

RECORD OF DECISION
U.S. NUCLEAR REGULATORY COMMISSION
DOCKET NOS. 50-327 AND 50-328
LICENSE RENEWAL APPLICATION FOR
SEQUOYAH NUCLEAR PLANT, UNITS 1 & 2

August 14, 2015

BACKGROUND:

The U.S. Nuclear Regulatory Commission (NRC or the Commission) received an application, dated January 7, 2013, from the Tennessee Valley Authority (TVA), filed pursuant to Section 103 of the Atomic Energy Act of 1954, as amended (AEA), and Title 10 of the *Code of Federal Regulations* (10 CFR) Parts 51 and 54, to renew the operating licenses for Sequoyah Nuclear Plant, Units 1 & 2 (SQN). Renewal of the licenses would authorize the applicant to operate SQN for an additional 20-year period beyond that specified in the current operating licenses.

SQN is a two-unit nuclear power plant located in Hamilton County, Tennessee. It began commercial operation in July 1981 (Unit 1) and June 1982 (Unit 2). The nuclear reactor for each SQN unit is a Westinghouse pressurized water reactor (PWR), producing a reactor core rated thermal power of 3,586 megawatts thermal (MWt). The nominal net electrical capacity for SQN is 2,400 megawatts electric (MWe). SQN uses a once-through cooling system, aided by the periodic operation of cooling towers. The system withdraws cooling water from and discharges it to the Chickamauga Reservoir. The current operating licenses for Unit 1 (DPR-77) and Unit 2 (DPR-79) expire on September 17, 2020, and September 15, 2021, respectively.

The NRC accepted TVA's application and began the environmental review process on February 26, 2013. Section 102 of the National Environmental Policy Act of 1969, as amended (NEPA), directs that an environmental impact statement (EIS) be prepared for major Federal actions that have the potential to significantly affect the quality of the human environment. The NRC's Federal action is to decide whether to renew the licenses for SQN for an additional 20 years.

Consistent with 10 CFR Part 51, the NRC staff published in the *Federal Register* (FR) a Notice of Intent to prepare an EIS and conduct scoping. On April 3, 2013, the NRC held two public meetings in Soddy-Daisy, Tennessee, to obtain public input on the scope of the environmental review related to the SQN license renewal application. The NRC staff reviewed the oral and written comments received during the scoping process and contacted Federal, State, Tribal, regional, and local agencies to solicit additional comments. A Scoping Summary Report was issued on April 24, 2014.

The NRC's environmental review involved the preparation of an EIS, which is a supplement to the Commission's NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants" (GEIS). See 10 CFR 51.95(c). The GEIS documents the results of the NRC staff's systematic approach to evaluate the environmental consequences of renewing the licenses of individual nuclear power plants and operating them for an additional 20 years. In the GEIS, the NRC staff analyzed in detail and resolved those environmental issues that could be resolved generically.

The GEIS identified generic issues (Category 1) and site-specific issues (Category 2). For Category 1 issues, no additional site-specific analysis is required in the supplemental EIS (SEIS) unless new and significant information is identified. For Category 2 issues, an additional site-specific review is required, and the results are documented in the SEIS.

Neither TVA nor the NRC staff identified information that is both new and significant related to Category 1 issues that would call into question the conclusions on these issues in the GEIS with respect to the SQN license renewal application. This conclusion is supported by the NRC staff's review of the applicant's environmental report and other documentation relevant to TVA's activities, consideration of public comments received during the scoping process and the draft SEIS comment period, consultation with Federal, State, and local agencies, and the findings from the environmental site audit conducted by the NRC staff.

The NRC issued a draft SEIS for public comment in support of the SQN license renewal application on July 31, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14211A454). A 45-day comment period began on the date of publication of the U.S. Environmental Protection Agency (EPA) Notice of Availability of the filing of the draft SEIS to allow members of the public and agencies to comment on the results of the environmental review. On September 19, 2014, the NRC conducted two public meetings at the City Hall in Soddy-Daisy, Tennessee, to describe the results of the environmental review, respond to questions, and accept public comments. All comments received during the comment period are included in Appendix A to the final SEIS.

