

50 YEARS OF NUCLEAR REGULATION

The last 50 years of the U.S. Nuclear Regulatory Commission have been shaped by significant changes in regulatory frameworks, public perceptions, and technological developments in nuclear energy. Here's a brief summary:



1975



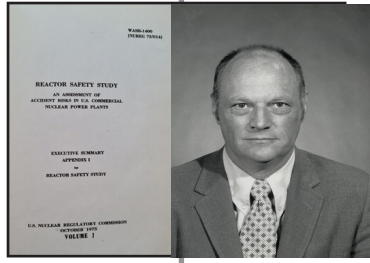
FOUNDING OF THE NRC

The NRC was established by the Energy Reorganization Act of 1974 (ERA), following widespread criticism of its predecessor, the Atomic Energy Commission, that its dual mandate to promote nuclear power and regulate its safety was a conflict of interest. The ERA created the NRC as an independent, five-member Commission focused solely on regulating civilian nuclear activities to ensure public safety.



THE BROWNS FERRY FIRE

The fire was started by a worker using a lit candle to check for air leaks. This risky action ignited a temporary polyurethane cable penetration seal. The resulting fire raged for over 7 hours and nearly disabled the safety equipment of one of the two affected units. The fire forever changed how the NRC and industry viewed the threat of fire and prompted a series of new fire protection regulations.



THE REACTOR SAFETY STUDY (WASH-1400)

The NRC published the Reactor Safety Study, the world's first full-scale probabilistic risk assessment. It represented a watershed event for the development and use of risk assessment in nuclear power regulation.

1979



THREE MILE ISLAND ACCIDENT

The partial meltdown at the Three Mile Island Generating Station became the most serious accident in U.S. commercial nuclear power plant history. The NRC's handling of the crisis led to a major review of its regulatory practices, resulting in stricter safety measures and more stringent oversight.

1986



POST-CHERNOBYL REFORMS

The Chernobyl disaster in the Soviet Union further shaped nuclear safety worldwide. The NRC strengthened its safety protocols, especially regarding emergency preparedness and radiation protection.

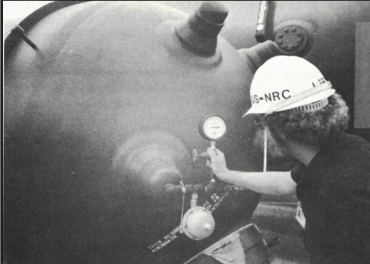
1989



COMBINED LICENSING, 10CFR PART 52

To improve regulatory efficiency and add greater predictability to the licensing process, the NRC approved 10 CFR Part 52 as an alternative licensing process. Where the NRC had previously issued licenses through a two-step process, it now issued in a single step a combined construction permit and operating license. In addition to the combined license, the new regulations allowed for nuclear power facilities the issuance of early site permits, standard design certifications, standard design approvals, and manufacturing licenses.

1991



MAINTENANCE RULE

The Maintenance Rule was an early step toward the development of risk-informed, performance-based regulations. The new rule was simple — licensees had to establish a maintenance program, collect data, assess the program's performance and then apply the results to improve their program. The rule paved the way for probabilistic approaches that identified the most effective ways to improve safety.

1995



RISK-INFORMED, PERFORMANCE-BASED REGULATIONS

Spurred by the Commission's approval of the PRA policy statement in 1995, the NRC launched a major initiative to regulate without stifling innovation or over burdening industry. It began implementing regulations based on a risk-informed and performance-based approach using quantitative data and measures of risk to evaluate safety performance criteria. In 2000, the Reactor Oversight Process was a significant step forward in creating risk-informed oversight of nuclear power plant performance.

2001



9/11 TERRORIST ATTACK

While the NRC had consistently worked to improve nuclear plant and materials safety and security, the terrorist attacks of September 11, 2001, led to significant new regulations. The NRC required enhanced security officer training, increased security patrols, expanded force-on-force drills, and additional physical barriers at plants and greater stand-off distance when performing vehicle checks. To improve materials security, the NRC developed the National Source Tracking System. This highly secure, accessible computer system tracks high-risk radioactive sources from the time they are manufactured or imported to their disposal or export, or until they decay enough to no longer be of concern.

2002



DAVIS-BESSE REACTOR VESSEL HEAD DEGRADATION

On February 16, 2002, the Davis-Besse Nuclear Power Station in Oak Harbor, Ohio, began a refueling outage. During the outage, the NRC had ordered the licensee to inspect for cracks on the vessel head penetration nozzles for its control rod drive mechanisms. On March 5, 2002, the licensee discovered that a leak of boric acid had caused corrosion to an area of the vessel head the size of a pineapple. An NRC lessons-learned task force recommended significant upgrades to corrosion inspection training, the NRC's review of licensee safety culture, and the NRC's engagement with licensees, and better documentation of its licensing decisions.

2011



FUKUSHIMA DAI-ICHI NUCLEAR ACCIDENT

The Fukushima Dai-ichi nuclear accident prompted the NRC to re-evaluate safety measures, focusing on enhancing reactor safety, improving flood and seismic hazard assessments, and ensuring the robustness of emergency plans in U.S. plants. The NRC approved new equipment requirements and strengthening emergency preparedness capabilities. The U.S. nuclear power industry also initiated a safety strategy called FLEX, which features additional resources to supply power and water to maintain safety functions.

2023



NEW REACTORS CONSTRUCTION—VOGTLE ELECTRIC GENERATING PLANT, UNITS 3 AND 4

On March 28, 2008, Southern Nuclear Operating Company submitted its application for combined licenses under 10 CFR Part 52 for two AP1000 advanced passive pressurized-water reactors for Vogtle Electric Generating Plant, Units 3 and 4. Units 3 and 4 entered commercial operation on July 31, 2023, and April 29, 2024, respectively.

2024



ADVANCE ACT OF 2024

The ADVANCE Act passed and signed by President Biden, requires the NRC to take a number of actions, particularly related to the licensing of new reactors and fuels, while maintaining the NRC's core mission to protect public health and safety. The ADVANCE Act affects a wide range of NRC activities, including by supporting the recruitment and retention of the NRC workforce, adding flexibility in the NRC's budgeting process, enhancing the regulatory framework for advanced reactors and fusion technology, and requiring initiatives to support the NRC's efficient, timely, and predictable reviews of license applications.

2025



TODAY

The NRC continues to oversee the safe operation of existing nuclear reactors, decommissioning of retired plants, and regulation of nuclear materials. It is also involved in evaluating advanced reactor designs and managing issues related to nuclear waste disposal. The year, the agency updated its mission statement:

The NRC protects public health and safety and advances the nation's common defense and security by enabling the safe and secure use and deployment of civilian nuclear energy technologies and radioactive materials through efficient and reliable licensing, oversight, and regulation for the benefit of society and the environment.