APPENDIX 2.3-B
Clinch River Breeder Reactor Project Packer Test Results

Table 2.3-B (Sheet 1 of 6)
Clinch River Breeder Reactor Project Investigation Packer Test Results

Boring	Date	Test Section (ft bgs)	Test Length (ft)	C_p (ft^2/ gpm-yr)	Flow Q (gpm)	Total Head H (ft)	Hydraulic Conductivity K[(a)] (ft/yr)	Hydraulic Conductivity K[(b)] (ft/d)	Hydraulic Conductivity K[(b)] (cm/s)	Geologic Horizon[(c)]	Geologic Strata[(d)]
B-26	10/2/1973	24 - 298	274	320	8.9	68.6	42	0.12	4.06E-05	U.A.S.S.	Chickamauga Group
	9/28/1973	30 - 298	268	325	10.1	64.7	51	0.14	4.93E-05	U.A.S.S.	Chickamauga Group
	9/28/1973	50 - 298	248	350	8.4	64.7	45	0.12	4.35E-05	U.A.S.S.	Chickamauga Group
	9/29/1973	70 - 298	228	380	8.6	99.4	33	0.09	3.19E-05	U.A.S.S.	Chickamauga Group
	---	90 - 298	208	420	4.9	61.7	33	0.09	3.19E-05	U.A.S.S.	Chickamauga Group
	10/2/1973	110 - 298	188	450	5.5	67.1	37	0.10	3.57E-05	U.A.S.S.	Chickamauga Group
	10/2/1973	150 - 298	148	540	7.2	67.1	58	0.16	5.60E-05	A.L.S.	Chickamauga Group
	10/2/1973	220 - 298	78	920	6.9	67.1	95	0.26	9.18E-05	L.A.S.S.	Chickamauga Group
B-27	11/8/1973	35 - 245	210	410	3.5	47.6	30	0.08	2.90E-05	A.L.S.	Chickamauga Group
	11/8/1973	60 - 245	185	460	2.8	47.6	27	0.07	2.61E-05	A.L.S.	Chickamauga Group
	11/8/1973	80 - 245	165	500	2.3	70.7	16	0.04	1.55E-05	A.L.S.	Chickamauga Group
	11/8/1973	100 - 245	145	550	1.1	70.7	9	0.02	8.69E-06	A.L.S.	Chickamauga Group
	11/8/1973	120 - 245	125	620	0.8	70.7	7	0.02	6.76E-06	L.A.S.S.	Chickamauga Group
B-28	11/13/1973	16 - 25	9	5300	8.7	44.6	1040[(e)]	2.85	1.00E-03	U.A.S.S.	Chickamauga Group
	11/13/1973	19 - 28	9	5300	8.8	41.6	980[(e)]	2.68	9.47E-04	U.A.S.S.	Chickamauga Group
	11/13/1973	27 - 36	9	5300	3.1	55.6	298[(e)]	0.82	2.88E-04	U.A.S.S.	Chickamauga Group
	11/13/1973	50 - 271	221	390	0.47	65.1	2.8	0.01	2.70E-06	U.A.S.S.	Chickamauga Group
	11/13/1973	90 - 271	181	470	0.96	65.1	6.9	0.02	6.66E-06	U.A.S.S.	Chickamauga Group
B-29	11/12/1973	30 - 335	305	290	2.5	61.1	11.9	0.03	1.15E-05	U.A.S.S.	Chickamauga Group
	11/12/1973	40 - 335	295	300	0.21	84.2	0.75	0.002	7.24E-07	U.A.S.S.	Chickamauga Group
	11/12/1973	50 - 335	285	305	0.76	107.3	2.2	0.01	2.12E-06	U.A.S.S.	Chickamauga Group
	11/12/1973	80 - 335	255	340	4.45	130.4	11.6	0.03	1.12E-05	U.A.S.S.	Chickamauga Group

Table 2.3-B (Sheet 2 of 6)
Clinch River Breeder Reactor Project Investigation Packer Test Results

