

Southern Nuclear AI

Empowering People,
Enhancing Operations



“I see no reason why someone who does office work isn’t using these tools to increase their productivity.”

Rick Libra, Chief Nuclear Officer

SNC AI Strategy

1. Strategic Alignment with Fleet Initiatives

Our AI initiatives are carefully crafted to align with Southern Nuclear's strategic goals and annual fleet initiatives. This ensures that AI and Data Science efforts contribute directly to our core objectives, fostering a culture of continuous improvement and excellence.

2. Ownership and Collaboration

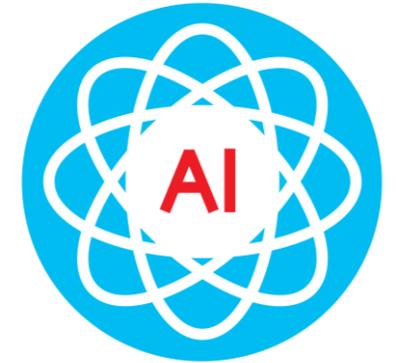
AI and Data Science initiatives are driven by the line organization, ensuring they are closely aligned with operational needs. Collaboration with the Technology Organization (TO) and other key stakeholders is essential for providing the technical expertise and support required for successful implementation.

3. Support for Grassroots Efforts

We empower employees to explore new ideas and initiatives, providing the necessary resources and platforms for experimentation.

4. Diversifying Partners

To ensure continuity and sustainability in a rapidly evolving technological environment, Southern Nuclear diversifies its supplier base, including in house development. This approach mitigates risks associated with reliance on a single supplier and promotes innovation by incorporating diverse solutions and practices.



AI Strategy Implementation

As seen in the December 2025 issue of **NuclearNews**
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AI at work

Southern Nuclear's adoption of
Copilot agents drives fleet forward



Fleet AI working group

Growth of Copilot Agents

4x Growth of Copilot active users

Implementation Challenges

Citizen Developers

AI Strategy Implementation

Diversified Partners / Solutions and Support of Grassroots Efforts

• **Vendor Solutions**

- Corrective Action Program
- Atom Assist
- Weighted Equipment Risk
- Drawing Intelligence
- Fuel Optimization

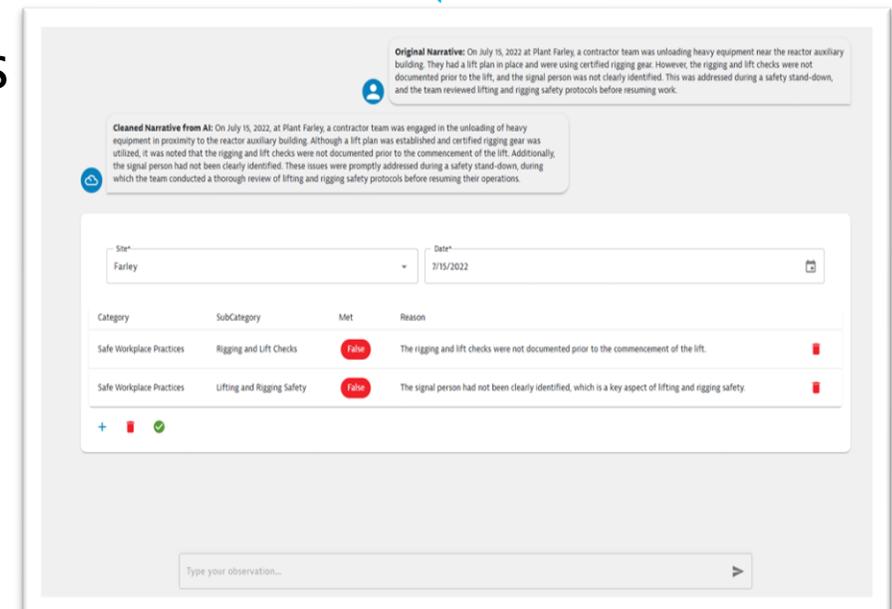
• **Copilot Solutions**



- 4 full agents in production
- Research Agent
- 80+ "Lite" Agents

• **In-House Solutions**

- Observation Program



Original Narrative: On July 15, 2022 at Plant Farley, a contractor team was unloading heavy equipment near the reactor auxiliary building. They had a lift plan in place and were using certified rigging gear. However, the rigging and lift checks were not documented prior to the lift, and the signal person was not clearly identified. This was addressed during a safety stand-down, and the team reviewed lifting and rigging safety protocols before resuming work.

