Protecting People and the Environment

SEMIANNUAL STATUS REPORT ON THE LICENSING ACTIVITIES AND REGULATORY DUTIES OF THE U.S. NUCLEAR REGULATORY COMMISSION

April 2023–September 2023

Note: The period of performance covered by this report includes activities that occurred from the first day of April 2023 to the last day of September 2023. The transmittal letter to Congress accompanying this report provides additional information to keep Congress fully informed of the current licensing and regulatory activities of the U.S. Nuclear Regulatory Commission.

Enclosure

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I. Reactor Oversight Process

The U.S. Nuclear Regulatory Commission (NRC) uses the Reactor Oversight Process (ROP) to assess the performance of operating power reactor licensees and to determine the most effective use of inspection resources. Using inputs from both agency self-assessments and independent evaluations, the NRC adjusts the ROP on an ongoing basis to enhance its effectiveness and efficiency. The NRC staff meets with interested stakeholders periodically to collect feedback on the effectiveness of the process and considers this feedback when making improvements to the ROP.

The agency's most recent performance assessments indicate that all operating power reactor plants continue to operate safely. The NRC staff conducts assessment reviews, communicates changes in licensee performance quarterly, and issues end-of-cycle assessment letters. The NRC issued annual assessment letters to licensees in March 2023. The NRC website reflects the latest power reactor plant performance assessments.

With the expiration of the Coronavirus Disease 2019 (COVID-19) public health emergency on May 11, 2023, the NRC returned to full implementation of the reactor inspection and oversight program (Agencywide Documents Access and Management System No. ML23082A106). The NRC staff completed the baseline inspection program for calendar year (CY) 2022, with the goal of completing nominal baseline inspection samples for future ROP inspection cycles.

The ROP is a risk-informed, performance-based oversight program that contains provisions for continuous self-assessment and improvement. In July 2022, the Commission approved the NRC staff's recommendations identified in SECY-22-0053 (ML22060A085) to change the periodicity of engineering inspections from a 3-year cycle to a 4-year cycle. In August 2023, the NRC began the first implementation of focused engineering Inspection Procedure (IP) 71111.21N.04, "Age-Related Degradation," (ML23192A837) at a reactor site.

The NRC staff have also recommended changes to the treatment of greater-than-green inspection findings and performance indicators, both of which are inputs to the ROP Action Matrix used to assess licensee performance, in SECY-22-0086 (ML22188A221). Additionally, the staff submitted options to the Commission for the frequency of the Problem Identification and Resolution (PI&R) team inspection in SECY-22-0087 (ML22145A448). In SECY-19-0067 (ML19070A036), the staff recommended changing the frequency of this inspection from biennial to triennial. After considering the recommendations from the comprehensive review of the PI&R inspection conducted in CY 2020, the staff subsequently revised its recommendation to keep the inspection at a biennial frequency. To better risk inform the Significance Determination Process (SDP), the staff also submitted, in SECY-22-0089 (ML22189A201), a recommendation to revise the Emergency Preparedness (EP) SDP. The staff recommended that inspection findings affecting only those planning standards that have a direct impact on public health and safety or on implementation of the emergency plan can have a significance greater-than-green. In the prior reporting period, the Commission approved the staff's recommendations in SECY-22-0086, SECY-22-0087, and SECY-22-0089. In accordance with Commission direction, the staff revised Inspection Manual Chapter (IMC) 0305, "Operating Reactor Assessment Program," dated May 4, 2023 (ML23093A184), and IP 71111.24, "Testing and Maintenance of Equipment Important to Risk," dated March 7, 2023 (ML23062A724). The NRC staff is in the process of revising IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process" (ML15128A462), dated September 22, 2015, in accordance with Commission direction. The staff is also in the process of revising IP 71152, "Problem Identification and Resolution," while maintaining consistency with Commission direction.

In January 2023, the NRC staff submitted its recommendation to the Commission to eliminate the alert and notification system ROP performance indicator and to develop a replacement performance indicator that measures emergency response facility and equipment readiness in SECY-23-0010 (ML23004A013). In this reporting period, the Commission approved the staff's recommendation (ML23244A282) and the staff is making changes to meet the recent Commission direction.

On July 28, 2022, the NRC completed a follow-on review of the lessons learned, best practices, and challenges during the COVID-19 public health emergency (ML22172A159). The follow-on review identified multiple recommendations for NRC management consideration to enhance the ROP and baseline inspection program. On July 6, 2023, NRC management issued a memorandum dispositioning those recommendations (ML23086C029) and chartered a working group (ML23086C054) to implement the key recommendations from the review.

II. Implementing Risk-Informed and Performance-Based Regulations

In 1995, the NRC issued the Probabilistic Risk Assessment (PRA) Policy Statement in the *Federal Register* (FR) (60 FR 42622; August 16, 1995), which formalized the Commission's commitment to risk-informed regulation through the expanded use of PRA. The use of PRA in regulatory decision-making and licensing activities for U.S. light-water reactors (LWRs) has increased in recent years, and licensees continue to adopt many risk-informed initiatives. PRAs provide licensees with risk insights that allow increased flexibility in plant operations. They also enable both licensees and the NRC to better identify and focus on more safety-significant issues. The NRC staff continues to work with industry to support risk-informed and performance-based initiatives.

The industry has communicated plans to continue to submit applications for adoption of Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.69, "Risk-informed categorization and treatment of structures, systems and components for nuclear power reactors." This would allow licensees to establish a more risk-informed program for the treatment of structures, systems, and components. In 2014, the NRC approved the pilot application of 10 CFR 50.69 for Vogtle Electric Generating Plant. Since completion of the pilot, the industry has submitted 39 applications to adopt 10 CFR 50.69. The NRC staff has reviewed and approved 32 applications and is currently reviewing the remaining 7 applications.

The industry also continues to communicate plans to submit applications to adopt the Risk-Informed Technical Specifications (RITS) Initiative 4b. This initiative allows licensees to temporarily extend certain technical specification completion times up to 30 days, based on plant configuration and a real-time risk calculation. This approach maintains and improves safety through the incorporation of risk assessment and management techniques into a plant's technical specifications, while reducing unnecessary regulatory burden. To date, the industry has submitted 37 applications to adopt RITS Initiative 4b. The NRC staff has reviewed and approved 29 applications and is currently reviewing the remaining 8 applications.

The Very Low Safety Significance Issue Resolution (VLSSIR) process, implemented in January 2020, is a framework to review, assess, and disposition issues of very low safety significance that are not clearly within a plant's licensing basis. The process is used regularly and resulted in the closure of six potential issues in CY 2022, and an additional three potential issues as of September 30, 2023. In August 2022, the VLSSIR process was expanded (ML22019A175) to include issues of concern that would not be greater than Severity Level IV if

the issue was determined to be a violation subject to traditional enforcement. In March 2023, the process was used to disposition an issue of generic applicability regarding inspection of piping under insulation (ML23046A398).

