DEEP FISSION

DICE 2026 · KEYNOTE · SALT LAKE CITY

From AI tools to AI-native nuclear execution

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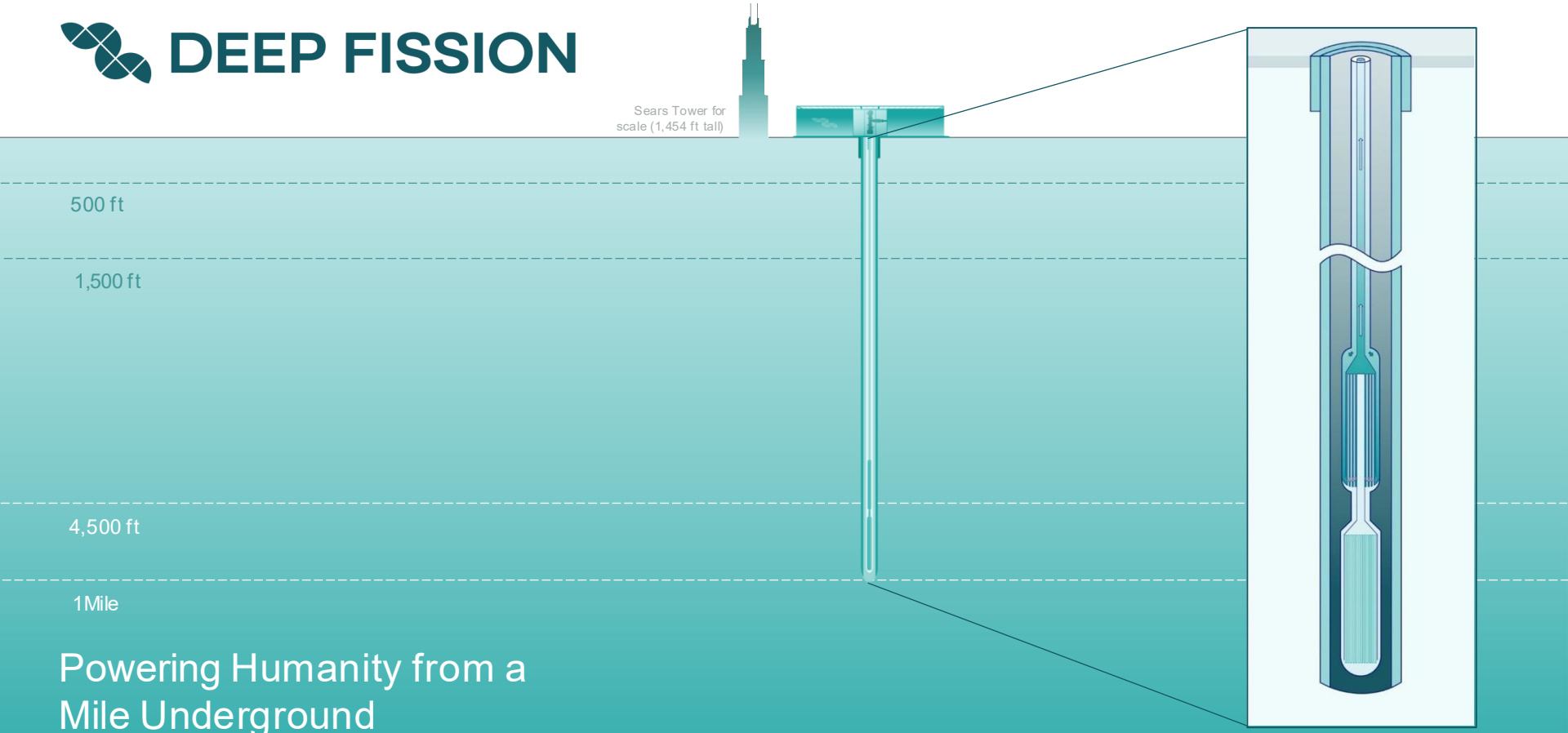
Idaho National Laboratory · Digital Engineering Conference · May 12, 2026

GRAVITY NUCLEAR REACTOR

DEEP FISSION



Powering Humanity from a Mile Underground

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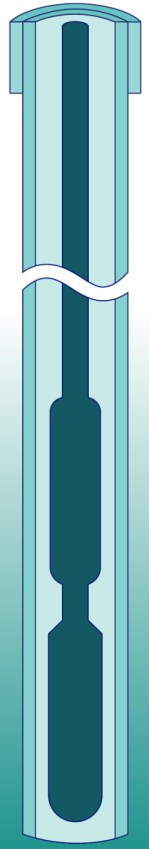
A Longstanding Relationship

