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

For the Reporting Period of January 1, 2021 through March 31, 2021

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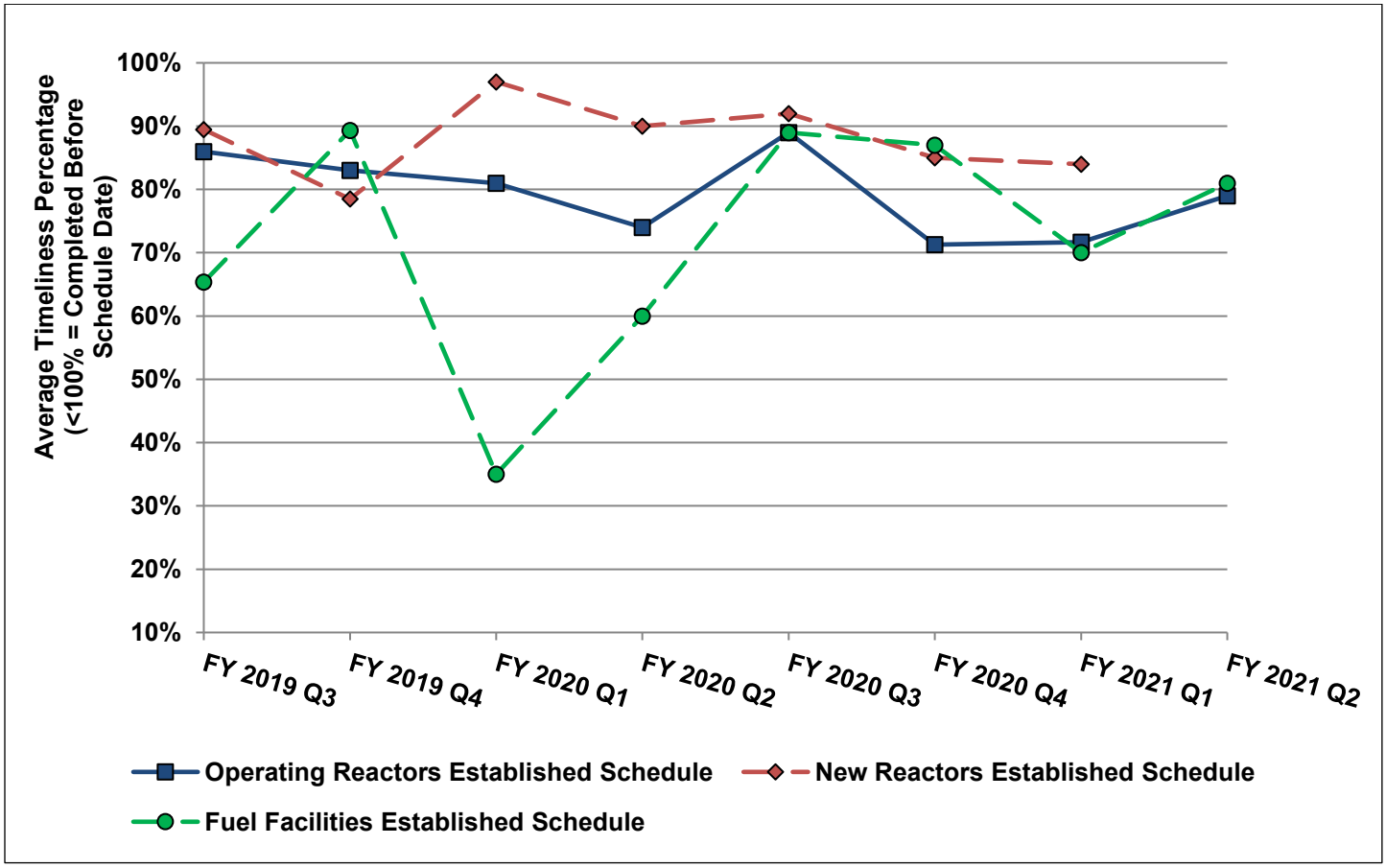
Enclosure 1 – High Level Summary

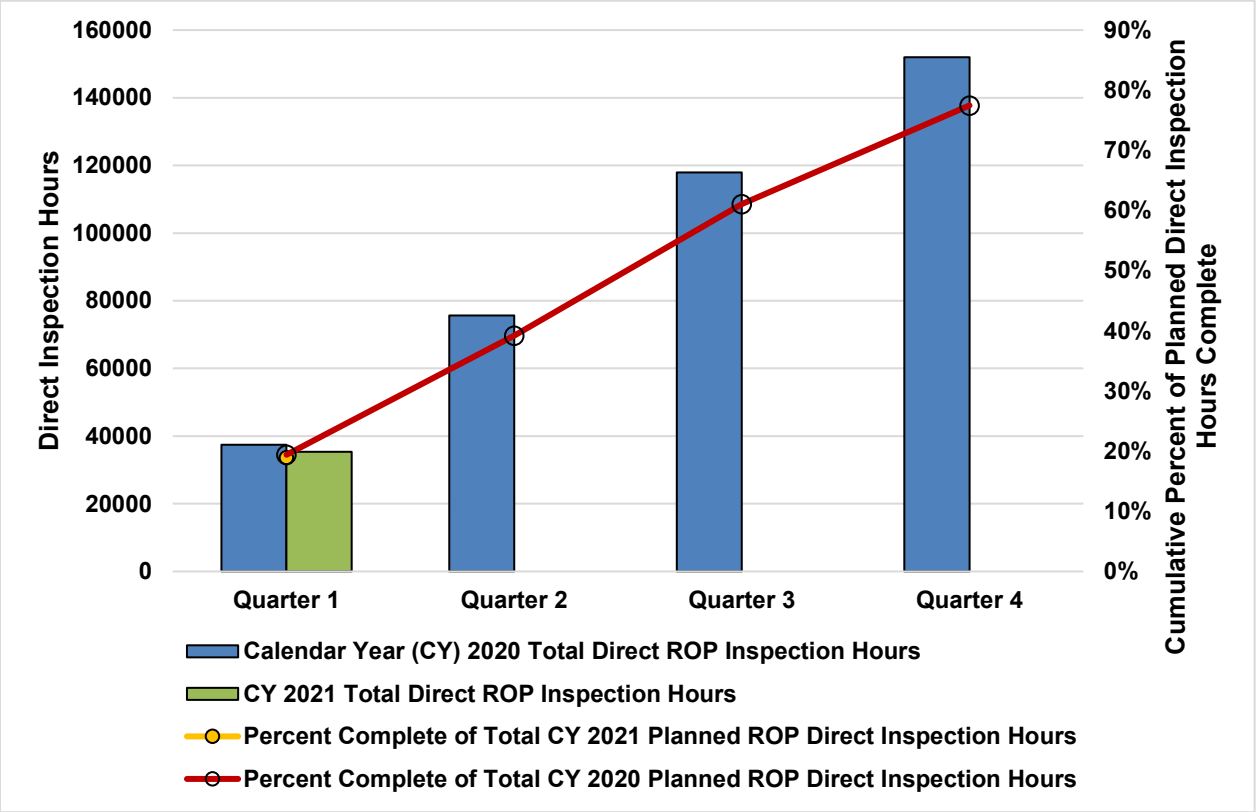
1-1 Average Timeliness Percentage for Licensing Actions Categorized Under the Nuclear Energy Innovation and Modernization Act



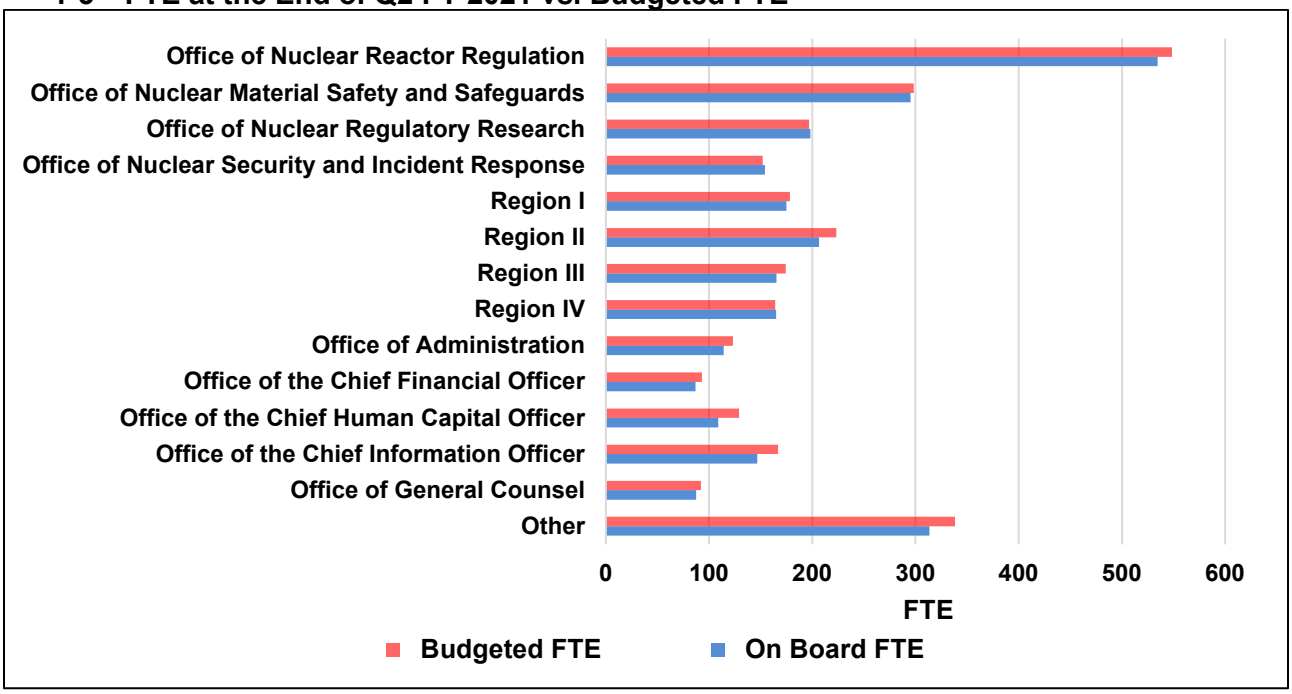
[1]

[1] No licensing actions categorized under the Nuclear Energy Innovation and Modernization Act were completed in Quarter (Q) 2 FY 2021 for the new reactor business line.