The NRC issued the final SEIS in support of the SQN license renewal application on March 20, 2015 (ADAMS Accession No. ML15075A438). In the final SEIS, the NRC staff concluded that the adverse environmental impacts of license renewal for SQN are not great enough to deny the option of license renewal for energy planning decision-makers.

Pursuant to 10 CFR 51.102 and 51.103(a)(1)-(5), the NRC staff has prepared this concise public record of decision (ROD) to accompany its action on the SQN license renewal application. This ROD incorporates by reference the material contained in the final SEIS, in accordance with 10 CFR 51.103(c).

DECISION:

The NRC makes the decision to grant or deny a license renewal application based on whether the applicant has demonstrated that the environmental and safety requirements in the agency's regulations can be met during the period of extended operation. The results of the NRC's safety review of the SQN license renewal application are documented in a safety evaluation report (ADAMS Accession No. ML15021A356). By letter dated March 13, 2015, the Advisory Committee on Reactor Safeguards (ACRS) notified the Commission of the ACRS's recommendation to approve the application for renewal of SQN's operating licenses (ADAMS Accession No. ML15070A551).

This ROD and the final SEIS, which is incorporated by reference herein, document the NRC's decision for the environmental review that the adverse environmental impacts of license renewal for SQN are not so great that preserving the option of license renewal for energy planning decision-makers would be unreasonable. See 10 CFR 51.103(a)(5). Under its renewed licenses, TVA will be able to continue operating SQN Units 1 and 2 for an additional 20 years beyond the expiration of the operating licenses, as requested in the license renewal application, plus the remaining number of years on the operating licenses currently in effect.

PURPOSE AND NEED:

As identified in Section 1.2, "Purpose and Need for the Proposed Action," of the final SEIS, the purpose and need for the proposed action (i.e., issuance of a renewed license) is to provide an option that allows for power generation capability beyond the term of the current nuclear power plant operating licenses to meet future system generating needs, as such needs may be determined by energy planning decision-makers, such as state, utility, and, where authorized,

Federal agencies (other than NRC). This definition of purpose and need reflects the Commission's recognition that, unless there are findings in the safety review required by the AEA or findings in the NEPA environmental analysis that would lead the NRC to reject a license renewal application, the NRC does not have a role in the energy planning decisions as to whether a particular nuclear power plant should continue to operate.

Ultimately, the appropriate energy planning decision-makers and TVA will decide whether the plant will continue to operate based on factors such as the need for power or other matters within the state's jurisdiction or the purview of the owners.

NRC EVALUATION OF ALTERNATIVES:

Section 102(2)(C)(iii) of NEPA states that EISs are to include a detailed statement analyzing alternatives to the proposed action. In this case, the proposed action is issuance of renewed licenses for SQN, which would allow the plant to operate for 20 years beyond the current expiration dates of its licenses. Chapter 2, "Alternatives Including the Proposed Action," of the final SEIS presents alternatives to the proposed action that were considered in detail and those alternatives that were eliminated from detailed study. Chapter 4, "Environmental Consequences and Mitigating Actions," compares the impacts of renewing the operating licenses for SQN and continued plant operations to the environmental impacts of alternatives. The evaluation of each alternative considered the environmental impacts across the following impact categories: land use, visual resources, air quality, noise, geologic environment, surface water use and quality, groundwater use and quality, terrestrial ecology, aquatic ecology, special status species, historic and cultural resources, socioeconomics, human health, environmental justice, and waste management. A three level standard of significance was used to indicate the intensity of the environmental effects for each alternative that was considered in-depth. The NRC's standard of significance for impacts was established using the Council on Environmental Quality (CEQ) terminology for "significant." The three levels of significance for potential impacts are SMALL, MODERATE, and LARGE, as defined below.

SMALL: Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.

MODERATE: Environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.

LARGE: Environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

In evaluating alternatives to license renewal, the NRC considered energy technologies or options currently in commercial operation, as well as some technologies not currently in commercial operation but likely to be commercially available by the time the current SQN operating licenses expire. The current operating licenses for SQN expire on September 17, 2020, and September 15, 2021, and, therefore, reasonable alternatives must be available (i.e., constructed, permitted, and connected to the grid) by the time the current SQN licenses expire to be considered to be likely to become available.

