



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001
March 26, 2013

Mr. John T. Carlin
Site Vice President
Tennessee Valley Authority
P.O. Box 2000
Soddy-Daisy, TN 37384

SUBJECT: LICENSE RENEWAL ENVIRONMENTAL SITE AUDIT REGARDING
SEQUOYAH NUCLEAR PLANT (TAC NOS. MF0057 AND MF0058)

Dear Mr. Carlin:

The U.S. Nuclear Regulatory Commission (NRC) staff is reviewing the Tennessee Valley Authority license renewal application for Sequoyah Nuclear Plant, Units One and Two (SQN). The environmental site audit will be conducted at SQN during the week of April 8, 2013, by NRC and its contractors. The environmental audit activities will be conducted in accordance with the environmental audit plan (Enclosure 1).

To develop the Supplemental Environmental Impact Statement, the NRC staff requests the information described in the environmental audit needs list (Enclosure 2) be made available, to the extent possible, during the environmental site audit. A draft schedule of tours and meetings for the audit is also provided (Enclosure 3). The NRC staff informally transmitted this information to your staff (Charles Wilson), by e-mail on March 26, 2013.

If you have any questions, please contact me by telephone at 301-415-4048 or by e-mail at emmanuel.sayoc@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Emmanuel C. Sayoc", with a long horizontal flourish extending to the right.

Emmanuel C. Sayoc
Environmental Project Manager
Projects Branch 2
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket Nos. 50-327, 50-328

Enclosures:
As stated

cc w/encls: Listserv

LICENSE RENEWAL ENVIRONMENTAL AUDIT PLAN SEQUOYAH NUCLEAR PLANT

1. Background

By letter dated January 15, 2013, Tennessee Valley Authority (SQN or applicant), submitted to the U.S. Nuclear Regulatory Commission (NRC or staff) an application to renew the Sequoyah Nuclear Plant, Units One and Two (SQN), operating licenses DPR-77 and DPR-79, respectively. The staff is reviewing the information contained in the environmental report (ER) of the license renewal application (LRA) per Title 10 of the *Code of Federal Regulations* Part 54 (10 CFR Part 54).

During the staff's review, an environmental audit is conducted at the SQN site. This audit is conducted with the intent to gain understanding, to verify information, and to identify information that will require docketing to support the basis of the licensing or regulatory decision. Specifically, the NRC staff will identify pertinent environmental data, review the facility and area, and obtain clarifications regarding information provided in the ER.

Per NRC guidance, the NRC staff prepares a regulatory audit plan that provides a clear overview of audit activities and scope, team assignments, and schedule.

2. Environmental Audit Bases

License renewal requirements are specified in 10 CFR Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants." Licensees are required by 10 CFR 54.23 to submit an ER that complies with the requirements in 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," as part of the LRA. Review guidance for the staff is provided in NUREG-1555, "Standard Review Plans for Environmental Reviews for Nuclear Power Plants: Supplement 1 – Operating License Renewal."

NRC staff is required to prepare a site-specific supplement to NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants." During the scoping process required in 10 CFR Part 51, NRC staff is required to define the proposed action, identify significant issues which must be studied in depth, and to identify those issues that can be eliminated from further study.

3. Environmental Audit Scope

The scope of this environmental audit for the SQN license renewal review is to identify those issues which are significant and those issues which can be eliminated from further study and to identify the environmental resources that must be adequately described and evaluated in the site-specific supplemental Environmental Impact Statement. Audit team members will focus on reviewing the documents and requested information listed in the SQN Environmental Audit Needs List (Enclosure 2) and discussing the information with the applicant's subject matter experts.

4. Information and Other Material Necessary for the Environmental Audit

As described in the Site Audit Needs List (Enclosure 2).

5. Tentative Team Assignments Area of Review Assigned Auditor

The environmental audit team members and their specific discipline assignments are shown in Table 1. Those members of the team who are contractors from Argonne National Laboratory will have ANL after their name. Those members of the team who are contractors from The Center for Nuclear Waste Regulatory Analyses will have CNWRA after their name. Those members of the team who are contractors from Pacific Northwest National Laboratory will have PNNL after their name.

Table 1 Environmental Audit Team Members and Resource Assignments

Discipline	Team Members
Branch Chief	Dave Wrona, NRC
Environmental Project Manager	Emmanuel Sayoc, NRC
Aquatic	Dennis Logan, NRC
Terrestrial	Michelle Moser, NRC Briana, Balsam, NRC
Hydrology	Kevin Folk, NRC William Ford, NRC
Air/Meteorology	Nancy Martinez, NRC Kevin Folk, NRC
Socioeconomic	Jeff Rikhoff, NRC* Emily Larson, NRC
Land Use	Emily Larson, NRC Michelle Moser, NRC
Cultural Resources	Emily Larson, NRC Jeff Rikhoff, NRC*
Waste Management	Stephen Klementowicz, NRC* Allison Travers, NRC
Alternatives	Allison Travers, NRC Kevin Folk, NRC
SAMA	Jerry Dozier, NRC John White, NRC Bob Schmidt, CNWRA Roland Benke, CNWRA
* Will not attend environmental site audit but may participate via conference call. ANL personnel in support of the audit to be announced.	

6. Logistics

The environmental audit will be conducted at SQN from April 8-11, 2013. An entrance meeting will be held with plant management towards the beginning of the audit on April 9, 2013. An exit meeting will be held towards the end of this audit on April 11, 2013.

7. Special Requests

The staff requests the applicant make available the information identified on the Environmental Audit Needs List (Enclosure 2). Plant staff who are subject matter experts in the disciplines listed on the Environmental Site Audit Needs List should be available for interviews and to provide tours which have been identified on the Environmental Audit Schedule (Enclosure 3).

8. Deliverables

An audit summary report is scheduled to be issued by NRC staff within 90 days from the end of the environmental audit.

SEQUOYAH NUCLEAR PLANT, UNITS ONE AND TWO (SQN) LICENSE RENEWAL ENVIRONMENTAL SITE AUDIT NEEDS LIST

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed Appendix E, the Environmental Report (ER), of the Sequoyah Nuclear Plant, Units 1 and 2 (SQN), license renewal application (LRA).

Please be prepared to discuss the following issues and make the following available during the environmental site audit.

