

NRC Operating Experience Artificial Intelligence Workshop

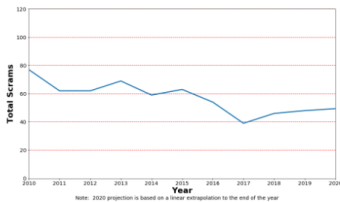
An Overview



OpE Scrams Dashboard

This dashboard summarizes the current status of scrams as of November 13, 2020. Last Scram: Limerick 1, 11/13/2020 (EN 54996) [Print/Save](#)

Scrams - 10 Year Look



43

Scrams this Year

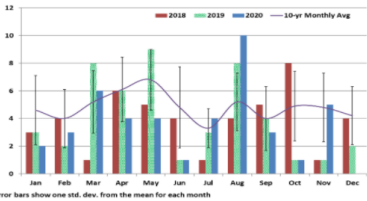
49

Scrams Predicted This Year (Linear Extrapolation)

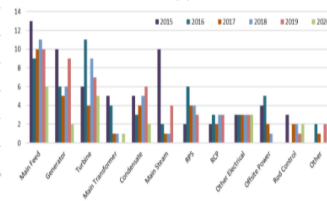
45

Scrams in the Past 365 Days

Scrams per Month 2018-2020 & 10-yr Monthly Averages



Scrams by System

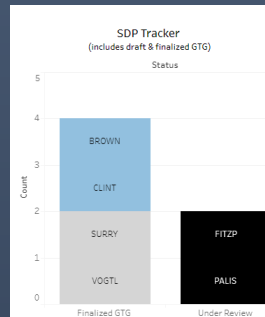


Focus

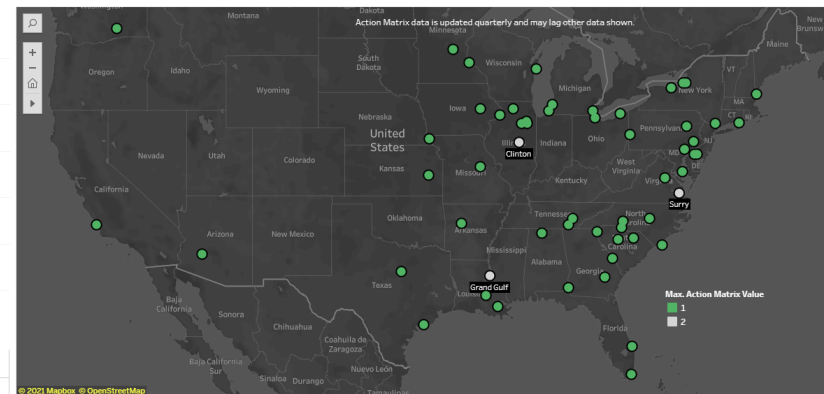
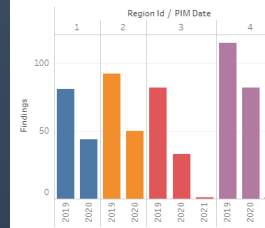
- Machine learning / natural language processing applications for operating experience
- Progress to date
- Impacts to the reactor oversight process

Jason Carneal
Chris Speer
Julie Winslow
Rebecca Sigmon
Lisa Regner

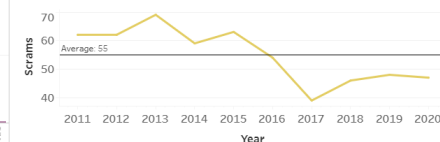
Team



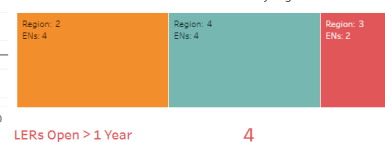
Findings by Region



Scrams Trend



Current Year EN distribution by Region



LERs Open > 1 Year

4

OpE Artificial Intelligence Projects

The operating experience branch is developing machine learning / natural language processing algorithms to make our processes more efficient.

Automation of operating experience processing

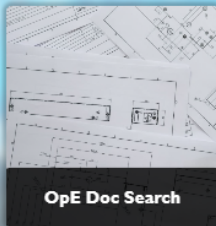
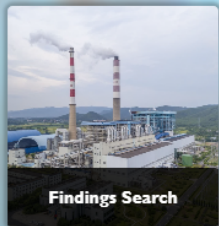
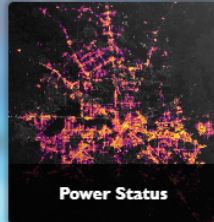
Extending existing search tools to allow association of reports to inspection procedure, system, and available risk information