The NRC staff initially considered 18 alternatives to the license renewal of SQN; 14 of these were dismissed because of technical, resource availability, or commercial limitations that currently exist and that the NRC staff believes are likely to continue to exist when the existing SQN licenses expire, rendering these alternatives not feasible and commercially viable. The no-action alternative (i.e., not renewing the SQN operating licenses) and the effects it would have were also considered by the NRC staff. The 14 alternatives considered, but dismissed, were as follows:

- wind power,
- solar power,
- hydroelectric power,
- geothermal power,
- biomass,
- municipal solid waste,
- wood waste,
- ocean wave and current energy,
- oil-fired power,
- fuel cells,
- coal-fired integrated gasification combined-cycle,
- delayed retirement,
- demand-side management; and
- purchased power.

Each alternative eliminated from detailed study and the basis for its removal is provided in Section 2.3 of the final SEIS.

The alternatives analyzed in detail were the feasible and commercially viable methods of power generation, and not renewing the SQN operating licenses (i.e., the no-action alternative). The impacts of all of the alternatives considered in detail are summarized in Table 2–2 of the final SEIS, which is also provided later in this ROD. The feasible and commercially viable replacement power alternatives considered in-depth were:

- natural gas combined-cycle (NGCC),
- supercritical pulverized coal (SCPC),
- new nuclear, and
- combination of wind and solar.

ALTERNATIVE EVALUATION:

i. No-Action Alternative

The No-Action alternative refers to a scenario in which the NRC denies the renewed operating licenses for SQN and the licenses expire at the end of the current license terms. If the NRC denies the renewed operating licenses, SQN will shut down at or before the end of the current licenses. After shut down, the licensee will initiate decommissioning in accordance with 10 CFR 50.82.

Assuming that a need currently exists for the power generated by SQN, the no-action alternative would require the appropriate energy planning decision-makers (not the NRC) to rely on an alternative to replace the capacity of SQN, rely on energy conservation or power purchases to offset parts of the SQN capacity, or rely on some combination of measures to offset and replace the generation provided by SQN. Therefore, the no-action alternative does not satisfy the purpose and need for the final SEIS, as it neither provides power-generation capacity nor meets the needs currently met by SQN or that the alternatives evaluated in detail would satisfy.

ii. Alternative Energy Sources

This section describes the four alternatives considered in detail in the final SEIS and provides a summary of the final SEIS's comparison of the environmental impacts of each alternative to the environmental impacts of license renewal.

For the NGCC alternative, the NRC staff evaluated six parallel Advanced F Class units, rated at 400 MWe each, and located at an existing power plant site (other than SQN). Each unit would be equipped with dry-low-nitrogen-oxide combustors to suppress nitrogen oxide formation and selective catalytic reduction of the exhaust with ammonia for post combustion control of nitrogen oxide emissions. This alternative assumes that the net power available would replace the 2,400 MWe produced by SQN. Air quality impacts would be greater because the new NGCC alternative would be a major source of criteria pollutants and greenhouse gases during operation. Impacts to historical and archeological resources would be greater depending on site location and whether a new gas pipeline is constructed or an existing gas pipeline is upgraded. Socioeconomic impacts would be greater due to the loss of high paying jobs at SQN, with corresponding reduction in purchasing activity and tax contributions to the regional economy.