1-2 Reactor Oversight Inspection Hours and Percent Complete



1-3 FTE at the End of Q2 FY 2021 vs. Budgeted FTE



1-4 Budget Authority, FTE Utilization, and Fees

U.S. Nuclear Regulatory Commission (NRC) FY 2021 Budget Authority March 31, 2021 (Dollars in Thousands)

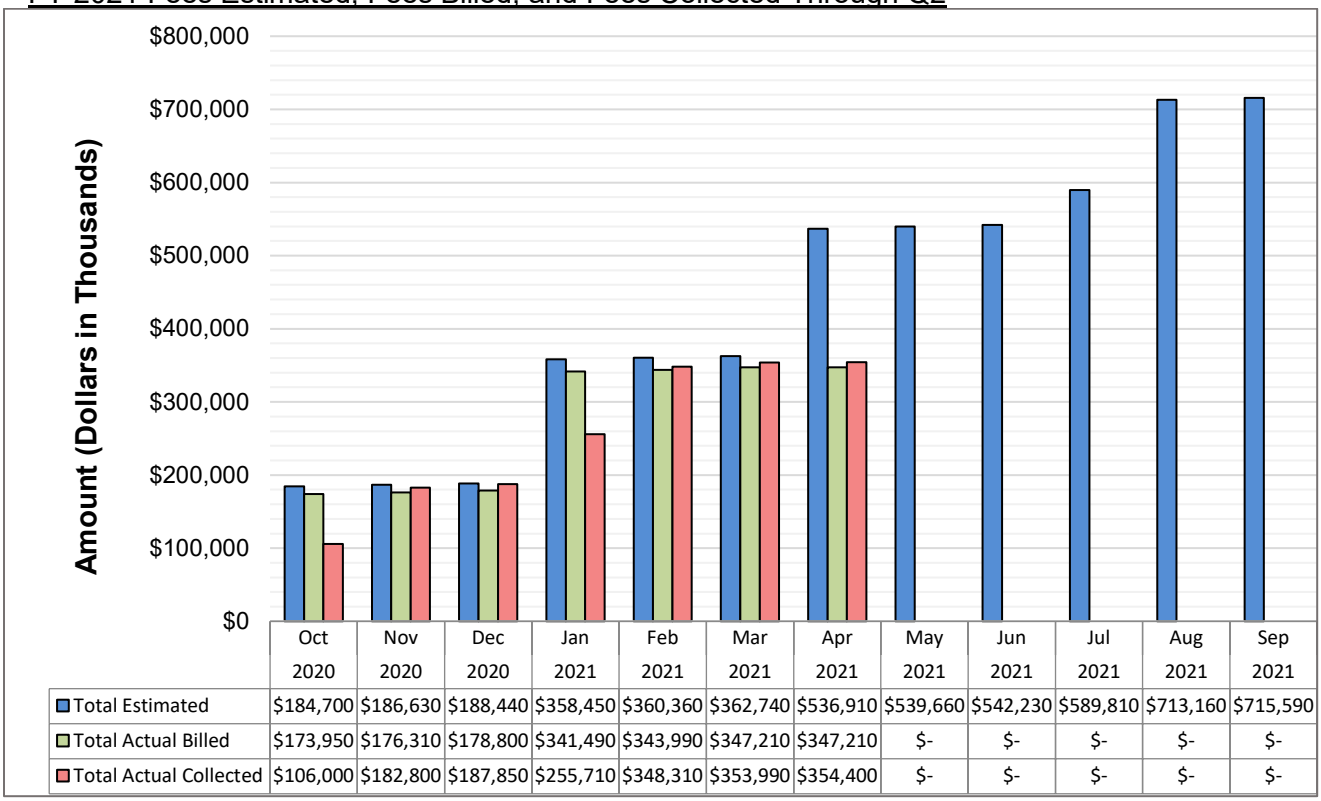
Fund Sources	FY 2021 Budget[2]	Percent Obligated	Percent Expended
Advanced Reactors	$18,759	45%	29%
Commission Funds	$12,813	29%	29%
Fee-Based Funds	$807,274	45%	36%
General Funds	$1,158	55%	31%
International Activities	$14,234	37%	30%
Integrated University Program	$21,951	6%	0%
Official Representation	$25	4%	4%
Total	**$876,214**	**44%**	**34%**
NRC Control Points	**FY 2021 Budget**	**Percent Obligated**	**Percent Expended**
Nuclear Reactor Safety	$453,900	45%	39%
Nuclear Materials and Waste Safety	$102,864	43%	38%
Decommissioning and Low-Level Waste	$22,771	46%	40%
Corporate Support	$274,729	45%	28%
Integrated University Program	$21,951	6%	0%
Total	**$876,214**	**44%**	**34%**

FTE Utilization, Hiring, and Attrition

Total Year to Date (YTD) FTE Utilization	Projected End of Year FTE Total Utilization	Quarter 2 Hiring	Quarter 2 Attrition	YTD Hiring	YTD Attrition
1379.6	2748.3	38	58	60	84

[2] FY 2021 Budget reflects the enactment of the Consolidated Appropriations Act, 2021 and includes the enacted and carryover budget.

FY 2021 Fees Estimated, Fees Billed, and Fees Collected Through Q2



	Oct 2020	Nov 2020	Dec 2020	Jan 2021	Feb 2021	Mar 2021	Apr 2021	May 2021	Jun 2021	Jul 2021	Aug 2021	Sep 2021
Total Estimated	$184,700	$186,630	$188,440	$358,450	$360,360	$362,740	$536,910	$539,660	$542,230	$589,810	$713,160	$715,590
Total Actual Billed	$173,950	$176,310	$178,800	$341,490	$343,990	$347,210	$347,210	$-	$-	$-	$-	$-
Total Actual Collected	$106,000	$182,800	$187,850	$255,710	$348,310	$353,990	$354,400	$-	$-	$-	$-	$-

Total 10 CFR Part 170 Fees Billed (Dollars in Millions)

FY 2019	FY 2020	FY 2021 Q1-Q2
$245.3	$205.7	$92.3

Enclosure 2 – Status of Specific Items of Interest

Enclosure 2 provides the status of specific items of interest including a summary of the item, the activities planned and accomplished under each item within the reporting period, and projected activities under each item for the next two reporting periods.

2-1 Transformation

The U.S. Nuclear Regulatory Commission's (NRC) transformation initiative currently encompasses a broad set of activities intended to advance the agency towards the vision of being a more modern, risk-informed regulator. There are four focus areas: (1) recruiting, developing, and retaining a strong workforce; (2) improving decision-making through the acceptance of an appropriate level of risk without compromising the NRC's mission; (3) establishing a culture that embraces innovation; and (4) adopting new and existing information technology resources.

Activities Planned and Completed for the Reporting Period (Q2 FY 2021)

Transformation Activities	Projected Completion Date	Completion Date
Communicated the launch of 2021 Objectives and Key Results (OKR) transformation performance management framework across the agency with the expectation to develop office-level OKRs that will support transformation. Staff established its goals for 2021 using the OKR performance measurement framework in the SECY-21-0018 paper to the Commission (Agencywide Documents Access and Management System (ADAMS) Package No. ML21048A368).	01/04/21	02/22/21
Communicated the progress of transformation activities at the 2021 Regulatory Information Conference (RIC) through a technical session and a digital exhibit.	03/11/21	03/11/21
Issued NUREG/KM-0016, "Be riskSMART: Guidance for Integrating Risk Insights into NRC Decisions" as a resource for staff (ADAMS Accession No. ML21071A238).	03/31/21	03/18/21

Projected Activities for the Next Two Reporting Periods (Q3 and Q4 FY 2021)

Projected Transformation Activities	Projected Completion Date
Launch new training module for the agency's Be riskSMART framework and include it in the agency's training management system.	04/30/21[3]
Conduct a survey of NRC staff on organizational culture to assess progress made since the initial survey in March 2020.	04/30/21

[3] Launch of training module was delayed from Q2 FY 2021 due to prioritization of issuance of NUREG/KM-0016, from which much of the training material will be derived.

Projected Transformation Activities	Projected Completion Date
Engage with all staff on a dialogue during the 2nd Town Hall with the Executive Director for Operations (EDO), as suggested by our culture surveys, to address topics of interest to staff.	05/18/21
Brief the Commission on staff's transformation activities (public meeting).	06/30/21
Conduct second innovate-a-thon to engage with all staff in innovation activities.	07/01/21
Start distribution of external stakeholder transformation surveys to gather insights on how transformation changes have enhanced our ability to meet our mission in a more effective and efficient manner.	08/31/21
Update internal and public websites to include specific transformation related accomplishments.	08/31/21
Launch the Mission Analytics Portal Event Reporting module. This module will provide NRC licensees an alternative electronic submission method for reports required under 10 CFR 50.72.	09/30/21
Conduct a series of first-line supervisors' workshops to engage in dialogue on the agency's progress on transformation and identify actions they can take to encourage use of transformation tools, while mitigating the effects of change fatigue.	09/30/21

2-2 Workforce Development and Management

The NRC implemented a Strategic Workforce Planning (SWP) process to improve workforce development to meet its near- and long-term work demands. The first step in this process is an Agency Environmental Scan that projects the amount and type of work anticipated in the next 5 years and identifies the workforce needs in order to perform that work. By analyzing the current workforce and comparing it to future needs, skill gaps can be identified. In the final step of the process, both short- and long-term strategies are developed to enable the agency to recruit, retain, and develop a skilled and diverse workforce with the competencies and agility to address both current and emerging needs and workload fluctuations.

Activities Planned and Completed for the Reporting Period (Q2 FY 2021)

Workforce Development and Management Activities	Projected Completion Date	Completion Date
Continued pre-employment hiring activities for 58 new and 5 returning 2021 Temporary Summer Student internships.	03/31/21	03/31/21

Projected Activities for the Next Two Reporting Periods (Q3 and Q4 FY 2021)

Projected Workforce Development and Management Activities	Projected Completion Date
Complete SWP process steps for FY 2021.	06/30/21
Complete onboarding activities for Summer 2021 Student Interns.	06/30/21

2-3 Accident Tolerant Fuel

The NRC continues to make significant progress in its preparation for licensing reviews of Accident Tolerant Fuel (ATF) designs for use in U.S. commercial power reactors. The NRC staff is executing the ATF project plan (ADAMS Accession No. ML19301B166). The NRC staff is currently reviewing four ATF fuel vendor topical reports. The first topical report is on a new type of doped fuel pellet called "Westinghouse Advanced Doped Pellet Technology (ADOPT™) Fuel" (ADAMS Accession No. ML20132A014) and the second covers increased burnup limits for a fuel cladding material (ADAMS Package No. ML20003E125). The third discusses allowing the use of higher burnup lead test assemblies (ADAMS Accession No. ML20350B834) and the fourth involves increased fuel enrichment (ADAMS Package No. ML21035A073). The NRC staff is preparing for several additional ATF submittals from fuel vendors in calendar year (CY) 2021.

Activities Planned and Completed for the Reporting Period (Q2 FY 2021)

ATF Activities	Projected Completion Date	Completion Date
Issuance of an Oak Ridge National Laboratory (ORNL) report on assessment of existing transportation packages for use with high-assay low-enriched uranium. This report assesses the potential to use currently licensed transportation packages for the transportation of increased enrichment unirradiated uranium fuel forms (ADAMS Accession No. ML21040A518).[4]	02/28/21	02/05/21
Issuance of an ORNL report on isotope distributions and fuel lattice parameter trends in increased enrichment and higher burnup light water reactor fuel. This report assesses the isotope distributions at increased enrichments and higher burnups and quantifies impact on fuel parameters (ADAMS Accession Nos. ML21088A336 and ML21088A354).	02/28/21	03/26/21[5]
Issuance of an ORNL report on ATF applied to pressurized and boiling water reactors (BWRs) including reactivity, isotope distributions, and decay heat. This report assesses the SCALE code updates necessary to evaluate these parameters for ATF (ADAMS Accession No. ML21088A254).	02/28/21	03/31/21[6]
Held an RIC session on ATF. The session provided the public and other stakeholders with a status update for ATF activities and an opportunity to ask questions of the NRC staff and industry representatives.	03/09/21	03/09/21

[4] Although the report is dated September 2020, the completion date is listed as February 5, 2021, because the final publication process took additional time to complete.