As part of the VLSSIR initiative, the NRC also developed the Risk-Informed Process for Evaluations (RIPE) to resolve very low safety-significant issues commensurate, with their risk significance using existing regulations under 10 CFR Section 50.12, "Specific exemptions," or 10 CFR Section 50.90, "Application for amendment of license, construction permit, or early site permit," and risk information. RIPE guidance was approved for use on January 7, 2021 (ML21006A324). RIPE was expanded on June 30, 2021, to allow licensees with additional approved risk-informed initiatives to use the process (ML21180A011). RIPE was further expanded on May 10, 2022 (ML22088A140), to allow licensees to use the process for license amendment requests involving changes to the technical specifications. In September 2023, RIPE guidance was updated to include enhancements and feedback from the first application of the process in 2022.The guidance was made publicly available as temporary staff guidance, TSG-DORL-2021-01, Revision 3, "Risk-Informed Process for Evaluations" (ML23122A014).

The NRC staff has increased use of risk insights in the review of new reactor applications. Specifically, in preparation of the submittal of the NuScale Standard Design Approval application (SDAA), the NRC staff collected preliminary risk insights in support of a graded review of the NuScale VOYGR 460 standard design. These risk insights were leveraged by NRC staff in its early review of the SDAA by: (1) identifying focus areas for the review, (2) grading the review scope and schedule, and (3) supporting decision-making during the acceptance review of the SDAA. The staff continues to use risk insights to inform its technical reviews of the SDAA and to resolve technical issues identified during the review. This NRC staff initiative is aligned with the implementation of the lessons learned from the previous NuScale Design Certification Application review (ML22294A144) and is an example of being a modern risk-informed regulator.

On September 12, 2023, NRR staff hosted NRC's 2023 Risk Forum (ML23254A388). Over 400 stakeholders participated in the meeting, including experts from across the NRC, the National Aeronautics and Space Administration (NASA), the Federal Aviation Administration (FAA), and multiple industry groups and utilities. An especially engaging discussion regarding the incorporation of Risk-Informed Decision Making (RIDM) into an organization's culture highlighted that the industry, NASA, FAA, and the NRC share similar challenges in incorporating RIDM. Stakeholders also highlighted the successes of leveraging RIDM to make safety improvements at nuclear power plants; explored the many facets of managing the various types of uncertainty; and discussed applying risk-informed principles to the licensing of operating, new, and advanced reactors. The meeting summary is available at ML23263B117.

III. Status of Issues Tracked in the Reactor Generic Issues Program

There were no generic issues during this reporting period.

Additional detail of the staff's evaluation may be found on the Generic Issues Dashboard:

https://www.nrc.gov/about-nrc/regulatory/gen-issues/dashboard.html#genericIssue/genericIssueDetails/48

IV. Licensing Actions and Other Licensing Tasks

Licensing actions related to operating power reactors include orders, license amendments, exemptions from regulations, relief from inspection or component testing, topical reports submitted on a plant-specific basis, license transfers, and other actions requiring NRC review and approval before licensees can carry out certain activities. Other licensing tasks for operating power reactors include licensees' responses to NRC requests for information through generic letters or bulletins, NRC review of generic topical reports, and other licensee actions or reports that do not require NRC review and approval before licensees can carry them out.

Currently there are three performance indicators for operating power reactor licensing actions. The first is for timely completion of the final safety evaluations (SE) by the generic milestone date, introduced in fiscal year (FY) 2021. In FY 2022, two performance indicators were added; specifically, the percentage of reviews completed within resource estimates and the average percentage of time allotted used in the established schedule. These three performance indicators are applicable to all "requested activities of the Commission," that involve a final SE as defined by the Nuclear Energy Innovation and Modernization Act (NEIMA) in the Operating Reactor Business Line. In FY 2022, the indicators related to the age of the inventory of licensing actions and the age of the inventory of other licensing tasks were discontinued.

Table 1 shows the actual FY 2020 through FY 2023 results to date and the FY 2023 goal for the above-mentioned Congressional Budget Justification performance indicators.

The agency continues to communicate with licensees about planned licensing submittals. The NRC's senior management remains fully engaged in monitoring the licensing action workload to maintain both the staff's safety focus and target performance goals.

Table 1 Results and FY 2023 Goals for the NRC's Congressional Budget Justification Performance Indicators

Output Measure	FY 2020 Actual	FY 2021 Actual	FY 2022 Actual	FY 2023 Current	FY 2023 Goal
Age of Inventory of Licensing Actions	99% ≤1 year 100% ≤2 year	100% ≤2 year	Discontinued	Discontinued	Discontinued
Age of Inventory of other Licensing Tasks	96% ≤1 year 100% ≤2 year	97% ≤2 year	Discontinued	Discontinued	Discontinued
Timely Completion of Final SEs	Not Applicable	100% Completed by the generic milestone schedule	99% Completed by the generic milestone schedule[1]	99% Completed by the generic milestone schedule[2]	100% Completed by the generic milestone schedule
Average Percentage of Time Allotted Used in the Established Schedule	Not Applicable	Not Applicable	81.75%	98%	≤115% or ≥75%
Percentage of Reviews Completed Within Resource Estimates	Not Applicable	Not Applicable	97.3%	94%	80%

V. Status of License Renewal Activities

During this reporting period, the NRC staff completed the acceptance review of one license renewal application (LRA) (Perry), one subsequent license renewal application (SLRA) (VC Summer) and completed the safety review of one SLRA (St. Lucie). Two additional applications are currently under review.

Commission Direction Related to Subsequent License Renewal (SLR)

On February 22, 2022, the Commission issued orders CLI-22-02, CLI-22-03, and CLI-22-04 (ML22055A496, ML22055A533, ML22055A557, respectively) regarding the agency's National Environmental Policy Act review of subsequent license renewal applications.

[1] In FY 2022, one final SE was not issued within the NRC's established generic milestone schedule due to a delay in the applicant's response to NRC's request for additional information.

[2] In FY 2023, two final SEs were not issued within the NRC's established generic milestone schedule. The first required additional time to bring closure to all safety aspects of the review, which included a supplement to the operating license application for a phased approach to startup operations. The second required additional time to address technical issues identified during an operational event at the plant.

Also on February 22, 2022, the Commission issued a Staff Requirements Memorandum (SRM) to SECY-21-0066, "Rulemaking Plan for Renewing Nuclear Power Plant Operating Licenses – Environmental Review" (ML22053A308), directing the staff to develop a rulemaking plan that aligns with the Commission orders. In the SRM, the Commission directed the staff to develop a rulemaking plan to fully evaluate the environmental impacts of reactor SLR in NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants", within 30 days.

On March 25, 2022, the staff provided to the Commission for its consideration SECY-22-0024, "Rulemaking Plan for Renewing Nuclear Power Plant Operating Licenses – Environmental Review" (ML22062B592), which recommended that a dedicated team of staff complete the rulemaking within two years. On April 5, 2022, the Commission issued SRM-SECY-22-0024, which approved the staff's recommendation and directed the staff to continue to seek opportunities to accelerate the schedule, working as efficiently as possible while still maintaining the integrity of the review (ML22096A035).

On March 3, 2023, the NRC issued the proposed rule and draft generic environmental impact statement (GEIS) for license renewal of nuclear power plants for a 60-day public comment period (88 FR 13329; ML23011A063). The NRC is scheduled to publish the final rule in August 2024.