For the SCPC alternative, the NRC staff evaluated four equal-sized boiler/steam turbine generator power trains, operating independently and simultaneously, located at an existing power plant site (other than SQN). The NRC staff assumed that all power trains would be equipped with pollution-control devices such that once all parasitic loads are overcome, the net power available would replace the 2,400 MWe produced by SQN. Land use impacts from construction would be greater depending on the amount of new infrastructure required for operation (e.g., new railroad) and the extent that the land adjacent to the site is converted to an industrial land use. Land use impacts for operation would be greater based on the land required for coal mining and processing. Air quality impacts would be greater because the new SCPC alternative would be a major source of criteria pollutants and greenhouse gases during operation. Terrestrial resources impacts from construction would be greater because of the potentially large area of undisturbed habitat that could be affected. Without knowing the location of this alternative and the associated aquatic species and their interaction with the ecosystem, the NRC staff cannot assume that the overall impacts would be less than those for SQN license renewal; therefore, the aquatic resources impacts would be greater. Socioeconomic impacts would be greater due to the loss of high paying jobs at SQN, with corresponding reduction in purchasing activity and tax contributions to the regional economy. Waste management impacts would be greater due to the large volume, as well as the toxicity of waste generated by coal combustion.

For the new nuclear alternative, the NRC staff assumed that a two-unit plant would be used to match the power output of SQN, located at an existing power plant site (other than SQN). The new nuclear alternative would rely on a closed-cycle cooling system with natural-draft cooling towers, similar to the cooling system currently in place at SQN. Aesthetic impacts would be greater if the construction of new cooling towers results in a noticeable change within the viewshed of the plant. Without knowing the location of this alternative and the associated aquatic species and their interaction with the ecosystem, the NRC staff cannot assume that the overall impacts would be less than those for SQN license renewal; therefore, the aquatic resources impacts would be greater. Socioeconomic impacts would be greater due to the loss of high paying jobs at SQN, with corresponding reduction in purchasing activity and tax contributions to the regional economy.

For the wind and solar combination alternative, the NRC staff evaluated the wind and solar generation necessary to match the power output of SQN. The wind portion of this alternative assumed numerous interconnected wind installations scattered across the TVA or Southeast Electric Reliability Corporation (SERC) region, with an installed capacity between 4,700 to 6,300 MWe. Using commonly available 2-MWe turbines, 2,350 to 3,150 turbines would be required to replace SQN generation in conjunction with the solar portion of this alternative. The solar portion of this alternative assumed that sufficient rooftop space exists throughout the TVA or SERC regions to provide 2,000 to 2,900 MWe of total installed solar photovoltaic capacity.

Land use impacts would be greater based on the substantial amount of land required to construct and operate this alternative. Aesthetic impacts would be greater depending on whether wind turbines are added to existing wind farms or new wind farms are required. Terrestrial resource impacts would be greater depending on the degree of change to undisturbed and forested habitat. Impacts to historical and archeological resources would be greater depending on sites selected for the wind generation component of this alternative. Traffic-related transportation impacts would be greater depending on current road capacities and average daily traffic volumes.

iii. Summary

In the SQN final SEIS, the NRC staff considered the environmental impacts associated with alternatives to license renewal, including other methods of power generation and not renewing the SQN operating licenses (i.e., the no-action alternative). The final SEIS concluded that the continued operation of SQN during the license renewal term would have SMALL environmental impacts in all areas. The final SEIS concluded that the environmental impacts of renewal of the operating licenses for SQN would be smaller than those of the feasible and commercially viable replacement power alternatives considered. The final SEIS concluded that under the no-action alternative, the act of shutting down SQN on or before its licenses expire would have mostly SMALL impacts, although socioeconomic impacts would be SMALL to LARGE.

A summary of the environmental impacts associated with the license renewal and alternatives, by resource areas, is provided in the table below.

As further detailed below, the NRC has published a revised rule at 10 CFR 51.23 (79 FR 56238) and associated Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel (NUREG-2157, ADAMS Accession Nos. ML14196A105 and ML14196A107). As a result, for the time-frame beyond the licensed life for reactor operations, the impacts associated with the continued storage of spent nuclear fuel, as assessed in NUREG-2157, have a range of impacts (i.e., SMALL to LARGE) for certain resource areas. These impact determinations are deemed incorporated by the revised 10 CFR 51.23 rule into the SQN final SEIS. The analysis in NUREG-2157 supports the conclusion that the most likely impacts of continued storage are those discussed for at-reactor storage. For continued at-reactor storage, impacts in the short-term timeframe (i.e., 60 years after the end of the renewed license period) would be SMALL, as further described below. With respect to SQN, the impacts of continued storage would occur under the proposed action (license renewal) as well as the no-action alternative. Spent nuclear fuel generated during the initial licensing period would continue to be managed onsite in the spent fuel pool and in an independent spent fuel storage installation. Under 10 CFR Part 50, TVA has a general license to store spent fuel from both units in NRC approved dry storage casks in accordance with the requirements in 10 CFR Part 72, Subpart K. In the SQN final SEIS, the NRC staff concluded that the environmental impacts of onsite storage of spent nuclear fuel for an additional 20 years of operations and spent nuclear fuel generation would be SMALL. Therefore, the NRC staff concludes that continued operation of SQN is the environmentally-preferred alternative.

