

SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2
LICENSE RENEWAL APPLICATION
AQUATIC ECOLOGY REQUESTS FOR ADDITIONAL INFORMATION

Aquatic Ecology

a. Intake velocities at four locations

Background - Section 2.6 (page 2.6-15) of the 1974 Tennessee Valley Authority (TVA) final environmental statement (FES) stated that

Estimated velocities at four locations in the intake system under full plant load conditions are:

- (1) 0.5 ft/s under the skimmer wall,
- (2) 2.7 ft/s in the intake channel,
- (3) 1.2 ft/s in the intake bays and
- (4) 2.2 ft/s through the 3/8 inch-square mesh traveling screen.

Section 3.2.2.1 of the environmental report (ER) indicates, “[Closed cooling water (CCW)] flows into the intake structure through trash racks designed to catch larger trash such as driftwood, plastic containers, etc. The flow then passes through six traveling screens at an intake velocity of approximately 1.7 feet per second (fps), three screens for each unit (Figure 3.2-1).” This value is also provided in Section 4.3.5.1 of the ER - “Flow [cooling water intake system] passes through six traveling screens at a velocity of approximately 1.7 fps, three for each unit.” [Rather than the 2.2 ft/s specified in the 1974 FES]. Further, the 2007 impingement report “Sequoyah Nuclear Plant NPDES 316(b) Monitoring Program – Fish Impingement at Sequoyah Nuclear Plant During 2005 to 2007” states that “Velocity at the traveling screens averaged 37 cm/sec (1.2 fps)”. (Page 1).

Request:

Provide a verification (or update) of the velocities given under the skimmer wall, in the intake channel and bays and through the traveling screens. If necessary, provide an explanation for the difference in the through-screen velocity during the fish impingement study (2005 to 2007) and the velocity reported in the ER.

b. Intake channel velocity compared to through-screen velocity

Background:

The velocity reported for the intake channel in final safety analysis report (FSAR) Amendment 23 is 2.7 ft/s. This is larger than the velocity cited in Section 3.2.2.1 or 4.3.5.1 of the ER (1.7 ft/s), although the maps showing the intake structure (Figure 3.2-2 for example) show an intake channel that is wider than the CCW intake structure.

Request:

Provide a description of the intake channel that would account for a higher velocity in the channel (2.7 ft/s) as reported in the FSAR Amendment 23, Section 2.4.8.1 (page 2.4-31), than the velocity measured through the traveling screens of the intake structure as described in the previous RAI. If available and germane to this description, provide a legible copy of FSAR Figure 2.4.5-1 or similar illustration showing the grading plan for the intake channel.

c. Entrainment of freshwater drum eggs and larvae

Background:

ER page 4-20 states "The 1986 assessment of operational monitoring (TVA 1986) noted that cove rotenone studies indicated a decline in numbers and biomass of young and intermediate-size freshwater drum... As a result of the assessment, TVA conducted a focused study on freshwater drum in 1986 to assess the impact of the higher entrainment rates on this species. The study involved collecting samples of adult fish and age analysis of the collected freshwater drum."

No reference was provided for the "focused study" other than TVA 1986. The following text in TVA 1986 appears to refer to a continued study (not reported in TVA 1986) and a potential future study:

However, because high entrainment rates of freshwater drum were noted at SQN (see section 5.1.2) TVA has initiated investigations to determine if entrainment losses provide an explanation of reduced numbers of young and intermediate size freshwater drum. EPA was informed of TVA's plans to conduct these studies in a letter dated February 14, 1986. Investigations are planned in two phases: (1) length frequency and age structure of the adult population to determine if recruitment to adult size may be restricted and (2) fish egg and larvae collections at SQN and downstream to determine if significant reproduction occurs beyond the influence of the plant's intake such that eggs and larvae would not be subjected to entrainment. The first phase of the study is being conducted in 1986, while the second phase is not planned until SQN resumes operation. (From Section 5.2.3; page 227)

Request:

Provide a copy of any additional reports generated as a result of the continued studies or new studies related to freshwater drum entrainment losses.

d. Clarification of Site Audit Notes

Page 51 of 131 on the Site Audit notes "Closed by Inspector 3 11 13" the question "Why isn't the ERCW included in the entrainment analysis" was answered in part with "Provided email from Mike Stiefel to Chuck Wilson about this on thumb drive". We did not find this email on our copy of the documents on the iron key thumb-drive. Provide a copy of the email.