Applications with Milestones Completed During this Reporting Period

St. Lucie

On August 3, 2021, Florida Power & Light Company submitted an SLRA (ML21215A314) for the St. Lucie Plant, Units 1 and 2, to extend the current operating licenses for an additional 20 years beyond its current expiration dates. On September 24, 2021, the NRC staff accepted the SLRA for review with a projected 21-month review schedule (ML21246A091).

The SE Report was first issued on July 21, 2023 (ML23200A146) and was later revised and re-issued on September 1, 2023 (ML23219A003). The Advisory Committee on Reactor Safeguards meeting was held on September 6, 2023. The environmental review is on hold pending either the completion of the generic environmental impact statement rulemaking or submittal of a site-specific environmental review.

Perry

On July 3, 2023, Energy Harbor Nuclear Corp submitted an LRA (ML23184A081) for the Perry Nuclear Power Plant, Unit 1, to extend the current operating license for an additional 20 years beyond its current expiration date. The application was accepted for review on September 22, 2023 with a projected 23-month review schedule (ML23256A359).

VC Summer

On August 17, 2023, Dominion Energy South Carolina, Inc., on behalf of itself and Santee Cooper, submitted an SLRA (ML23233A179) for Virgil C. Summer Nuclear Station, Unit No. 1 (V.C. Summer) to extend the current operating license an additional 20 years beyond its current expiration date. It is currently under acceptance review.

Site-Specific Environmental Reports

By letter dated June 9, 2022 (ML22160A301), Florida Power & Light Company submitted an Environmental Report, Supplement 2, related to its 2018 application (ML18037A812) for SLR of Renewed Facility Operating License Nos. DPR-31 and DPR-41 for the Turkey Point Nuclear Generating Station, Units 3 and 4. This site-specific environmental report is currently under NRC staff review. The draft site-specific environmental impact statement (EIS) (ML23242A216) was issued for public comment on August 31, 2023. The NRC staff is scheduled to issue the final Supplemental Environmental Impact Statement (SEIS) supplement in March 2024.

The NRC also received site-specific environmental report supplements for SLRAs for North Anna, Units 1 and 2, in September 2022 (ML22272A041); and Oconee Units 1, 2, and 3, in November 2022 (ML22311A036). These site-specific environmental report supplements are currently under NRC staff review. The NRC staff is scheduled to issue the final SEIS supplement for North Anna in May 2024; and issue the final SEIS for Oconee in June 2024.

VI. Summary of Reactor Enforcement Actions

The reactor enforcement statistics in the tables below are arranged by region, half FY, FY, and two previous FYs for comparison purposes. These tables provide the non-escalated and escalated reactor enforcement data, as well as the escalated enforcement data associated with traditional enforcement and the ROP. The severity level assigned to a violation (i.e., traditional enforcement) generally reflects the significance of a violation. However, for most violations, the significance is assessed using the SDP under the ROP, which uses risk insights, as appropriate, to assist the NRC in determining the safety or security significance of inspection findings identified within the ROP.

Brief descriptions of the escalated reactor enforcement actions associated with traditional enforcement and the ROP (as well as any other significant actions) taken during the applicable fiscal half-year follow the tables.

Table 2 Non-escalated Reactor Enforcement Actions*

NON-ESCALATED REACTOR ENFORCEMENT ACTIONS						
		Region I	Region II	Region III	Region IV	TOTAL
Cited Severity Level IV or Green	1st Half FY 23	0	1	0	2	3
	2nd Half FY 23	1	3	0	4	8
	FY 23 YTD Total	1	4	0	6	11
	FY 22 Total	0	8	0	2	10
	FY 21 Total	0	6	0	4	10
Non-cited Severity Level IV or Green	1st Half FY 23	33	47	55	65	200
	2nd Half FY 23	46	68	44	53	211
	FY 23 Total	79	115	99	118	411
	FY 22 Total	80	81	69	108	338
	FY 21 Total	48	53	39	78	218
TOTAL Cited and Non-cited Severity Level IV or Green	1st Half FY 23	33	48	55	67	203
	2nd Half FY 23	47	71	44	57	219
	FY 23 Total	80	119	99	124	422
	FY 22 Total	80	89	69	110	348
	FY 21 Total	48	59	39	82	228

* The non-escalated enforcement data reflect the cited and non-cited violations either categorized at Severity Level IV (the lowest level) or associated with Green findings during the indicated time periods. The numbers of cited violations are based on Enforcement Action Tracking System data that may be subject to minor changes following verification. These data do not include Green findings that do not have associated violations.

Table 3 Escalated Reactor Enforcement Actions Associated with Traditional Enforcement*

ESCALATED REACTOR ENFORCEMENT ACTIONS ASSOCIATED WITH TRADITIONAL ENFORCEMENT						
		Region I	Region II	Region III	Region IV	TOTAL
Severity Level I	1st Half FY 23	0	0	0	0	0
	2nd Half FY 23	0	0	0	0	0
	FY 23 Total	0	0	0	0	0
	FY 22 Total	0	0	0	0	0
	FY 22 Total	0	0	0	0	0
Severity Level II	1st Half FY23	0	0	0	0	0
	2nd Half FY 23	0	0	0	0	0
	FY 23 Total	0	0	0	0	0
	FY 22 Total	0	0	0	0	0
	FY 21 Total	0	1	0	0	1
Severity Level III	1st Half FY 23	0	1	0	0	1
	2nd Half FY 23	0	1	0	0	1
	FY 23 Total	0	2	0	0	2
	FY 22 Total	0	1	0	1	2
	FY 21 Total	0	4	0	4	8
TOTAL Violations Cited at Severity Level I, II, or III	1st Half FY 23	0	1	0	0	1
	2nd Half FY 23	0	1	0	0	1
	FY 23 Total	0	2	0	0	2
	FY 22 Total	0	1	0	1	2
	FY 21 Total	0	5	0	4	9

* The escalated enforcement data reflect the Severity Level I, II, or III violations or problems cited during the indicated time periods.

Table 4 Escalated Reactor Enforcement Actions Associated with the Reactor Oversight Process*

ESCALATED REACTOR ENFORCEMENT ACTIONS ASSOCIATED WITH THE REACTOR OVERSIGHT PROCESS						
		Region I	Region II	Region III	Region IV	TOTAL
Violations Related to Red Findings	1st Half FY 23	0	0	0	0	0
	2nd Half FY 23	0	0	0	0	0
	FY 23 Total	0	0	0	0	0
	FY 22 Total	0	0	0	0	0
	FY 21 Total	0	0	0	0	0
Violations Related to Yellow Findings	1st Half FY 23	0	0	0	0	0
	2nd Half FY 23	0	0	0	0	0
	FY 23 Total	0	0	0	0	0
	FY 22 Total	0	0	0	0	0
	FY 21 Total	0	0	0	0	0
Violations Related to White Findings	1st Half FY 23	2	2	1	1	6
	2nd Half FY 23	0	1	0	3	4
	FY 23 Total	2	3	1	4	10
	FY 22 Total	0	2	1	1	4
	FY 21 Total	1	0	0	0	1
TOTAL* Related to Red, Yellow, or White Findings	1st Half FY 23	2	3	1	1	7
	2nd Half FY 23	0	3	0	3	6
	FY 23 Total	2	6	1	4	13
	FY 22 Total	0	2	1	1	4
	FY 21 Total	1	0	0	0	1

* The escalated enforcement data reflect the violations or problems cited during the indicated time periods that were associated with either Red, Yellow, or White findings. This data does not include Red, Yellow, or White findings that do not have associated violations. The total will include escalated security violations due to being greater-than-green but are designated official use only – security related information (OUO-SRI).