**Summary of Environmental Impacts of Proposed Action, Alternatives Evaluated in Detail,
and No-Action Alternative**

Impact Area (Resource)	SQN License Renewal (Proposed Action)	Natural Gas Combined Cycle (NGCC)	Super-critical Pulverized Coal (SCPC)	New Nuclear	Combination (Wind and Solar)	No-Action
Land Use	SMALL	SMALL	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE	SMALL
Visual Resources	SMALL	SMALL	SMALL to MODERATE	SMALL to MODERATE	SMALL to MODERATE	SMALL
Air Quality	SMALL	SMALL to MODERATE	MODERATE	SMALL	SMALL	SMALL
Noise	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Geologic Environment	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Surface Water	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Groundwater	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Terrestrial	SMALL	SMALL	SMALL to MODERATE	SMALL	SMALL to MODERATE	SMALL
Aquatic	SMALL	SMALL	SMALL to MODERATE	SMALL to MODERATE	SMALL	SMALL
Special Status Species	NO EFFECT	SEE NOTE ¹	SEE NOTE ¹	SEE NOTE ¹	SEE NOTE ¹	NO EFFECT
Historic and Cultural	SEE NOTE ²	SMALL to MODERATE	SMALL	SMALL	SMALL to LARGE	SMALL
Socioeconomics	SMALL	SMALL to LARGE	SMALL to LARGE	SMALL to LARGE	SMALL to MODERATE	SMALL to LARGE
Human Health	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Environmental Justice	SEE NOTE ³	SEE NOTE ³	SEE NOTE ³	SEE NOTE ³	SEE NOTE ³	SEE NOTE ⁴
Waste Management	SMALL	SMALL	MODERATE	SMALL	SMALL	SMALL

Notes:

¹ The magnitude of impacts could vary widely based on site selection and the presence or absence of special status species and habitats when the alternative is implemented; thus, the NRC staff cannot forecast a level of impact for this alternative.

² The NRC staff concludes that license renewal would cause no adverse effect on historic properties.

³ This alternative would not have disproportionately high and adverse human health and environmental effects on minority and low-income populations in the vicinity of the SQN.

⁴ The No-Action alternative could disproportionately affect minority and low-income populations.

CONTINUED STORAGE OF SPENT NUCLEAR FUEL

The environmental impacts for two issues: “Onsite spent fuel” and “Offsite radiological impacts (spent fuel and high-level waste disposal),”¹ were not completed prior to the March 2015 publication of the SQN final SEIS. As discussed in Chapter 4 of the SQN final SEIS, these two issues, which were contained in the NRC’s generic findings for license renewal of nuclear power plants codified in Table B–1 of Appendix B to Subpart A of 10 CFR Part 51, relied on the Commission’s Waste Confidence Decision and Rule (10 CFR 51.23), which were vacated in *New York v. NRC*, 681 F.3d 471 (D.C. Cir. 2012). Therefore, the SQN final SEIS did not have an analysis of or make an impact determination on the environmental impacts associated with the onsite storage of spent nuclear fuel for the period after the licensed life for operation of a reactor and the offsite impacts of spent nuclear fuel and high-level waste disposal, including possible disposal in a deep geologic repository. Instead, the SQN final SEIS stated that it would rely on the revised 10 CFR 51.23 and its supporting Generic Environmental Impact Statement (GEIS) to provide the NEPA analyses of the environmental impacts of spent fuel storage at the reactor site or at an away-from-reactor storage facility beyond the licensed life for reactor operations.

