

Off the Bench, Onto the Critical Path

AI showed up this month in a licensing file, a waste processing weir, and an interconnection queue.

RTS | Nuclear Energy + AI Newsletter

The nuclear AI field continues to expand and RTS is watching it closely and has a few news stories for you to consider.

Blykalla pointed Microsoft's AI at a permitting file. Savannah River ran an AI supported analysis, widened a weir by a tenth of an inch, and pushed the Salt Waste Processing Facility past its design throughput. Google, NVIDIA and Emerald AI pulled twenty organizations into an alliance built to make data center load flexible enough to get connected.

Three problems, one shift: AI is being assigned to critical-path work. The licensing record. The throughput target. The interconnection queue. That is where AI begins to matter and where its outputs begin to be audited.

RTS Research Team

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Momentum in the Field

Industry Signals and the RTS Perspective

LICENSING

Blykalla takes Microsoft's AI to the licensing file

On September 15, 2026, Blykalla, the Swedish developer of the lead cooled SEALER reactor, announced a collaboration with Microsoft to apply AI to permitting and licensing. The stated target is to cut the documentation process, in the companies' words, *"from years to months."*

The target is significant, but it remains a company projection rather than a demonstrated licensing outcome.

Blykalla is not first through this door. Idaho National Laboratory and Aalo Atomics have both taken Microsoft AI to reactor licensing work. What is new is a developer applying it to its own submittal rather than to a research exercise.

RTS PERSPECTIVE

The bottleneck is real. For an advanced reactor the documentation package is not paperwork around the schedule, it is the schedule.

But a compression claim has to survive a defensibility test. A regulator does not accept a faster document. It accepts a document it can trace. The questions that matter: does every generated assertion map to a qualified source, is provenance captured at the moment of generation, and will the review record still hold up under audit two years from now?

Human in Command® is the control that makes this defensible, not a tagline. Teams that build traceability into the generation step will move faster than teams that generate first and reconstruct the trail afterward. Watch which regulator sees the first AI assisted package, and how it responds. That response sets the precedent for everyone behind it.

READ THE ARTICLE

OPERATIONS

A tenth of an inch, and 106 percent of design

Engineers at Savannah River Mission Completion investigated a throughput problem at the Salt Waste Processing Facility with a technical analysis that incorporated AI. The answer was a weir, the circular component inside the centrifugal contactors that controls liquid separation. They widened its inner diameter by one tenth of an inch.

Throughput moved from the 21.6 gallon per minute design rate to 23 gallons per minute, 106 percent of the original design.

SWPF Senior Director Ryan Lentsch:

"Prior to the weir adjustment, SWPF processed 17 million gallons of waste feed in almost six years of operation."

After the changeout it moved more than 3 million gallons in five months.

RTS PERSPECTIVE

This is the most useful nuclear AI story of the month, and it will get the least attention. No new plant. No new model. An existing facility, an analysis, one part, and a number that moved.

The value came from pointing AI at a bounded engineering question where ground truth was measurable and the engineers kept the decision. Notice what it did not do. It did not operate the plant. It did not affect a safety function or require a major change to the facility's authorization basis. The regulatory surface stayed small, so the work shipped.

That is the shape of near term demand. When operators ask us where to start, this is the answer: the bounded analysis problem with a measurable outcome, not the enterprise assistant. Start where you can prove the delta, then earn the right to the harder ground.

READ THE ARTICLE

GRID AND DEMAND

The grid decides who gets built

On September 16, Emerald AI, Google and NVIDIA launched the AI Energy Management Alliance, joined by seventeen more organizations including Anthropic, National Grid, AES, Constellation, NRG and RWE. The goal is to make data center load flexible enough to interconnect faster.

Google committed to cutting 1 gigawatt of demand when grid conditions require it. Emerald AI chief executive Varun Sivaram said flexibility has to be *"verifiable and enforceable."*

Context for why this launched now: 84 percent of Americans say they are worried about what data centers do to local electricity prices.

RTS PERSPECTIVE

This looks like a data center story. It is a nuclear demand story.

How much firm power the AI build out actually needs, and when it needs it, depends on whether flexible load is real. "Verifiable and enforceable" is the phrase to sit with, because that is a measurement and verification problem, and it is a discipline nuclear already runs on.

If flexibility proves out, some urgency behind firm procurement softens at the margin. If it does not, the case for firm generation gets stronger and considerably more specific. Either way the buyer gets more sophisticated between now and the next procurement cycle. Developers should stop selling megawatts and start selling an availability profile they can defend with data.

READ THE ARTICLE

From the NRC Desk

Our Founder and Chief Nuclear Officer, Sam Rieck, presented **"Nuclear AI as the Key to Part 53"** at the [NRC Artificial Intelligence Workshop #7, "Navigating the AI Landscape"](#) on September 15, 2026, at NRC Headquarters in Rockville, Maryland. The research was developed with N. Prasad Kadambi, author of NUREG/BR-0303.