Deep Fission Team Offsite – August 2025

Deep Fission Breaks Ground

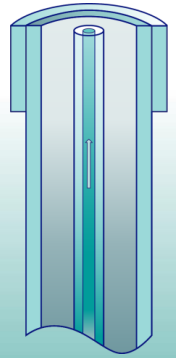
Site 1 – Parsons, Kansas

Integrating Three Mature Technologies



Deep Fission prioritizes deployment over invention. Our Gravity Nuclear Reactor ™ design uses established reactor technology, combined with existing capabilities in the oil, gas, and geothermal industries with the goal of reducing reliance on surface infrastructure, supporting faster deployment timelines, improving security, enhancing safety and lowering costs.

Deep Borehole Drilling



Optimized borehole design is intended to be drillable using proven oil & gas infrastructure for containment a mile underground.

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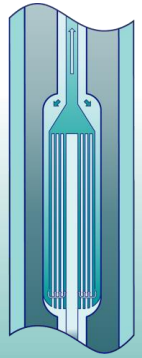
Geothermal Technology



Novel deployment approach will apply established geothermal components and processes for energy transfer to the turbine generator at the surface.

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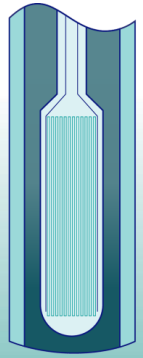
Pressurized Water Reactor



Hydrostatic pressure from one-mile-deep column of water expected to provide 160 atm of reliable pressure, safely and naturally. PWR design uses readily available low-enriched uranium (LEU) fuel.

00 · THE ORIGIN OF OUR AI JOURNEY

AI is not the story.
Commercialization speed is the story.

Deep Fission's core challenge is not whether AI is advantageous.
It is how AI can best help a highly regulated nuclear company deliver on its promises faster with greater certainty and without weakening rigor.

01

Nuclear commercialization is constrained by engineering, licensing, permitting, documentation, and validation cycles.

02

The biggest barrier to nuclear energy is not reactor technology. It’s time. Speed is constrained more by deployment architecture than by nuclear physics.

03

AI is being embedded where it supports that strategy: evidence, workflows, review, decision speed, traceability.

Demand-side infrastructure is moving faster than energy infrastructure.

The AI era is creating a timing problem for energy.

01

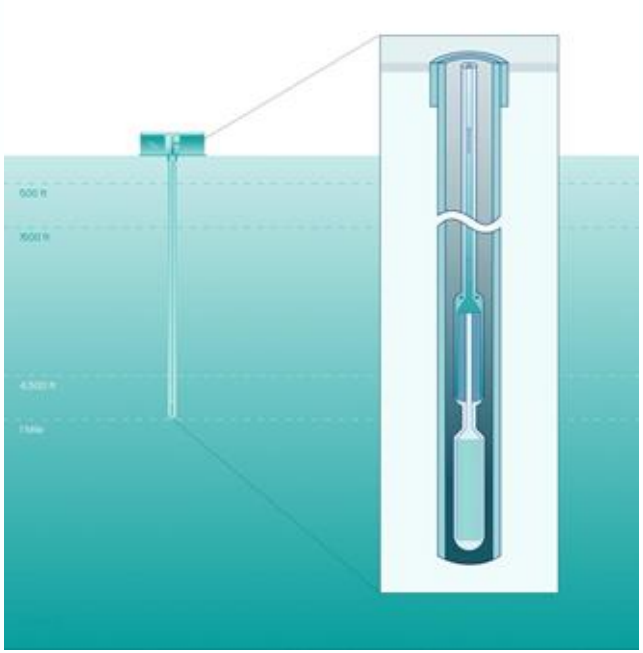
AI infrastructure, industrial electrification, and resilience needs are increasing demand for reliable power.

02

Nuclear can contribute meaningfully only if deployment pathways compress.

03

The bottleneck is no longer just technology — it is the full system of design, evidence, licensing, siting, and execution.



The Gravity Nuclear Reactor — placed one mile underground.

Deep Fission's strategy is deployment-first.