[5] Volume II of this report was delayed to March 2021 because it contained first-of-a-kind complex analyses that required significant coordination and review between NRC offices and ORNL. ORNL issued Volume I of this report in February 2021.

[6] The issuance of this report was delayed because it contained first-of-a-kind complex analyses that required significant coordination and review between NRC offices and ORNL.

ATF Activities	Projected Completion Date	Completion Date
Issued a license amendment to Calvert Cliffs Nuclear Power Plant to allow the insertion of ATF lead test assemblies in non-limiting core locations (ADAMS Accession No. ML20363A242).	03/31/21	01/26/21

Projected Activities for the Next Two Reporting Periods (Q3 and Q4 FY 2021)

Projected ATF Activities	Projected Completion Date
Issuance of a severe accident PIRT report that covers the performance of the reactor during severe accidents for the current ATF concepts, higher burnup fuel, and fuel with enrichment above five weight percent. The report will also document findings from the expert elicitation panels held in Q1 and Q2 of FY 2021. The report will be used by the NRC to support changes to the regulatory infrastructure for ATF, higher burnup, and fuel with enrichment above five weight percent.	05/31/21
Hold second Higher Burnup workshop. This workshop will relay the state of development of higher burnup and increased enrichment technical and regulatory issues. It will also provide a public forum for discussions between the NRC, industry, and other stakeholders.	07/31/21
Issue new revision of the ATF Project Plan. This new revision will take account of both industry and NRC changes in approaches and schedules since the last issuance in October 2019.	09/30/21

2-4 Digital Instrumentation and Control

The NRC staff continues to complete digital instrumentation and control infrastructure improvements to address protection against common cause failure, including proposals developed by industry, and commercial grade dedication of digital equipment. Further, the NRC staff continues to review and prepare for anticipated digital modernization license amendment requests (LARs).

Activities Planned and Completed for the Reporting Period (Q2 FY 2021)

Digital Instrumentation and Control Activities	Projected Completion Date	Completion Date
Update BTP 7-19, "Guidance for Evaluation of Defense-In-Depth and Diversity to Address Common Cause Failure due to Latent Design Defects in Digital Safety Systems."		
• Issued Revision 8 to BTP 7-19 (86 Fed. Reg. 7577, ADAMS Package No. ML20339A642).[7]	01/31/21	01/29/21
Review Nuclear Energy Institute (NEI) 17-06, "Guidance on Using IEC 61508 SIL Certification to Support the Acceptance of Commercial Grade Digital Equipment for Nuclear Safety Related Applications," and consider endorsement through issuance of a regulatory guide (RG).		
• The NEI submitted NEI 17-06 for NRC review (ADAMS Accession No. ML21083A147).	02/19/21	02/23/21

[7] This item is now considered to be complete and will not be included in future reports.

Digital Instrumentation and Control Activities	Projected Completion Date	Completion Date
Significant Digital Modernization LAR Milestones.		
• Conduct second pre-application meeting with NextEra for digital modernization project at Turkey Points Units 3 and 4 (ADAMS Accession No. ML20351A205).	01/13/21	01/13/21
• Conduct second pre-application meeting with Exelon for a digital modernization project at Limerick Generating Station (ADAMS Accession No. ML21071A056).[8]	03/16/21	03/16/21

Projected Activities for the Next Two Reporting Periods (Q3 and Q4 FY 2021)

Projected Digital Instrumentation and Control Activities	Projected Completion Date
Pre-submittal Review of NEI 20-07, "Guidance for Addressing Software Common Cause Failure in High Safety-Significant Safety-Related Digital I&C Systems"	
• Conduct public meetings to discuss resolution of NRC staff's feedback provided in response to 01/12/21 public meeting.	04/30/21
Review NEI 17-06, "Guidance on Using IEC 61508 SIL Certification to Support the acceptance of Commercial Grade Digital Equipment for Nuclear Safety Related Applications," and consider endorsement through issuance of an RG.	
• Staff decision on fee exemption requested by NEI.	04/30/21
Significant Digital Modernization LAR Milestones	
• Conduct third pre-application meeting with NextEra for digital modernization project at Turkey Point Units 3 and 4.	04/08/21
• Conduct third pre-application meeting with Exelon for a digital modernization project at Limerick Generating Station.	07/30/21
• Issue license decision to Entergy for LAR to upgrade the core protection calculator at Unit 3 of the Waterford Steam Electric Station	08/24/21

2-5 Vogtle Electric Generating Plant Units 3 and 4

The NRC issued two combined licenses to Southern Nuclear Operating Company (SNC) and its financial partners on February 10, 2012, for two AP1000 units to be built and operated at the Vogtle site near Augusta, GA. SNC's public milestone for initial fuel loading of Vogtle Electric Generating Plant (Vogtle) Unit 3 has shifted from April 30 to July 22, 2021. The NRC staff adjusted the agency's activities and associated milestone dates to reflect the revised initial fuel loading date. In addition, the NRC staff continued licensing and inspection activities to support the NRC staff's evaluation that the acceptance criteria in the combined license are met.

During this reporting period, the NRC staff took additional steps to assess the staff's readiness to support a potential Unit 3 10 CFR 52.103(g) finding (the staff's finding to confirm if all inspections, tests, analyses, and acceptance criteria (ITAAC) have been successfully

[8] This emergent meeting was both requested and conducted in Q2 FY 2021. Therefore, it was not included in the last report. The first pre-application meeting was held in June 2020.

completed). This included staff training and table-top exercises across different NRC organizations on a variety of scenarios that could occur during the later stages of construction.

Due to health and safety concerns related to the Coronavirus Disease 2019 (COVID-19) pandemic, the NRC staff continued with primarily remote operations during this reporting period. Construction inspections and licensing activities continued with only minor interruptions due to the successful application of technology for telework and remote access to licensee information. The NRC continues to closely monitor COVID-19 cases and perform mission-critical inspections through a combination of remote inspections and targeted onsite inspections based on safety significance and the uniqueness or complexity of the construction activity.

Activities Planned and Completed for the Reporting Period (Q2 FY 2021)

Vogtle Electric Generating Plant Units 3 and 4 Activities	Projected Completion Date	Completion Date
None	N/A	N/A

Projected Activities for the Next Two Reporting Periods (Q3 and Q4 FY 2021)

Projected Vogtle Electric Generating Plant Units 3 and 4 Activities	Projected Completion Date
Conduct public meeting to discuss Vogtle Readiness Group activities.	04/28/21[9]
Issue safety evaluation for request for alternative, "Alternative Requirements for American Society of Mechanical Engineers (ASME) Section XI Examination Coverage of Weldolet Branch Connection Welds (VEGP 3&4-PSI/ISI-ALT-15)."	04/29/21[10]
Provided the requisite findings are made, issue amendment regarding emergency plan changes.	06/30/21
Publish a notice of the licensee's intent to operate Vogtle 4 in the *Federal Register* to announce the opportunity for the public to request a hearing on the licensee's conformance with acceptance criteria in the Combined License.	07/12/21
Once the NRC determines that all ITAAC have been met, issue the finding that all acceptance criteria contained in the Vogtle Unit 3 license have been met and that the licensee may operate the facility, in accordance with 10 CFR 52.103(g) (provided the requisite findings are made).	07/22/21[11]

NRC Inspections and ITAAC Reviews for the Reporting Period (Q2 FY 2021)

A combined license allows a licensee to construct a plant and to operate it once construction is complete if certain standards identified in the combined license are satisfied. These standards are called ITAAC. The majority of ITAAC are from the design certification for the particular reactor technology that a plant uses. Throughout the construction process, NRC inspectors will perform inspections based on Inspection Manual Chapter 2503, "Construction Inspection Program: Inspections of Inspections, Tests, Analyses and Acceptance Criteria (ITAAC) Related

[9] The Vogtle Readiness Group public meeting was moved from March 2021 to April 28, 2021, to coincide with the Vogtle 1-4 public end-of-cycle meeting.

[10] Due to changes in SNC's schedule, the requested due date for the alternative request has shifted from April 13 to April 29, 2021.

[11] The projected completion date was modified from April 8 to July 22, 2021, due to the changes in the licensee's construction schedule.

Work," and the NRC's Construction Inspection Program at the plant site to confirm that the licensee has successfully completed the ITAAC.

Additional information on the ITAAC process as well as closure for Vogtle Units 3 and 4 is available at https://www.nrc.gov/reactors/new-reactors/oversight/itaac.html.

Unit	Number of ITAAC Remaining Requiring Inspection	Total Inspections Completed[12]	ITAAC Inspected[13]	ITAAC Inspections Closed[14]
Vogtle 3	101	39	12	4
Vogtle 4	130	7	4	1

ITAAC Reviews Completed for the Reporting Period (Q2 FY 2021)

The table below provides ITAAC closure notification reviews completed during the reporting period for Vogtle Units 3 and 4, including the date when the NRC received the ITAAC closure notice and the date when the review was completed.

Unit	ITAAC No.	Received Date	Approval Date
Vogtle 3	2.2.04.01	01/28/21	02/01/21
Vogtle 3	2.2.05.01	01/11/21	01/12/21
Vogtle 3	2.3.01.03.ii	01/08/21	01/12/21
Vogtle 3	2.3.02.08a.iii	01/20/21	01/22/21
Vogtle 3	2.3.04.02.i	02/06/21	02/09/21
Vogtle 3	2.3.08.02.i	03/04/21	03/08/21
Vogtle 3	2.3.08.02.iii	03/02/21	03/04/21
Vogtle 3	2.6.03.04b	01/31/21	02/03/21
Vogtle 3	2.7.01.05.i	01/27/21	02/01/21
Vogtle 3	E.3.9.03.00.01	12/30/20	01/11/21
Vogtle 3	E.3.9.07.01.02	01/17/21	01/20/21
Vogtle 3	E.3.9.08.01.01	01/17/21	01/28/21
Vogtle 3	E.3.9.08.01.02	01/17/21	01/21/21
Vogtle 3	2.3.05.03b.iii	03/19/21	03/23/21
Vogtle 4	2.6.03.04b	01/31/21	02/05/21

[12] This column includes all inspections related to Vogtle Unit 3 and 4 completed during the reporting period; the column is not limited to ITAAC (e.g., quality assurance inspections).
[13] "ITAAC Inspected" refers to the number of ITAAC that were inspected as part of ongoing inspections and does not indicate that all inspections were completed for those ITAAC.
[14] "ITAAC Inspection Closed" refers to the number of ITAAC for which all associated inspections have been completed during the reporting period.