Reactor Escalated Enforcement Actions and Other Significant Actions

Southern Nuclear Company (Farley 1 &2) – EA-22-101

On March 30, 2023, the NRC issued a notice of violation to Southern Nuclear Operating Co., Inc. (licensee), for a violation associated with a Greater-than-Green SDP finding at Joseph M. Farley Nuclear Plant. The details of the finding are OUO-SRI.

Tennessee Valley Authority (Sequoyah 1 & 2) – EA-22-129

On April 20, 2023, the NRC issued a notice of violation to Tennessee Valley Authority (licensee) for a violation associated with a Greater-than-Green SDP finding at Sequoyah Nuclear Plant. The details of the finding are OUO-SRI.

Tennessee Valley Authority (Browns Ferry 1) – EA-22-122

On May 8, 2023, the NRC issued a notice of violation to Tennessee Valley Authority (licensee) for a violation associated with a white SDP finding at Browns Ferry Nuclear Plant, Unit 1 (BFN1). The white finding, an issue of low-to-moderate safety significance which involved the licensee's failure to promptly identify and correct a condition adverse to quality as required by Title 10 of the Code of Federal Regulations Part 50, Appendix B, Criterion XVI. This failure resulted in the inoperability of the BFN1 high pressure coolant injection system.

Energy Northwest (Columbia) – EA-21-170

On June 1, 2023, the NRC issued a notice of violation to Energy Northwest, Inc. (licensee) for three violations grouped as a problem associated with a white SDP finding at Columbia Generating Station (Columbia). The white finding, an issue of low-to-moderate safety significance, involved the licensee's failure to: 1) control work activities in a high radiation area with dose rates greater than 1.0 rem/hour at 30 centimeters; 2) develop surveys of areas that were reasonable under the circumstances to evaluate the magnitude and extent of radiation levels; and 3) use processes or other engineering controls to limit the concentration of radioactive material in the air surrounding a work area. These failures are in violation of 10 CFR 20.1701, Columbia Technical Specifications, and 10 CFR 20.1501(a)(2), respectively, which resulted in an airborne radioactivity event and multiple confirmed uptakes of radioactive materials to workers.

Entergy Nuclear Operations, Inc. (River Bend 1) – EA-23-055

On July 20, 2023, the NRC issued a notice of violation to Entergy Operations, Inc. (licensee) for a violation associated with a white SDP finding at River Bend Station. The white finding, an issue of low-to-moderate safety significance, involved the licensee's failure to adequately inspect the high-pressure core spray transformer wiring in accordance with site maintenance procedures as required by Technical Specification 5.4.1.a and Regulatory Guide 1.33.

Entergy Nuclear Operations, Inc. (River Bend 1) – EA-23-071

On August 15, 2023, the NRC issued a notice of violation associated with a white SDP finding to Entergy Operations, Inc. (licensee) at the River Bend Station. The white finding, an issue of low-to-moderate safety significance, involved the licensee's failure to properly calibrate radiation monitors resulting in its inability to meet the requirements in 10 CFR Part 50, Appendix E, and the planning standards of 10 CFR 50.47(b), as required by 10 CFR 50.54(q)(2).

Southern Nuclear Operating Company (Vogtle 1) – EA-23-108

On September 5, 2023, the NRC issued a notice of violation to Southern Nuclear Operating Company, Inc for a Severity Level (SL) III violation at Vogtle Electric Generating Plant Units 1 and 2. The SL III violation involved the licensee's failure to follow a radiological work permit (RWP) as required by licensee technical specifications. Specifically, three contract employees entered the containment building on an improper RWP.

Duke Energy Carolinas, LLC (Harris 1) – EA-23-060

On September 13, 2023, a notice of violation was issued to Duke Energy Progress, LLC for a violation associated with a Greater-than-Green SDP finding at Shearon Harris, Unit 1. The details of the finding are OUO-SRI.

VII. Security and Emergency Preparedness and Incident Response Activities

The NRC continues to maintain an appropriate regulatory infrastructure to provide reasonable assurance of adequate protection of public health and safety and to promote the common defense and security while implementing risk-informed strategies and improving the realism of NRC licensing and oversight activities. The NRC's security, EP, and incident response programs contribute to these goals.

Physical Security

The NRC remains focused on the mission of protecting public health and safety and has applied risk insights and the use of technology to perform security oversight activities. During 2023, the staff continued to implement its normal security inspection activities. The NRC's security oversight continued to inspect for any vulnerabilities or deficiencies in site protective strategies and programs and to take prompt action, as necessary. In addition, kinetic assessment methods, such as force-on-force (FOF) inspections, continued to provide performance-based insights regarding licensee readiness to defend their sites.

The NRC continued to conduct FOF inspections at each nuclear power reactor and Category I fuel cycle facility on a regular 3-year cycle. Each FOF inspection includes both tabletop drills and exercises that simulate combat between a mock adversary force and the licensee's security force. These inspections assess the ability of power reactor and Category I fuel cycle facility licensees to defend against the design basis threat (DBT) for radiological sabotage. For Category I fuel cycle facilities, the NRC uses FOF inspections to evaluate the effectiveness of licensees' protective strategies against an additional DBT of theft or diversion of special nuclear material. FOF inspections, along with the other inspections that comprise the NRC's security baseline inspection program, provide valuable insights that enable the NRC to evaluate the effectiveness of licensees' security programs. The FOF inspection program was modified during the COVID-19 public health emergency to account for adverse conditions experienced at the sites, and beginning in 2022, consistent with other ROP inspections, the full inspection procedure was reinstated.

Cybersecurity

Under 10 CFR 73.54, “Protection of digital computer and communication systems and networks,” the NRC requires nuclear power plant licensees and new license applicants to provide high assurance that digital computer and communication systems and networks are adequately protected against cyberattacks. These licensees must implement a cybersecurity program to ensure that safety, security, and EP functions are protected from cyberattacks. In conjunction, the NRC has developed an oversight program for power reactor cybersecurity that includes an inspection program, inspector training, and a process for evaluating the significance of inspection findings.

In 2021, the agency completed the cybersecurity program’s full implementation inspections of all operating nuclear power plant licensees. The inspections verified that the facilities had fully implemented their cybersecurity requirements. In February 2022, the staff began inspecting licensees’ maintenance of their cybersecurity programs as part of the ROP using IP 71130.10, “Cybersecurity” (ML21271A106), to ensure continued compliance. From April 2023 to September 2023, the staff completed 16 cybersecurity inspections.