1. Air Quality/Meteorology

a. Documents requested to be available for review:

- i. Provide copies of Sequoyah Nuclear Plant Units 1 and 2 (SQN) air permits (expiration date: July 17, 2017) issued by the Chattanooga-Hamilton County Air Pollution Control Bureau (CHCAPCB) for operation of Unit 1 cooling tower, operation of Unit 2 cooling tower, operation of insulation saws A and B, operation of auxiliary boilers A and B, operation of carpenter shop, operation of abrasive blasting operation, operation of emergency diesel generators 1A, 1B, 2A, and 2B and blackout diesel generators 1 and 2.
- ii. Provide any expected upgrade/replacement activities for equipment/operation that could increase or decrease air emissions over the license renewal period.
- iii. Provide a summary of SQN annual greenhouse gas emissions (GHG). Identify the sources (stationary combustion sources, mobile sources, etc.) and include GHG emissions such as carbon dioxide, sulfur hexafluoride (SF_6), hydrofluorocarbons (HFC), perfluorocarbons (PFC). If no GHG emission inventory is available, provide the following data to estimate GHG emissions:
 1. Combustion sources along with capacity, operational run times, fuel type, fuel consumption/usage.
 2. Mobile sources (including commuter, visitor, support, and delivery vehicles) along with number of vehicles, average daily trips, travel distance per trip.
- iv. Other sources (e.g. refrigerant leakage)
- v. Provide the associated annual air emissions (air pollutant and amount) for the most recent five years of operation for air permitted emission sources at SQN.
- vi. Identify sources of hazardous air pollutants (HAPs) at SQN and amount released for the most recent five years.
- vii. Provide the following information for Unit 1 and 2 cooling towers: operating hours per year (for the most recent 5 years), total dissolved solids concentration, water circulation rate, and drift loss rate.
- viii. Provide the following meteorological information from the data recorded at SQN's meteorological facility. The meteorological data should include the most recent 5 years for which data is available. Please provide the following information:
 1. mean monthly and annual temperatures
 2. mean monthly precipitation and annual precipitation
- ix. Provide seasonal and annual summary wind statistics in the form of wind direction and speed frequency distribution tables and wind roses. Discuss predominant wind direction and speed by season and annual average, local

terrain features affecting wind direction and speed, and provide a value for annual average wind speed and peak wind gust.

- x. Noise. Provide any information about noise that can be considered a nuisance to offsite property owners resulting from operation of SQN. Provide information about any noise complaints for the most recent five years.

2. Alternatives

None

3. Aquatic Ecology

a. Documents requested to be available for review:

- i. Provide the following documents that contain the data for the assessments in *Section 2.2.1.6 TVA Ecological Monitoring*:
 - 1. Biological Monitoring of the Tennessee River near Sequoyah Nuclear Plant Discharge – Autumn 2011
 - 2. Biological Monitoring of The Tennessee River near Sequoyah Nuclear Plant Discharge – Autumn 2012 (when available).
 - 3. Entire report - Biological Monitoring of the Tennessee River near Sequoyah Nuclear Plant Discharge Autumn 2008 - dated 2009
- ii. Please provide occurrence data from the TVA Regional Natural Heritage Database for the Federal and State listed aquatic species near the SQN plant listed in Table 2.5-1.
- iii. Please provide commercial harvest rates for roe and non-roe fish and turtles from Chickamauga Reservoir for the most recent three years (numbers and/or weight of fish by species) Provide an indication of the general areas near the Sequoyah Nuclear Plant where commercial harvesting routinely occurs (unless it occurs generally in the entire reservoir).
- iv. Please provide creel survey data for the most recent three years in Chickamauga Reservoir (numbers of fish by species).
- v. Water temperature data is available for the impingement studies in 1984-1985 and 2005-2007 (figure 5 of TVA 2007b). Provide water temperature data between December 19, 2001 and February 25, 2002 during the 2001-2002 impingement study reported in Kay and Baxter 2002.
- vi. Page 2-28 refers to sampling studies in 1986 of phytoplankton and zooplankton. Provide the references if other than the sampling studies performed in 1985 in Reference TVA 1986.\
- vii. Section 3.2.2.1 (Cooling and Auxiliary Water Systems; Condenser Circulating Water System), page 3-3, paragraph 6, first sentences states: "Approximately 250 feet upstream from the discharge diffusers and 1 mile downstream from the intake skimmer wall, an underwater dam exists across the main river channel." Please provide a schematic showing the location of the underwater dam that exists across the main river channel in relationship to the discharge diffusers and the intake simmer wall so that we can compare it to the location of biological sampling sites.
- viii. Section 4.2.5.1 (Entrainment of Fish and Shellfish in Early Life Stages; Analysis of Environmental Impact; Background), Page 4-19, lines 2-3 states that "Because the intake velocity is typically considered best technology available, TVA did not include the ERCW intake structure in this analysis." The Clean Water Act question of determining the best technology available is

different from the NEPA question of describing the level of impact. Please provide the following information:

1. Please provide copies of any studies of entrainment or impingement at the ERCW in the last ten years not already submitted.
 2. Please provide an average frequency for daily use of the ECRW intake in a given year.
 3. Please provide a basis for the statement that intake velocity is considered the best technology available for mitigating entrainment of fish and shellfish in early life stages (Section 4.2) at SQN.
- ix. Section 4.3.5.1 (Impingement of Fish and Shellfish; Analysis of Environmental Impact; Background), Page 4-24, Paragraph 3, last sentence states that "Because the intake velocity is typically considered best technology available, TVA did not include the ERCW intake structure in this analysis." The Clean Water Act question of determining the best technology available is different from the NEPA question of describing the level of impact. Please provide the following information:
- i. Does the ERCW have a fish return system for impinged fish? If not, please explain what happens to any impinged fish.
 - ii. Please provide copies of any studies of entrainment or impingement at the ERCW in the last 10 years not already submitted.
 - iii. Please provide a basis for the statement that intake velocity is considered the best technology available for mitigating impingement of fish and shellfish at SQN.
 - iv. Section 4.10.5.2, first sentence in second paragraph states: "TVA is not aware of any adverse impacts on threatened or endangered species that have been attributed to the site or transmission line operations." Please provide for examination any studies or reports describing surveys of the Sequoyah site or transmission line corridors for protected species in the last five years that support that conclusion.
 - v. Section 4.10.5.2, first sentence in second paragraph states:
... there are two state-listed fish species: the highfin carpsucker and the lake sturgeon. Although suitable habitat exists adjacent to the site for the highfin carpsucker, and lake sturgeon may be present adjacent to SQN due to their migratory nature, there are no recorded instances of either species being impinged on the SQN intake structure screens based on impingement studies conducted over previous years.

Please provide for examination any studies or reports of impingement and entrainment monitoring of protected species in the last five years that support that conclusion.

b. Meetings requested:

Please provide a technical expert who can discuss about topics listed below:

- i. The decrease in plankton densities at the diffuser location.
- ii. Issues found in 1980's sampling related to the higher proportion of freshwater drum entrained versus transported as compared to other species. (page 2-29) "The entrainment data for 1981 through 1984 indicated low entrainment rates of fish larvae for all species other than freshwater drum".
- iii. Section 4.3.5.2 (Impingement Analysis) contains a section entitled Equivalent Adult/Production Foregone Model on page 4-26. The

neither the section nor the referenced document (TVA 2007b) contain a description of either the models or the parameter values used in modeling.

- i. Please provide documentation on the models and the parameter values used in the impingement assessment.
- ii. Please provide an explanation of why TVA did not use the Equivalent Adult and Production Foregone models for the fish entrainment analysis.