Cleaned Narrative from AI: On July 15, 2022, at Plant Farley, a contractor team was engaged in the unloading of heavy equipment in proximity to the reactor auxiliary building. Although a lift plan was established and certified rigging gear was utilized, it was noted that the rigging and lift checks were not documented prior to the commencement of the lift. Additionally, the signal person had not been clearly identified. These issues were promptly addressed during a safety stand-down, during which the team conducted a thorough review of lifting and rigging safety protocols before resuming their operations.

Category	SubCategory	Met	Reason
Safe Workplace Practices	Rigging and Lift Checks	False	The rigging and lift checks were not documented prior to the commencement of the lift.
Safe Workplace Practices	Lifting and Rigging Safety	False	The signal person had not been clearly identified, which is a key aspect of lifting and rigging safety.

Filter: Site: Farley, Date: 7/15/2022

Type your observation...

AI Acceleration Focus

- **AI Acceleration effort**

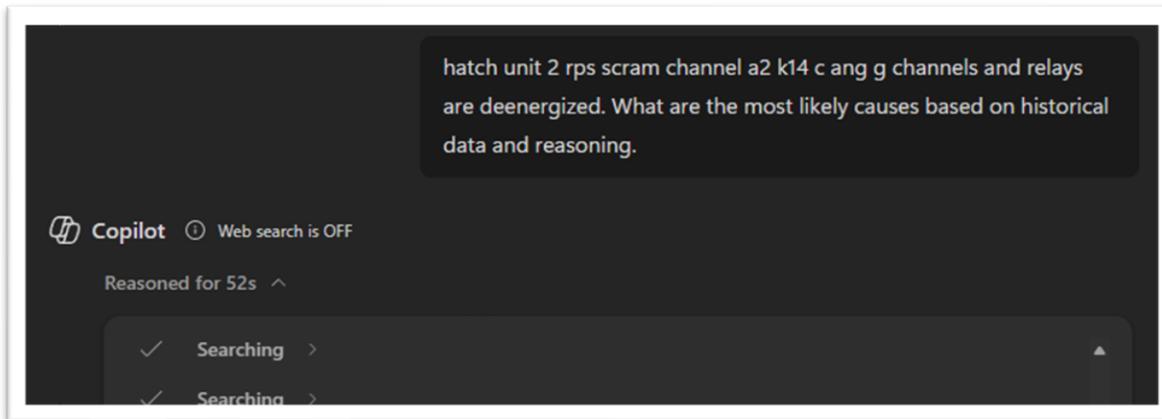
- In-Person “meet them where they are”
 - » 4Q25 Engineering Focus
 - » 1Q25 Operations, Work Management, & Maintenance Focus
- Webinars on Current AI Tools
- AI Use Case Intake
- Rapid Tool Development
- **4.5/5** Leadership Rating for value added

WHY?

- **Culture**
- **Literacy**
- **Enablement**
- **3 hrs saved per user/month (Estimated)**

Sample Copilot Uses

- Equipment Troubleshooting
 - Combine vendor manuals, sharepoint, and web data with the latest models



Most likely causes (ranked) — based on Hatch historical events + design reasoning

1) Blown fuse / short transient on K14C (or associated) relay coil power → K14 drops out

This is one of the best historical matches for what you described.

- Hatch Unit 2 had a documented event where the coil power supply fuse for scram relay 2C71-K14C blew, de-energizing K14C, which then tripped the RPS motor-generator output breakers and caused loss of power on the "A" RPS bus and a half-scram. nrc
- In that LER, the site postulated the fuse blew due to a momentary contact/short inside the relay during cover handling, causing a current surge. nrc

Why this is likely here: your symptom explicitly names K14C de-energized, which has a known Hatch precedent tied to a fuse event and transient short mechanism. nrc

2) Failed relay coil (open coil) and/or coil failure that cascades into fuse operation → multiple relays de-energize

Another strong Hatch analog: relay coil failure causing de-energization, with a fuse blowing and multiple downstream/associated actuations.