In July 2023, the NRC issued Regulatory Guide 5.83, Revision 1, “Cybersecurity Event Notifications” (ML23087A017), which provides a risk-informed approach to reporting cyber incidents at nuclear power reactors. This revision aligns definitions in the glossary with other NRC issued cybersecurity guidance. It also provides clarification on reportability of malicious activity against digital devices on the same network as regulated devices. Finally, it approves industry-issued guidance for use on the same subject.

Emergency Preparedness and Incident Response

As discussed in Section X of this report, on May 12, 2020, the NRC published a proposed rule and draft regulatory guidance on EP for Small Modular Reactors and Other New Technologies (92 FR 28436). The NRC staff then provided the draft final rule to the Commission for its consideration on January 3, 2022 (ML21200A055). The draft final rule was affirmed by the Commission on August 14, 2023, and is scheduled to be published in the Federal Register by January 2024.

The NRC staff continues to review proposed licensing submittals to implement enhancements to emergency response organization staffing and response/augmentation times in Revision 2 to NUREG-0654/FEMA-REP-1, “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants.”

On March 10, 2023, the NRC staff issued license amendments (ML22332A493) to Brunswick Steam Electric Plant, Units 1 and 2; Catawba Nuclear Station, Units 1 and 2; Shearon Harris Nuclear Power Plant, Unit 1; McGuire Nuclear Station, Units 1 and 2; Oconee Nuclear Station, Units 1, 2, and 3; H.B. Robinson Steam Electric Plant, Unit 2; and William States Lee III Nuclear Station, Units 1 and 2, to revise respective Radiological Emergency Response Plans to change the location of the consolidated Duke Energy Emergency Operations Facility (EOF). On March 31, 2023, the NRC staff issued license amendments (ML22357A100) to Monticello Nuclear Generating Plant and Prairie Island Nuclear Generating Plant, Units 1 and 2, to create a new Xcel Energy Standard Emergency Plan and to approve a consolidated EOF, which replaced site-specific EOFs and their common back-up EOF.

All licensing reviews for power reactor, non-power production or utilization facility, new power reactor, spent fuel, or fuel facility under the physical security and EP program remain on schedule. The NRC staff is using its established licensing process to ensure that the safety and environmental reviews meet all milestones and provide opportunities for stakeholder input.

VIII. Power Uprates

Since the 1970s, licensees have applied for and implemented power uprates to increase the output of their plants. The NRC staff has reviewed and approved 172 power uprates to date. Existing plants have gained approximately 24,089 megawatts thermal or 8,030 megawatts in electric generating capacity (the equivalent of about 8 large nuclear power plant units) through power uprates. At this time, the NRC has no power uprate applications under review. Although there is general interest for future applications, the NRC has not received proposed schedules for submittal.

IX. New Reactor Licensing

The NRC's new reactor program is: (1) focusing on licensing and construction oversight activities for large LWRs, small modular LWRs, and non-LWRs and (2) continuing to develop the specific regulatory framework and infrastructure for advanced reactors (non-LWRs). In addition, the NRC is actively engaged in several new and existing international cooperative initiatives to improve the international collaboration efforts associated with safety reviews of new reactor designs, and to share construction experience.

Standard Design Approval Reviews

NuScale Power, LLC, Small Modular Reactor Standard Design Approval Application

By letter dated December 31, 2022, NuScale submitted an SDAA for its US460 small modular reactor design under 10 CFR Part 52, Subpart E, "Standard Design Approvals" (ML22339A066). The proposed 77 MWe nuclear power module US460 design is capable of producing more power than the certified 50 MWe NuScale design and features additional design changes. On March 17, 2023, NRC staff issued a letter (ML23058A160) to NuScale explaining the results of its acceptance review. In the letter, the staff identified technical sufficiency issues related to the phenomenon of density wave oscillation that required supplemental information. NuScale provided supplemental information to address the technical sufficiency issues by letters dated July 14, 2023 (ML23195A092) and July 17, 2023 (ML23198A244). By letter dated July 31, 2023 (ML23198A163), the NRC informed NuScale that its SDAA, as supplemented, was acceptable for docketing. In its July 31, 2023, letter, the NRC also provided a four phase, 24-month review schedule and committed to provide resource estimates within 60 days of the issuance of the letter. Accordingly, the staff completed its evaluation of the resource needs and communicated these to NuScale in a letter dated September 22, 2023 (ML23254A192).

Combined License Application Reviews

Carbon Free Power Project Combined License Application Review

Carbon Free Power Project (CFPP) LLC is a subsidiary of Utah Associated Municipal Power Systems (UAMPS) and is responsible for developing the nuclear energy sector of the UAMPS

energy production portfolio. CFPP plans to submit a 2-part combined license application (COLA) to the NRC for approval to build and operate a 6-module US460 NuScale small modular reactor plant in Idaho National Laboratory, near Idaho Falls, Idaho. CFPP submitted an application for a limited work authorization (LWA), on July 25, 2023 (ML23212A008), and plans to submit the COLA in January 2024. The NRC staff accepted CFPP's LWA application on September 5, 2023, for docketing and a detailed review (ML23236A263).

The NRC and CFPP staffs are currently conducting a pre-application readiness assessment review of various parts of the COLA to facilitate its review. The main objective of the readiness assessment review is to identify any significant information gaps or complex technical or policy issues that could challenge the NRC staff's acceptance review of the application when submitted. Other technical areas that NRC staff and the CFPP team are currently conducting public meetings on include quality assurance program, volcanic hazards assessment, emergency planning, cyber security, and physical security.

Construction Oversight Under 10 CFR Part 52

On July 28, 2023, Southern Nuclear Operating Company (SNC) notified the NRC that all startup testing was successfully completed on Vogtle Unit 3 and publicly declared the start of commercial operation on July 31, 2023. Vogtle Unit 3 has operated under the ROP program since August 2022.

On July 28, 2023, the NRC issued the 10 CFR 52.103(g) finding for Vogtle Unit 4 (ML22348A093). This finding allowed SNC to load fuel and operate Vogtle Unit 4 in accordance with the terms and conditions of the combined license. The NRC issued the finding after verifying that all the inspections, tests, analyses, and acceptance criteria (ITAAC) were met. The basis for this finding is fully described in the 10 CFR 52.103(g) basis document (ML22348A088). Upon the issuance of this finding, Vogtle Unit 4 transitioned from the Construction Reactor Oversight Process to the ROP and is in the Licensee Response Column of the ROP's Action Matrix. SNC projects Unit 4 commercial operations to start between the December 2023 and March 2024.

The NRC is working to issue a public summary report on lessons learned related to 10 CFR Part 52 construction by the end of CY 2023. The summary report will identify best practices and lessons learned that can be applied to construction of new facilities, including small modular reactors and advanced reactor technologies.

During the reporting period, the NRC staff completed the following actions related to licensing and construction activities at Vogtle Units 3 and 4:

- Led a public information meeting with a question-and-answer session to discuss Vogtle Readiness Group activities.

- Conducted an additional ten public meetings with the licensee to discuss licensing and oversight activities for Vogtle Units 3 and 4.