Vogtle Units 3 and 4 License Amendment Request Reviews Completed (Q2 FY 2021)

Number of License Amendment Request Reviews Forecast to be Completed in the Reporting Period	Number of License Amendment Request Reviews that were Completed in the Reporting Period
0	0

2-6 NuScale Small Modular Reactor Design Certification

On March 15, 2017, the NRC accepted the NuScale Power, LLC (NuScale) application for a small modular reactors (SMR) design certification review. The NRC staff completed the final Safety Evaluation Report on August 28, 2020, (ADAMS Package No. ML20023A318) and issued a standard design approval to NuScale on September 11, 2020 (ADAMS Accession No. ML20247J564). On January 14, 2021, the NRC staff provided the Commission with a draft proposed rule that proposes certifying the design for its consideration; if approved by the Commission, the staff's next step would be to publish the proposed rule for public comment (ADAMS Package No. ML19353A003).[15]

Activities Planned and Completed for the Reporting Period (Q2 FY 2021)

NuScale Small Modular Reactor Design Certification Activities	Projected Completion Date	Completion Date
Issued to the Commission the proposed rule for NuScale SMR design certification.	01/29/21	01/14/21

Projected Activities for the Next Two Reporting Periods (Q3 and Q4 FY 2021)

Projected NuScale Small Modular Reactor Design Certification Activities	Projected Completion Date
Publish proposed rule for NuScale SMR design certification.[16]	07/02/21

2-7 Advanced Nuclear Reactor Technologies

The NRC is making significant progress in preparation for reviewing non-light-water-reactor (non-LWR) designs, consistent with the NRC staff's vision and strategy (ADAMS Accession No. ML16356A670). The NRC staff is currently executing the implementation action plans to achieve non-LWR safety review readiness.[17] During this reporting period, the NRC staff provided the Commission with the annual paper, SECY-21-0010, "Advanced Reactor Program Status," (ADAMS Accession No. ML20345A239). This information paper provides the status of the staff's activities related to advanced reactors and describes the path forward on its advanced reactor licensing and readiness activities such as the resolution of key technology-inclusive policy issues, development of risk-informed and performance-based licensing approaches, and interactions with prospective applicants and other stakeholders.

In addition, the NRC staff plans to release for public comment the various subparts for the 10 CFR Part 53 preliminary proposed rule, including technical, licensing, and administrative requirements on an iterative basis. As noted in the last report, the NRC staff released

[15] The publication date is contingent upon the Commission's decision on the draft proposed rule.
[16] Additional information regarding this rulemaking is available at: https://www.nrc.gov/reading-rm/doc-collections/rulemaking-ruleforum/active/RuleDetails.html?id=40.
[17] The NRC's public Web site lists the implementation action plans and is updated periodically to show the status of these activities (https://www.nrc.gov/reactors/new-reactors/advanced/details.html#visStrat).

preliminary rule language on safety and risk criteria in November 2020. During this reporting period, the NRC staff continued to release Part 53 preliminary proposed rule language for public comment. Also during the reporting period, the NRC staff discussed the preliminary proposed rule language with various stakeholders during public meetings held on January 7, 2021, and February 4, 2021 (ADAMS Accession Nos. ML20353A093 and ML21035A040, respectively). The NRC staff also briefed the ACRS on January 14, 2021, February 2, 2021, February 18, 2021, and March 17, 2021. Details of these ACRS meetings can be found on the NRC's public Web site (https://www.nrc.gov/reading-rm/doc-collections/acrs/agenda/index.html).

The NRC's public Web site lists the open and resolved technical and policy issues related to SMRs and non-LWRs and is updated periodically to show the status of the issues (https://www.nrc.gov/reactors/new-reactors/smr.html#techPolicyIssues). The NRC holds periodic stakeholder meetings to discuss non-LWR topics of interest. A list of the meetings that the NRC has conducted to date can be found on the NRC's public Web site (https://www.nrc.gov/reactors/new-reactors/advanced/details.html#stakeholder).

Activities Planned and Completed for the Reporting Period (Q2 FY 2021)

Advanced Nuclear Reactor Technologies Activities	Projected Completion Date	Completion Date
Issued annual paper SECY-21-0010, "Advanced Reactor Program Status" to the Commission on the status of advanced reactor readiness activities (ADAMS Package No. ML20345A239).	01/31/21	02/01/21[18]
Issued draft white paper with NRC staff views on demonstrating the acceptability of probabilistic risk assessments used to support non-LWR plant licensing (ADAMS Accession No. ML21015A434).	01/31/21	01/13/21
Issuance of seven[19] technical reports by the Center for Nuclear Waste Regulatory Analyses (CNWRA) at the Southwest Research Institute regarding operating experience and potential challenges for the transportation, storage, and disposal of advanced reactor fuel types (ADAMS Package No. ML20184A143).	01/31/21	01/21/21
Issuance of technical input report by Argonne National Laboratory for the NRC's review of ASME Boiler and Pressure Vessel Code Section III, Division 5 (ADAMS Accession No. ML21090A033).	02/28/21	03/31/21
Issued final technology-inclusive, risk-informed, and performance-based design review guide for instrumentation and controls systems for advanced reactors (ADAMS Accession No. ML21011A140).	03/31/21	02/26/21

[18] This document was finalized on January 29, 2021; however, issuance was delayed from the previous projected date of January 31, 2021 due to processing.

[19] The previous report projected the issuance of six reports. CNWRA issued seven technical reports related to this topic.

Advanced Nuclear Reactor Technologies Activities	Projected Completion Date	Completion Date
Issuance of two technical reports by ORNL on materials, chemistry, and component integrity addressing molten salt chemistry, salt compatibility with high temperature materials, high temperature corrosion, and graphite (ADAMS Accession Nos. ML21084A039 and ML21084A041).	03/31/21	03/30/21[20]

Projected Activities for the Next Two Reporting Periods (Q3 and Q4 FY 2021)

Projected Advanced Nuclear Reactor Technologies Activities	Projected Completion Date
Issue Material Control and Accounting guidance for Category II facilities (NUREG-2159).	05/31/21
Issue reports on Siting and Licensing Computer Codes, and Computer Code Methodology for Nuclear Fuel Cycle Analysis.	05/31/21
Publish draft NUREG for public comment with proposed fuel qualification methodology to provide guidance for non-LWR developers on qualification of fuel under the Nuclear Energy Innovation and Modernization Act (NEIMA).	06/30/21
Release preliminary proposed rule language for 10 CFR Part 53 technical requirements.[21]	06/30/21
Publish draft RG for endorsement of the ASME Section III, Division 5 Standard for public comment.	06/30/21
Issuance of a series of technical reports by NUMARK Associates, Inc. and ORNL on materials, chemistry, and component integrity addressing molten salt chemistry, salt compatibility with high temperature materials, high temperature corrosion, and graphite.	06/30/21
Provide a report to the appropriate congressional committees for completing a rulemaking to establish a technology-inclusive regulatory framework for optional use by commercial advanced nuclear reactor technologies in new reactor license applications, and ensuring that the agency has adequate expertise to support the evaluation of commercial advanced reactor license applications, in accordance with the NEIMA, Section 103(e).	07/14/21
Issue a paper to the Commission providing the Alternative Physical Security Requirements for Advanced Reactors draft proposed rule for its consideration.	09/27/21
Issue a paper to the Commission providing the Emergency Preparedness Requirements for Small Modular Reactors and Other New Technologies final rule for its consideration.	09/30/21

[20] The previous report projected the issuance of three contractor reports. ORNL issued two reports related to this topic. The remaining report is under NRC staff review and will be issued in Q3 FY 2021 with additional related contractor reports. A new Projected Activity was added to reflect that the additional reports are expected to be issued in Q3 FY 2021.

[21] This activity only reflects publicly releasing preliminary proposed Part 53 technical requirements for early stakeholder engagement. The staff will continue to publish preliminary proposed licensing and administrative requirements and may continue to release revised iterations of the technical requirements in CY 2021.

Projected Advanced Nuclear Reactor Technologies Activities	Projected Completion Date
Issuance of a report by the CNWRA addressing information gaps and potential information needs associated with transportation and storage of fresh and spent advanced reactor fuel types.	09/30/21
Issue a white paper to provide information to advanced reactor developers on the benefits of robust preapplication engagement in order to optimize both safety and environmental application reviews.	09/30/21

2-8 Oklo Power LLC Combined License Application for the Aurora Compact Fast Reactor

The NRC continues engagement with Oklo related to their advanced reactor design that uses liquid metal for heat transport and the associated custom combined license (COL) application[22] that was submitted to the NRC on March 11, 2020 (ADAMS Package No. ML20075A000). The proposed Aurora design would use heat pipes to transport heat from the reactor core to a power conversion system, where it would then be used to generate electricity.

The NRC staff planned to complete the review of the Oklo COL application in a two-step process (ADAMS Accession No. ML20149K616). On November 17, 2020, the NRC staff issued a letter to Oklo (ADAMS Accession No. ML20308A677) extending the Step 1 review in the areas of maximum credible accident methodology, safety classification of structures, systems, and components (SSCs), and scope of the quality assurance program. Because Oklo's quality assurance program is closely tied to its safety classification of SSCs, these issues have been combined and are no longer being tracked separately. In the letter, the NRC stated that Oklo's responses to requests for additional information, audit documents, and audit discussions enhanced the staff's understanding of Oklo's novel approach to the Aurora safety case but did not provide sufficient information to define the scope of the full Step 2 technical review. The NRC staff completed its review of one of the key aspects of the licensing basis, the applicability of regulations, and issued a letter documenting Step 1 closure on this topic on November 17, 2020 (ADAMS Accession No. ML20300A593). The NRC staff continue to work with Oklo on a plan to proceed with the remaining review items. Previously reported projected activities have been deferred to dates to be determined, pending a plan from and engagement with the applicant on the path forward.

The NRC staff holds periodic public meetings to discuss the review of the COL application for the Oklo Aurora design. A list of the meetings can be found on the NRC's public Web site (https://www.nrc.gov/reactors/new-reactors/col/aurora-oklo/public-meetings.html).

Activities Planned and Completed for the Reporting Period (Q2 FY 2021)
Major activities were deferred during this reporting period due to a need for more information from the applicant.

Projected Activities for the Next Two Quarters (Q3 and Q4 FY 2021)
As described above, previously projected activities have been deferred.

[22] A custom COL application provides both the design information that would be provided by a certified design and the site-specific information provided with a COL application.

2-9 Reactor Oversight Process

The ROP is a risk-informed, performance-based oversight program that contains provisions for continuous self-assessment and improvement. The staff developed recommendations to make changes to the ROP in SECY-19-0067, "Recommendations for Enhancing the Reactor Oversight Process," (ADAMS Accession No. ML19070A050) which are being considered by the Commission. The staff continues to assess and improve the ROP as part of its normal work practices through the NRC's transformation activities, stakeholder correspondence, feedback from ROP public meetings, and the annual ROP self-assessment program.