- Hatch Unit 2 LER (1994) documented the coil of relay 2A71-K57 failed, the relay went to its de-energized state, and the supplying fuse also blew, which de-energized several relays and caused multiple isolations/actuations. nrc

Sample Copilot Uses

- Categorize nuclear training observation data for quick analysis

I am a nuclear training professional and I want to understand the proficiency of my site in regards to INPO24-001. I have data from teaching and learning activities conducted last month at my nuclear site. Categorize the data and find the trends in regards to teaching and learning, what is my site struggling to do? Using the proficiency model fro Teaching and Learning Details.pdf INPO24-001PocketGuide.pdfm INPO24-001 is my biggest gap as a site in foundation, challenges, or mitigation

Copilot

Analysis

Based on your site's teaching and learning activity data from last month and the INPO24-001 proficiency model, here's what I found:

Categorization of Activities

Each activity was analyzed and categorized into one of the three INPO24-001 proficiency elements:

Proficiency Element	Number of Activities
Foundation	19

Teaching and Learning Area Coverage

Proficiency Area	Number of Activities	Observations
Knowledge	42	Strong emphasis on knowledge transfer through explanations, briefings, and shared experience.
Skill	12	Moderate focus on hands-on training and procedural practice.
Familiarity	17	Reinforced through walkdowns, tours, and repeated exposure.
Understanding	14	Some depth in experience-based learning and contextual awareness.
Currency	15	Reasonable attention to recency and refreshers.
Challenge	5	Underrepresented – few activities explicitly identify or address environmental, organizational, or human nature challenges.
Mitigation	17	Solid use of mitigation strategies like peer checks, oversight, and tabletop exercises.

Copilot Research Agent

How to Use Researcher in Microsoft 365 Copilot

-  **Open Researcher**
Access Researcher under the Agents section in Microsoft 365 Copilot.
-  **Ask a Question**
Enter your prompt to Researcher or use a built-in example.
-  **Clarify (Optional)**
Respond to any follow-up questions from Researcher to refine your prompt.
-  **Watch It Work**
Researcher gathers and analyzes information from trusted sources.
-  **Get a Report**
Receive a structured summary with key insights, source citations, and recommended next steps.
-  **Take Action (Optional)**
Review the report. Optionally, edit, share, or ask follow-up questions.

Sample Prompt:

Identify regulatory precedents for Nuclear power plants in the US who have been approved for License amendments to change the materials specified in their Rod cluster control assemblies or RCCAs. focus on NRC publicly available records and not my outlook email.

Copilot Research Agent

Find fatal flaws in procedures!

- **Diesel Fails to Close Within 10 Seconds:** This is a critical failure addressed *immediately* in the procedure. Step 4.2.14 states: “IF Diesel Breaker fails to close within 10 seconds, THEN Abort testing AND Go To Section 4.3 Step 10 to restore power”[1]. In practice, this means if the generator didn’t connect in time, the operator must **stop the test** and quickly re-energize the switchgear from normal power. The instruction to jump to section 4.3 step 10 is intended to expedite restoration. **Potential issue:** Jumping directly to step 4.3.10 skips earlier restoration steps (like closing the undervoltage disconnect and re-closing the main breaker)[1][1]. This could be a *procedure flaw* – see **Fatal Flaw #1** below. Ideally, the operator should ensure normal power is restored (perform steps 4.3.1–9) *before* step 10 (diesel shutdown). The procedure text isn’t explicit on this nuance, possibly assuming the user will restore main power anyway. Nevertheless, the first priority on a failure is to get the bus powered from any available source. Once power is restored, the test is aborted and the failure is logged. The acceptance criteria would obviously not be met, and section 5.2 instructs to determine the cause and notify the SS and Security Captain[1]. In this case, the likely cause might be investigated (e.g. a slow breaker or control issue).

OR Copilot Agent

Leveraging Artificial Intelligence (AI) to Enhance Performance at Plant Hatch

2 min read

As Plant Hatch prepares for its 2025 World Association of Nuclear Operators (WANO) evaluation, the site has collaborated with fleet Organizational Effectiveness (OR) to review Gap/Driver/Action Results (GDARs) and its site-specific excellence plan, "Hatch PROUD," in response to recent events. The OR/Performance Improvement (PI) Copilot agent, an AI tool designed for cognitive trending and analysis of GDARs and other OR/PI products, was utilized to support this assessment. This innovative approach incorporates AI-driven analytics to enhance cognitive trending and deliver more nuanced insights into performance gaps, representing a significant step forward in Hatch's WANO evaluation preparation.

