TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

February 13, 1985

Director of Nuclear Reactor Regulation
Attention: Ms. E. Adensam, Chief
Licensing Branch No. 4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Ms. Adensam:

In the Matter of the Application of) Docket Nos. 50-390
Tennessee Valley Authority 50-391

This letter constitutes TVA's formal request for an exemption from cold no-flow, cold full-flow, and hot no-flow rod drop testing at the Watts Bar Nuclear Plant. The justification for this request is based upon the requirements for rod drop testing in Regulatory Guide 1.68, Revision 2, "Initial Test Programs for Water-Cooled Nuclear Power Plants," Watts Bar Technical Specifications (TS), and the Watts Bar Final Safety Analysis Report (FSAR).

Regulatory Guide 1.68, Revision 2, Appendix A, section 2.b, states "To the extent practical, testing should demonstrate control rod scram times. . .as required to bound conditions under which scram might be required." It is our position that hot full-flow rod drop testing fully meets these conditions of the Regulatory Guide.

Scram capability is required whenever the reactor is critical, i.e., Modes 1 and 2. Watts Bar TS 3.1.1.4 requires the reactor coolant system operating loop temperature (T_{AVG}) to be greater than or equal to 551°F in Modes 1 and 2. Specification 3.4.1.1 requires that all reactor coolant loops be in operation in Modes 1 and 2 except when exempted by Special Test Exemption 3.10.4. From these two specifications, it can be seen that hot full-flow rod drop testing would bound the conditions present for a critical reactor (Modes 1 and 2).

Scram capability is also required in the event of an uncontrolled rod cluster control assembly bank withdrawal from a subcritical condition. As discussed in the Watts Bar FSAR Section 15.2.1.2, hot zero power conditions (Mode 2) are the most conservative for this event. Thus, this transient condition is bounded by hot full-flow rod drop testing conditions.

Additional justification for exemption from hot no-flow rod drop testing is obtained from the analysis rod drop test data for Sequoyah Unit 2. The rod drop times indicate that in all cases the hot full-flow rod drop times were longer (more conservative) than the hot no-flow rod drop times.

Exemption from cold no-flow, cold full-flow, and hot no-flow rod drop testing would be economically beneficial to Watts Bar. As each rod drop test requires at least one shift to complete, a significant amount of critical path work would be eliminated from the plant startup schedule. This is allowed by the requirements of Regulatory Guide 1.68, Revision 2, which requires testing "To the extent practical. . . ." TVA does not believe it obtains a practical benefit from the performance of these rod drop tests, as the hot full-flow rod drop test bounds the conditions necessary for scram capability. Consequently, TVA

A001
1/0

believes that exemption from all but hot full-flow rod drop testing will still meet the requirements of Regulatory Guide 1.68, Revision 2. The Watts Bar TS and FSAR ensure that the conditions requiring scram are bounded by hot full-flow rod drop testing conditions. Exemption from other rod drop testing would be economically beneficial to Watts Bar by the elimination of a significant amount of critical path work.

The enclosure to this letter consists of a copy of the hot no-flow and hot full-flow rod drop unit test data for 2 of our Sequoyah Nuclear Plant. We note that the NRC Staff has previously approved a similar exemption for Union Electric's Callaway Nuclear Plant by letter dated August 7, 1982 from B. J. Youngblood to D. F. Schnell. In order to support our proposed fuel load date of March 1985, we request an expeditious review and evaluation of this request.

If you have any questions concerning this matter, please get in touch with K. Mali at FTS 858-2682.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

J. W. Hufham, Manager
Licensing and Regulations

Sworn to and subscribed before me
this 13th day of Feb. 1985.

Paulette H. White
Notary Public

My Commission Expires 8-24-88

Enclosure
cc: U.S. Nuclear Regulatory Commission (Enclosure)
Region II
Attn: Mr. J. Nelson Grace, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