4. Cultural Resources

a. Documents requested to be available for review

- i. A map detailing the level of previous and existing ground disturbance at the plant site, including documentation on how this level of disturbance was determined.
- ii. A series of aerial photographs of the entire SQN property, including the plant site, and associated existing transmission lines (before, during, and after pre-construction, construction, and post-construction periods). These are for looking at: levels of disturbance that occurred during pre-construction and construction or since operation; any buildings, structures, or archaeological sites present on the property; and identifying any recent projects that will require a review of additional documentation.
- iii. USGS 7.5 minute topographic quadrangle maps at 1:24,000 scale that show the boundaries of the SQN property, the plant site, and existing transmission lines. (I will need to take these hard copy maps with me for the file search at the Tennessee Historical Commission (THC); I am not referring to GIS maps with underlying topographic data – the actual USGS-named quad sheets are needed at 1:24,000 scale.)
- iv. Vegetation/land-use maps of the SQN property, the plant site, and associated transmission lines.
- v. map of site locations and previously surveyed areas within the entire SQN property (plant site and plant property) and along existing transmission lines will be needed during the site visit. These maps will not be docketed, as they are considered sensitive information. NRC will be independently collecting and verifying the location data as available at the THC, but that will be after the site visit is completed.
- vi. Applicant's *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Transmission Construction and Maintenance Activities*, Revision 2.1, as referenced in Section 10 of the ER, and any other environmental review procedures for land-disturbing activities (e.g., trenching, clearing, digging) on or associated with SQN.
- vii. Copies of any archaeological surveys performed on SQN property. These surveys will not be docketed, as they are considered sensitive information.
- viii. Detailed information about the Igou Cemetery (HS-2), including protection procedures for the site.

- ix. Verify if geomorphological work was conducted for the archaeological surveys to determine the depth of deposits and how deep archaeological remains may be present.
 - x. Any information on cultural resource training required for SQN staff.
 - xi. Copies of all letters and communications to and from the THC specific to determining the NRHP-eligibility of all cultural resources (e.g. 40HA549, HS-1, and HS-2) identified to date within the SQN property, including the plant site and along existing transmission lines.
 - xii. Consultation letters and other communication documents indicating correspondence to and from the THC and to and from Federally recognized Indian tribes that have ancestral or historical ties to the project area and surrounding lands. This would include relevant correspondence in addition to what is provided in ER to and from the THC. Additionally, has any contact been made with local historical societies or other local organizations with an interest in historic preservation?
- b. Meetings requested
- i. Meeting with Applicant staff familiar with the cultural resources within the SQN property to review cultural resource management procedures to determine how they manage resources, avoid impacting historic and cultural resources, and deal with inadvertent discovery of historic and cultural resources and human remains. Is any cultural resource training required for staff?
 - ii. Meeting with Applicant staff and transmission line maintenance staff to discuss right-of-way maintenance and monitoring and any procedures in place regarding protection of historic and cultural resources along existing transmission line corridors.
(Note: NRC will meet with the THC in Nashville after the site audit to discuss the license renewal application and conduct an independent file search.)

5. Hydrology

a. Ground Water

- i. Meetings requested:
 - 1. We want to improve our understanding of existing groundwater contamination and over the term of licensed activities, improve the description of any impacts from this contamination. We also want to develop a description of ongoing dewatering groundwater withdrawals (if any).
 - 2. We would like to view a map of groundwater monitoring well locations used to identify the extent of groundwater contamination and we would like know what hydrologic units those wells are monitoring.
 - 3. We would like to view tritium groundwater quality data collected in 2012 and 2013 (our most recent data is from 2011).
 - 4. What is currently believed to be the source of tritium contaminated groundwater at the site?
 - 5. Are there ongoing releases of tritium to the groundwater (i.e. is the tritium from past spills or from ongoing leaks to the groundwater)?

6. Where is the tritium in the groundwater predicted to travel in the future and what is the direction of groundwater flow (lateral and vertical)?
7. What is the potential for tritium to move vertically from the soil/alluvial material into fractures of the underlying bedrock (Conasauga Formation)?
8. If tritium did move into these fractures, where would the tritium move next and why?

ii. Tours requested:

1. On the site tour, we would like to view areas underlain by known tritium groundwater contamination
2. We would like to understand the location, concentration, and extent (lateral and vertical) of tritium detected in groundwater.

b. Surface Water

i. Documents requested to be available for review:

1. Please make available for review any records of Notices of Violation (NOVs), nonconformance notifications, or related infractions received from regulatory agencies associated with the following:
2. NPDES permitted discharges, sewage systems, landfill operations, groundwater or soil contamination, including spills, leaks, and other inadvertent releases of fuel solvents, chemicals, or radionuclides (covering past 5 years encompassing CY 2012).
3. Discharge Monitoring Report (DMR) submittals to TDEC (covering past 5 years).
4. TVA surface water use/diversion reports submitted for SQN (covering past 5 years).
5. SQN's Section 26a water intake permit.
6. If available, please provide a copy of TVA's NPDES permit renewal application for NPDES Permit No. TN0026450, which expires on October 31, 2013.

ii. Meetings requested:

1. Relative to potential impacts to surface water, please provide a description of operational and maintenance activities (or projects) anticipated to be undertaken during the license renewal term (as possible, identify expected timeframe, location(s) affected, acres disturbed, and activity/project duration).

6. Socioeconomics

a. Meetings requested:

- i. In addition to payments in lieu of taxes (PILOT) information presented in Section 2.7 of the ER, please describe any other major annual support payments, one-time payments, and other forms of non-tax compensation (if any) provided to local organizations, communities, and jurisdictions (e.g., county, municipality, townships, villages, incorporated places, and school districts) on behalf of Sequoyah.
- ii. Also, please provide information about any potential changes in assessed property value or any other recent or anticipated payment adjustments that

- iii. could result in notable increases or decreases in PILOT or other payments in future years. Are there any anticipated changes in the Tennessee state tax code that could affect TVA and/or Sequoyah?
- iv. Please provide any updated TVA estimated tax distribution information for 2012 that complements Table 2.7-1.
- v. Provide any information about noise that can be considered a nuisance to offsite property owners resulting from operation of SQN. Provide information about any noise complaints for the most recent five years.

7. Environmental Justice

a. Meetings requested:

- i. Consistent with the review criteria in the NRC standard review plan and to help address the provisions of Section 4-4 "Subsistence Consumption of Fish and Wildlife" in Executive Order 12898, the following discussion with plant personnel is needed to assist the staff in its environmental justice review:
- ii. Information about any observed subsistence consumption behavior patterns—specifically fish and wildlife consumption—by minority and low-income populations in the vicinity of Sequoyah. This subsistence consumption behavior could consist of hunting, fishing, and trapping of game animals and any other general food gathering activities (e.g., collecting nuts, berries, and other plant material) conducted by minority and low-income individuals in the vicinity of Sequoyah.
- iii. Information about current or past wildlife sampling and testing of game animals such as deer, squirrel, turkey, pheasant, duck, fish and other game birds and animals that may have been conducted in the vicinity of Sequoyah. Wildlife sampling and testing may have been conducted before, during, and after plant construction and in the early days of plant operation, but was discontinued after determining that tissue samples consistently showed no significant or measurable radiological impact on the environment from plant operations.