Workshop #7 was the one where the field stopped talking about whether AI can add value and started talking about where it belongs in a workflow, what evidence shows it is fit for purpose, and who holds authority when the output matters. A few of Sam's takeaways:

- **Part 53 and agentic AI have arrived at a mutually enabling moment.** [10 CFR Part 53](#) supplies a technology inclusive, risk informed, performance based structure. Agentic systems may be what finally makes the decomposition and traceability work practical on a real project schedule.
 - **The anchor is \$53.230.** Limiting the release of radioactive material is the primary safety function, supported by control of reactivity, heat generation, heat removal and chemical interactions. Those carry down through systems, components, performance objectives and procurement specifications in a traceable objectives hierarchy.
 - **The agent builds the structure. The human owns the judgment.** An agentic system can propose the decomposition, connect objectives to sources, hold traceability as the design changes, and flag gaps. Every generated element still has to be attributable, reviewable and owned.
 - **There is a readiness gap, and it is concrete.** No complete objectives hierarchy based Part 53 application exists yet as a reference example. The near term work is curating the foundations and testing them inside a governed agentic workflow.
 - **RTS recommended a topical report pathway.** Define the methodology, inputs, controls, traceability expectations and human command model now, rather than leaving the first applicant to invent all of it under schedule pressure.
 - **Across the day, trust was treated as a system property, not a model claim.** Curated data, explicit task boundaries, traceability, validation, monitoring, and a person who is accountable for the decision. Duke reported cutting an aging management review from roughly five months with ten engineers to about one month, designed around 99 percent recall because the consequential error was a missed record.
- **The full workshop recap publishes September 22, 2026** and goes out to this list. *From Pilots to Practice* covers the whole day: trust and bounded autonomy, the data and traceability constraint, production lessons from Duke, TerraPower, Southern Nuclear and INPO, and what the NRC's own tabletop reviews are surfacing.
 - **The full RTS Part 53 paper publishes September 29, 2026.** The complete argument for Part 53 as a machine readable decision architecture, with the objectives hierarchy worked through and the human command model spelled out.

Research News

- **Fusion commercialization picks up an AI thread.** ANS covered three US and UK partnerships moving fusion toward commercial deployment, including Stellar-AI and supercomputer applications. [Nuclear Newswire](#)
- **The precedent Blykalla is following.** Idaho National Laboratory took Microsoft AI to reactor licensing first, which is the reference point for every developer claim about compressing submittal timelines. [Nuclear Newswire](#)
- **Aalo Atomics is on the same track.** The company partnered with Microsoft to speed up permitting, which makes three AI assisted licensing efforts running in parallel. [Data Center Dynamics](#)
- **The NRC is doing its own AI work.** The agency maintains a public AI program page covering regulatory readiness and the workshop series. Worth checking before you assume where the regulator stands. [NRC Artificial Intelligence](#)

Other News

- **Holtec gets early ground moving at Palisades.** On August 28 the NRC granted an exemption letting Holtec install permanent support of excavation and cutoff wall systems for Pioneer Units 1 and 2 before a Limited Work Authorization issues. The NRC was explicit that this is not a commitment to issue the LWA or the construction permit. [GlobeNewswire](#)
- **OpenAI pitches utilities on grid security.** Politico reported that Sam Altman has been meeting utilities since late July about an OpenAI security model for the grid, including a session at an Edison Electric Institute gathering in Colorado Springs attended by Duke Energy, Exelon, Southern Co. and NextEra Energy. The pitch lands while the industry is actively worried about autonomous AI intrusion. [Reported via Gizmodo](#)
- **"We've crossed the nuclear tipping point."** ANS argues demand, government support and capital have finally lined up at the same time. Useful framing, and worth reading with an operator's skepticism about what still has to be built. [Nuclear Newswire](#)
- **Data centers are coming to DOE sites.** Partnership agreements are advancing to build AI data centers with paired energy infrastructure at Paducah and Savannah River. [Nuclear Newswire](#)

What This Signals

This month brought one demonstrated operating result and two consequential commitments. Savannah River used AI-supported analysis to improve plant throughput. Blykalla put Microsoft's AI into its licensing workflow. Google, NVIDIA, Emerald AI, and seventeen other organizations formed an alliance around flexible data-center demand.

- **Licensing is the schedule.** Three developers are now pointing AI at submittal documentation. The differentiator will be provenance, not speed.
- **Bounded beats broad.** A weir and a tenth of an inch beat an enterprise rollout, because the delta was measurable and the regulatory surface stayed small.
- **Verification is becoming the product.** "Verifiable and enforceable" on the grid side is the same requirement as an auditable trail on the licensing side.
- **The demand signal is getting sharper.** Flexible load changes how much firm power the AI build out needs and when. Assume your buyer is about to get more sophisticated.
- **The regulator is not waiting.** Seven AI workshops in, the NRC is building its own readiness. Arriving with an undocumented AI process is now the conspicuous choice.

None of this rewards moving fast for its own sake. It rewards moving fast in a way you can show your work on. That is the whole of what we build at RTS: nuclear AI that is audit ready from day one, with Human in Command®, and a measurable AI advantage you can put in front of a regulator without flinching.

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