Activities Planned and Completed for the Reporting Period (Q2 FY 2021)

Reactor Oversight Process Activities	Projected Completion Date	Completion Date
Issued new Inspection Manual Chapter 0335, "Changes, Tests, and Experiments" (ADAMS Accession No. ML20325A180).	03/31/21	01/29/21
Issued update to Inspection Procedure IP 95002, "Supplemental Inspection for One Degraded Cornerstone or Any Three White Inputs in a Strategic Performance Area" (ADAMS Accession No. ML20238C055).	03/31/21	03/19/21
Conducted effectiveness review of the Very Low Safety Significance Issue Resolution process and issued a report (ADAMS Accession No. ML21070A334).	03/31/21	03/02/21
Conducted effectiveness review of Action Matrix change for White Findings and issued a report (ADAMS Accession No. ML21069A154).	03/31/21	03/30/21
Completed the CY 2020 ROP Self-Assessment and provided paper to the Commission (ADAMS Package No ML21057A137).	03/31/21	04/01/21

Projected Activities for the Next Two Reporting Periods (Q3 and Q4 FY 2021)

Projected Reactor Oversight Process Activities	Projected Completion Date
Complete Comprehensive Baseline Inspection Program Review	08/31/21

2-10 Backfit

The NRC's backfitting rules are codified in 10 CFR 50.109, 70.76, 72.62, and 76.76. The backfitting rules define backfitting "as the modification of or addition to systems, structures, components, or design of a facility; or the design approval or manufacturing license for a facility; or the procedures or organization required to design, construct or operate a facility; any of which may result from a new or amended provision in the Commission's regulations or the imposition of a regulatory staff position interpreting the Commission's regulations that is either new or different from a previously applicable staff position…."[23] The rules require, in the absence of an

[23] 10 CFR 50.109(a)(1). Substantially similar definitions are provided in § 70.76, "Backfitting," § 72.62, "Backfitting," and § 76.76, "Backfitting" for non-reactor facilities.

applicable exception, an analysis showing that the backfit would result in a substantial increase in the overall protection of the public health and safety or the common defense and security and that the increased protection warrants the direct and indirect costs of implementation. There are similar requirements, referred to as "issue finality," that apply when there are new or amended requirements for licenses, permits, and design approvals and certifications issued under 10 CFR Part 52.

The Commission clarified its backfitting and issue finality policy as well as its policy on "forward fits," which are requirements or staff interpretations of requirements imposed as a condition of agency approval of a licensee request that result in the modification of or addition to systems, structures, components, or design of a facility, in NRC Management Directive 8.4, "Management of Backfitting, Forward Fitting, Issue Finality, and Information Requests" (ADAMS Accession No. ML18093B087). The NRC completed draft NUREG-1409, "Backfitting Guidelines," Revision 1, in March 2020 and issued a notice of availability in the *Federal Register* for public comment (ADAMS Accession No. ML18109A498). This revision would provide additional guidance for the NRC staff on how to implement the Commission's backfitting and issue finality regulations and policies and forward fitting policy, including how to process violations that are contested based on unjustified backfitting. The NRC received approximately 250 individual comments from members of the public, licensees, and industry representatives. The NRC staff evaluated the comments, updated the draft NUREG, and provided the Commission with the staff's proposed NUREG-1409, Revision 1 (Final Report) (ADAMS Package No. ML21006A431). This revised document is currently before the Commission for its consideration.

Activities Planned and Completed for the Reporting Period (Q2 FY 2021)

Backfit Activities	Projected Completion Date	Completion Date
Provided NUREG-1409, Revision 1 (Final Report) to the Commission (ADAMS Accession No. ML18109A498).	03/31/21	03/31/21

Projected Activities for the Next Two Reporting Periods (Q3 and Q4 FY 2021)

Projected Backfit Activities	Projected Completion Date
Develop recommendation on whether a proposed technical specification, pertaining to degraded voltage protection (DVR) at the Oconee Nuclear Station, is required under 10 CFR 50.36(c)(3), in accordance with the NRC's backfit rule.[24]	07/31/21
Submit to the Commission the Fitness-for-Duty Drug Testing Program Requirements Final Rule, which would constitute a generic backfit via rulemaking.	09/15/21

2-11 Risk-Informed Activities

The NRC staff continues to make progress to advance the use of risk insights more broadly to inform decisionmaking. There are numerous activities ranging in scope from agencywide initiatives, such as the "Be riskSMART" initiative, which is part of the transformation efforts

[24] On January 28, 2021, the EDO directed the Office of Nuclear Reactor Regulation (NRR) to determine whether a proposed technical specification is required for DVR protection at Oconee under 10 CFR 50.36(c)(3), in accordance with the backfit rule. The NRC staff's assessment of this issue is due to the EDO in July 2021.

discussed in section 2-1, to the advanced reactor risk-informed activities listed in section 2-7, to individual undertakings in program and corporate offices.[25] The NRC staff is implementing the agencywide Be riskSMART risk-informed decisionmaking framework to inform a broad range of decisions spanning technical, legal, and corporate arenas. As part of the Be riskSMART initiative, the staff is tracking its use of risk-informed decisionmaking.

Activities Planned and Completed for the Reporting Period (Q2 FY 2021)

Risk-Informed Activities	Projected Completion Date	Completion Date
Issued implementation guidance associated with the Risk-Informed Process for Evaluations (RIPE) initiative (ADAMS Accession No. and ML21006A324 and ADAMS Package No. ML20261H475).	01/31/21	01/7/21
Conducted a public meeting to discuss rollout of the RIPE initiative and options to broaden the applicability of RIPE to additional NRC licensees (ADAMS Package No. ML21025A005).	01/31/21	01/26/21
Published draft regulatory basis for rulemaking to align licensing processes and apply lessons learned from new reactor licensing for public comment (ADAMS Accession No. ML20149K680).	02/26/21	01/29/21
Issued a Job Aid for pilot use to support risk-informing reviews of amendments for spent fuel dry storage systems.	03/08/21	03/08/21
As part of the Fuel Cycle Stakeholder public meeting, discussed the status of activities and next steps to support the implementation of a risk-informed program to address inspection-identified licensing basis questions that are determined to be of very low safety significance.	03/25/21	03/25/21

[25] The NRC maintains a listing of risk-informed activities that is updated annually at https://www.nrc.gov/about-nrc/regulatory/risk-informed/rpp.html.

Risk-Informed Activities	Projected Completion Date	Completion Date
Published Revision 1 to NUREG/CR-7002, "Criteria for Development of Evacuation Time Estimate Studies" (ADAMS Accession No. ML21013A504). The revision risk-informs the size of evacuation models, the impact of a shadow evacuation, modeling adverse weather, the use of manual traffic control, and various other important parameters to support consistent application of evacuation time estimate (ETE) methodology and will facilitate consistent NRC review of ETE studies.	03/30/21	02/09/21
Implemented the near-term recommendations on building a smarter fuel cycle licensing program (ADAMS Accession No. ML20184A267).	03/26/21	03/26/21
Issued revised RG 5.75 on training and qualification for personnel assigned to implement site security plans, licensee response strategies, and implementing procedures at nuclear power reactors. The guide incorporates NRC's risk-informed position on how licensees may use firearms training simulators to satisfy some weapons training requirements (ADAMS Accession No. ML17111A699).	03/31/21	03/19/21

Projected Activities for the Next Two Reporting Periods (Q3 and Q4 FY 2021)

Projected Risk-Informed Activities	Projected Completion Date
Complete review of LAR to revise the emergency plans for SNC fleet to change emergency response organization staffing composition and extend staff augmentation times. These LARs are significant in that they result from the risk-informed aspects of the 2019 revision of NUREG-0654, the definitive emergency preparedness evaluation guidance.[26]	09/30/21
Issue final safety evaluation report for the first topical report related to Holtec spent fuel storage systems and that involves a generic and risk-informed approach on heat load zone configurations. This approach, if approved and adopted for a given Holtec design, will reduce the number of future license amendments.	04/30/21

[26] This activity was originally projected to be completed by March 23, 2021. However, the licensee submitted new information for consideration. Thus, the completion date has been changed to September 30, 2021.

Complete assessment of the August 2020 derecho event at the Duane Arnold Energy Center and issue report with recommendations for additional regulatory actions based on risk insights from the event.	04/30/21
Conduct tabletop exercises of past fuel cycle facility licensing basis questions that have arisen during inspections using the drafted risk-informed process that was developed as part of the very low safety significance issues resolution initiative.	06/15/21
Brief ACRS on draft Revision 2 of RG 1.205, "Risk-Informed, Performance-Based Fire Protection for Existing Light-Water Nuclear Power Plants," following the public comment period (ADAMS Accession No. ML20231A856).	06/30/21
Implement the recommendations on building a smarter fuel cycle inspection program (ADAMS Accession No. ML20183A242).	06/30/21[27]
Identify potential need for changes in guidance to the definition of term "gross-rupture," which could result in operational and licensing efficiencies for spent fuel storage systems through engagement with external stakeholders.	06/30/21
Initiate exploratory activities for applying the RIPE concept to review nuclear materials licensing requests.	06/30/21
Conduct public meeting to discuss the status, results of tabletop exercises, and path forward on the nuclear materials' low safety significance issue resolution initiative.	06/30/21
Consider the expansion of RIPE to additional reactor licensees by allowing the use of risk insights obtained from probabilistic risk assessments developed to support TSTF-425, "Surveillance Frequency Control Program" (ADAMS Accession No. ML090850627).	06/30/21

2-12 Coronavirus Disease 2019 Pandemic

The NRC COVID-19 Coordination Team (including a COVID-19 Task Force and Working Group) continues to develop and implement precautionary measures in response to the pandemic to help protect the health and safety of our workforce consistent with guidance provided by the Federal Government, including the Centers for Disease Control and Prevention (CDC), as well as considerations of State and local conditions around NRC facilities. In addition, the NRC continues to protect public health and safety and the environment. The NRC is monitoring the effects of the COVID-19 pandemic on NRC- licensed activities as well as actions taken in response to State, local, and site-specific conditions. The NRC is poised to take additional steps as warranted.

NRC Re-Occupancy of Facilities

The agency continues to closely monitor State and local conditions as well as guidance from the CDC, Occupational Safety and Health Administration, and Office of Management and Budget in consideration of re-occupancy decisions to help protect the health and safety of the workforce.

[27] This activity was originally projected to be completed by November 30, 2020, and most of the inspection procedures identified for revision were completed by December 31, 2020. However, seven procedures (not needed to complete inspection in Q1 of CY 2021) remained in the final stages of review. All of these procedures have now been issued. The staff also plans to implement two longer-term recommendations from the smarter fuel cycle inspection report in the third quarter of FY 2021: 1) performing an in-depth assessment of the scope of resident inspector guidance and 2) incorporating into the inspection program the results of the Operating Experience Program and the Fuel Cycle Inspection Assessment Program.

During this reporting period, NRC headquarters remained in Phase 2 of the agency's Re-Occupancy Plan, while all four regions and the Technical Training Center remained in Phase 1. Enhanced screening (i.e., temperature checks and access questions) applies to NRC facilities in Phase 1.