Boring	Date	Test Section (ft bgs)	Test Length (ft)	C_p (ft^2/gpm-yr)	Flow Q (gpm)	Total Head H (ft)	Hydraulic Conductivity K[(a)] (ft/yr)	Hydraulic Conductivity K[(b)] (ft/d)	Hydraulic Conductivity K[(b)] (cm/s)	Geologic Horizon[(c)]	Geologic Strata[(d)]
B-30	12/4/1973	11 - 20	9	5300	11.3	39.6	1510[(e)]	4.14	1.46E-03	U.A.S.S.	Chickamauga Group
	12/5/1973	20 - 253.5	233.5	370	14.8	68.1	80	0.22	7.73E-05	U.A.S.S.	Chickamauga Group
	12/5/1973	65 - 253.5	188.5	450	9.9	68.1	65	0.18	6.28E-05	U.A.S.S.	Chickamauga Group
	12/5/1973	88 - 253.5	165.5	500	2.2	91.2	12	0.03	1.16E-05	U.A.S.S.	Chickamauga Group
	12/5/1973	144 - 253.5	139.5	560	0.5	91.2	3.1	0.01	2.99E-06	A.L.S.	Chickamauga Group
B-31	11/1/1973	82 - 91	9	5300	12.5	89.5	740	2.03	7.15E-04	A.L.S.	Chickamauga Group
	11/1/1973	92 - 101	9	5300	12	89.5	711	1.95	6.87E-04	A.L.S.	Chickamauga Group
	11/1/1973	101 - 110	9	5300	12	89.5	711	1.95	6.87E-04	A.L.S.	Chickamauga Group
	10/21/1973	110 - 252	142	560	1.8	89.5	112[(e)]	0.31	1.08E-04	L.A.S.S.	Chickamauga Group
B-34	10/30/1973	45.5 - 54.5	9	5300	12.2	73.1	885	2.42	8.55E-04	A.L.S.	Chickamauga Group
	10/30/1973	54.5 - 63.5	9	5300	12.1	82.1	781	2.14	7.54E-04	A.L.S.	Chickamauga Group
	10/30/1973	56 - 65	9	5300	11.5	83.1	733	2.01	7.08E-04	A.L.S.	Chickamauga Group
	10/29/1973	92.5 - 248	155.5	520	6	84.1	37	0.10	3.57E-05	A.L.S./L.A.S.S.	Chickamauga Group
	10/29/1973	105 - 248	143	550	2	84.1	13	0.04	1.26E-05	L.A.S.S.	Chickamauga Group
	10/29/1973	130 - 248	118	660	1.8	84.1	14	0.04	1.35E-05	L.A.S.S.	Chickamauga Group
	10/29/1973	165 - 248	83	880	1.6	84.1	17	0.05	1.64E-05	L.A.S.S.	Chickamauga Group
	10/29/1973	172 - 248	76	950	4.5	84.1	51	0.14	4.93E-05	L.A.S.S.	Chickamauga Group
B-35	10/27/1973	51.5 - 284	232.5	375	6.2	34.6	67	0.18	6.47E-05	A.L.S./L.A.S.S.	Chickamauga Group
	10/27/1973	95 - 284	189	450	4.9	41.6	53	0.15	5.12E-05	L.A.S.S.	Chickamauga Group
	10/26/1973	130 - 284	154	525	4.8	51.6	49	0.13	4.73E-05	L.A.S.S.	Chickamauga Group
	10/27/1973	169 - 284	115	670	3.3	51.6	42[(e)]	0.12	4.06E-05	L.A.S.S.	Chickamauga Group
	10/27/1973	218 - 284	66	1080	2.7	51.6	57	0.16	5.51E-05	L.A.S.S.	Chickamauga Group
	10/27/1973	238 - 284	46	1450	2	74.7	39	0.11	3.77E-05	L.A.S.S./Knox	Chickamauga Group/Knox Group

Table 2.3-B (Sheet 3 of 6)
Clinch River Breeder Reactor Project Investigation Packer Test Results