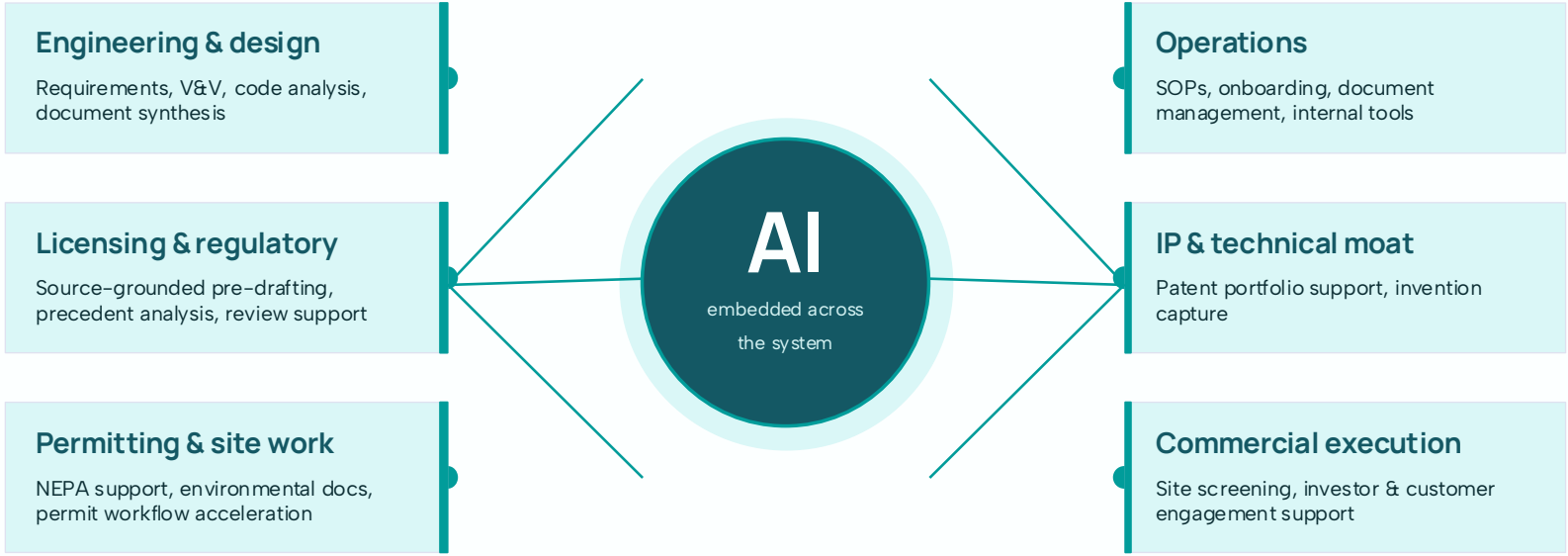
The operating thesis

Deploy proven technologies in a new architecture.

1. **Established** PWR technology.
2. **Standard** LEU fuel pathway.
3. **Deep subsurface** deployment using proven drilling, casing, and geothermal-adjacent industrial capability.

AI supports our commercialization roadmap, it is not a side project.

Deep Fission uses AI across the same workstreams that determine commercialization speed.



AI alone does not create productivity. Operating-model redesign does.

Most organizations do not fail because AI is weak.
They fail because AI is added on top of workflows that were never redesigned.

THREE PROOF POINTS

01

AI can increase output volume without increasing decision velocity.

02

AI strategy must align with corporate strategy: ours is: Deployable, Repeatable, Systematic, Simplified and Scalable

03

In regulated industries, speed without evidence can become risk.

Take-away Learning

The AI Productivity Paradox

Why capability isn't translating into output — and what changes when AI is built into the operating model, not bolted onto it.

KEY RESEARCH CITED

- Yotzov et al., NBER Working Paper 34836, Feb 2026
- Ranganathan & Ye, Harvard Business Review, Feb 2026
- Upwork Research Institute, From Burnout to Balance, 2024

SCAN TO READ

labrynth.ai/insights

Regulated industries have an even harder time navigating the paradox

In regulated work, an AI answer is not enough. It must be:

01

Source-grounded

Every claim ties back to a verifiable record.

02

Reviewable by experts

Engineers, licensing leads, regulators can challenge it.

03

Traceable to decisions

What changed, why, and by whom.

04

Suitable for audit

Built to withstand challenge and revision.

DEEP FISSION

Our 6 operating principles. Built from practice, not theory.

Citation is a critical baseline .

In nuclear, unsupported claims are defects.

WHAT THIS CHANGES

- Claims must point back to sources.
- Outputs must distinguish fact, inference, and recommendation.
- Reviews must show what changed, why, and by whom.