- Authorized the use of an alternative to the in-service inspection requirements for steam generator nozzle to reactor coolant pump casing welds for Vogtle Units 3 and 4 (ML23095A284).

- Granted a license amendment request (LAR) for Vogtle Units 3 and 4 regarding the Technical Specification Surveillance Requirement 3.0.3 for Never Performed Surveillances (ML23072A186).

- Authorized the use of Code Case N-648-2 for in-service inspection of the reactor vessel nozzle inner radius sections for Vogtle Units 3 and 4 (ML23109A067).

- Granted a LAR to revise the timing of Vogtle Unit 4 Technical Specifications effectiveness prior to initial criticality (ML23158A205).

- Granted a LAR that removes Appendix C (ITAAC) from the Vogtle Unit 3 Combined License (ML23158A243).

Vendor Inspections

The NRC uses the Vendor Inspection Program to confirm reactor applicants and licensees are fulfilling their regulatory obligations to oversee the supply chain. NRC staff conducts inspections to verify implementation of vendor quality assurance (QA) programs to ensure: (1) the quality of materials, equipment, and services supplied to the commercial nuclear industry are consistent with the requirements of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic licensing of production and utilization facilities;" (2) that vendors maintain an effective system for reporting defects under 10 CFR Part 21, "Reporting of defects and noncompliance;" and (3) to verify the use of commercial-grade dedication programs for safety-related materials, equipment, and services. Other activities conducted by the vendor inspection staff include ensuring that counterfeit items are removed and prevented from use in safety-related applications, participation in international cooperation efforts, and the development of industry consensus standards.

For FY 2023, the NRC completed 21 vendor inspections. During this reporting period, the NRC performed all vendor inspections onsite.

The NRC staff continues to monitor the impact of rulemaking enacted by the Environmental Protection Agency (EPA), in response to the Stockholm Convention on persistent organic pollutants, that prohibits the manufacture, processing, or distribution of items containing Decabromodiphynyl ether (DecaBDE). DecaBDE is a material that has been used in nuclear qualified cabling and other electrical and electronic components for safety-related applications in the U.S. nuclear industry as well as in other countries. Based on this rulemaking, safety-related cabling and other components that contain DecaBDE are no longer allowed to be sold or distributed. The NRC staff is frequently communicating with EPA and the Department of Energy (DOE) on this topic and provided written responses to EPA questions on March 31, 2023 (ML23090A159). Based in part on these interactions, on May 3, 2023, EPA issued a temporary enforcement statement indicating its intent to not pursue enforcement actions for certain violations of the DecaBDE rule, where such violations allow processing and distribution of DecaBDE-containing wire and cable insulation for use in nuclear power generation facilities. This temporary enforcement statement is in effect until either September 30, 2024, or the effective date of a final action addressing this compliance date, whichever occurs earlier. The NRC staff has also provided comments on other related proposed rulemaking matters regarding DecaBDE to the EPA through coordination with the Office of Management and Budget, EPA, and DOE, and will continue engagement with these agencies as necessary.

Nuclear Procurement Issues Corporation (NUPIC) serves as an entity that performs joint utility audits of nuclear facility suppliers to determine overall acceptability and verify the effective implementation of a vendor's QA and 10 CFR Part 21 programs. The NRC staff observes NUPIC-led audits up to three times a year to verify the effectiveness of the NUPIC-led audit through the selection of a sample of audit checklist evaluation areas, observation of NUPIC's review of the implementation of the vendor's QA program, and evaluation of the adequacy of NUPIC's process for documenting audit findings in the associated trip report. The NRC staff attended the last NUPIC General Membership Meeting and Vendor Conference on June 12-15, 2023. The NRC staff updated the NUPIC membership on the following topics: NRC inspection findings, status of the proposed update to NRC guidance on the QA program criteria related to design and construction, commercial-grade dedication inspections at licensees, American Society of Mechanical Engineers (ASME) Code Case N-883, EPA Rulemaking on DecaBDE, and the NRC sponsored second virtual Town Hall meeting on vendor oversight.

The NRC staff hosted its second virtual Town Hall meeting on vendor oversight on June 21, 2023. The purpose of this meeting was to allow the NRC staff to engage in an open dialogue with external stakeholders to discuss any current issues of importance to the nuclear industry. Topics covered during the meeting included: an update and follow-up activities associated with the DecaBDE issue, Part 21 reporting requirements, establishing sample sizes in commercial-grade dedication and other issues identified during NRC inspections. There were also two dedicated question and answer sessions.

In September 2023, the NRC staff hosted visiting regulators from the Polish Regulatory Agency (PAA) interested in understanding the QA and vendor inspection work performed by the NRC. The NRC staff prepared a series of training sessions focused on areas of regulatory oversight including: 10 CFR Part 21, 10 CFR Part 50, Appendix B, conduct of vendor and QA implementation inspections, commercial-grade dedication, comparison of Appendix B to ISO-9001, "Quality Management Systems - Requirements", and training and qualification activities for vendor inspectors and QA staff. The NRC and PAA staff also participated in an inspection at a vendor's facility in September 2023.

The NRC staff issued Regulatory Guide (RG) 1.28, "Quality Assurance Program Criteria (Design and Construction)," Revision 6, on September 7, 2023. The RG endorsed with comment the ASME Nuclear Quality Assurance (NQA-1) standard 2017, 2019 and 2022 editions. The NQA-1 standard provides the nuclear industry with specific guidance acceptable to the NRC staff for meeting the requirements of 10 CFR Part 50, Appendix B.

Operator Licensing

The NRC staff continued to prepare for operator licensing activities involving advanced reactors as part of the 10 CFR Part 53, "Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors," rulemaking that is presently with the Commission for its consideration. These draft proposed regulations provide an integrated, performance-based, and technology-inclusive regulatory framework that includes the areas of staffing, personnel qualifications, training programs, operator licensing examinations, and human factors. Notably, this framework introduces new flexibilities such as provisions for automatic load following, online refueling, customized licensed operator staffing, a modernization of the traditional Shift Technical Advisor position, allowance for facilities to administer their own operator licensing examinations, and the ability for facilities to develop operator license examinations of appropriate scope and format based on their unique design and operational considerations.

The NRC staff also continued parallel work to make improvements to the operator licensing process at facilities that pursue licensing under 10 CFR Parts 50 and 52. The NRC staff prepared a lessons-learned rulemaking that would improve the usability of operator licensing requirements in 10 CFR Part 55 for new Part 50 and 52 reactors during construction. Additionally, the NRC staff issued, for stakeholder engagement, Advanced Reactor Content of Application Project (ARCAP) guidance on organization and human-system considerations to support the NRC staff's reviews of non-LWR facility applicants under 10 CFR Part 50 and 52. The NRC staff are also enhancing the sharing of information with applicants via a new "frequently asked questions for new reactor operator licensing" resource, which is publicly available at https://www.nrc.gov/reactors/operator-licensing/licensing-process/faq-operator-licensing.html.