Licensing and Oversight Items of Interest

The NRC staff has taken steps to identify areas of our regulations that are challenging during the pandemic, and the areas where temporary flexibilities, such as exemptions, would not compromise the ability of licensees to maintain the safe and secure operation of NRC-licensed facilities. The NRC staff continues to communicate the processes available to licensees for requesting these flexibilities in a transparent way through public communications, such as teleconferences, webcasts, and letters. In addition, these processes and the approved flexibilities are posted and updated on the NRC public Web site (https://www.nrc.gov/about-nrc/covid-19/).

During the reporting period, the agency noticed 155 public meetings to address a range of NRC issues. Due to health and safety concerns related to COVID-19, these meetings were held virtually via webcast or by teleconference. The NRC has also developed portions of its Web site devoted to the regulatory activities taken in response to the COVID-19 pandemic. Specific posts related to nuclear power plant licensees, nuclear materials licensees, and security and emergency preparedness have been developed to keep the public informed on how the NRC is adapting its regulatory approach during the pandemic. Between January 1, 2021, and March 31, 2021, the NRC issued 19 licensing actions granting temporary flexibilities to maintain the safe and secure operation of nuclear reactor and nuclear materials licensees. A complete list of licensing actions approved by the NRC in response to the COVID-19 pandemic is available on the NRC public Web site at https://www.nrc.gov/about-nrc/covid-19/.

In mid-CY 2020, a multidisciplined team of NRC staff was established to evaluate lessons learned and best practices from the implementation of the ROP during the initial phases of the COVID-19 pandemic. On January 11, 2021, the team issued a publicly available report entitled "Initial Report on Challenges, Lessons Learned and Best Practices from the 2020 COVID-19 Public Health Emergency – Focus on Regulatory Oversight of Operating Nuclear Reactors" (ADAMS Accession No. ML20308A389). The report includes several near- and long-term recommendations that were developed for consideration as the NRC continues to implement the ROP during the COVID-19 pandemic and for future emergencies that require the staff to perform extensive telework. The recommendations, which were discussed during a January 27, 2021, public meeting, also address how the NRC might prepare for remote oversight in the future for normal, non-emergency conditions.

Additionally, the NRC staff is engaged in analysis of pandemic related lessons learned in the materials oversight disciplines. For this effort, the first phase (Phase A) consisted of a short-term evaluation of feedback received through a survey to all the NRC staff with responsibility for implementing materials oversight programs. The Phase A objective was to assess this feedback and make recommendations for enhancing practices and processes that were already in place during the current COVID-19 pandemic in hopes of sharing any challenges and good practices in implementing the various oversight programs. Documentation of Phase A is being completed. In March 2021, the assessment transitioned to Phase B which will be a more comprehensive evaluation by a working group with members having specialized inspection and programmatic experiences from each of the materials business lines and regional offices. The working group will provide recommendations on potential enhancements to materials inspection

programs based on lessons learned during the pandemic. Phase B is anticipated to be completed by the end of FY 2021.

Regulatory Activities Taken in Response to the COVID-19 Pandemic During the Reporting Period

Licensee Type	Number of COVID-19 Requests Approved During the Reporting Period	Average Number of Days to Review COVID-19 Requests[28]
Power Reactor	17	28
Non-Power Reactor	0	N/A
Other (e.g., topical reports)	0	N/A
Decommissioning of Nuclear Facilities and Uranium Recovery	0	N/A
Storage and Transportation of Spent Nuclear Fuel	0	N/A
Fuel Cycle Facilities	0	N/A
Medical, Industrial and Academic Uses of Nuclear Materials and Agreement States	2	34

[28] This average is calculated based on the date the request is received and the review is completed; review time may be longer in cases where a supplement to a request is received after the initial submission date.

Enclosure 3 – Summary of Activities

3-1 Reactor Oversight Process Findings

The table below provides the CY ROP findings for the YTD and 3-year rolling metrics.

Location	Number of Findings	CY 2018	CY 2019	CY 2020	CY2021 (YTD)
Nationally	**Total**	478	440	291[29]	21[30]
Region I	Green	107	95	50	5
	White	1	0	0	0
	Yellow	0	0	0	0
	Red	0	0	0	0
	Greater Than Green Security	0	0	0	0
	Total	**108**	**95**	**50**	**5**
	No. of Units Operating During CY	25	24	21[31]	21
Region II	Green	113	110	77	2
	White	0	1	2	0
	Yellow	0	0	0	0
	Red	0	0	0	0
	Greater Than Green Security	0	0	1	0
	Total	**113**	**111**	**80**	**2**
	No. of Units Operating During CY	33	33	33	33
Region III	Green	110	96	51	1
	White	2	1	0	0
	Yellow	0	0	0	0
	Red	0	0	0	0
	Greater Than Green Security	0	0	0	1

[29] The inspection reports for the fourth quarter of CY 2020 were finalized on February 15, 2021.
[30] The inspection reports for the first quarter of CY 2021 will continue to be finalized through May 15, 2021. The report for the next reporting period will be updated to include any additional findings from the first quarter of CY 2021.
[31] The reduction of three units for CY 2020 reflects the permanent shutdown of Pilgrim Nuclear Station on May 31, 2019; Three Mile Island, Unit 1, on September 20, 2019; and Indian Point Nuclear Generating Unit 2 on April 30, 2020.

Location	Number of Findings	CY 2018	CY 2019	CY 2020	CY2021 (YTD)
	Total	**112**	**97**	**51**	**2**
	No. of Units Operating During CY	23	23	22[32]	22
Region IV	Green	145	137	110	12
	White	0	0	0	0
	Yellow	0	0	0	0
	Red	0	0	0	0
	Greater Than Green Security	0	0	0	0
	Total	**145**	**137**	**110**	**12**
	No. of Units Operating During CY	18	18	18	18

3-2 Licensing Actions

The tables below provide the status of licensing actions organized by licensing program. Consistent with Section 102(c) of NEIMA, the licensing actions referenced in this section include "requested activities of the Commission" for which the NRC staff issues a final safety evaluation. These totals do not include LARs, as they are addressed separately in section 3-3. "Total Inventory" refers to the total number of licensing actions that are open and accepted by the NRC at the end of the quarter. "Licensing Actions Initiated During the Reporting Period" are the number of licensing actions (regardless of acceptance) that are received by the NRC during the reporting period.

Operating Reactors

Reporting Period	Total Inventory	Licensing Actions Initiated During the Reporting Period	Licensing Actions Completed During the Reporting Period	Percentage of Licensing Actions Completed Prior to the Generic Milestone Schedule[33]	Percentage of Licensing Actions Completed Prior to the Established Schedule[34]
Q3 FY 2020	191	213	203	100%	93%
Q4 FY 2020	238	33	186	100%	98%

[33] Consistent with previous reports, this excludes unusually complex and Fukushima-related licensing actions accepted or initiated prior to July 13, 2019.

[33] Consistent with previous reports, this excludes unusually complex and Fukushima-related licensing actions accepted or initiated prior to July 13, 2019.

[34] The "established scheduled" is the schedule communicated to the licensee and made publicly available at the completion of the acceptance review.

Reporting Period	Total Inventory	Licensing Actions Initiated During the Reporting Period	Licensing Actions Completed During the Reporting Period	Percentage of Licensing Actions Completed Prior to the Generic Milestone Schedule[33]	Percentage of Licensing Actions Completed Prior to the Established Schedule[34]
Q1 FY 2021	224	226	237	100%	92%
Q2 FY 2021	264	135	105	100%	96%

New Reactors

Reporting Period	Total Inventory	Licensing Actions Initiated During the Reporting Period	Licensing Actions Completed During the Reporting Period	Percentage of Licensing Actions Completed Prior to the Generic Milestone Schedule	Percentage of Licensing Actions Completed Prior to the Established Schedule
Q3 FY 2020	8	5	0	N/A	N/A
Q4 FY 2020	3	1	6	100%	100%
Q1 FY 2021	2	1	2	100%	100%
Q2 FY2021	2	0	0	N/A	N/A

Fuel Facilities

Reporting Period	Total Inventory	Licensing Actions Initiated During the Reporting Period	Licensing Actions Completed During the Reporting Period	Percentage of Licensing Actions Completed Prior to the Generic Milestone Schedule	Percentage of Licensing Actions Completed Prior to the Established Schedule
Q3 FY 2020	4	3	5	100%	100%
Q4 FY 2020	3	1	2	100%	100%
Q1 FY 2021	2	1	2	100%	0%[35]
Q2 FY 2021	2	4	4	100%	75%[36]

[35] One licensing action was complex; the other was completed approximately 25 days after the established schedule. Both licensing actions were completed within the generic milestone schedule.

[36] One licensing action was complex, which resulted in it exceeding the established schedule by 27 days. The licensing action was completed within the generic milestone schedule.

3-3 Licensing Amendment Request Reviews

The tables below provide the status of LARs organized by licensing program. Consistent with Section 102(c) of NEIMA, the LARs referenced in this section include "requested activities of the Commission" for which the NRC staff issue a final safety evaluation. The total inventory is the number of open LARs at the end of the quarter. LARs are included in the total inventory after they have been accepted by the NRC (the acceptance review period is generally 30 days after the application is submitted).

Operating Reactors

Reporting Period	Total Inventory	LARs Submitted During the Reporting Period	LAR Reviews Completed During the Reporting Period	Percentage of LAR Reviews Completed Prior to the Generic Milestone Schedule[37]	Percentage of LAR Reviews Completed Prior to the Established Schedule[38]
Q3 FY 2020	382	125	95	100%	96%
Q4 FY 2020	362	125	145	100%	91%
Q1 FY 2021	354	84	94	100%	92%
Q2 FY 2021	276	36	107	100%	90%

New Reactors

Reporting Period	Total Inventory	LARs Submitted During the Reporting Period	LAR Reviews Completed During the Reporting Period	Percentage of LAR Reviews Completed Prior to the Generic Milestone Schedule	Percentage of LAR Reviews Completed Prior to the Established Schedule
Q3 FY 2020	5	3	4	100%	100%
Q4 FY 2020	3	1	3	100%	100%
Q1 FY 2021	1	0	2	100%	100%
Q2 FY 2021	1	0	0	N/A	N/A

[37] Consistent with previous reports, this excludes unusually complex and Fukushima-related LARs accepted or initiated prior to July 13, 2019.

[38] The "established scheduled" is the schedule communicated to the licensee and made publicly available at the completion of the acceptance review.

Fuel Facilities

Reporting Period	Total Inventory	LARs Submitted During the Reporting Period	LAR Reviews Completed During the Reporting Period	Percentage of LAR Reviews Completed Prior to the Generic Milestone Schedule	Percentage of LAR Reviews Completed Prior to the Established Schedule
Q3 FY 2020	12	14	13	100%	93%
Q4 FY 2020	14	7	5	100%	80%
Q1 FY 2021	14	6	6	100%	100%
Q2 FY 2021	10	4	8	100%	75%[39]

Unusually Complex LARs[40]

The staff has identified certain LARs (accepted for review prior to July 13, 2019), as unusually complex. Consistent with the previous reports, these unusually complex submittals are not included in the internal performance measures as they do not lend themselves to realistic schedule forecasting. Rather, they are given escalated management attention to ensure progress is made toward resolving outstanding issues and completing the reviews in a timely manner.