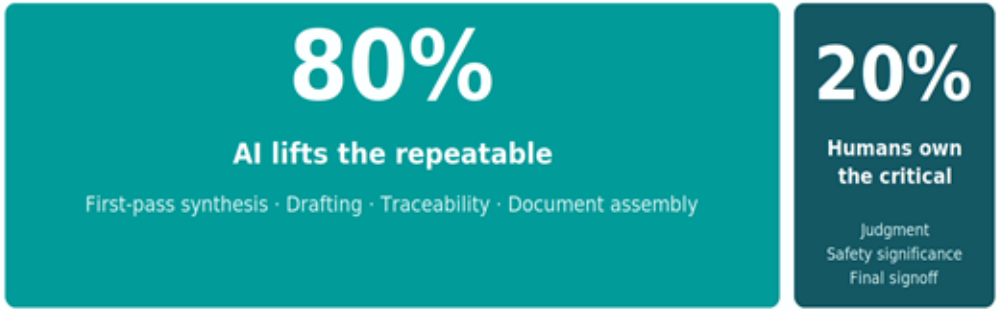
In regulated environments, ***citation is not a feature. It's the product.***

AI does not replace expertise. It removes much of the drag before expertise is applied

AI should move experts faster to the work only experts can do.

WHAT AI HANDLES	WHAT HUMANS OWN
• First-pass synthesis • Requirements extraction • Draft structure • Comparison across source documents • Repetitive formatting and document assembly	• Technical judgment • Safety significance • Regulatory strategy • Final sign off • Ethical and governance decisions

Humans-in-the-Loop are not a constraint. They are the control system.



APPLIED EXAMPLES

SOPs, onboarding, doc mgmt
AI assembles first pass; humans approve.

Licensing support
AI accelerates pre-drafting; experts validate.

Engineering Validate & Verify
AI supports traceability; engineers decide adequacy.

The question is not whether humans remain in the loop.
The question is whether they are spending their time on judgment or on paper pushing.

Model choice matters less than workflow fit.

Deep Fission does not treat AI as one tool. It uses task-appropriate tools, sequenced into workflows called "ontologies" – these power the missing execution layer.

01

Foundation models

Selected by task class — synthesis, structured drafting, diagram analysis.

02

Domain workflows

Built around regulated outputs and review cycles, not generic prompting.

03

Citation-grade systems

Source-grounded knowledge bases for evidence-bearing work.

04

Human review checkpoints

Where judgment, safety, or regulatory reliance is involved.

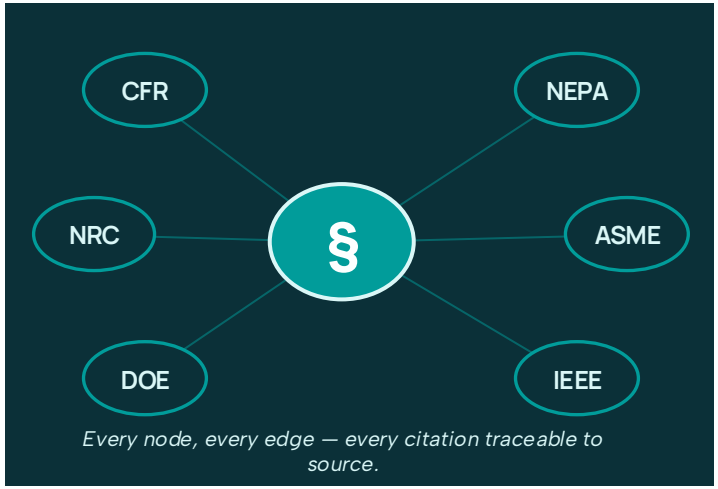
One integrated source of engineering and regulatory truth.

OUR AI-NATIVE ENGINEERING STACK : *auditable end-to-end.*

INPUTS

- CFR · NEPA · NRC regs
- DOE guidance & precedent
- ASME · IEEE · ANSI codes
- Project docs & submittals
- Reactor design & eng. data

REGULATORY + ENGINEERING KNOWLEDGE GRAPH



Every node, every edge — every citation traceable to source.

OUTPUTS

Engineering research
Conversational synthesis across standards, with citations.

Pre-drafting engine
First 80% of permitting & review documents.

Expert review layer
Validation of the 20% that matters most.

Audit & defense
Traceable record on every line, every revision.

Built to be audited.

THE AI EXECUTION LAYER underneath the work.

Why generic AI fails in regulated environments — and what makes the difference here.