For this initiative, both site focus area GDARs and selected additional GDARs were input into the OR/PI Copilot to identify underlying trends. Additionally, the tool was tasked with pinpointing areas of weakest site performance relative to INPO 19-003 "Staying on Top." The AI-generated analysis was compared with the team's own evaluation of the Hatch PROUD plan GDAR feedback and overall cognitive feedback; results were consistent, with the AI tool also highlighting insights not immediately identified by the team. The OR/PI Copilot can analyze and trend performance gaps from GDARs, providing direct feedback on strengths and weaknesses. This capability enables identification of patterns and anomalies that human analysts may initially miss.

Key Results:

Within minutes, the AI tool:

1. Validated the majority of the team's observations regarding GDARs and the Hatch PROUD plan.
2. Uncovered additional cross-cutting drivers associated with INPO 19-003 "Staying on Top" values, specifically in Leadership and Talent Development

Fleet OE Copilot Agent

Use: Smart search a SharePoint fleet operating experience (OE) site and customize results for human performance (HU) error mitigation, troubleshooting and Lessons Learned.

"I'm an operator and need relevant operating experience on the Vogtle 1&2 electric fire pump for an upcoming surveillance."

Thanks for your request on operating experience (OE) related to the **electric fire pump surveillance at Vogtle 1&2**. I reviewed four key OE documents that provide valuable insights for your upcoming surveillance. Here's a summary of the most relevant learnings and actions:

1. Flow Measurement Accuracy and Instrumentation Issues

From 11023853 - 5th Shift - Electric Fire Pump Test Recirc Flow Measurement ¹:

- During surveillance using procedure 14952-C, **discrepancies in flow readings** were observed between the installed gauge (CFI-18170) and M&TE.
- The installed gauge underreported flow by over 250 GPM at the 3750 GPM reference point.
- **Root valve throttling** was essential to stabilize ΔP readings for accurate flow conversion.
- **Lesson:** Always validate flow readings using multiple instruments and apply STAR (Stop-Think-Act-Review) fundamentals.

2. High Vibration Challenges and Functional Thresholds

From 10909967 Electric Fire Pump High Vibrations ²:

- Monthly surveillance per 14951-C and 25210-C revealed **vibration levels exceeding alert thresholds** (0.2559 in/sec vs. 0.2 in/sec alert level).
- Engineering guidance (CR10736099) classifies >0.200 in/sec as marginal and >0.450 in/sec as unacceptable.
- **Lesson:** Use engineering support and don't hesitate to call a time-out when data challenges operability. Procedure 25210-C was revised to include functional thresholds.

3. Execution Gaps and Human Performance Learnings

Make a surveillance checklist for electric fire pump

Draft a pre-job brief for the team

Summarize key OE actions for shift turnover

Weighted Equipment Risk

Use AI to predict component level health integrated with work order history, sensor data, EPRI maintenance strategies

The screenshot displays the Nucleam AI Equipment Risk dashboard. The main view shows a list of 10 locations with their respective risk scores and EPRI PM compliance. A detailed view of location 11305E4007 is shown on the right, featuring a risk score of 0.5 (Low Risk), 75% EPRI Compliance, and a risk increase of +0.3. The dashboard includes a navigation sidebar, a search bar, and various data visualization elements like a line chart and summary cards.

Location	Risk Score	EPRI PM Compliance	Component Types
11201B6003	0.9	100%	Heat Exchanger
11201P6001	0.6	0%	Pump
11201P6003	0.6	0%	Pump
11201V6002	0.5	--	MISC
11201P6002	0.3	0%	Pump
11201B6001	0.2	60%	Heat Exchanger
11201P6004	0.2	0%	Pump
11201B6002	0.1	75%	Heat Exchanger
11201V6003	0.0	--	MISC
11201B6004	0.0	75%	Heat Exchanger

Location Summary for 11305E4007:

- Current Risk Score: 0.5 (Low Risk)
- EPRI Compliance: 75%
- Risk Increase: +0.3
- 10000 sensor readings, 1 text records, 599 work orders, 21 predictions