8. Terrestrial Ecology

a. Documents requested to be available for review:

- i. Tennessee Valley Authority Division of FFWD. Forestry Bulletin 143, June 1969. (Note that this document is reference #7 from Section 1.2 in the TVA 1974 Final Environmental Statement)

b. Meetings requested:

- i. Section 2.4 of the Environmental Report (ER) states that TVA conducted a site walk down in January 2010 to identify general plant populations, including herbaceous vegetation along fence rows and roadsides and various unnamed lawn and weedy species. Please provide a knowledgeable expert to describe the methodology used for the site walk down, including the duration of the walk down and portions of the SQN site that TVA visited. Also, please describe any documentation of the walk down, other than the summary provided in the ER and the TVA (2011) Sequoyah Final Environmental Impact Statement (EIS).
- ii. Both Section 2.4 of the ER and Section 3.7 of TVA's (2009) Steam Generator Environmental Assessment (EA) describe invasive species at the SQN site. Please provide a knowledgeable expert to describe the methodology used to determine the presence of invasive species at the SQN site. Also, please describe any documentation to determine the presence of invasive species,

- other than the summary provided in the ER and the TVA (2009) Steam Generator EA.
- iii. Section 2.4.1.1 describes the presence of wetlands at the SQN site based on National Wetland Inventory (NWI) maps. Please clarify whether any field surveys have been conducted at the SQN site or adjacent areas to determine the presence of wetlands.
 - iv. Section 2.4.1.2 of the ER and Section 3.7 of TVA's (2009) Steam Generator EA describes common wildlife at the SQN site and adjacent areas, including mammals, birds, amphibians, and reptiles. Please provide a knowledgeable expert to describe the methodology used to determine the presence of the mammals, birds, amphibians, and reptiles species that TVA indicated occur on or within the vicinity of the SQN site. Also, please describe any documentation to determine the presence of these species, other than the summary provided in the ER and the TVA (2009) Steam Generator EA.
 - v. Section 2.4.1.2 of the ER states that during the January 2010 SQN site visit, TVA identified a heron rookery along the eastern shoreline of SQN near the intake structure in the Chickamauga Reservoir. Please provide a knowledgeable expert to describe the methodology used during the site visit, including the duration of any walk downs and portions of the site that TVA surveyed or visited. Also, please describe any documentation of the site visit, other than the summary provided in the ER and the TVA (2011) Sequoyah Final EIS)
 - vi. Section 4.9.5 states that TVA has not planned to conduct construction activities during the period of extended operations in undisturbed areas. Please clarify whether TVA plans to conduct any construction activities in previously disturbed areas during the period of extended operations.

9. Protected Species

- a. Documents requested to be available for review:
 - i. Section 3.2.10.2.4 of the ER states that USDA Wildlife Services maintains the appropriate permit from the U.S. Fish and Wildlife Service (FWS) for raptor or heron nest relocation or removal along the transmission line corridors. Please explain the relationship between USDA Wildlife Services and TVA in transmission line maintenance and typical level of coordination between the two organizations for nest relocation or removal. Provide a copy of the applicable permit, if TVA maintains a copy.
 - ii. Sections 9.1.1 and 9.1.3.16 of the ER state that TVA, as a Federal agency, is required to comply with section 7 of the Endangered Species Act for the Sequoyah license renewal. The ER also notes that TVA's section 7 consultation and assessment of impacts to listed species is documented in Section 3.7 of TVA's June 2011 FSEIS. However, neither the ER nor the FSEIS describes the consultation process with the FWS pursuant to section 7. Please be prepared to discuss and provide a written chronology of TVA's section 7 consultation with the FWS as well as copies of any correspondence between TVA and FWS associated with this consultation.
 - iii. Section 2.5.1 indicates that no Federally listed species have been identified on the SQN site. Please describe any surveys or studies been completed on the SQN site for Federally listed species and provide copies of these studies, if applicable.
 - iv. Table 9.1-2 indicates that the FWS concluded that there would be no adverse

impacts on species and habitats protected under the ESA. Provide documentation that indicates such a conclusion from FWS.

b. Meetings requested:

- i. Consistent with the review criteria in the NRC standard review plan, the staff will be considering transmission lines as defined in Table B-1 of 10 CFR 51, Subpart A, Appendix B, under the 2012 revised final rule, which states that in-scope transmission lines are those lines that “connect the nuclear power plant to the substation where electricity is fed into the regional power distribution system and transmission lines that supply power to the nuclear plant from the grid.” Please clarify which portions of the 12 lines described in Section 3.2.10.1 of the ER are in scope for the license renewal review according to this revised definition.
- ii. Sections 9.1.1 and 9.1.3.16 of the ER points the reader to TVA’s June 2011 FSEIS for documentation of Endangered Species Act section 7 consultation and TVA’s assessment of impacts to Federally listed species. Page 3-69 of TVA’s FSEIS states that TVA completed a Natural Heritage Database query for a 6-mile radius around SQN in March 2010, which is documented in FSEIS Table 3-15. Because this database query is now 3 years old, please be prepared to discuss and provide the staff with an updated FSEIS Table 3-15.
- iii. Section 2.5.1 states that suitable habitat for the large-flowered skullcap and pink mucket mussels may occur along some portions of the in-scope transmission lines. Do these statements remain true under the revised definition of in-scope transmission lines in Table B-1 of 10 CFR 51, Subpart A, Appendix B, in the 2012 revised final rule?
- iv. Section 2.5.1 states that one dromedary pearly mussel individual was identified in the late 1970s approximately 3 miles from SQN. Was this individual found upstream or downstream of SQN? Describe and provide a reference to the study under which this individual was identified or explain the circumstances of this record if it was not part of a study.
- v. Section 2.5.1 states that pink mucket mussels were identified in the early 1960s approximately 5.5 miles from SQN. Were the mussels found upstream or downstream of SQN? Describe and provide a reference to the study under which the mussels were identified or explain the circumstances of this record if it was not part of a study.
- vi. The FWS’s endangered species program search by county (<http://www.fws.gov/endangered/species/>) indicates that several Federally listed species occur in Hamilton County that are not included in Table 2.5-1 or described in the ER. These species include four endangered species—orangefoot pimpleback pearlymussel (*Plethobasus cooperianus*), rough pigtoe (*Pleurobema plenum*), Cumberland monkeyface (*Quadrula intermedia*), and Indiana bat (*Myotis sodalis*); four threatened species—snail darter (*Percuba tanasi*), small whorled pogonia (*Isotria medeoloides*), large-flowered skullcap (*Scutellaria montana*), Virginia spiraea (*Spiraea virginiana*); and one candidate species, the white fringeless orchid (*Platanthera integrilabia*). Explain the basis for eliminating these species from the ER’s discussion of Federally protected species.

