N-432                           | 1                       |
| N-504                           | 30                      |
| N-562                           | 2                       |
| N-638                           | 34                      |
| N-661                           | 9                       |
| N-666                           | 2                       |
| N-722                           | 24                      |
| N-729                           | 31                      |
| N-740                           | 23                      |
| N-752                           | 1                       |
| N-762                           | 1                       |
| N-766                           | 2                       |
| N-770                           | 31                      |
| N-786                           | 3                       |
| N-789                           | 6                       |
| N-818                           | 2                       |
| N-839                           | 1                       |

Count of Relief Request Series by ASME Code Case

| ASME Code Case | Count of Series |
|----------------|-----------------|
| N-638          | 34              |
| N-770          | 31              |
| N-729          | 31              |
| N-504          | 30              |
| N-722          | 24              |
| N-740          | 23              |
| N-661          | 9               |
| N-789          | 6               |
| N-786          | 3               |
| N-818          | 2               |
| N-766          | 2               |
| N-666          | 2               |
| N-562          | 2               |
| N-853          | 1               |
| N-839          | 1               |
| N-762          | 1               |
| N-752          | 1               |
| N-432          | 1               |

Note: A Relief Request series typically references more than one ASME Code Case number.

A visualization is provided on the home page of each of the topics.



# View of datasets for Code Case N-740

In this view, Relief Request datasets are organized by the ASME Code Case number that appears in the beginning or ending record.

N-740

| Plant Name  | Operator                         | Document Title  | Date       | Author  | Code Case #s Appearing in Series              | # of Pages | Series #   | Link to document            |
|-------------|----------------------------------|---|------------|---|---|------------|------------|-----------------------------|
| Waterford-3 | Entergy Nuclear Operations, Inc. | Waterford Steam Electric Station, Unit 3 - Request for Additional Information Regarding License Amendment Request for Revision of Technical Specification 3/4.7.4, "Ultimate Heat Sink" (EPID L-2018-LLA-0080).   | 01-28-2019 | NRC   | ['N-504', 'N-638', 'N-740', 'N-770']          | 6          | Series 105 | <a href="#">ML19018A010</a> |
| Waterford-3 | Entergy Nuclear Operations, Inc. | Waterford Steam Electric Station, Unit 3 - Proposed Inservice Inspection Program Alternative WF3-RR-19-1 for Application of Dissimilar Metal Weld Full Structural Weld Overlay - Reactor Coolant System Cold Leg Drain Nozzles.                               | 01-28-2019 | Entergy Operations, Inc   | ['N-504', 'N-638', 'N-740', 'N-770']          | 39         | Series 105 | <a href="#">ML19028A436</a> |
| Waterford-3 | Entergy Nuclear Operations, Inc. | Waterford, Unit 3, Response to U.S. Nuclear Regulatory Commission Request for Additional Information Regarding Relief Request WF3-RR-19-1 for Application of Dissimilar Metal Weld Full Structural Weld Overlay.  | 02-04-2019 | Entergy Operations, Inc   | ['N-504', 'N-638', 'N-740', 'N-770']          | 36         | Series 105 | <a href="#">ML19035A658</a> |
| Waterford-3 | Entergy Nuclear Operations, Inc. | 2019/02/06 NRR E-mail Capture - Verbal Authorization for Relief Request WF3-RR-19-1, Proposed Alternative for ASME Code Section XI, IWA-400 for Waterford Steam Electric Station, Unit 3 (EPID L-219-LLR-0003)  | 02-06-2019 | NRC   | ['N-504', 'N-638', 'N-740', 'N-770']          | 4          | Series 105 | <a href="#">ML19042A298</a> |
| Waterford-3 | Entergy Nuclear Operations, Inc. | Waterford Steam Electric Station, Unit 3 - Authorization of Proposed Alternative to ASME Code Section XI, IWA-4000, "Repair/Replacement Activities" (EPID L-2019-LLR-0003)  | 08-27-2019 | NRC   | ['N-504', 'N-638', 'N-740', 'N-770']          | 18         | Series 105 | <a href="#">ML19232A025</a> |
| Plant Name  | Operator                         | Document Title  | Date       | Author  | Code Case #s Appearing in Series              | # of Pages | Series #   | Link to document            |
| Millstone-2 | Dominion Generation              | Millstone Power Station, Unit 2 - Alternative Request RR-04-20, Use of Weld Overlays as an Alternative Repair and Mitigation Technique.   | 04-11-2014 | Dominion Nuclear Connecticut, Inc   | ['N-504', 'N-638', 'N-722', 'N-740', 'N-770'] | 32         | Series 072 | <a href="#">ML14112A071</a> |
| Millstone-2 | Dominion Generation              | Millstone Power Station Unit 2 - Response To Request For Additional Information Regarding ASME Section XI In-service Inspection Program Alternative Request RR-04-20. Use Of Weld Overlays As An Alternative Repair And Mitigation Technique (TAC No. MF3918) | 10-14-2014 | Dominion, Dominion Nuclear Connecticut, Inc                                   | ['N-504', 'N-638', 'N-722', 'N-740', 'N-770'] | 7          | Series 072 | <a href="#">ML14294A453</a> |
| Millstone-2 | Dominion Generation              | Millstone Power Station, Unit No. 2 - Alternative Use of Weld Overlay As Repair and Mitigation Technique (TAC No. MF3918).  | 04-24-2015 | NRC   | ['N-504', 'N-638', 'N-722', 'N-740', 'N-770'] | 11         | Series 072 | <a href="#">ML15082A409</a> |
| Plant Name  | Operator                         | Document Title  | Date       | Author  | Code Case #s Appearing in Series              | # of Pages | Series #   | Link to document            |
| Millstone-2 | Dominion Generation              | Millstone, Unit 2, Fourth 10-Year Interval Inservice Inspection Program and Associated Proposed Alternatives and Relief Request.  | 07-29-2010 | Dominion Nuclear Connecticut, Inc   | ['N-504', 'N-638', 'N-740', 'N-770']          | 174        | Series 050 | <a href="#">ML102580204</a> |
| Millstone-2 | Dominion Generation              | Millstone, Unit 2 - Fourth 10-Year Interval Inservice Inspection Program.   | 08-05-2010 | Dominion, Dominion Nuclear Connecticut, Inc, Dominion Resources Services, Inc | ['N-504', 'N-638', 'N-740', 'N-770']          | 124        | Series 050 | <a href="#">ML102220527</a> |
| Millstone-2 | Dominion Generation              | Millstone, Unit 2, Relief Request RR-04-07: Response to Request for Additional Information Regarding Proposed Alternative for Examination Criteria of Weld Overlays.  | 03-01-2011 | Dominion Nuclear Connecticut, Inc   | ['N-504', 'N-638', 'N-740', 'N-770']          | 5          | Series 050 | <a href="#">ML110610207</a> |