PM Frequency Summary:

- 3 Compliant
- 1 Deviations
- 0 Data Gaps
- Tasks Needing Attention: Performance Monitoring (Significant Deviation)

Location Summary:

- LOCATION: 11305E4007
- DESCRIPTION: MAIN CONDENSER 'C'
- CRITICALITY: NONCRT-1
- DUTY CYCLE: SERVICE CONDITION
- SYSTEM: 1305.0
- UNIT: 1
- SITE: VOGTLE

PULSE (Observation Program)

- Eliminates frustrating application with numerous clicks
- Use AI to predict the clicks and human in the loop to address missed predictions

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Site*
Farley

Date*
7/15/2022

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Type your observation...

Southern Nuclear SafetyNet
SafetyNet
Jul 09, 2025 | ryan.gregory | Reset Password | User Resources | Feedback | Logout

Home | Departments Observed | Observations | Reports | Action Items | Popular | SmartWork

Inspection Details

Observations | Images and Files | Category: Sub-Category

Save Details
Finish Observation
Start Another Observation
View Report

Observation Type: Observation and Coaching Form | Department Observed: Fleet Outage Services

Core 4

Standard Met	Not Met	Standard Met	Not Met
+	-	+	-
+	-	+	-
+	-	+	-
+	-	+	-
+	-	+	-

Risk Behaviors

Standard Met	Not Met	Standard Met	Not Met
+	-	+	-
+	-	+	-
+	-	+	-
+	-	+	-

HU - Field

Standard Met	Not Met	Standard Met	Not Met
+	-	+	-
+	-	+	-
+	-	+	-
+	-	+	-
+	-	+	-
+	-	+	-
+	-	+	-
+	-	+	-

HU - Non-Field

Standard Met	Not Met	Standard Met	Not Met
+	-	+	-
+	-	+	-
+	-	+	-
+	-	+	-
+	-	+	-

Industrial Safety

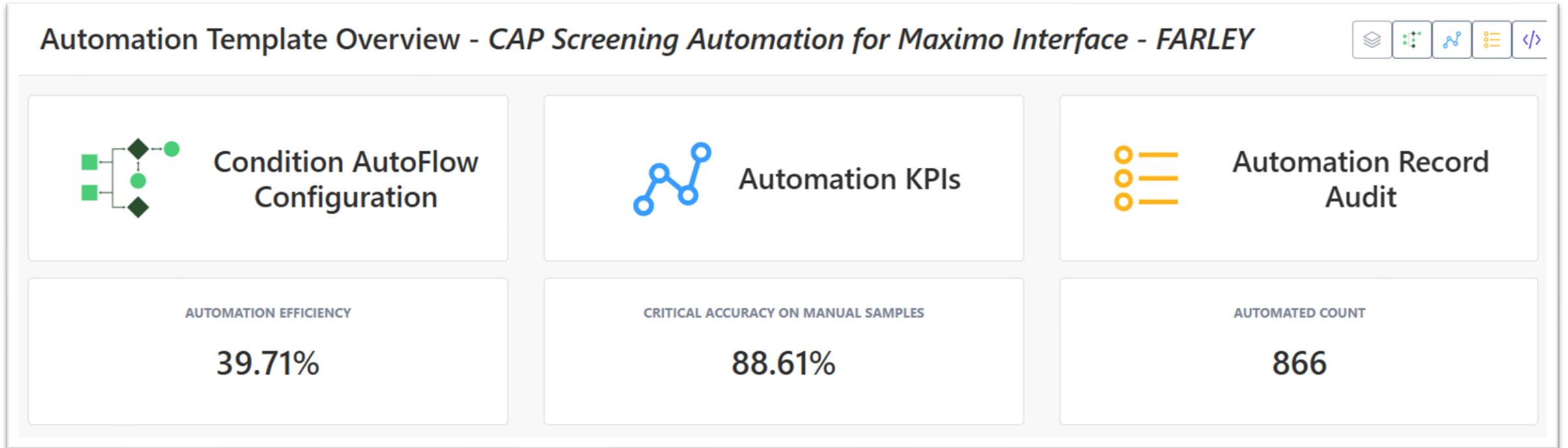
Standard Met	Not Met	Standard Met	Not Met
+	-	+	-
+	-	+	-
+	-	+	-
+	-	+	-