10. Transmission Lines

None

11. Human Health

- a. Documents requested to be available for review:
 - i. Information on abnormal spills and leaks of radioactive material that that are applicable to the criteria in 10 CFR 50.75(g) and NEI's Groundwater Protection Program.
 - ii. Information on any on-site disposals of low-level radioactive waste.
- b. Tour requested accompanied by plant personnel:
 - i. Tour of low-level radioactive waste storage facilities.
 - ii. Tour of selected radiological environmental monitoring stations (e.g. air monitoring stations, including, any collocated State monitoring stations, nearby water, milk, or vegetation monitoring locations).
 - iii. Discussion with plant staff on the radioactive effluent monitoring program, the radiological environmental monitoring program, and any questions resulting from the staff's independent review of the applicant's ER, UFSAR, ODCM, and annual Effluent and Radiological Monitoring reports.
 - iv. Tour of non-radiological waste storage facilities (should include relevant plant staff to answer questions on the site's non-rad waste storage, including hazardous waste and mixed waste).

12. SAMA

- a. Documents requested to be available for review
 - i. Review of SAMA analysis and results as documented in TVA's SQN License Renewal
 - ii. Environmental Report (ER) and supporting documents.
 - iii. Review of Level 1, 2, and 3 PRA as described in TVA's SQN License Renewal Environmental Report and supporting documents.
 - iv. Provide the comprehensive list of 309 Phase I candidate SAMAs considered for implementation at SQN provided in onsite documentation. Include source of the SAMA and the Phase I screening disposition.
 - v. Provide the release category frequencies for all Phase II SAMAs.
 - vi. Provide equations listed in Section E.1.5.4 of Attachment E to the Environmental Report.
 - vii. Specific questions to be addressed at the audit are attached.
 - viii. Peer review report, summary of disposition of peer review findings and observations (F&Os)
 - ix. Documentation associated with any other reviews performed on Level 1, 2, and 3 Probabilistic Risk Assessments (PRAs)
 - x. PRA supporting documentation including: MDN-000-000-2010-203, MDN-000-000-2010-205 and References E.1-1, E.1-2, E.1-10, and E.1-13
 - xi. Documentation of CDF and Release Category frequency for each Phase II SAMA.
 - xii. TVA Calculation NUC-SQN-MDN-000-000-2010-0200 [Reference E.1-10]
 - xiii. WinMACCS calculation documents
 - xiv. Surrounding population analysis and evacuation documentation
 - xv. Documentation of economic data used in the benefit calculation
- b. Meetings requested:

- i. Interview with knowledgeable staff on Level 1, 2, and 3 PRA development and results as well as SAMA identification and evaluation to discuss the attached questions and any other questions that may arise from review at the site.
- c. Tours requested:
- i. No specific tour is needed for SAMA.
- d. SAMA Audit Questions
- i. Level 1 PRA
 1. Section E.1.1 states that the SQN PRA models reflect the SQN configuration and design as of November 30, 2009 and component failure and unavailability data as of November 30, 2009. Identify and discuss any completed or planned changes to the plant design or operation since these dates that might impact the SAMA analysis.
 2. Describe the more important reasons for the differences in major core damage frequency (CDF) contributors and significant differences in SAMA CDF reductions between the two units as shown in Tables E.1-1 and E.1-2 and Tables E.2-1 and E.2-2.
 3. Tables E.1-1 and E.1-2 include Stuck Open Safety/Relief Valve as an initiating event. This would appear to be a consequential event resulting from other initiators. Describe this event.
 4. It is noted that the loss of offsite power initiator contributes only 1 to 2% to the CDF while station blackout contributes 10 to 13%. Also the Level 1 importance analysis does not include any events for failure of the emergency diesel generators. Explain.
 5. Section E.1.4.5 describes the CAFTA Revision 0 as a complete revision of the model that involved converting the model from the RISKMAN software platform into CAFTA format. Clarify the extent to which models, data, success criteria, etc. from the prior version were utilized in the CAFTA version. Was there a peer review of any RISKMAN PRA versions?
 6. Identify any systems shared between the two SQN units and how the availability/unavailability of these systems during normal operation, during normal shutdown, and during dual unit trips are incorporated in the SQN PRAs.
 7. It is stated that no changes were made to the Level 1 CAFTA Rev. 0 PRA to produce the SQN SAMA Level 1 model. The peer review is stated to have been performed on the January 14, 2011 version of the SQN CAFTA PRA, while the Rev. 0 model is given in Table E.1-17 as having an issue date of June 3, 2011. Apparently, the peer review was performed on an earlier version of the CAFTA PRA. Provide the CDF and LERF for the model that was peer reviewed. Confirm that all of the changes described in the resolution of the peer review findings in Section E.1.4.7 have been implemented in the Revision 0 model and a summary of the more significant changes to the peer reviewed model to make the Revision 0 model.
 8. For the peer review results discussed in Section E.1.4.7:
 - a. For Finding 1-10; what is the significance on the results of the SAMA analysis of the assumption that the operator is

successful in providing feedwater to the ruptured steam generator?

- b. For Finding 1-14, clarify if the data used for the Rev. 0 PRA has been updated to exclude the post maintenance test data. If not, what is the impact on the results?
- c. For Finding 4-3, was the impact of spraying from glycol system failures included in the analysis?

ii. Level 2 Model PRA/PSA

1. Provide a brief history of the current SQN Level 2 PRA model development.
2. In several places in the ER, the accuracy of the Level 2 model is discussed. For example, in Section E.1.2.1 it is stated:
"However, the quantification of the non-LERF end states is not as accurate as would be obtained from a rigorous Level 2 model."
and
"The event tree nodes and split fractions were reviewed to ensure that the consequences, in terms of release frequencies, would be larger than would be expected with a fully developed Level 2 model."
and in Section E.1.2.3.2
Quantification of the SQN SAMA Model results in release frequencies that are over predicted..."
Provide a discussion of the bases for these statements and the reasons for the inaccuracies as well as steps taken to insure that any inaccuracies do not adversely impact the SAMA identification or cost-benefit analysis process.
3. What is the frequency for the intact containment event tree (CET) end state?
4. While SEQSOR was used to determine the fission product release fractions, a phenomenological based code such as MAAP is necessary for other inputs, such as available operator action time windows and the evaluation of accident progression to determine containment failure probabilities and release timing. Identify the code or codes used including the version.
5. The discussion of the BLERF end state in Section E.1.2.1 states
"A bypass release does not have an opportunity to undergo scrubbing within the containment. However, the SGTR tube rupture cases may have an opportunity for scrubbing."
Discuss further the treatment of SGTRs including the release categories which incorporate both scrubbed and unscrubbed SGTRs.
6. The subcategory definitions given in Tables E.1-13 and E.1-14 appear to exclude some combinations of the listed characteristics such as SBO versions of Release Categories (RCs) I and III and transient contributors similar to RC Va. Provide a discussion of the development of the Release Categories and of the logic used to insure that all containment failure CET endpoints are incorporated.
7. Provide a discussion of the representative accident scenarios used for the determination of the release characteristics for each of the release categories including:
 - a. A description of each scenario
 - b. The bases for the selection of the representative scenarios