OpE Hub – Deployed Products

Help

Operating Experience & Generic Communication Hub

ROP Monitoring



Consolidation of Deployed Products

- Website portal for NRC users
- One stop shop for all OpE products
- Easy to navigate
- Facilitates user interaction and support

ROP Machine Learning Case 1

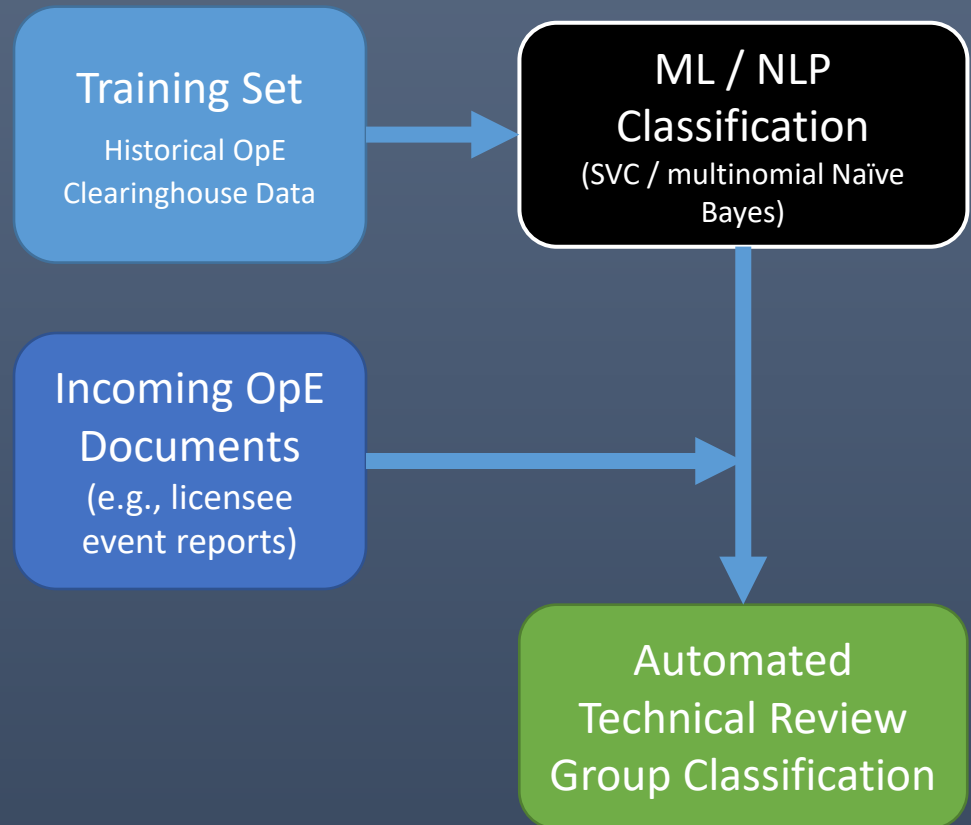
Classification of Operating Experience Documents by Technical Review Group

Objectives

- Build a classifier that can sort incoming OpE documents by technical review group
- Automate certain aspects of operating experience workflow

Progress

- Working classifier for event notifications (ranges from 60%-90% accuracy depending on technical area)
- Exploring extension to licensee event reports



ROP Machine Learning Case 2

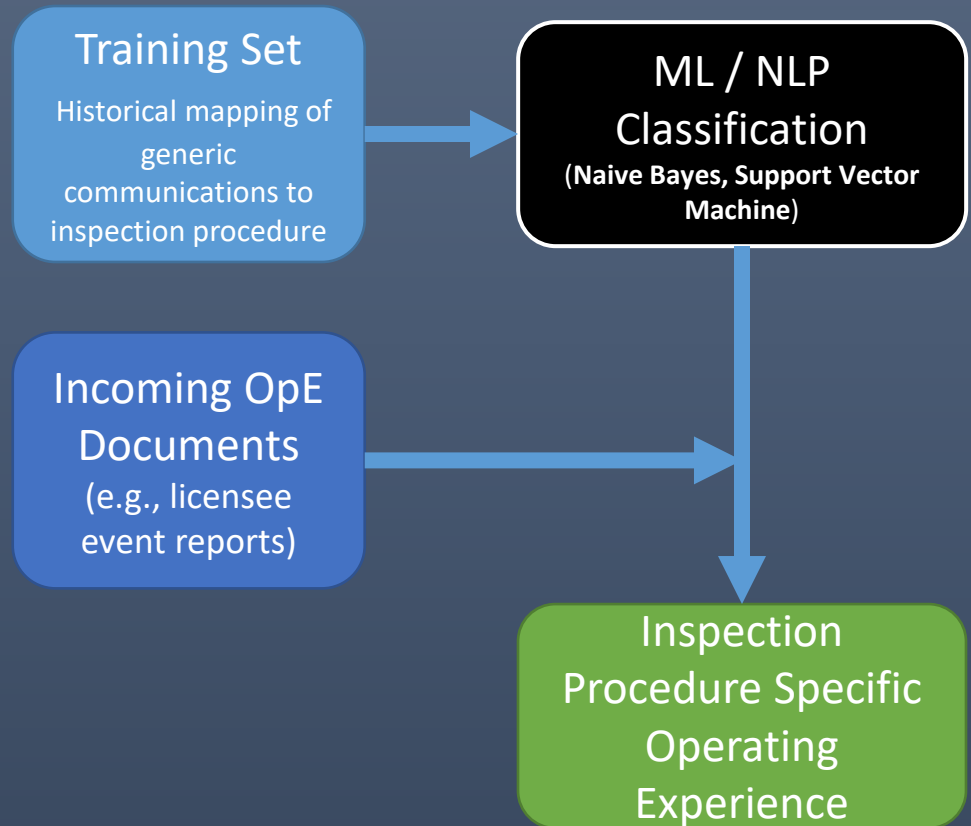
Classifying Operating Experience Documents by Inspection Procedure