Furthermore, the NRC staff continued to review a number of white papers, topical reports, and licensing submittals from advanced reactor designers such as X-energy, TerraPower, Westinghouse, Oklo, General Electric, Holtec, and NuScale. The NRC staff engaged in information sharing with stakeholders via workshops, conferences, and other forums on issues related to the concept of operations for advanced reactors in order to inform performance-based regulatory approaches for future technologies. These ongoing interactions included topics such as flexible plant operations (e.g., grid load following, hydrogen production, etc.), artificial intelligence, simulation technology, digital interfaces, remote monitoring, and autonomous operations.

Non-Light-Water Reactors

The NRC staff continues to make significant progress executing its vision and strategy for advanced reactor readiness and meeting the requirements in Section 103 of NEIMA. Additional information on the status of advanced reactor readiness and activities is available on the NRC's public website at https://www.nrc.gov/reactors/new-reactors/advanced.html.

During the reporting period, the NRC staff continued its extensive stakeholder engagement on various initiatives related to establishing a technology-inclusive, risk-informed, and performance-based regulatory framework, including hosting public meetings on micro-reactor licensing, developing a PRA to support a construction permit application, and issuing draft Technology-Inclusive Content of Application Project and ARCAP guidance documents.

Other recent accomplishments include:

- The NRC staff continued to hold periodic public meetings with stakeholders on numerous advanced reactor topics.

- The Commission approved a final rule amending the regulations to include new alternative EP requirements for small modular reactors and other new technologies (ML23226A216).

- The NRC staff issued draft RG (DG-1404) for potential endorsement of industry led Nuclear Energy Institute (NEI) 21-07, "Technology Inclusive Guidance for Non-Light-Water Reactors," and nine NRC-led ARCAP interim staff guidance documents for public comment (ML23044A038).

- The NRC staff submitted a paper (SECY-23-0048) to the Commission on the vision for the NRC's Advanced Reactors Construction Oversight Program (ML23061A086).

- The NRC staff released draft interim staff guidance (DRO-ISG-2023-04) on facility training programs to support stakeholder engagement (ML23017A130).

- The NRC entered into a Memorandum of Understanding with DOE on Roles and Responsibilities for National Environmental Policy Act (NEPA) Implementation Requirements for Reactor Demonstration Projects Supported by DOE (ML23213A147).

- The NRC staff released a draft white paper titled “Technical, Licensing, and Potential Policy Issues for Factory-Fabricated Transportable Micro-Reactors” to support stakeholder engagement (ML23236A575).

- The NRC staff held a public workshop on SCALE/MELCOR non-LWR fuel cycle demonstration project for a sodium-cooled fast reactor (ML23202A091).

- The NRC staff issued a draft white paper on alternative approaches to address population-related siting considerations (ML23102A326).

- The staff published Revision 1 of DG-1404, "Guidance for a Technology-Inclusive Content-of-Application Methodology to Inform the Licensing Basis and Content of Applications for Licenses, Certifications, and Approvals for Non-Light-Water Reactors" (ML23194A194), in the *Federal Register* for public comment (88 FR 61989), which includes a proposed Appendix B providing guidance on the acceptability of a PRA that supports a non-LWR construction permit application based on the Licensing Modernization Project methodology.

Regarding non-LWR licensing activities, the NRC staff continues to implement flexible and staged non-LWR regulatory review processes and pre-application engagement. The staff has reviewed the construction permit application submitted in October 2021 for the Kairos Hermes test reactor in Oak Ridge, TN, which is intended to support the development of its fluoride salt-cooled, high-temperature reactor technology (ML21272A375 and ML21306A131). The staff completed its safety review of the Hermes application and issued its final SE on June 13, 2023 (ML23158A265). The final environmental impact statement for the application was issued on August 17, 2023 (ML23214A269). A mandatory hearing on the application was conducted on October 19, 2023.

On July 14, 2023, Kairos submitted a second construction permit application for a two-unit test reactor facility (Hermes 2) that would be located on the same site as the proposed Hermes test reactor (Hermes 1) (ML23195A121). The Hermes 2 test reactors would use the same fluoride salt-cooled, high-temperature reactor technology as the Hermes 1 reactor but would incorporate some additional features such as intermediate salt loops and a shared turbine generator set. The NRC staff accepted the Hermes 2 construction permit application for review on September 11, 2023 (ML23233A167).

The staff is reviewing a construction permit application from Abilene Christian University (ACU) for a molten salt, non-power research reactor (MSRR) (ML22227A201) that was submitted in August 2022. The NRC staff is currently conducting a detailed technical review of the safety of the MSRR design, which will lead to a SE. The NRC staff is preparing an environmental

assessment for this facility. The NRC staff originally committed to issuing the final SE by May 2024 and the environmental assessment by April 2024 (ML22341A615). On September 14, 2023, the NRC staff notified ACU that the staff remains engaged with ACU to resolve technical issues associated with the review and that additional time will be needed for ACU to provide the information necessary for the staff to complete its review of the application (ML23249A095). The NRC staff will re-evaluate the review schedule when the timeline for the resolution of the remaining technical topics and the corresponding preliminary safety analysis report changes becomes clear.

The staff is reviewing pre-application reports and meeting regularly with vendors on potential future applications, including: X-energy, LLC, on its pebble-bed, high-temperature gas-cooled reactor; Kairos Power on its tri-structural isotropic particle (TRISO) fuel, fluoride-cooled high-temperature commercial power reactor; Terrestrial Energy on its molten salt coolant, molten salt fuel reactor; TerraPower on its sodium-cooled fast reactor; Westinghouse Electric Company on its high temperature heat pipe micro-reactor; General Atomics on its high-temperature gas-cooled reactor; the University of Illinois, Urbana-Champaign on its power-generating TRISO fuel research reactor; and Oklo, Inc. on its liquid-metal-cooled fast reactor.

With respect to advanced reactor fuel fabrication, in September 2022, the NRC staff received the completed application to construct and operate a TRISO fuel fabrication facility from TRISO X, which is a subsidiary of X-energy, LLC (ML22101A200 and ML22266A269).[5] The application was docketed for formal review on November 4, 2022 (ML22320A110), which initiated a 32-month review scheduled to be completed by June 2025. Additionally, in October 2021, Global Nuclear Fuel – Americas (GNF-A) expressed intent (ML21292A180) to submit a LAR to permit high-assay low-enriched uranium fuel fabrication. In March 2023, GNF-A was granted an exemption (ML23039A151) to submit the LAR in two parts. GNF-A submitted the supplemental environmental report (first part) on March 6, 2023 (ML23065A072). GNF-A informed the NRC on July 11, 2023 (ML23192A516) that the submittal of the complete LAR would be delayed by approximately 24 months. The complete LAR is now anticipated to be submitted in the third quarter of 2025. The review of the supplemental environmental report will be delayed until early 2025.

Regulatory Infrastructure

The NRC continues to enhance its regulatory infrastructure to meet its goals of improving the planning, licensing, and oversight of future new reactor applications; making timely and effective policy decisions; and updating regulatory guidance for large LWRs, small modular reactors, and non-LWRs. The NRC also continues to review its internal processes to ensure that the safety and environmental reviews are effective and efficient. As part of the NRC's commitment to openness, the staff continues to provide opportunities for external stakeholder input as part of the agency's processes. The agency also rigorously assesses licensing and oversight performance and uses the results to inform these regulatory infrastructure activities.