- c. Steps taken to insure that the benefit of a SAMA is not underestimated for situations where a SAMA impacts scenarios, which (while not having a dominant frequency) may have a significantly larger consequence than that for the representative scenario
 8. Provide a listing of the characteristics used to describe each of the representative scenario for each RC as input to the SEQSOR emulator.
 9. Provide a discussion of the steps taken to insure the technical adequacy of the SQN Level 2 model and analysis.
- iii. External Events
 1. The Technical Evaluation Report of the SQN IPEEE concludes that there are several weaknesses in the fire analysis that could lead to optimistic results. These are: inappropriate combining of severity factors and non-suppression probabilities, the assumption of independence of several human actions in the main control room fire analysis, and that the cable spreading room was screened out due to lack of fire sources. While the latter appears to not be strictly true, the cable spreading room fire analyzed assumes no safe shutdown equipment failure. Discuss these observations and the impact of them on the SQN fire CDF.
 2. Provide a summary of the conservatisms and non-conservatisms in the SQN IPEEE fire analysis in light of the above TER review and the recent research and guidance reported in NUREG/CR-6850, specifically in the areas of hot short probabilities, fire ignition frequencies, and non-suppression probabilities, that indicates the fire analysis methodologies utilized for the Individual Plant Examinations for External Events (IPEEEs) may underestimate fire risk. Discuss the impact on the evaluation of potential SAMAs for fire risk contributors in addition to the use of the external events multiplier.
- iv. Level 3 Consequence Analysis
 1. Table E.1-18 provides the estimated population distribution within a 50-mile radius for 2041. Describe the current population distribution surrounding SQN.
 2. The economic multiplier value of 2.0329 was described in Section E.1.5.2.4. Specify the dollar-to-hectare values used for farm and nonfarm land.
 3. Section E.1.5.2.6 states meteorological data from 2005 resulted in the highest release quantities. Do the highest release quantities correspond to the highest public dose risk and highest averted cost risk? Describe the modeling of precipitation events and precipitation influence on calculated doses. Quantify the amount of missing meteorological data in 2003, 2004, and 2005, which were estimated using data interpolation or replacement.
 4. As described in Section E.1.5.2.7, the maximum preparation time of 105 minutes was applied for the 10-mile emergency planning zone. This value includes 75 minutes for notification and 30 minutes for preparation. What information is available to support the 30-minute preparation time to leave after notification? Does the evacuation analysis consider generic information for the average evacuation

- speed or site-specific information based on the current (or projected) number of people required to evacuate via existing roads?
5. Evacuation sensitivity is presented in Table E.1-23. Small effects on dose were shown for evacuation fractions of 90, 95 and 99.5 percent (or 10, 5, and 0.5 percent of individuals who do not evacuate). Considering roughly half of the calculated population dose risk is attributed to late releases, what causes the reported small effects on dose from evacuation? Where are the members of the public evacuated to?
- v. Selection and Screening of Phase I SAMAs
1. Section E.1.1 indicates that the results of the importance analysis were reviewed down to a RRW of 1.005 for the identification of potential cost-beneficial SAMAs. This corresponds to a potential maximum benefit including uncertainty of \$97K for SQN Unit 1 and \$88K for Unit 2. This precludes potential simple procedure changes that according to Section E.2.3 might cost \$50K. Discuss the potential for added candidate SAMAs down to a RRW corresponding to a simple procedure change.
 2. As stated in Section E.1.1.1 and the SQN IPEEE SER, the limiting plant component (HCLPF) is 0.23g which is less than the review level earthquake (RLE) of 0.3g. The Technical Evaluation Report (Table 4.1) supporting the SER indicates there are 12 components with HCLPFs below the RLE. While the NRC concluded that the SQN IPEEE meets the intent of to GL 88-20, Supplement 4, the result above indicates that there are some components which should be examined for the identification of potential cost-beneficial SAMAs. The TVA responses to the Fukushima Near-Term Task Force Report Recommendation 2.3: Seismic Response Report states that
"The statuses of all IPEEE outliers which were not corrected through physical modification were resolved through re-calculation of the appropriate HCLPF capacities. All IPEEE outliers are now resolved and have minimum HCLPF Capacities above 0.3g."

Discuss the actions taken on these 12 items, the final HCLPF values and the potential for cost-beneficial SAMAs for these SQN components. Also provide a discussion of the current status of the seismic reevaluation and walkdown activities being undertaken in response to the Fukushima Dai-ichi event.
 3. Review of the fire CDF values in Table E.1-16 indicates that the CDF for the top 14 fire areas is greater than that which if mitigated would have a benefit of the minimum hardware cost of \$100,000. While four of these fire areas are addressed by SAMA 287, provide a discussion of the potential for cost-beneficial SAMAs for the other fire areas.
 4. One of the screening criteria given in Section E.2.2 is "Excessive Implementation Cost: If the estimated cost of implementation is greater than the modified Maximum Averted Cost-Risk, the SAMA cannot be cost beneficial and is screened from further analysis". Was the uncertainty multiplier of 2.5 considered in performing this screening and if not discuss the impact on screening results?

5. The dispositions in the correlation of risk significant terms to SAMAs given in Tables E.1-3 and E.1-4 do not include Phase II SAMAs for some of the events. While it is stated that Phase I SAMAs have been implemented (to the extent that the implementations are reflected in the current PRA), the following events appear significant enough to warrant further review for additional SAMAs.
 - a. For events PTSFD1PMP_0030142 and PTSFR1PMP_0030142, representing the random failure of the turbine driven AFW pump to start or run, 4 Phase I SAMAs to improve pump reliability are stated to have been implemented. These failures contribute about 8% and 1% of the CDF, respectively. Discuss the implemented SAMAs and the potential for other candidate SAMAs to mitigate these failures.
 - b. For event AFWOP3, representing the failure of operators to depressurize and cooldown vessel so that low pressure injection can be used following a small or medium LOCA with failure of high pressure recirculation, 3 Phase I SAMAs to improve the capacity to cooldown and depressurization are stated to have been implemented. Discuss the implemented SAMAs and the potential for other candidate SAMAs to mitigate this failure.
 - c. For event TM_1PMP_003001AS, representing the maintenance unavailability of the turbine driven AFW pump, 2 Phase I SAMA to improve the reliability of the AFW turbine driven pump have been implemented. Discuss the implemented SAMAs and the potential for other candidate SAMAs to mitigate this unavailability.
 - d. For event TM_1PMP0030118A, representing the maintenance unavailability of motor driven AFW Pump 1A-A, one Phase I SAMA to improve the reliability of the AFW pumps and valves has been implemented. Discuss the implemented SAMA and the potential for other candidate SAMAs to mitigate this unavailability.
 - e. For event PMAFD1PMP_00300118, representing the random failure of motor driven AFW Pump 1A-A failing to start, two Phase I SAMAs are stated to have been implemented. Discuss the implemented SAMAs and the potential for other candidate SAMAs to mitigate this failure.
 6. For basic events %1RTIE and %1TTIE representing a general reactor trip and a turbine trip, it is stated in Tables E.1-3 and E.1-4 that Phase II SAMA 218, to increase the reliability of power supplies, has been evaluated. Discuss the potential for other SAMAs to reduce the general reactor trip and turbine trip frequency.
 7. One source of Phase I SAMAs is indicated to be the October 2010 Watts Bar Unit 2 SAMDA submittal. Consider any additional SAMA (SAMDA) identified during the review of this submittal as documented in TVA responses to RAIs and the draft NRC staff review of the SAMDA analysis (if available).
- vi. Cost benefit analysis and site-specific cost estimates