Link to Abstract

Series 105

Series 072

The title headers indicate the start of a unique series.

# Each Series has an NLP Developed Abstract

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| Plant Name  | Abstract - Initial Relief Request  | Doc Number  |
|-------------|--|-------------|
| Waterford 3 | <p>Note that ASME Code Case N-504-4 has been conditionally approved by the NRC in RG 1.147 with the condition that the provisions of ASME Code, Section XI, Appendix Q be met when using the Code Case.</p> <p>In order to maintain the pressure boundary and structural integrity of the welds, Entergy proposes to perform full structural weld overlays based on ASME Code Case N-740-2.</p> <p>Inc. (Entergy) proposes, as an emergent repair, to mitigate the SCC susceptibility of the Waterford Steam Electric Station, Unit 3 (Waterford 3) reactor coolant system (RCS) cold leg drain nozzle DMWs between the nozzle and safe end by installing a full structural weld overlay (FSWOL) on the DMWs.</p>  | ML19028A436 |
| Plant Name  | Abstract - Closing NRC Letter  | Doc Number  |
| Waterford 3 | <p>In lieu of repairing or replacing the subject welds in accordance with the ASME Code, Section XI, the licensee proposed to install a full structural weld overlay (FSWOL) on the affected welds based on the methodology contained in ASME Code Case N-740-2, "Full Structural Dissimilar Metal Weld Overlay for Repair or Mitigation of Class 1, 2, and 3 Items</p> <p>Adherence to Section XI of the ASME Code is mandated by 10 CFR 50.55a(g)(4), "Inservice inspection standards requirement for operating plants," which states, in part, Throughout the service life of a boiling or pressurized water-cooled nuclear power facility, components (including supports) that are classified as ASME Code Class 1, Class 2, and Class 3 must meet the requirements, except design and Enclosure - 2 - access provisions and preservice examination requirements, set forth in Section XI of editions and addenda of the ASME BPV Code....</p> <p>The licensee compared the proposed alternative to ASME Code Case N-504-4, "Alternative Rules for Repair of Class 1, 2 and 3 Austenitic Stainless Steel Piping, Section XI, Division 1," and the ASME Code, Section XI, Appendix Q, as shown in Attachment 2 of the relief request dated February 4, 2019.</p> | ML19232A025 |

# Where are we going next

- Easier way to find a complete series of information
- We can now look at data in new ways
  - What does this data mean?
  - Are we seeing initial trends (example: start of degradation in certain components, need for new Code changes, research, etc.)
- Next Steps:
  - Mine a larger NRC ADAMS data set now that the process has been developed and determine if there are any interesting trends
  - Obtain broader member feedback from proof of concept
- Future: Potential to use developed process on structured NRC ADAMS dataset from Event Management Response Tool (EMRT) project and other code cases, requests for alternative



Questions?

A blue-tinted photograph of four people, two men and two women, standing in a row. They are all wearing white lab coats or work shirts with the EPR2 logo on the chest. The woman on the far right is wearing a white hard hat. They appear to be in a professional setting, possibly a laboratory or office, and are looking towards the camera with slight smiles. The background is a solid blue color.

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