Unusually Complex LAR Description	Exclusive Justification	Age (Months)
None	N/A	N/A

3-4 Research Activities[41]

Summary of New Research Projects

During the reporting period, the Office of Nuclear Regulatory Research initiated research on or substantially revised the following projects:

Update of Seismic Guidance to State-of-Practice	
Importance to the NRC Mission	Incorporation of lessons learned from the technical review of design certification applications and combined license applications into updated RGs.
Planned Activities:	This activity will enhance analytical methods, develop clear staff positions, and support consensus development with end users. The guidance updates will incorporate lessons learned, simplify the application process,

[39] Two licensing actions had delayed issuance at the end of the year, which resulted in both items exceeding the established schedule by 2 percent (5 days).

[40] There were no unusually complex LARs for new reactors, operating reactors, or fuel facilities during the reporting period. The previously-reported unusually complex Point Beach exemption request was withdrawn by the licensee on February 11, 2021 (ADAMS Accession No. ML21042A002).

[41] This section provides information about projects that were started or completed during the reporting period that exceeded 300 staff hours or $500K of program support for the total duration of the project.

Update of Seismic Guidance to State-of-Practice	
	and provide alternative methods to reduce conservatism in engineering assumptions. Updates will include: • RG 1.92, "Combining Modal Responses and Spatial Components in Seismic Response Analysis." • RG 1.122, "Development of Floor Design Response Spectra for Seismic Design of Floor-Supported Equipment or Components."
Requesting Business Line	Operating Reactors, New Reactors
Estimated Completion	FY 2024
Estimate of Total Research Resources	2 FTE and $250K over a 3 year period

Reactor Pressure Vessel Integrity (NRR-2021-003)	
Importance to the NRC Mission	Support of deterministic vessel integrity analysis capabilities and review and monitoring of fleet reactor embrittlement data.
Planned Activities:	This work scope includes maintaining and updating the Radiation Embrittlement Archive Program online database, external engagement for Reactor Pressure Vessel (RPV) integrity issues, and support of deterministic RPV integrity analyses.
Requesting Business Line	Operating Reactors
Estimated Completion	FY 2025
Estimate of Total Research Resources	2.5 FTE and $500K over a 5-year period

Continued Maintenance and Development of State-of-Practice Probabilistic Tools for Nuclear Power Plant Component Integrity Risk Assessments (NRR-2021-008)	
Importance to the NRC Mission	Sustain continued innovation in probabilistic fracture mechanics (PFM) tools, methods, and expertise to enable risk-informed decision-making for nuclear power plant piping and reactor pressure vessel component integrity assessments.
Planned Activities:	This work establishes a long-term plan to invest in maintaining and developing the state-of-practice for NRC's PFM tools, methods, and expertise. It will enable the NRC staff to answer regulatory questions

Continued Maintenance and Development of State-of-Practice Probabilistic Tools for Nuclear Power Plant Component Integrity Risk Assessments (NRR-2021-008)	
	concerning the risks of failure of nuclear power plant reactor pressure vessel and piping components. Such questions may arise to assess the safety of potentially degraded components or industry requests to reduce inspections or to support NRC staff reviews of licensing, rulemaking, and industry codes and standards activities. Specific activities will include: • Maintenance and development of the NRC's PFM codes, Extremely Low Probability of Rupture (xLPR) and Fracture Analysis of Vessels – Oak Ridge (FAVOR), including completion of the FAVOR code modernization. • Support for use of the codes in licensing reviews, analyses of emergent technical issues, and other regulatory applications. • Benchmarking of the NRC's PFM codes against similar codes, analyses, or operational data to inform maintenance and development activities.
Requesting Business Line	Operating Reactors
Estimated Completion	FY 2026
Estimate of Total Research Resources	22 FTE and $5M over a 5 year period

Development of Alternative Framework for Postulating Pipe Break Locations (NRR-2021-004)	
Importance to the NRC Mission	Development of alternative framework for postulating pipe ruptures in fluid system piping at nuclear power plants.
Planned Activities:	The work scope includes developing and documenting an alternative framework and, as appropriate, acceptance criteria for postulating pipe ruptures in fluid system piping at nuclear power plants. This work will also evaluate the dynamic and environmental effects of such ruptures in accordance with General Design Criterion 4 in Appendix A to 10 CFR Part 50.
Requesting Business Line	Operating Reactors, New Reactors
Estimated Completion	FY 2023
Estimate of Total Research Resources	3 FTE and $250K over a 3 year period

Confirmatory Analysis of BWRX-300 Containment Methods (NRR-2021-001)	
Importance to the NRC Mission	Confirmatory analyses to evaluate the BWRX-300 short-term containment thermal-hydraulic response and long-term reactor core water inventory during the loss-of-coolant accident (LOCA) events. The analysis will assess the safety margins and conservatism of certain aspects in the licensing topical report (LTR).
Planned Activities:	The LTR includes a combined methodology for capturing the primary cooling system response and the containment thermal-hydraulic response. As such, an integrated confirmatory model will support the technical review and support gaining safety insights. The scope of work includes: • Development of an integrated reactor pressure vessel/containment TRACE thermal hydraulics model. TRACE is a modern thermal-hydraulics code to analyze large/small break LOCAs and system transients (https://www.nrc.gov/about-nrc/regulatory/research/safetycodes.html). • Development of a MELCOR thermal-hydraulic containment model. MELCOR is a code for modeling the progression of severe accidents and estimating source terms for nuclear power plants (https://energy.sandia.gov/programs/nuclear-energy/nuclear-energy-safety-security/melcor/). • Performing confirmatory analysis. Additionally, this confirmatory analysis is expected to be leveraged in future licensing activities, including the construction permit or design certification application stage for the final BWRX-300 containment design.
Requesting Business Line	New Reactors
Estimated Completion	FY 2021
Estimate of Total Research Resources	1 FTE and $0M over a 1 year period

Radiological Assessment System for Consequence AnaLysis (NSIR-2021-002)	
Importance to the NRC Mission	The Radiological Assessment System for Consequence AnaLysis (RASCAL) code is a tool used by responders in the NRC's headquarters operations center, regional incident response centers, and deployed responders for making independent dose and consequence projections during radiological incidents and emergencies.
Planned Activities:	This includes the Office of Nuclear Regulatory Research (RES) staff providing technical support, maintenance and the continued development

Radiological Assessment System for Consequence AnaLysis (NSIR-2021-002)	
	of the source term, atmospheric dispersion, transport and dose calculation models in RASCAL. RES staff will provide support and training for the NRC Headquarters Operations and Regional Incident Response Centers and domestic and international stakeholders and provide technical assistance to NSIR, including knowledge management activities, code modernizations plans (i.e. maintainability, readability, and extendibility), and assisting in the diagnosis of RASCAL coding errors and problem.
Requesting Business Line	Operating Reactors
Estimated Completion	FY2021 to FY2026
Estimate of Total Research Resources	6.0 FTE and $2.7M over a 5 year period

Summary of Completed Research Projects[42]

During the reporting period, Office of Nuclear Regulatory Research completed the following activities:

Development of the xLPR Probabilistic Tool for Evaluation of Leak-Before-Break in Reactor Piping (NRR-2014-004)	
Importance to the NRC Mission	Provided new probabilistic methods for evaluating leak-before-break of nickel-based alloys exposed to primary water environments to support regulatory alternatives.
Research Results or Findings	Staff completed development, testing, documentation, and review of a state-of-practice probabilistic fracture mechanics code, xLPR. The code was released publicly as announced in June 2020. The code inputs and outputs were then studied to identify the most significant areas of uncertainty in the models and inputs. Finally, the code was used to assess the risks of active degradation mechanisms in certain pressurized-water reactor piping systems.
Duration of the Project	7 years
Estimate of Total Research Resources	17 FTE and $12M over the 7 year period

[42] The research project resources are estimates of staff hours and program support costs based on inspection of project records, including staffing plans and contract spending plans.

Acceptance Criteria for Pipe Ruptures in Fluid System Piping (NRO-2015-007)	
Importance to the NRC Mission	Developed acceptance criteria for pipe ruptures in fluid system piping.
Research Results or Findings	Staff completed the following tasks associated with the UNR: • Technical letter report, "Criteria for Postulating Pipe Rupture Locations: Background and History," (ADAMS Accession No. ML19144A089). • Development of potential alternative to current pipe rupture criteria in staff guidance. • NUREG/CR-7275, "Jet Impingement in High-Energy Piping Systems," (ADAMS Accession No. ML21074A091).
Duration of the Project	4 years
Estimate of Total Research Resources	2.8 FTE and $340K over a 4 year period

3-5 Fees Billed

The tables below provide information on Part 170 fees billed for each fee class. For each fee class, the NRC staff compared the fees billed to the receipts estimated in the annual fee rule.[43]

Fee Class	FY 2021 Part 170 Receipts Proposed – Annual Fee Rule ($M)	Part 170 Billed in FY 2021 Q2 ($M)	Total Part 170 – Billed in FY 2021 ($M)
Fuel Facilities	$7.4	$1.9	$3.8
Generic Decommissioning	$0.5	$0.7	$1.6
Materials Users[44]	$1.0	$0.1	$0.4
Operating Power Reactors	$157.0	$34.8	$79.2
Research and Test Reactors	$3.7	$0.4	$1.1
Spent Fuel Storage / Reactor Decommissioning	$12.4	$2.4	$5.6
Transportation	$3.6	$0.3	$0.5
Uranium Recovery	$0.3	$0.1	$0.1

[43] The FY 2021 Proposed Fee Rule estimated collections are being used until the FY 2021 Final Fee Rule is published.
[44] Materials Users—Billed as flat fee applications and included in the estimates and billed.

Significant Ongoing Licensing Actions

The following table includes a comparison of the fees billed to projected resources for subsequent license renewal application reviews, Oklo's Aurora COL application, and the SHINE Medical Technologies, LLC (SHINE) operating license application review.

Docket	Project Name	Projected Resources ($M)[45]	Fees Billed to Date ($M)[46]
Point Beach Units 1 and 2 05000266/05000301	Point Beach Units 1 and 2 Subsequent License Renewal Application — Safety Review	$5.0[47]	$0.2
Point Beach Units 1 and 2 05000266/05000301	Point Beach Units 1 and 2 Subsequent License Renewal Application — Environmental Review	$1.4	$0.1
North Anna Units 1 and 2 05000338/05000339	North Anna Units 1 and 2 Subsequent License Renewal Application — Safety Review	$5.0[48]	$1.3
North Anna Units 1 and 2 05000338/05000339	North Anna Units 1 and 2 Subsequent License Renewal Application — Environmental Review	$1.4	$0.4
Surry Units 1 and 2 05000280/05000281	Surry Units 1 and 2 Subsequent License Renewal Application — Safety Review	$4.9	$4.6
Surry Units 1 and 2 05000280/05000281	Surry Units 1 and 2 Subsequent License Renewal Application — Environmental Review	$1.4[49]	$1.9
SHINE Medical Technologies, LLC 05000608	SHINE Medical Isotope Production Facility Operating License Application Review	$6.2[50]	$3.6

[45] Projected resources are calculated based on the FTE estimates provided to applicants in the acceptance letters. Dollar amounts are obtained by multiplying the hours estimate by the professional hourly rate.