ENCLOSURE

HOT NO-FLOW AND HOT FULL-FLOW
ROD DROP TEST DATA

SEQUOYAH NUCLEAR PLANT UNIT 2

Rod Drops for Hot, No Flow

RCCA BANK	RCCA Grid Location	Time From Start to Dash Pot t_1 (secs)	Time From Dash Pot to Bottom t_2 (secs)	Total Drop Time t_1+t_2 (secs)	Rod Release Time (secs)	RCS T_{avg} (°F)	RCS Flow (%)	6/5/80 RCS Press (psig)
CONTROL BANK A	H6	1.13	.46	1.59	.04	525.9	0	2235
	H10	1.12	.42	1.56	.03	526.1	0	2235
	F8	1.10	.45	1.55	.03	526.0	0	2235
	K8	1.12	.43	1.55	.04	526.0	0	2235
CONTROL BANK B	F2	1.11	.44	1.55	.03	548.3	0	2230
	B10	1.13	.43	1.56	.05	547.0	0	2235
	K14	1.11	.42	1.53	.04	546.1	0	2235
	P6	1.12	.44	1.56	.04	545.0	0	2235
	B6	1.12	.44	1.56	.04	543.6	0	2235
	F14	1.13	.42	1.55	.04	543.2	0	2235
	P10	1.08	.44	1.52	.04	542.5	0	2235
	K2	1.12	.41	1.53	.04	542.0	0	2235
CONTROL BANK C	H2	1.13	.44	1.57	.03	525.8	0	2240
	B8	1.12	.42	1.54	.04	526.0	0	2240
	H14	1.12	.43	1.55	.04	526.0	0	2240
	P8	1.13	.43	1.56	.04	526.0	0	2240
	F6	1.12	.43	1.55	.04	526.0	0	2240
	F10	1.12	.43	1.65	.03	526.0	0	2235
	K10	1.12	.41	1.53	.03	526.0	0	2235
	K6	1.30	.275	1.575	.04	526.1	0	2230
CONTROL BANK D	D4	1.12	.42	1.54	.03	536.4	0	2235
	D12	1.12	.45	1.57	.04	536.5	0	2235
	M12	1.13	.43	1.56	.05	537.2	0	2235
	M4	1.12	.44	1.56	.05	537.7	0	2235
	H4	1.16	.41	1.57	.08	538.3	0	2235
	D8	1.14	.44	1.58	.06	539.5	0	2235
	H12	1.13	.45	1.58	.04	540.7	0	2235
	M8	1.12	.41	1.53	.03	542.8	0	2235
	H8	1.12	.42	1.54	.04	544.9	0	2235

Rod Drops for Hot, No Flo

RCCA BANK	RCCA GRID LOCATION	TIME FROM START TO DASH POT t_1 (secs)	TIME FROM DASH POT TO BOTTOM t_2 (secs)	TOTAL DROP TIME $t_1 + t_2$ (secs)	ROD RELEASE TIME (secs)	RCS T_{avg} (°F)	RCS FLOW (%)	RCS PRESS (psig)
SHUTDOWN BANK A	D2	1.14	.42	1.56	.03	549.2	0	2235
	B12	1.12	.46	1.58	.04	538.4	0	2235
	M14	1.12	.42	1.54	.05	545.0	0	2235
	P4	1.13	.45	1.58	.05	544.3	0	2235
	B4	1.13	.43	1.56	.05	543.3	0	2235
	D14	1.1	.43	1.54	.04	542.9	0	2235
	P12	1.11	.44	1.55	.03	542.0	0	2235
	M2	1.15	.42	1.57	.07	514.4	0	2235
SHUTDOWN BANK B	G3	1.12	.43	1.55	.03	530.8	0	2235
	C9	1.13	.43	1.56	.05	528.1	0	2235
	J13	1.11	.46	1.57	.03	526.7	0	2235
	N7	1.13	.45	1.58	.04	525.8	0	2235
	C7	1.13	.42	1.55	.05	525.8	0	2235
	G13	1.11	.41	1.52	.03	525.8	0	2235
	N9	1.12	.43	1.55	.04	525.8	0	2235
	J3							
SHUTDOWN BANK C	E3	1.13	.44	1.57	.03	525.8	0	2235
	C11	1.12	.45	1.57	.04	526.0	0	2235
	L13	1.12	.43	1.55	.03	526.0	0	2235
	N5	1.13	.42	1.55	.03	545.0	0	2235
SHUTDOWN BANK D	C5	1.12	.45	1.57	.03	541.3	0	2235
	E13	1.11	.44	1.55	.03	525.8	0	2235
	N11	1.12	.44	1.56	.03	539.6	0	2235
	L3	1.14	.44	1.58	.05	535.8	0	2235