On August 26, 2014, the Commission approved a revised rule at 10 CFR 51.23 and associated “Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel” (NUREG-2157, ADAMS Accession Nos. ML14196A105 and ML14196A107). Subsequently, on September 19, 2014, the NRC published the revised rule (79 FR 56238) and NURE-2157 (79 FR 56263). The revised rule adopts the generic impact determinations made in NUREG-2157 and codifies the NRC’s generic determinations regarding the environmental impacts of continued storage of spent nuclear fuel beyond a reactor’s operating license (i.e., those impacts that could occur as a result of the storage of spent nuclear fuel at at-reactor or away-from-reactor sites after a reactor’s licensed life for operation and until a permanent repository becomes available). As directed by 10 CFR 51.23(b), the impacts assessed in NUREG-2157 regarding continued storage are deemed incorporated into the SQN final SEIS for a license renewal application.

In CLI-14-08 (ADAMS Accession No. ML14238A242), the Commission held that the revised 10 CFR 51.23 and associated NUREG-2157 cure the deficiencies identified by the court in *New York* and stated that the rule satisfies the NRC’s NEPA obligations with respect to continued storage for initial, renewed, and amended licenses for reactors. Therefore, the SQN final SEIS, which by rule now incorporates the impact determinations in NUREG-2157 regarding continued storage, contains an analysis of the generic issues of “Onsite storage of spent nuclear fuel” and “Offsite radiological impacts of spent nuclear fuel and high-level waste disposal” that satisfies NEPA. As the Commission noted in CLI-14-08, the NRC staff must account for these environmental impacts before finalizing its licensing decision in this proceeding. To account for these impact determinations, the NRC staff analyzed whether the revised rule at 10 CFR 51.23 and the associated NUREG-2157 presented new and significant information such that a supplement to the SQN final SEIS was required. As detailed in an NRC staff evaluation (ADAMS Accession No. ML15103A585), NUREG-2157 and the revised rule do not constitute new and significant information because they do not present a “seriously different picture” of the environmental impacts of the proposed action (i.e., license renewal) as compared to the impacts analysis presented in the SQN final SEIS. As noted, the SQN final SEIS did not evaluate or

¹ These two issues were renamed, “Onsite storage of spent nuclear fuel” and “Offsite radiological impacts of spent nuclear fuel and high-level waste disposal,” respectively, by the 2013 license renewal rulemaking. See “Revisions to Environmental Review for Renewal of Nuclear Power Plant Operating Licenses,” 78 FR 37282–37324 (June 20, 2013).

make an impact determination on the impacts of continued storage of spent fuel beyond the licensed life for reactor operations. Instead, the SQN final SEIS stated that it would rely on the revised 10 CFR 51.23 and its supporting GEIS (i.e., NUREG-2157) to provide the NEPA analyses of the environmental impacts of spent fuel storage at the reactor site or at an away-from-reactor storage facility beyond the licensed life for reactor operations. By virtue of revised 10 CFR 51.23, the SQN final SEIS now incorporates the impact determinations in NUREG-2157 regarding continued storage such that there is a complete analysis of the environmental impacts associated with spent fuel storage beyond the licensed life for reactor operations and prior to disposal in a geologic repository.

The NRC staff also considered whether the revised rule and NUREG-2157 had altered the NRC staff's recommendation in the SQN final SEIS that the adverse environmental impacts of license renewal for SQN are not great enough to deny the option of license renewal for energy planning decision-makers.

