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CONTROL NO: 811

FILE: ENVIRO

FROM: TVA Chattanooga, Tn 37401 J E Gilleland		DATE OF DOC 1-20-75	DATE REC'D 1-24-75	LTR XXXX	TWX	RPT	OTHER
TO: Mr Bicker		ORIG one signed	CC	OTHER	SENT AEC PDR <u>XX</u> SENT LOCAL PDR <u>XX</u>		
CLASS	UNCLASS XXXXXXX	PROP INFO	INPUT	NO CYS REC'D 1	DOCKET NO: 50-259/260/296		

DESCRIPTION:

Ltr re our 12-23-75 ltr.....
in support of their 9-13-74 submittal
regarding tech specs change concerning
chlorination specifications.....

ENCLOSURES:

ACKNOWLEDGED
REMOVED

PLANT NAME: Browns Ferry 1, 2, & 3

FOR ACTION/INFORMATION 1-24-75 ehf

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INTERNAL DISTRIBUTION

<u>REG FILE</u> AEC PDR OGC, ROOM P-506A MUNTZING/STAFF CASE GIAMBUSSO BOYD MOORE (L) DEYOUNG (L) SKOVHOLT (L) GOLLER (L) (Ltr) P. COLLINS DENISE REG-OPR FILE & REGION (2) MORRIS STEELE	<u>TECH REVIEW</u> SCHROEDER MACCARY KNIGHT PAWLICKI SHAO STELLO HOUSTON NOVAK ROSS IPPOLITO TEDESCO (2) LONG LAINAS BENAROYA VOLLMER	<u>ENVIRO</u> DENTON GRIMES GAMMILL KASTNER BALLARD SPANGLER <u>ENVIRO</u> MULLER DICKER KNIGHTON YOUNGBLOOD REGAN PROJECT LDR HARLESS	<u>LIC ASST</u> R. DIGGS (L) H. GEARIN (L) E. GOULBOURNE (L) P. KREUTZER (E) J. LEE (L) M. MAIGRET (L) S. REED (E) M. SERVICE (L) S. SHEPPARD (L) M. SLATER (E) H. SMITH (L) S. TEETS (L) G. WILLIAMS (E) V. WILSON (L)	<u>A/T IND</u> BRAITMAN SALTZMAN ABEL <u>PLANS</u> MCDONALD CHAPMAN DUBE (Ltr) E. COUPE PETERSON D. THOMPSON (2) KLECKER EISENHUT WIGGINTON
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EXTERNAL DISTRIBUTION

-1 - LOCAL PDR <u>Athens, Al</u>	-1 - NATIONAL LABS	1 - PDR-SAN/LA/NY
-1 - TIC (ABERNATHY) (1)(2)(10)	1 - W. PENNINGTON, Rm E-201 GT	1 - BROOKHAVEN NAT LAB
-1 - NSIC (BUCHANAN)	1 - CONSULTANTS	1 - G. ULRIKSON, ORNL
1 - ASLB	NEWMARK/BLUME/AGBABIAN	1 - AGMED (RUTH GUSSMAN) Rm B-127 GT
1 - Newton Anderson		1 - R. D. MUELLER, Rm E-201 GT
-12 - ACRS HOLDING SENT To L. A. Kreutzer		

BW



19-22 22

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TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE
37401

January 20, 1975

30-259/260/296



Mr. Gordon K. Dicker, Chief
Environmental Projects Branch 2
Directorate of Licensing
U.S. Atomic Energy Commission
Washington, D.C. 20545



Dear Mr. Dicker:

This letter is in response to your letter of December 23, 1974, concerning TVA's requested change to the Browns Ferry Nuclear Plant chlorination specification.

As we stated in the bases for the proposed change submitted September 13, 1974, the change was requested to correct an oversight in the original specification. Asiatic clam infestation has been a serious problem for over a decade to TVA installations and other industries located along the Tennessee River.

Because of the delay in getting this technical specification change approved, we were unable to chlorinate at the end of the spawning season in October 1974. On December 15, 1974, load was reduced to replace a leaking heat exchanger on B recirculation pump MG set drive motor. The heat exchanger was approximately 50 percent plugged with asiatic clams. It has been necessary to institute a program to manually remove clams from raw water heat exchangers; however, this procedure would provide only temporary relief as the exchangers would be reinfested by clams carried in from elsewhere in the raw water system. This is a serious maintenance problem which could adversely affect power generation unless proper control measures can be applied.

The following responses correspond to the numbered questions in your letter.

1. As described in the environmental statement, it is necessary to chlorinate continuously during the active spawning period to control clam concentrations. Continuous chlorination during the critical periods means 24 hours a day.
2. Chlorine residual in the auxiliary raw cooling water system varied from 0.2 to a maximum of 1.0 mg/l by actual measurement during the June 1974 chlorinating period. There was no difficulty in limiting the residual to 1.0 mg/l in the raw cooling



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water system. Little or no adjustment of chlorine feed was needed to maintain a constant residual after the initial demand of the system was satisfied. The chlorine concentration in the condenser cooling water discharge was below the detectable limits of the analyses (0.1 mg/l). It was calculated, as mentioned in the environmental statement, that the normal cooling water demand of 0.5 mg/l would readily consume the diluted concentration of 0.05 mg/l (a 20:1 dilution of the raw water by condenser circulating water) and result in no chlorine residual in the condenser cooling water discharge.

3. The chlorination of the auxiliary raw cooling water system has not been practiced during closed-cycle operation of the cooling towers since construction of the towers is just being completed and they have not yet been put into service. Chlorination is performed to coincide with the beginning and end of the clam-spawning season which occurs about May and October. It is not likely the cooling towers will need to be in closed-cycle operation for thermal control during those periods; but, if the towers were in closed-cycle operation, chlorination would probably not present any problems.

At the time of preparation of the Browns Ferry final environmental statement, there was some question about whether continuous chlorination during closed-cycle operation might result in a buildup of chlorine in the condenser circulating water system after several days in this mode. Measurements made during chlorination with once-through operation, however, indicated no detectable chlorine in the condenser cooling water system which bears out the estimates made in the environmental statement. More recent studies for closed-cycle systems at other plants indicate that the demand of the closed system is sufficient to prevent a buildup of chlorine residual in the system.

4. As mentioned above, chlorination is tied to the clam-spawning season which lasts from about the middle of May through October. When the season begins, clam reproduction is very prolific for a few weeks initially, then tapers off and continues at a lesser rate throughout the season until it ceases in early fall. Optimum control of clams is achieved through continuous chlorination during the first few weeks (very active reproduction period) or near the end of May. An additional continuous chlorination period is needed in October at the end of the season to eliminate clams produced

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during the months of June through September. Normal or typical riverflow during chlorination periods is more than 20,000 ft³/s. The total dilution of the auxiliary raw cooling water system effluent at the diffusers is about 100:1. It should be reiterated, however, as pointed out in the environmental statement, that actual measurement of the reservoir chlorine demand has shown that the condenser cooling water will react with all the chlorine residual from the auxiliary cooling system and result in only chlorides being discharged at the diffusers.

5. Chlorine residual in the raw cooling water system is recorded during the chlorination periods. As stated previously, no detectable amount of chlorine has been found in the condenser cooling water discharge.

Very truly yours,

TENNESSEE VALLEY AUTHORITY



J. E. Gilleland
Assistant Manager of Power