Objectives

- Build a classifier that maps OpE documents to applicable inspection procedures
- Expand to include different forms of classification (equipment types, failure modes, etc.)
- Deploy advanced search capability

Progress

- Generic Communication classifier built (ranges from 65-70% accuracy)
- Exploring extension to licensee event reports and other operating experience documents





Offsetting redundant tasks

- Eliminating repetitive manual reports on popular topics
- Tools for inspectors / NRC staff / management to review data of interest
- Lowering bar of access to data for both internal and external users

Improving data-driven decision-making

- Consolidating and democratizing access to sparse and difficult to access data
- Deploying tools that allow users to explore data on their own
- Sharing insights previously difficult to ascertain

Operating Reactor Analytics Public Site

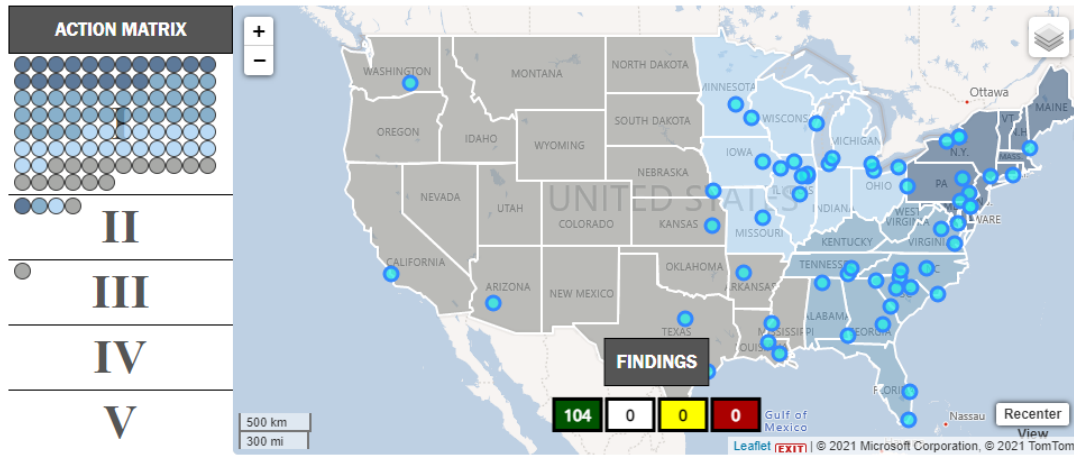
OPERATING REACTOR ANALYTICS

Welcome to the Operating Reactor Analytics Page. This webpage provides a different view of several aspects of ROP oversight: Findings, Action Matrix, and Performance Indicators. This page is still in beta and will be updated to add functionality. If you have any comments or questions, please [Contact Us](#).

DISCLAIMER

OVERVIEW

This section summarizes the current plant performance status and findings so far this calendar year. You can select sites by clicking them on the map, clicking them in the action matrix, or by searching for them in the toolbar above. You can also filter the findings to just the selected sites and highlight the plants in the action matrix. If you don't select a site you'll see data for all sites. The **FILTERS** button in the top right includes options such as selecting all sites in a Region or all sites associated with a particular utility.



Public Site for Reactor Oversight Process Information

- Action Matrix
- Performance Indicators
- Findings

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Reed Anzalone
NRR/EMBARK

<https://www.nrc.gov/reactors/operating/oversight/analytics.html>