1. Identify what is included and what is not included in the SQN specific cost estimates including such things as contingency, replacement power, lifetime maintenance, etc.
2. Discuss the impact of sharing engineering and design cost between units for the SQN specific costs as well as the costs based on other plant's SAMA analyses.
3. Provide the release category frequencies for each Phase II SAMA.
4. Provide the equations used for the benefit calculations described in Section E.1.5.4 of Attachment E to the ER.
5. The benefit for SAMA 8 (Increase training on response to loss of two 120V AC buses) was determined by eliminating the inadvertent actuation of safety injection. Are there any other impacts of the loss of the two buses that would benefit from the training? Also, the RRW for loss of a single bus is given for Unit 1, but there is no value for the common cause failure of both buses. Explain.
6. The impact of adding the gas-turbine in SAMA 14 is only a 0.35% and 0.1% reduction in CDF. Explain why this so small considering that SBO is about 10% of the CDF.
7. The description of SAMAs 55 and 56 states that "No power dependencies were included as part of this addition to the model." Confirm that this means that the benefit of a dedicated diesel for SAMA 55 is not credited.
8. The title for SAMA 68 on page E-122 indicates that an auxiliary feed pump is being added while the text and the title of the SAMA in Table E.2-1 indicates that it is a normal motor drive feed pump. Clarify.
9. For SAMA 70 (Install accumulators for turbine-driven auxiliary feedwater pump flow control valves), it is indicated that a bounding analysis was performed by eliminating the failure of the existing flow control valves. Confirm that this analysis included the failure due to lack of air.
10. For SAMA 83 (Add a Switchgear Room High Temperature Alarm), it is stated that a bounding analysis was performed by eliminating the failure of the ventilation fans in the 480V Transformer Room, thereby maintaining a proper temperature in the room. Confirm that this room is the only one impacted by loss of switchgear HVAC.
11. For SAMA 103 (Institute Simulator Training for Severe Accident Scenarios), it is stated that a bounding analysis was performed by reducing the failure probability of important human actions and that the HEP dependency factors for important human actions were also improved. Identify the HEPs reduced and the amount of the reduction.
12. For SAMA 161 (Provide backup ventilation for the EDG rooms, should their normal HVAC supply fail), the cost is given as \$1M with the source being the minimum hardware cost. The minimum hardware cost is \$100K. Explain.
13. For SAMA 188 (Implement modifications to the Compressed Air System to increase the capacity of the system), describe the modification in more detail to support the cost estimate of \$2.8M. Note that the cost for SAMA 87 involving replacing the service and instrument air compressors is \$900K. Explain.

14. If the results of SAMA 268 (Perform an Evaluation of the CCS/AFW Area Cooling Requirements) indicate that area cooling is required, will alternative SAMAs be added to mitigate these area cooling failures?
 15. In Tables E.2-1 and E.2-2, the source for the cost of SAMA 284 (Improve Reliability of Pressurizer Safety Relief Valves) is given as Minimum Hardware Cost while the value is given as \$1.6M versus the stated minimum hardware cost of \$100K. Correct the source for this cost and describe what makes up this cost.
 16. In Tables E.2-1 and E.2-2, the source for the cost of SAMA 287 is given as the Columbia License Renewal Draft Environmental Impact Statement. Which specific Columbia SAMA was the cost taken from?
 17. Explain how the reduction in population dose and off-site economic cost was determined for SAMA 287 involving mitigating internal fire events.
- vii. Consider the following potentially lower cost or more effective alternative SAMAs:
1. For basic event HASE2 (and others) involving RCP seal cooling failures, automate tripping of RCPs on loss of CCW.
 2. For SAMA 289 involving installing backup cooling for the CCS/AFW space coolers, opening doors and/or stage portable fans, etc. unless this is addressed by SAMA 160.
 3. For SAMAs 87 and 188 involving replacing air compressors, provide connection to other unit air system and/or connections to plant service air system.
 4. For basic event SHECLR-2 involving mispositioned ERCW valves failing space cooling, install high temperature alarms to warn of failure of cooling.
 5. For event HACD1, representing the failure of operators to cooldown the RCS with main feedwater given that AFW has failed, and %1TLMFW, representing the total loss of main feedwater, does SQN have a motor driven startup feedwater pump that might be easier to use than the main feedwater system?
 6. For the various COMBINATION events which account for the dependency between multiple human error events, are there alternative cues that could be used, with or without added instrumentation, and added to the plant procedures?
 7. Event MORXC0FCV_0670478IE and three other similar events represent the transfer close failure of ERCW flow control valves thereby failing the CCW system. Is it possible to operate the ERCW/CCW systems in such a way that flow control is not necessary and the potential to transfer closed is reduced?
 8. For Events %690.0-A01-1_067_S and %669.0-A01_067_S representing the initiator for ERCW spray events in room 690.0-A1 in the Auxiliary Building which results in the loss of AFW pumps, install spray shields for these events.
 9. For SAMA 71 (Install a new Condensate Storage Tank), discuss the alternative of using a portable pump to provide water for the AFW system.
 10. For SAMA 161 (Provide backup ventilation for the EDG rooms, should their normal HVAC supply fail), consider using temporary ventilation, opening doors, etc.