Inspection Summary

Scram and Downpower Predictor (Development)

- Predictive model based on weather, asset history, operations logs, and PI (sensor) data, etc trained to identify scenarios that lead to scrams (forced outages) and downpowers (< 100% capacity)
- Shoot for Mars scenario...
- Lots of lessons learned on procurement, legal, ETL to enhance future major AI projects
- Status: Re-thinking model selection and will seek to retrain with current data

Corrective Action Program (CAP)



Predicts the trends, priority, and responsible manager of a Condition Report (CR)

Atom Assist

Home / Assistant x2rwhite@southernco.com

Nuclearn

MARKETPLACE

- Persona Market
- Dataset Market

GENERATIVE AI

- AtomAssist
- AtomAssist Projects
- AtomAssist Actions
- AtomAssist Personas
- AtomAssist Templates

DATA

- Datasets
- AtomResults

ANALYTICS

- Buckets
- Reports

PRODUCTS

How can I help?

Ask AtomAssist anything...

+ Select Persona

Add Dataset Balanced Smart Assist

Recent Chats View More →

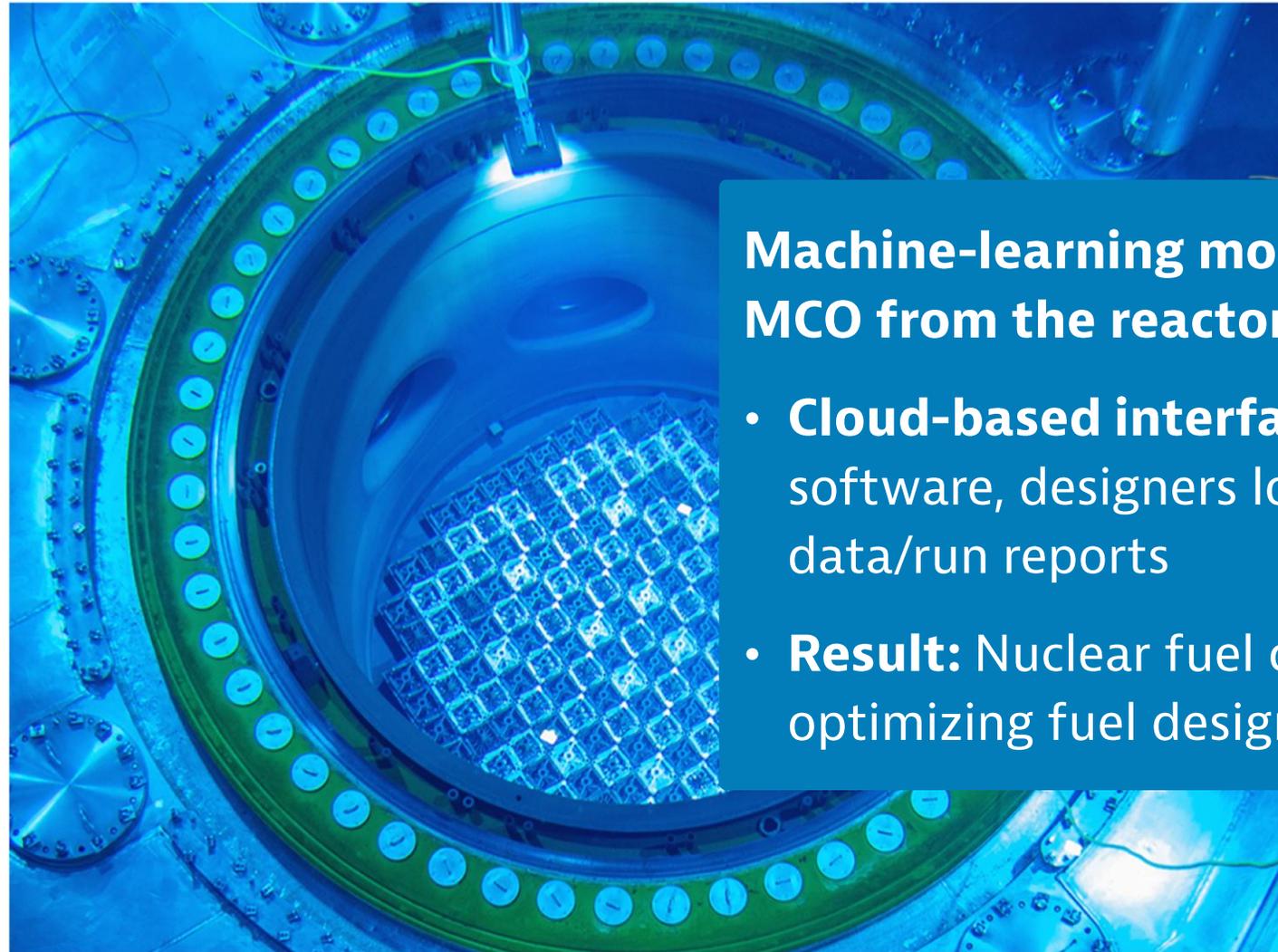
- Seasonal maintenance prioritization
17 hours ago
- Subsequent License Renewal Updates
2 days ago
- SLR updates from NRC ADAMS
2 days ago