Table 6.1.3-4
Page 1 of 3

Rod Drops for Hot, Full-Flow

RCCA BANK	RCCA Grid Location	Time From Start to Dash Pot t_1 (secs)	Time From Dash Pot to Bottom t_2 (secs)	Total Drop Time t_1+t_2 (secs)	Rod Release Time (secs)	RCS Tavg (°F)	RCS Flow (%)	URCS Press (psig)
CONTROL BANK A	H6	1.24	.50	1.74	.04	547.5	100%	2235
	H10	1.25	.50	1.75	.04	547.7	100%	2235
	F8	1.25	.49	1.74	.03	547.5	100%	2235
	K8	1.26	.48	1.74	.04	547.5	100%	2235
CONTROL BANK B	F2	1.30	.53	1.83	.03	547.4	100%	2235
	B10	1.24	.48	1.72	.03	547.5	100%	2235
	K14	1.31	.51	1.82	.03	547.2	100%	2235
	P6	1.22	.50	1.72	.03	547.3	100%	2235
	B6	1.23	.49	1.72	.04	547.3	100%	2235
	F14	1.31	.51	1.82	.03	547.3	100%	2235
	P10	1.24	.48	1.72	.05	547.4	100%	2235
	K2	1.30	.49	1.79	.04	547.7	100%	2235
CONTROL BANK C	H2	1.32	.51	1.83	.04	547.4	100%	2235
	B8	1.27	.48	1.75	.04	547.5	100%	2235
	H14	1.30	.50	1.80	.04	547.4	100%	2235
	P8	1.29	.49	1.78	.07	547.7	100%	2235
	F6	1.26	.50	1.76	.04	547.7	100%	2235
	F10	1.25	.48	1.73	.04	548.1	100%	2235
	K10	1.25	.48	1.73	.04	548.2	100%	2235
	K6	1.27	.51	1.78	.04	548.1	100	2235
CONTROL BANK D	D4	1.25	.47	1.72	.02	548.3	100%	2235
	D12	1.25	.49	1.74	.04	548.3	100%	2235
	M12	1.25	.49	1.74	.03	548.3	100%	2235
	M4	1.23	.51	1.74	.03	548.1	100%	2235
	H4	1.24	.50	1.74	.03	548.0	100%	2235
	D8	1.23	.52	1.75	.03	547.9	100%	2235
	H12	1.22	.52	1.74	.03	547.7	100%	2235
	M8	1.26	.47	1.73	.03	547.1	100%	2235
	H8	1.23	.49	1.72	.03	548.6	100%	2235

Rod Drops for Hot, Full Flow

RCCA BANK	RCCA GRID LOCATION	TIME FROM START TO DASH POT t_1 (secs)	TIME FROM DASH POT TO BOTTOM t_2 (secs)	TOTAL DROP TIME $t_1 + t_2$ (secs)	(.15) NRA ROD 9-1-8 RELEASE TIME (secs)	RO RCS Uni T_{avg} (°F)	RCS FLOW (%)	RCS PRESS (psig
SHUTDOWN BANK A	D2	1.38	.54	1.92	.03	547.7	100%	2235
	B12	1.23	.53	1.76	.03	545.2	100%	2235
	M14	1.36	.51	1.87	.04	545.2	100%	2235
	P4	1.27	.51	1.78	.06	545.6	100%	2230
	B4	1.26	.51	1.77	.04	545.9	100%	2240
	D14	1.37	.51	1.88	.04	547.9	100%	2235
	P12	1.26	.49	1.75	.04	547.3	100%	2235
	M2	1.34	.51	1.85	.05	547.4	100%	2235
SHUTDOWN BANK B	G3	1.29	.50	1.79	.04	547.3	100%	2235
	C9	1.25	.47	1.72	.05	547.3	100%	2235
	J13	1.27	.52	1.79	.05	547.5	100%	2235
	N7	1.25	.49	1.74	.04	547.5	100%	2235
	C7	1.24	.48	1.72	.03	547.7	100%	2235
	G13	1.25	.48	1.73	.03	547.9	100%	2235
	N9	1.23	.48	1.71	.03	648.0	100%	2235
	J3							
SHUTDOWN BANK C	E3	1.28	.49	1.77	.04	547.9	100%	2235
	C11	1.23	.51	1.74	.04	547.9	100%	2235
	L13	1.28	.50	1.78	.05	547.7	100%	2235
	N5	1.25	.47	1.72	.04	547.7	100%	2235
SHUTDOWN BANK D	C5	1.24	.51	1.73	.03	547.8	100%	2235
	E13	1.28	.50	1.78	.03	547.7	100%	2233
	N11	1.27	.50	1.77	.05	547.5	100%	2235
	L3	1.30	.50	1.80	.05	547.5	100%	2235