[46] The NRC bills its licensees/applicants in the first month of the quarter following the timeframe in which the work was performed. For example, NRC work performed in January, February, and March, would be invoiced to the licensee/applicant in April. Therefore, the total billed amounts listed in Table 3-5 reflects costs for NRC work performed through December 2020.

[47] When the formal acceptance letter for the Point Beach subsequent license renewal application was sent to the licensee on January 15, 2021 (ADAMS Accession No. ML21006A417), the NRC estimated that it would take approximately $6.4M to complete the application review.

[48] When the formal acceptance letter for the North Anna subsequent license renewal application was sent to the licensee on October 13, 2020 (ADAMS Accession No. ML20258A284), the NRC estimated that it would take approximately $6.4M to complete the application review.

[49] When the Surry subsequent license renewal application was accepted for review on December 3, 2018 (ADAMS Accession No. ML18320A236), the NRC estimated it would take approximately $6.3M to complete the application review.

[50] The projected resource estimate was provided to SHINE by letter dated April 30, 2020 (ADAMS Accession No. ML20114E315).

Docket	Project Name	Projected Resources ($M)[45]	Fees Billed to Date ($M)[46]
	— Safety and Environmental Reviews		
Oklo Aurora 05200049	Oklo Aurora COL Application –Safety Review	$0.5[51]	$0.3
Oklo Aurora 05200049	Oklo Aurora COL Application – Environmental Review	$0.2	$0.1

3-6 Requests for Additional Information

The table below provides information on requests for additional information (RAIs) associated with licensing actions that are considered "requested activities of the Commission" for which the NRC staff issues a final safety evaluation, consistent with Section 102(c) of NEIMA. While Section 102(c) of NEIMA only applies to licensing actions accepted after July 13, 2019, the RAI data also include licensing actions accepted prior to July 13, 2019, to provide a complete inventory.

Type of Facility or Activity Type	Total Inventory of Open RAIs as of the End of Reporting Period	Total Number of RAIs Issued in Reporting Period	Total Number of RAIs Responded to in Reporting Period	Total Number of RAIs Closed in Reporting Period[52]
Operating Reactors	375	141	119	125
Non-Power Production and Utilization Facilities[53]	531[54]	16	20	3
Design Certifications for New Reactors[55]	N/A	N/A	N/A	N/A
Early Site Permits for New Reactors[56]	N/A	N/A	N/A	N/A

[51] When the Oklo COL application was accepted, the NRC indicated that the staff plans to complete the review in a two-step process. This table contains the projected resources to complete the identified Step 1 safety and environmental aspects of the review (ADAMS Accession No. ML20308A677).

[52] RAIs are considered closed once the final safety evaluation, environmental assessment, or environmental impact statement is finalized except for RAIs associated with new reactor application reviews. Due to the phased approach taken over several years for new reactor application reviews, RAIs are closed throughout the review process once the staff has determined that no additional information is needed to resolve the issue.

[53] For the purposes of RAI reporting, non-power production and utilization facilities include all operating research and test reactors and medical radioisotope facilities licensed under 10 CFR Part 50, including the ongoing review of the SHINE operating license application.

[54] The "Total Inventory of Open RAIs as of the End of Reporting Period" column has been corrected to account for an error in the total inventory of open RAIs. Specifically, 519 RAIs were reported in the previous report but the number should have been 518 RAIs.

[55] No design certification applications are currently under review by the NRC; therefore, there will be no RAI data to report until an application is submitted and accepted by the NRC for review.

[56] No early site permit applications are currently under review by the NRC; therefore, there will be no RAI data to report until an application is submitted and accepted by the NRC for review.

Type of Facility or Activity Type	Total Inventory of Open RAIs as of the End of Reporting Period	Total Number of RAIs Issued in Reporting Period	Total Number of RAIs Responded to in Reporting Period	Total Number of RAIs Closed in Reporting Period[52]
Combined Licenses for New Reactors	10	0	0	0
Fuel Facilities	122	6	48	67
Power Reactor Decommissioning	61	4	16	11
Research and Test Reactor Decommissioning	6	0	0	0
Spent Fuel[57]	798	13	13	38
Materials	0	0	0	6
Pre-Application Activities for Advanced Reactors	0[58]	0	0	0

3-7 Workforce Development and Management

FY 2021 Staffing by Office[59]

	FY 2021 Budget[60]	FTE Utilization 12/20/20 - 01/30/21	FTE Utilization 01/31/21 - 02/27/21	FTE Utilization 02/28/21 - 03/27/21	FTE Utilization as of 03/27/21	Delta (Q2 FTE Utilization – FY 2021 Budget)	End of Year (EOY)[61] Projection w/ Personnel Actions	Delta (EOY Projection – FY 2021 Budget)
Totals	2877.9	318.0	211.4	211.7	1379.6	-1498.3	2748.3	-129.6
COMM	45.0	4.0	2.7	2.7	17.5	-27.5	35.0	-10.0
OIG	63.0	6.4	4.3	4.3	28.0	-35.0	55.4	-7.6
Totals Other Offices	2769.9	307.7	204.4	204.7	1334.1	-1435.8	2657.8	-112.1

[57] During this reporting period, the NRC staff instituted a new method to more accurately and consistently capture the RAI reporting information in the area of spent fuel activities and rebaselined the number of RAIs reported. This method was instituted as an interim measure to ensure accuracy and consistency while the staff continues its efforts to update its official licensing system (the Web-based Licensing System) to facilitate the tracking of RAIs. In short, RAIs related to spent fuel activities in the previous reports were likely over-reported due to counting of draft or clarification RAIs for some reviews.

[58] In the previous two reports, 27 RAIs were listed in the "Total Inventory of Open RAIs as of the End of Reporting Period" column. These open RAIs should have been removed in the Q4 FY 2020 reporting period as these RAIs were resolved on August 11, 2020. There were no open RAIs for advanced reactor pre-application activities in this reporting period.

[59] Some numbers might not add due to rounding.

[60] Staffing numbers were adjusted slightly during this reporting period from the last report to reflect the enacted budget.

[61] Based on FTE utilization as of March 27, 2021.

	FY 2021 Budget [60]	FTE Utilization 12/20/20 - 01/30/21	FTE Utilization 01/31/21 - 02/27/21	FTE Utilization 02/28/21 - 03/27/21	FTE Utilization as of 03/27/21	Delta (Q2 FTE Utilization – FY 2021 Budget)	End of Year (EOY) [61] Projection w/ Personnel Actions	Delta (EOY Projection – FY 2021 Budget)
OCFO	93.0	10.4	6.7	6.6	44.7	-48.3	88.6	-4.4
OGC	92.0	10.4	6.9	6.7	44.8	-47.2	88.5	-3.5
OCA	10.0	1.3	0.8	0.8	5.4	-4.6	10.9	0.9
OCAA	7.0	0.8	0.5	0.5	3.4	-3.6	6.7	-0.3
OPA	13.0	1.4	1.0	1.0	6.4	-6.6	12.8	-0.2
SECY	17.0	2.1	1.3	1.3	8.8	-8.2	17.3	0.3
OIP	34.0	3.8	2.5	2.5	16.1	-17.9	32.0	-2.0
ASLBP	23.0	2.4	1.6	1.6	10.4	-12.6	19.4	-3.6
ACRS	24.0	2.8	1.9	1.9	12.4	-11.6	24.8	0.8
OEDO	23.0	2.7	1.7	1.8	11.4	-11.6	23.2	0.2
NRR	548.4	62.5	41.3	40.9	268.4	-280.0	531.9	-16.5
NMSS	298.3	34.3	22.7	22.9	149.1	-149.2	295.3	-3.0
RES	197.0	21.7	14.7	15.1	95.2	-101.8	194.9	-2.1
NSIR	152.0	17.9	11.8	11.7	77.2	-74.8	152.3	0.3
R-I	178.2	19.8	13.3	13.4	85.3	-92.9	172.4	-5.8
R-II	223.3	23.9	15.9	15.9	104.5	-118.8	205.5	-17.8
R-III	174.4	18.8	12.7	12.7	82.1	-92.3	163.9	-10.5
R-IV	164.0	18.5	12.5	12.7	81.1	-82.9	161.5	-2.5
OE	30.3	3.2	2.2	2.2	14.4	-15.9	29.2	-1.1
OI	35.0	4.5	3.0	3.0	19.6	-15.4	38.5	3.5
OCIO	167.0	16.9	11.2	11.2	74.0	-93.0	149.0	-18.0
ADM	123.0	13.1	8.7	8.8	57.3	-65.7	113.0	-10.0
SBCR	13.0	1.5	1.0	1.0	6.1	-6.9	12.6	-0.4
OCHCO	129.0	12.8	8.5	8.4	55.0	-74.0	111.8	-17.2
CSU	1.0	0.2	0.2	0.2	1.0	0.0	2.0	1.0

3-8 Inspection Activities

The table below shows the average number of hours of direct inspection per plant in CY 2021.

Average Reactor Oversight Process Direct Inspection Hours

Nationwide Per Plant (unit)	Column 1 of ROP Action Matrix	Column 2 of ROP Action Matrix	Column 3 of ROP Action Matrix	Column 4 of ROP Action Matrix
373 Hours	364 Hours	553 Hours[62]	586 Hours[63]	No Plants in Column 4

The table below shows the staff hours expended for inspection-related effort at operating power reactor sites by CY.

Items	Description	CY 2020 (Hours)	CY 2021 (YTD) (Hours)
i.	Baseline Inspection	219,178	49,833
ii.	Plant-Specific Inspection	7,521	253
iii.	Generic Safety Issue Inspections	911	382
iv.	Performance Assessment	1,880	240
v.	Other Activities	86,074	19,892
vi.	Total Staff Effort	315,563	70,599
vii.	Total Staff Effort Per Operating Site	5,536[64]	1,261[65]

3-9 Backfit

Facility-Specific Backfits

No facility-specific backfits were issued during the reporting period.

Generic Backfits

No generic backfits were issued during the reporting period.

Backfit Appeals Filed by Licensees and Applicants

There were no backfit appeals submitted to the NRC during the reporting period.

[62] Callaway Plant (1-unit Pressured Water Reactor (PWR)), Clinton Power Station (1-unit BWR), and Surry Power Station Unit 2 (two-unit PWR reactor site) were in Column 2 of the ROP Action Matrix YTD in CY 2021.
[63] Grand Gulf Nuclear Station (1-unit BWR) entered Column 3 of the ROP Action Matrix in Q4 CY 2020 by Assessment letter dated March 3, 2021 (ADAMS Accession No. ML21055A008).
[64] Total staff effort is divided by 57 sites for CY 2020, due to Three Mile Island Unit 1, permanently ceasing operations on September 20, 2019.
[65] Total staff effort is divided by 56 sites for CY 2021, due to Duane Arnold Unit 1 permanently ceasing operations in August 2020.