SQN Environmental Site Audit Schedule

Date/Time	Activity	Location	Participants
Monday, April 8			
All Day	Travel to SQN Vicinity	Soddy-Daisy, TN	All NRC and non-local TVA Participants
Tuesday, April 9			
0900-1000	Entrance Meeting and Introductions	STC Auditorium	All NRC and TVA Participants
1000-1030	Orientation to Work Areas and References	STC Auditorium and Classrooms 214, 215 & 216A, Breakout Rooms 43, 44A, 44B, 44C, 44D	All NRC and TVA Participants
1030-1200	General Site Tour: Met Tower area, EAB (inc. intake, discharge, ponds, cooling towers, outfalls, etc.)	Vans in STC Parking Lot	All NRC; SQN Environmental Staff (Dawn Booker, Lynne Koby, Brad Love); Duane Morris; Tom Adkins; other TVA by request
1200-1300	Lunch	STC, just outside the Auditorium	All
1300-1630	SAMA Discussion	STC 43	NRC: Jerry Dozier, Jason White TVA: Mike Walker, Ching Guey Enercon: Gary Smith, Marvin Morris
1300-1630	Boat Tour of Waterways (weather permitting)	Van in STC Parking Lot (for travel to launch site)	NRC: Dennis Logan, Kevin Folk, Michelle Moser TVA: Dennis Baxter, et. al.; Paul Hopping, Craig Phillips
1300-1630	OR Tour of Transmission Lines and Ecological Areas in Site Vicinity (if no boat tour this day)	Van in STC Parking Lot	NRC: Briana Balsam, Dennis Logan, Michelle Moser TVA: Jason Regg, Brad Moore, Adam Dattilo, Kim Pilarski, Holly LeGrand, Britta Lees, Chris Ellis
1300-1630	Tour of Historic and Archaeological Sites	Vehicle in STC Parking Lot	NRC: Emily Larson TVA: Steve Cole, Richard Yarnell
1300-1500	Radiological Tour (inc. REMP, rad waste storage, etc.)	Van in STC Parking Lot	NRC: Ali Travers TVA: Ken Kimsey, George Flaherty, Rob Richie, Herb Hill
1500-1630	Non-Radiological Waste Tour (inc. hazardous and non-hazardous waste processing and storage, RCRA)	Van in STC Parking Lot	NRC: Ali Travers TVA: SQN Environmental Staff (Dawn Booker, Lynne Koby, Brad Love)
1630-1700	SQN and NRC Debrief	STC Auditorium	All

Wednesday, April 10			
0800-1200	Cultural Resources Discussion	STC 44D	NRC: Emily Larson TVA: Steve Cole, Richard Yarnell, Clint Jones
0800-1000	Radioactive Effluent Discussion (REMP, Radwaste, etc.)	STC 44A	NRC: Ali Travers TVA: Ken Kimsey, George Flaherty, Rob Richie, Herb Hill
1000-1200	Non-Radiological Waste Discussion (inc. hazardous and non-hazardous waste processing and storage, RCRA)	STC 44A	NRC: Ali Travers TVA: SQN Environmental Staff ((Dawn Booker, Lynne Koby, Brad Love)
0800-1000	Meteorological Tour (inc. air quality, met tower)	Van in STC Parking Lot	NRC: Nancy Martinez, Jason White, and Dave Wrona or Melanie Wong TVA: Tom Adkins, Jack Byars, Ken Wastrack, Jennifer Call
0800-1200	Transmission Line/Ecological Areas Discussion	STC Auditorium	NRC: Michelle Moser, Briana Balsam TVA: Jason Regg, Brad Moore, Adam Dattilo, Kim Pilarski, Holly LeGrand, Britta Lees
0800-1000	Hydrology Discussion (inc. Aquatic Biota, Surface Water, NPDES Permit)	STC 214	NRC: Dennis Logan, Kevin Folk, Bill Ford TVA: Dennis Baxter, Craig Phillips, Paul Hopping, John Higgins, Travis Markum
1000-1200	Groundwater Discussion	STC 214	NRC: Bill Ford TVA: Nanette Brodie, Bruce Vogel, Hank Julian
1000-1200	SAMA Discussion	STC 43	NRC: Jerry Dozier, Jason White TVA: Mike Walker, Ching Guey Enercon: Gary Smith, Marvin Morris
1200-1300	Lunch	STC, just outside the Auditorium	All
1300-1630	SAMA Discussion	STC 43	NRC: Jerry Dozier, Jason White TVA: Mike Walker, Ching Guey Enercon: Gary Smith, Marvin Morris
1300-1630	Tour of Transmission Lines and Ecological Areas in Site Vicinity (if no boat tour this day)	Van in STC Parking Lot	NRC: Briana Balsam, Dennis Logan, Michelle Moser TVA: Jason Regg, Brad Moore, Adam Dattilo, Kim Pilarski, Holly LeGrand, Britta Lees, Chris Ellis
	<u>OR</u> Boat Tour of Waterways (alternate day for inclement weather)	Van in STC Parking Lot (for travel to launch site)	NRC: Dennis Logan, Kevin Folk, Michelle Moser TVA: Dennis Baxter, et. al.; Paul Hopping, Craig Phillips
1300-1630	Follow-up Discussions as needed (all environmental topics)	STC 44A, 44B, 44C, 44D, 214, Auditorium	NRC: TBD TVA: TBD
1630-1700	SQN and NRC Debrief	STC Auditorium	All

Thursday, April 11			
0800-1000	SAMA Discussion	STC 43	NRC: Jerry Dozier, Jason White TVA: Mike Walker, Ching Guey Enercon: Gary Smith, Marvin Morris
0800-1000	Follow-up Discussions as needed (all environmental topics)	STC 44A, 44B, 44C, 44D	NRC: TBD TVA: TBD
1000-1200	Air Quality/Meteorological Discussion	STC Auditorium	NRC: Nancy Martinez, Kevin Folk, Jason White TVA: Tom Adkins, Jack Byars, Ken Wastrack, Jennifer Call
1000-1200	NRC Exit Prep	STC 215	NRC
1100-1200	TVA/Enercon Caucus (all SMEs)	STC 216A	TVA
1200-1300	Lunch	STC, just outside the Auditorium	All
1300-1400	Exit Meeting	STC Auditorium	All

March 26, 2013

Mr. John T. Carlin
Site Vice President
Tennessee Valley Authority
P.O. Box 2000
Soddy-Daisy, TN 37384

SUBJECT: LICENSE RENEWAL ENVIRONMENTAL SITE AUDIT REGARDING
SEQUOYAH NUCLEAR PLANT (TAC NOS. MF0057 AND MF0058)

Dear Mr. Carlin:

The U.S. Nuclear Regulatory Commission (NRC) staff is reviewing the Tennessee Valley Authority license renewal application for Sequoyah Nuclear Plant, Units One and Two (SQN). The environmental site audit will be conducted at SQN during the week of April 8, 2013, by NRC and its contractors. The environmental audit activities will be conducted in accordance with the environmental audit plan (Enclosure 1).

To develop the Supplemental Environmental Impact Statement, the NRC staff requests the information described in the environmental audit needs list (Enclosure 2) be made available, to the extent possible, during the environmental site audit. A draft schedule of tours and meetings for the audit is also provided (Enclosure 3). The NRC staff informally transmitted this information to your staff (Charles Wilson), by e-mail on March 26, 2013.

If you have any questions, please contact me by telephone at 301-415-4048 or by e-mail at emmanuel.sayoc@nrc.gov.

Sincerely,

/RA/

Emmanuel C. Sayoc
Environmental Project Manager
Projects Branch 2
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket Nos. 50-327, 50-328

Enclosures:

As stated

cc w/encls: Listserv

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NAME	IKing	ESayoc	MWong	DWrona
DATE	3/19/13	3/26/13	3/24/13	3/26/13

OFFICIAL AGENCY RECORD

Letter to J. Carlin from E. Sayoc dated March 26, 2013

SUBJECT: LICENSE RENEWAL ENVIRONMENTAL SITE AUDIT REGARDING
SEQUOYAH NUCLEAR PLANT (TAC NOS.

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