Secure the Grid Coalition

2020 Pennsylvania Avenue, N.W., Suite 189
Washington, D.C. 20006

Dear Secretary Granholm and distinguished members of the Secretary of Energy Advisory Board:

The *Secure the Grid Coalition* greatly appreciates the opportunity to voice recommendations to the SEAB for consideration during its April 19, 2021, virtual meeting.

Our Request: We would like to build upon our previous comments to the SEAB on January 25th and our suggestion that The U.S. Department of Energy (DOE) adopt a new "Energy Earthshots" Initiative [that we named the "Carbon Free Millenia"] promoting the recycling of spent nuclear fuel for use in all-hazards secure advanced nuclear reactors to provide up to 1000 years of clean power for the United States. Specifically, **as an urgent first step, we ask you to address the current vulnerability of our spent nuclear fuel** to the prospect of a prolonged and widespread power outage. You can do this by engaging the U.S. Nuclear Regulatory Commission (NRC) to take action on an *eleven-year-old* Petition for Rulemaking and **request that NRC MANDATE the protection, monitoring, and use of High Reliability Unattended Backup Power technologies to protect spent nuclear fuel.**

Background: In February 2011, the Foundation for Resilient Societies submitted a Petition for Rulemaking to the NRC [PRM-50-96][i] that proposed long-term backup power for spent fuel pools at nuclear power plants because of the potential for human or mechanical error to interrupt power from emergency diesel generators (EDGs) currently employed for back-up power and for which the NRC requires only 7 days of fuel. Five weeks later, the Fukushima disaster served as a worldwide wake-up call on nuclear safety.

Between 2018 and 2020, The White House, Department of Defense (DOD), Department of Energy (DOE), the NRC, and Air University hosted multiple interagency exercises examining the likelihood of prolonged electric power outages and consequent impacts to U.S. nuclear reactors and safety systems – including spent nuclear fuel. The unclassified findings and recommendations were published in Air University's special collection called The Lemay Papers. These reports[ii] and their annexes are the most read documents in Air University history, note the same vulnerabilities associated with previous reports and promote a series of similar recommendations, including that the NRC mandate the use of existing technologies to ensure unattended, long-term cooling of spent nuclear fuel pools.

In September 2021, the Government Accountability Office[iii] concurred that spent fuel "—can pose serious environmental, public health, and security risks if not properly managed," warned that the "amount of spent fuel is growing by about 2,000 metric tons annually," and recommended Congressional action to "develop a permanent disposal solution." It is therefore **critically important that spent nuclear fuel be protected, constantly monitored, and its cooling systems be capable of providing long-term "walk-away safe" power through methods of "High Reliability Unattended Backup Power."**

Platform for DOE/NRC Collaboration: The Nuclear Energy Innovation Capabilities Act of 2017 provided the legal foundation upon which the DOE and NRC were able to sign a Memorandum of Understanding (MOU) in October 2019 "to share technical expertise and computing resources to speed up the deployment of advanced nuclear technologies." The DOE/NRC MOU was centered around DOE's National Reactor Innovation Center (NRIC) initiative and while this collaboration has been mostly focused on advanced reactors, we propose that the MOU provides the SEAB an opportunity to engage NRC on the matter of securing spent nuclear fuel.

Specific Recommendations: Our Coalition respectfully recommends that the SEAB work with NRC to encourage them to immediately mandate that nuclear power plant licensees immediately incorporate the following measures for spent nuclear fuel storage pools:

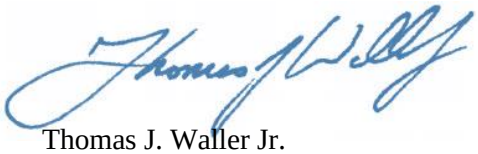
(1) High Reliability Unattended Backup Power technologies: The Foundation for Resilient Societies' 11-year-old recommendations [within PRM-50-96] for High Reliability Unattended Backup Power included three technologies which are commercially available today: Organic Rankine Cycle power production, Solar Photovoltaic power production, and Thermoelectric Generator power production. More recently, small modular reactors (SMRs) have gained prominence for all-hazards resilient, walk-away-safe power producers. While SMRs installed at existing nuclear sites for augmented power production would be ideal as a source of back-up power for safety systems, any and all currently available technologies must be immediately assessed and incorporated to augment/replace the current emergency diesel generators that provide back-up power to safety systems that keep spent fuel cool.

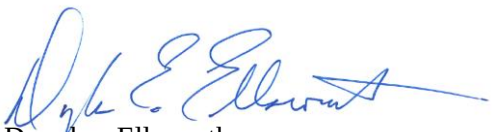
(2) Real-time surveillance and monitoring systems: If, in the wake of the Fukushima accident, nuclear power plant licensees do not already employ physical surveillance systems, radiation monitors, and pool temperature monitors for infrastructures storing and cooling spent nuclear fuel, these should be immediately installed. Monitoring data should be made available in real time to:

a. The Strategic Alliance for FLEX Emergency Response (SAFER) centers located in Memphis, Tennessee and Phoenix, Arizona. These SAFER centers are the nuclear-industry-led national response centers that help meet the requirements of the NRC's Mitigation Strategies Order, issued after the Fukushima accident. They provide "Diverse and Flexible Mitigation Capability" (FLEX) portable equipment to help provide cooling to nuclear plants experiencing an emergency such as what took place during the Fukushima accident.
b. State-level fusion centers where nuclear power plant licensees reside. State-level emergency response assets (National Guard, State Guard, State Police, Fire crews, etc.) should be informed on what must be done to maintain spent fuel cooling and refuel existing emergency diesel generators until the above "High Reliability Unattended Backup Power technologies" are adequately installed at spent nuclear fuel storage pool sites.

Our Coalition is ready to assist the SEAB and can make personal introductions to numerous experts throughout the country who can help DOE act on the above recommendations.

Respectfully submitted by,





Thomas J. Waller Jr.
Co-Director
Secure-the-Grid Coalition
twaller@centerforsecuritypolicy.org

Douglas. Ellsworth
Co-Director
Secure-the-Grid Coalition
doug.ellsworth@usapact.org

[i] PRM-50-96:
https://www.resilientsocieties.org/uploads/5/4/0/0/54008795/petition_for_rulemaking_resilient_societies_docketed.pdf
[ii] EDTF Report 2.0:
https://www.airuniversity.af.edu/Portals/10/AUPress/Papers/LP_0004_ELECTROMAGNETIC_DEFENSE_TASK_FORCE_2_2019.PDF
[iii] GAO Report "Commercial Spent Nuclear Fuel" September 2021:
https://www.gao.gov/assets/gao-21-603.pdf