As described in an NRC staff evaluation (ADAMS Accession No. ML15103A585), NUREG-2157 documents the analysis of continued storage of spent fuel at at-reactor and away-from-reactor sites during three timeframes: the short-term timeframe (60 years beyond the licensed life of a reactor), the long-term timeframe (an additional 100 years after the short-term timeframe), and an indefinite timeframe. The analysis in NUREG-2157 supports the conclusion that the most likely impacts of continued storage are those discussed for at-reactor storage. For continued at-reactor storage, impacts in the short-term timeframe would be SMALL. Over the longer timeframes, impacts to certain resource areas would be a range (i.e., for historic and cultural resources during both the long-term and indefinite timeframes the range is SMALL to LARGE and for nonradioactive waste during the indefinite timeframe the range is SMALL to MODERATE). In NUREG-2157, the NRC stated that disposal of the spent fuel before the end of the short-term timeframe is most likely. There are inherent uncertainties in determining impacts for the long-term and indefinite timeframes. With respect to some resource areas, those uncertainties could result in impacts that, although less likely, could be larger than those that are to be expected at most sites and have therefore been presented as ranges rather than as a single impact level. Those uncertainties exist, however, regardless of whether the impacts are analyzed generically or site-specifically. As a result, these impact ranges provide correspondingly more limited insights to the decision-maker in the overall picture of the environmental impacts from the proposed action (i.e., license renewal).

The NRC staff concluded that when weighed against the array of other fuel cycle impacts presented in the SQN final SEIS, and the more-likely impacts of continued storage during the short-term timeframe in NUREG-2157, which are SMALL, the uncertainties associated with the impact ranges for the long-term and indefinite timeframes also do not present a seriously different picture of the direct, indirect, and cumulative environmental impacts compared to the NRC staff's analysis of the impacts from issuance of a renewed operating license for SQN attributable to the uranium fuel cycle and waste management (which includes the impacts associated with spent fuel storage).

The NRC staff therefore concludes that the revised rule and the impact determinations related to continued storage in NUREG-2157 do not alter the NRC staff's recommendation in the SQN final SEIS that the adverse environmental impacts of license renewal for SQN are not great enough to deny the option of license renewal for energy planning decision-makers.

MITIGATION MEASURES:

The NRC has taken all practicable measures within its jurisdiction to avoid or minimize environmental harm from the alternative selected. Continued operation of SQN would have SMALL environmental impacts in all resources areas. While the NRC is not requiring any mitigation measures for continued operation of SQN, the National Pollutant Discharge Elimination System (NPDES) permits do impose effluent limitations and monitoring requirements as well as best management practices to ensure that the impacts to water quality and aquatic life are minimal during the continued operation of SQN. The NRC is not imposing any license conditions in connection with mitigation measures. Additionally, the NRC is not requiring any new environmental monitoring programs outside what is required for the NPDES permits.

DETERMINATION:

Based on the independent review, analysis, and evaluation contained in the license renewal final SEIS; careful consideration of all the identified social, economic, and environmental factors, and input received from other agencies, organizations, and the public; and the factors and mitigation measures outlined above, the NRC has determined that the standards for issuance of a renewed license, as described in 10 CFR 54.29, have been met and that the requirements of Section 102 of NEPA have been satisfied.

APPROVED BY:

/RA/

Christopher G. Miller, Director
Division of License Renewal
Office of Nuclear Reactor Regulation

MITIGATION MEASURES:

The NRC has taken all practicable measures within its jurisdiction to avoid or minimize environmental harm from the alternative selected. Continued operation of SQN would have SMALL environmental impacts in all resources areas. While the NRC is not requiring any mitigation measures for continued operation of SQN, the National Pollutant Discharge Elimination System (NPDES) permits do impose effluent limitations and monitoring requirements as well as best management practices to ensure that the impacts to water quality and aquatic life are minimal during the continued operation of SQN. The NRC is not imposing any license conditions in connection with mitigation measures. Additionally, the NRC is not requiring any new environmental monitoring programs outside what is required for the NPDES permits.

DETERMINATION:

Based on the independent review, analysis, and evaluation contained in the license renewal final SEIS; careful consideration of all the identified social, economic, and environmental factors, and input received from other agencies, organizations, and the public; and the factors and mitigation measures outlined above, the NRC has determined that the standards for issuance of a renewed license, as described in 10 CFR 54.29, have been met and that the requirements of Section 102 of NEPA have been satisfied.

APPROVED BY:

/RA/

Christopher G. Miller, Director
Division of License Renewal
Office of Nuclear Reactor Regulation

ADAMS Accession No. ML15104A689

*concurred via email

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