

50-327/328

TENNESSEE VALLEY AUTHORITY

NORRIS, TENNESSEE 37828

OCT 23 1980

Mr. Sanford W. Harvey, Director
Water Enforcement Division
Environmental Protection Agency
Region IV
345 Courtland Street, NE.
Atlanta, Georgia 30308

Dear Mr. Harvey:

SEQUOYAH NUCLEAR PLANT - NPDES PERMIT NO. TN0026450 - EXTENSION OF
MODIFICATION REQUEST FOR DISCHARGE NO. 012

TVA requested a permit modification for the subject plant in order to continue startup operation while problems with the evaporator systems were being resolved. Your letter dated July 31, 1980, allowed us to bypass the evaporator system until October 29, 1980.

The evaporator system is used to recover materials for reuse in the plant or to remove substances which are undesirable according to plant operational criteria. In the case of the boric acid evaporator system, the evaporators are designed to recover boron for reuse. During the recent startup period, we encountered levels of silica above the plant criteria in the influent streams processed by the boric acid evaporators. Information obtained from another plant similar in design to Sequoyah indicates that high silica levels may continue to occur until continuous full power operation begins. As a result of the silica contaminates, the evaporator concentrate is rendered unacceptable for reuse. Consequently, the concentrate is processed through a portable vendor-supplied solidification system for disposal. Operational problems have been encountered with the present vendor solidification system, which resulted in an unapproved solidified material. Alternate solidification system contractors are now being evaluated. An operable solidification system is expected to be available by January 14, 1981. Therefore, we request a 90-day extension to the permit modification granted by your letter dated July 31, 1980.

This situation will result in the inability to operate the plant evaporators until the enclosed listed modifications are complete. As before, the only alternative we have to ceasing plant startup is to continue the processing of waste by bypassing the evaporators and discharging wastewater. The wastewater will, as before, contain small amounts of radioactivity, but all discharges will be within 10 CFR 20 limits as established in the Sequoyah technical specifications.

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POOR QUALITY PAGES

OCT 23 1980

Mr. Sanford W. Harvey

For your information, a compilation of data concerning boron releases through October 1, 1980, from the holdup tanks at Sequoyah is also enclosed. If you have any questions concerning this permit modification request, please contact Wally Carpenter at FTS 856-6450. We would appreciate a telephone call notifying us of your response to this matter as soon as possible due to the October 29, 1980, cease discharge date.

Sincerely,

Mohamed T. El-Ashry, Ph.D.
Director of Environmental Quality

Enclosures

cc (Enclosures):

Tennessee Department of Public Health
Division of Water Quality Control
621 Cordell Hull Building
Nashville, Tennessee 37219

~~Mr. Harold R. Denton, Director~~
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
7920 Norfolk Avenue
Washington, DC 20555

Mr. James P. O'Reilly, Director
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Region II - Suite 3100
101 Marietta Street
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Mr. James R. Patrick, Jr., Chief
Water Enforcement Branch
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345 Courtland Street, NE.
Atlanta, Georgia 30308

Mr. Jack McCormick, Regional Engineer
Division of Water Quality Control
Tennessee Department of Public Health
2501 Milne Street
Chattanooga, Tennessee 37406

EVAPORATOR MODIFICATIONS

In order to return the evaporator system to an operable status, TVA is working on the following evaporator modifications.

1. Reduce steam pressure to 1.25 - 1.5 (2 maximum) psig or the amount that is required to overcome gas handling system back pressure. The harder the unit is steamed, the greater the chances of carryover.
2. Recalibrate/span all evaporator level transmitters, so that 0 percent is the bottom and 100 percent is the top. The technical manual is in error.
3. Review the heat tracing for hot/cold spots, especially on the instrument sensing lines where localized boiling is causing erratic level indication.
4. Enclose concentrate pumps in heated enclosures.
5. Drill holes, grind slit, or remove excess skirt that protrudes down into the submerged tube evaporator shell at the base of the absorption tower.
6. Balance the distillate recycle valves and the distillate discharge valves so that the valve positions versus flow are the same in either mode for a given air signal from the controller.
7. Shorten the timers so that the changeover from recycle mode to distillate out mode will be smoother.
8. Perform a wiring change on the boric acid evaporator per FDR-OHI-10212. This will prevent contamination of the condenser with feedwater during the changeover from recycle to distillate out.
9. Insulate the waste evaporators the same as the boric acid evaporator.
10. Replace evaporator pumps which have proven to be operationally defective.

These modifications are now in various stages of completion and should be completed within 90 days.

BORON RELEASES FROM THE HOLDUP TANKS
SEQUOYAH NUCLEAR PLANT

Table 1

Date	Time	Boron Concentration	
		Cooling Tower Blowdown (CTB) Limit 14.0 ppm	Diffuser Pond Effluent (DPE) Limit 1.1 ppm
8/1/80	0530	0.49	0.099
8/1/80	0930	1.3	0.30
8/1/80	1425	1.2	0.36
8/1/80	2030	2.0	0.16
8/2/80	0200	1.3	0.77
8/2/80	0600	1.3	--
8/2/80	1445	1.2	0.18
8/3/80	1415 start release		
8/4/80	1340 end release		
8/3/80	1530	0.25	0.66
8/3/80	1850	0.29	1.0
8/3/80	2330	0.30	1.4
8/3/80	0330	0.39	1.5
8/3/80	0700	0.38	1.4
8/3/80	1130	0.08	0.30
8/3/80	1500	0.09	0.06
8/7/80	0200 start release		
8/7/80	1700 end release		
8/7/80	0700	< 0.01	0.03
8/7/80	1340	0.026	0.87
8/7/80	2030	0.027	0.14
8/15/80 - Boron concentration prior to release 1100 ppm; based on previous releases the DPE and CTB boron limits of <1.1 ppm and <14.0 ppm were not exceeded. No samples were taken at the cooling tower blowdown or the diffuser pond during the release of the holdup tank. The cooling tower blowdown flow was approximately 15,000 gpm and the diffuser pond flow was at least 350,000 gpm.			
8/18/80	2100 start release		
8/19/80	0800 end release		
8/19/80	0035	1.6	0.38
8/19/80	0430	1.3	0.33
9/8/80	2300 start release		
9/9/80	0915 end release		
9/9/80	0230	1.16 <14.0 ppm	0.24 <1.1 ppm
9/9/80	0630	0.23	0.03
9/9/80	1030	0.42	0.07
9/22/80	2130 start release		
9/23/80	1030 end release		
9/22/80	2130	2.21	0.08
9/23/80	0230	0.35	0.29
9/23/80	0630	0.19	0.25
9/23/80	1030	0.12	0.59
10/1/80	0300 start release		
10/1/80	0700 end release		
10/1/80	0300	0.05	0.27
10/1/80	0700	0.38	0.04