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How Artificial Intelligence and Small Modular Reactors Will Power Emergency Preparedness and Response

The purpose of this research is to enhance requirements for personnel considering Artificial Intelligence (AI) capabilities during the adoption of Small Modular Reactors (SMR) in the context of nuclear Emergency Preparedness and Response (EPR) activities. The goal is to understand how AI might integrate into the emergency response organizations for SMR deployments to improve decision-making and crisis management strategies. Approaches to EPR requirements must undergo a profound transformation to adequately address the complex challenges as well as opportunities presented by the deployment of SMRs and AI by specifically evolving current frameworks and response plans.

In the realm of SMR deployments, AI may serve as a crucial ally in enhancing EPR measures while at the same time introducing new considerations including:

- Remote vs. on-site/In-the-vicinity operations
- Staffing plans, qualifications, and training including SMR engineering expertise
- Scenario simulations to include digital twins of facilities
- Responding to communication challenges for remote operations centers
- Management of SMR maintenance and modifications

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Confirm that the work is original and has not been published anywhere else

YES

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