The previous section discussed infrastructure activities that are largely for non-LWRs. The sections below describe other infrastructure activities conducted during the reporting period.

[5] In the previous report, the TRISO-X fuel fabrication facility application was erroneously identified as being received in April 2022. The submittal in April 2022 did not include the environmental report that was subsequently submitted in September 2022. The NRC staff does not consider an application to be complete without the safety and safeguards analysis report and the environmental report.

Environmental Reviews for Advanced Nuclear Reactors

The NRC staff developed a draft GEIS and proposed rulemaking for the environmental review process for the construction and operation of advanced nuclear reactors as described in SECY-20-0020, "Results of Exploratory Process for Developing a Generic Environmental Impact Statement for the Construction and Operation of Advanced Nuclear Reactors" (ML20052D029). This GEIS would use a technology-neutral regulatory framework and performance-based assumptions to determine generic environmental impacts for new commercial advanced nuclear reactors. On September 21, 2020, in SRM-SECY-20-0020 (ML20265A112), the Commission directed the staff to initiate rulemaking for the GEIS. The staff provided this draft GEIS and proposed rule to the Commission on November 29, 2021 (ML21222A044), for its consideration. Additional information about this rulemaking is available at: https://www.nrc.gov/reading-rm/doc-collections/rulemaking-ruleforum/active/ruledetails.html?id=1139.

The NRC staff issued its Draft EIS for the Kairos Hermes test reactor in September 2022 (ML22259A126), and held a public meeting in Oak Ridge, TN in November 2022 to present the staff's preliminary findings and accept comments on the draft EIS. The staff is also developing infrastructure and monitoring developments for other advanced nuclear projects as appropriate (e.g., Department of the Air Force, Oklo, and Holtec).

Alignment of Licensing Processes and Lessons Learned from New Reactor Licensing

The NRC staff is working on a rulemaking to address the alignment of licensing requirements of 10 CFR Part 50, "Domestic licensing of production and utilization facilities," and 10 CFR Part 52. The Commission directed the staff to pursue rulemaking to incorporate lessons learned from recent new power reactor licensing reviews. This rulemaking would help ensure consistency in new reactor licensing reviews, regardless of whether an applicant chooses to use the Part 50 or Part 52 licensing process.

On June 6, 2022, the NRC staff submitted the draft proposed rule (ML21159A055) to the Commission for its consideration. In the draft FR notice for the proposed rule, the NRC staff responded to the public comment submissions on the regulatory basis, which were considered in the formulation of the draft proposed rule.

Interim Staff Guidance for New Light-Water Power Reactor Construction Permit Reviews

DNRL-ISG-2022-01, "Safety Review of Light-Water Power Reactor Construction Permit Applications" (ML22189A099) was issued October 2022. This interim staff guidance (ISG) focuses on the safety review of power reactor construction permit applications for any LWR design, including designs similar to those reviewed recently under 10 CFR Part 52. This guidance was developed to supplement the current guidance for staff review of LWR construction permit applications in NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition." The ISG also references RG 1.70, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants (LWR Edition)," which dates from the 1970s (ML011340122) and the more recent LWR application guidance in RG 1.206, "Applications for Nuclear Power Plants" (ML18131A181), for 10 CFR Part 52 applications (which does not include construction permit applications), to provide additional insights on the level of detail needed to support an LWR construction permit application review. The ISG discusses the regulatory requirements for a construction permit and provides insights on the level of detail required for a preliminary safety analysis report. It

includes an appendix that clarifies and supplements the guidance in NUREG-0800 for the review of a construction permit application.

Standard Review Plan Modernization (NUREG-0800)

The NRC staff continued its effort to modernize NUREG-0800.[6] The objective of the Standard Review Plan (SRP) modernization effort is to help the staff focus its review on the regulatory requirements and associated acceptance criteria that determine whether there is reasonable assurance of adequate protection. In addition, the updated SRP will leverage the improved use of risk insights to inform the staff's reviews. During this reporting period, the NRC staff refined the scope of the project to focus on SRP sections prioritized by the staff or industry that will benefit from incorporating concepts beyond SRP modernization guidance. Additionally, the staff is creating a framework for future modernization of SRP sections through the routine update process.

Environmental Guidance Updates

The NRC staff noticed issuance of Revision 3 of RG 4.2, "Preparation of Environmental Reports for Nuclear Power Stations," in the FR on September 24, 2018 (83 FR 48346, ML18071A400). This was the first update to RG 4.2 since July 1976. The staff is currently updating NUREG-1555, "Standard Review Plans for Environmental Reviews for Nuclear Power Plants: Environmental Standard Review Plan," last revised in July 2007.[7] The update will reflect changes in reactor technology and NRC policy and regulations and will incorporate streamlined processes based on experience gained through completed environmental reviews. The update will also reflect statutory requirements, applicable Executive Orders, judicial developments, and agency administrative decisions and will consider, as appropriate and in coordination with a potential NRC rulemaking, any new environmental regulations issued by the Council on Environmental Quality. Further, as directed by the Commission on April 23, 2021, in SRM-M210218B (ML21113A070), the staff conducted a systematic review of how the agency's programs, policies, and activities address environmental justice. On March 29, 2022, the staff submitted the results (ML22031A063) of its review and recommendations to the Commission for its consideration.

As discussed in Section V, on April 5, 2022, the Commission issued SRM-SECY-22-0024 (ML22096A035), which directed the staff to complete a rulemaking in 24 months for updating the generic environmental impact statement and implementing regulations on renewing nuclear power plants operating licenses environmental reviews to account for SLR applications. On March 3, 2023, the NRC issued the proposed rule and draft GEIS for license renewal of nuclear power plants for a 60-day public comment period (88 FR 13329; ML23011A063). In the interim, the Commission recognizes that some subsequent license renewal applicants may not want to await the completion of the rulemaking effort and would instead prefer to do a completely site-specific environmental review. For those applicants, the NRC continues to conduct environmental reviews in accordance with current NRC regulations, while still considering best practices and lessons learned from past reviews.

[6] The SRP is available online at https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0800/index.html.

[7] The SRP is available online at https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1555/updates.html.

X. Planned Rulemaking Activities

The attached report lists the status of NRC rulemaking activities as of September 30, 2023, including their priorities and schedules. Of the 64 rulemaking activities, 60 rulemakings are planned activities. The NRC is also reviewing four petitions for rulemaking. The 60 planned rulemaking activities include 12 proposals in response to industry requests, 14 that could reduce or clarify existing requirements, 10 that are required by statute or are needed to conform NRC regulations to other agency requirements or to international treaties or agreements, and 24 that could establish new requirements. The NRC uses a single tracking and reporting system to provide real-time updates on all NRC rulemaking activities. Members of the public can access the NRC's rulemaking activity information at https://www.nrc.gov/about-nrc/regulatory/rulemaking/rules-petitions.html.

At the time of publication, each proposed and final rule includes a statement that addresses actions taken to meet applicable backfitting and issue finality requirements, including which, if any, backfitting and issue finality requirements apply and how the NRC staff evaluated the rule with respect to those requirements.