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Current Uses:

- CR SMART Search
- Reportability Screener
- NRC ADAMS Research
- CR, WO, ESOMS integration

Moisture Carry Over (MCO) Model



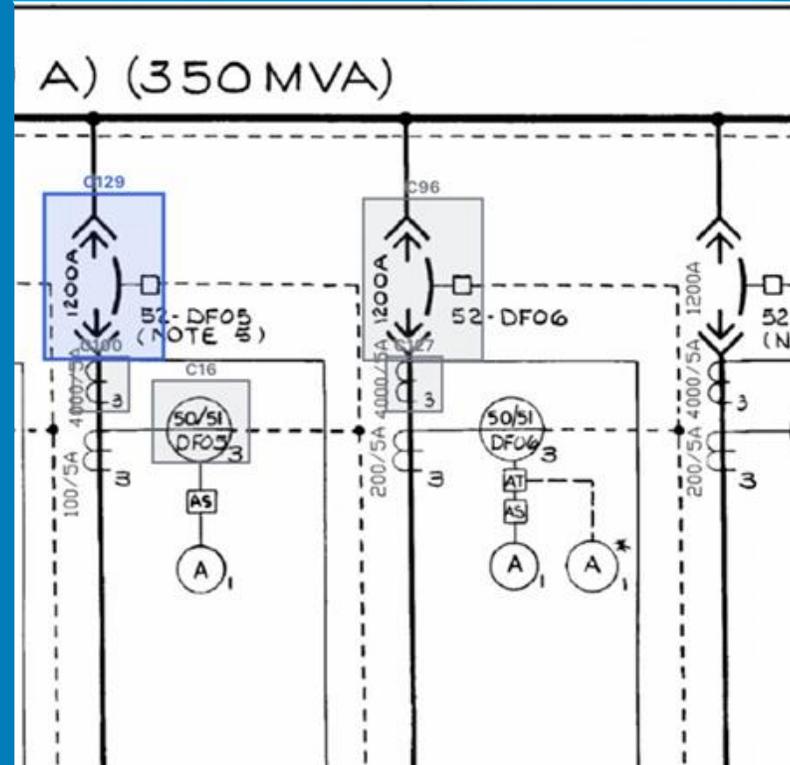
Machine-learning model that predicts MCO from the reactor to the steam lines.

- **Cloud-based interface:** Vendor hosts software, designers log in, can upload data/run reports
- **Result:** Nuclear fuel cost savings by optimizing fuel design

Electrical Drawing Intelligence (PILOT)

AI Model to extract Electrical Drawing intelligence...

- Component Identification
- Component Classification
- Component Meta-Data
 - What type of breaker?
 - How many are there?
 - What is the breaker connected to?
- **Result:** Ability to chat with configuration data



DCR Results (5 components in chunk)

ID	Class	Sub-class	ANSI Code	Equipment Tag	Rating	Associated Text
C16	relay	-	50/51	-	-	50/51 DF05 3
C96	breaker	-	-	52-DF06	1200A	1200A 52-DF06
C100	current_transformer	-	-	-	4000/5A	4000/5A 3
C127	current_transformer	-	-	-	4000/5A	4000/5A 3
C129	breaker	-	-	52-DF05	1200A	1200A 52-DF05 (NOTE 5)



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