DIMENSION	GENERIC LLM	DEEP FISSION GRAPH-RAG (Retrieval Augmented Generation)
Training data	Open internet	**Regulatory knowledge graph**
Source citations	Possibly hallucinated references	**Every answer cites source documents**
Agency specificity	Generic regulatory language	**Domain-tuned federal & state writing**
Auditability	Unauditable, unrepeatable	**Auditable workflow, chat → draft**
Regulated use?	High hallucination risk	**Production-ready, legal-grade**

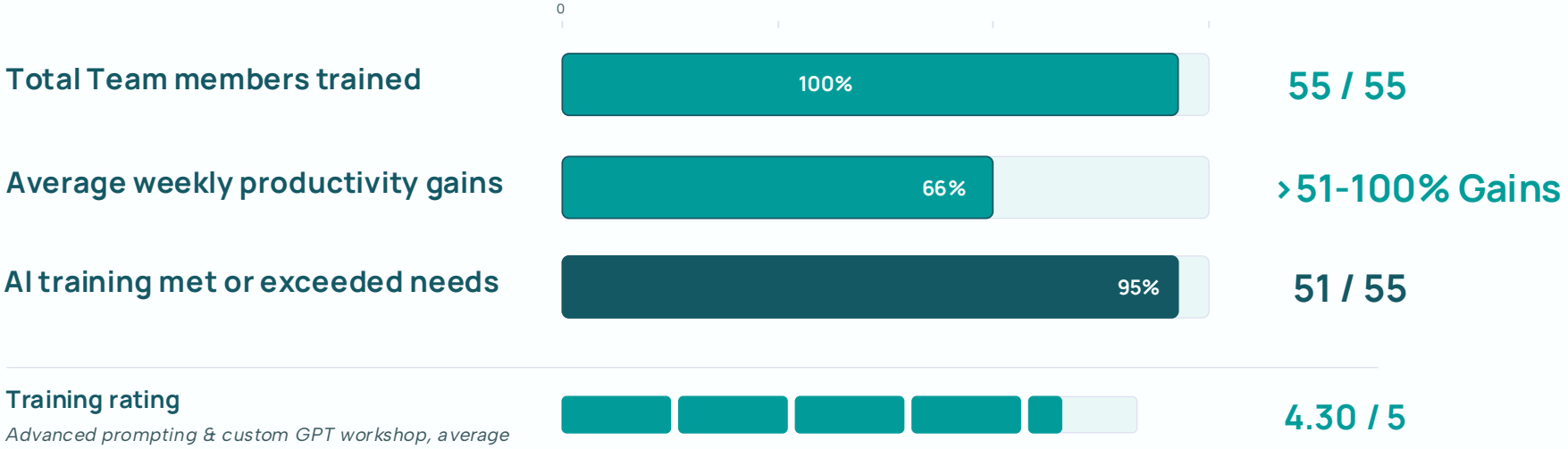
Every output is cited. ***Every citation is auditable.***

DEEP FISSION

Data insights from our KPI’s

AI adoption is becoming part of our operating culture.

Internal survey · n = 95% respondents across all squads.



Source: Deep Fission internal AI adoption survey. See AI-Native Section, Slide 11.

AI helps turn engineering knowledge into structured evidence.

AI-SUPPORTED ENGINEERING WORKSTREAMS

- Requirements extraction and flowdown
- Code and standards comparison
- V&V support and traceability
- Engineering document synthesis
- Design-decision evidence capture

INTERNAL RESULT — Validate & Verify SUPPORT

33%

improvement in the first month.
Target: 50%+ improvement in the next 30 days.

AI supports parallel work without weakening review discipline.

Regulatory work is evidence work. AI supports:

1. Source-grounded pre-drafting
2. Crosswalks between DOE authorization material and NRC application needs
3. Requirements traceability
4. Comment response preparation
5. Review packages for expert validation

LICENSING TEAM FEEDBACK

"Months could be reduced to → **Days**"

Certain regulatory workflow cycles have become more than 10x more efficient

AI helps scale the paperwork side of infrastructure.

Deployment requires more than reactor design. AI-supported workstreams:

- NEPA-related documentation support
- Environmental assessment material organization
- Construction and site permitting workflow design
- Site-selection data synthesis
- Investor and customer engagement preparation

NEPA-RELATED TOOLS

~10×

application & permit support acceleration

SITE PERMITTING WORKFLOWS

10–15×

targeted cycle compression via AI ontology-driven workflows

DEEP FISSION

CLOSING

The AI-native company is the one that can learn faster, prove faster, and review faster.

WHAT WE ARE BUILDING

- Faster learning loops
- More productive experts
- Stronger auditability
- Better evidence management
- More repeatable workflows
- An operating model built for regulated infrastructure

> AI is not just a set of tools for the nuclear industry.
> **It helps nuclear companies execute faster and better.**