Boring	Date	Test Section (ft bgs)	Test Length (ft)	C_p (ft^2/gpm-yr)	Flow Q (gpm)	Total Head H (ft)	Hydraulic Conductivity K[(a)] (ft/yr)	Hydraulic Conductivity K[(b)] (ft/d)	Hydraulic Conductivity K[(b)] (cm/s)	Geologic Horizon[(c)]	Geologic Strata[(d)]
B-36	11/1/1973	36.5 - 274.5	238	365	3.9	123.2	12	0.03	1.16E-05	L.A.S.S.	Chickamauga Group
	11/1/1973	50 - 274.5	244.5	385	4.4	123.2	14	0.04	1.35E-05	L.A.S.S.	Chickamauga Group
	11/1/1973	70 - 274.5	204.5	420	3.1	123.2	11	0.03	1.06E-05	L.A.S.S.	Chickamauga Group
	11/1/1973	90 - 274.5	184.5	460	2.6	123.2	10	0.03	9.66E-06	L.A.S.S.	Chickamauga Group
	11/1/1973	110 - 274.5	164.5	500	3	123.2	12	0.03	1.16E-05	L.A.S.S.	Chickamauga Group
B-38	10/4/1973	41 - 47.5	--	--	0	--	0	0	0	B	Chickamauga Group
	10/4/1973	44.5 - 51	--	--	0	--	0	0	0	B	Chickamauga Group
	10/3/1973	70 - 380.9	--	--	0	--	0	0	0	B	Chickamauga Group
	10/3/1973	100 - 380.9	--	--	0	--	0	0	0	B	Chickamauga Group
	10/3/1973	140 - 380.9	--	--	0	--	0	0	0	U.A.S.S.	Chickamauga Group
	10/3/1973	170 - 380.9	--	--	0	--	0	0	0	U.A.S.S.	Chickamauga Group
	10/3/1973	190 - 380.9	--	--	0	--	0	0	0	U.A.S.S.	Chickamauga Group
B-39	11/9/1973	20 - 29	9	5300	4	87.8	242[(e)]	0.66	2.34E-04	U.A.S.S.	Chickamauga Group
	11/8/1973	28.5 - 329	300.5	290	7.5	64.7	33.5[(e)]	0.09	3.24E-05	U.A.S.S.	Chickamauga Group
	11/8/1973	50 - 329	279	310	5.5	64.7	26.4	0.07	2.55E-05	U.A.S.S.	Chickamauga Group
	11/8/1973	65 - 329	264	330	5.1	64.7	26.0	0.07	2.51E-05	U.A.S.S.	Chickamauga Group
	11/8/1973[(f)]	85 - 329	244	360	1.03	87.6	4.2	0.01	4.06E-06	U.A.S.S.	Chickamauga Group
	11/8/1973[(f)]	85 - 329	244	360	2.32	110.9	7.5	0.02	7.24E-06	U.A.S.S.	Chickamauga Group
B-40	9/25/1973	30 - 39	9	5300	9.8	59.6	871	2.39	8.41E-04	A.L.S.	Chickamauga Group
	9/25/1973	36 - 45	9	5300	5.8	65.6	471[(e)]	1.29	4.55E-04	A.L.S.	Chickamauga Group
	9/25/1973	46 - 55	9	5300	9.1	75.6	637[(e)]	1.75	6.15E-04	A.L.S.	Chickamauga Group
	9/25/1973	57.5 - 66.5	9	5300	2.1	87.1	128	0.35	1.24E-04	A.L.S.	Chickamauga Group
	9/25/1973	68.5 - 77.5	9	5300	9.5	106.9	470[(e)]	1.29	4.54E-04	A.L.S.	Chickamauga Group
	9/24/1973	81 - 90	9	5300	2	125.2	85	0.23	8.21E-05	A.L.S.	Chickamauga Group

Table 2.3-B (Sheet 4 of 6)
Clinch River Breeder Reactor Project Investigation Packer Test Results

Boring	Date	Test Section (ft bgs)	Test Length (ft)	C_p (ft^2/gpm-yr)	Flow Q (gpm)	Total Head H (ft)	Hydraulic Conductivity K[a] (ft/yr)	Hydraulic Conductivity K[b] (ft/d)	Hydraulic Conductivity K[b] (cm/s)	Geologic Horizon[c]	Geologic Strata[d]
B-40	9/24/1973	91 - 100	9	5300	0.5	102.1	26	0.07	2.51E-05	A.L.S.	Chickamauga Group
	9/24/1973	101 - 110	9	5300	2.1	105.1	108[e]	0.30	1.04E-04	A.L.S.	Chickamauga Group
	9/23/1973	110 - 314	204	420	5.5	124	19	0.05	1.84E-05	L.A.S.S.	Chickamauga Group
	9/23/1973	140 - 314	174	480	6.1	101.6	29	0.08	2.80E-05	L.A.S.S.	Chickamauga Group
	9/23/1973	184 - 314	130	600	6.1	101.1	36	0.10	3.48E-05	L.A.S.S.	Chickamauga Group
	9/23/1973	220 - 314	94	800	5.2	106.1	39	0.11	3.77E-05	L.A.S.S.	Chickamauga Group
	9/23/1973	259.5 - 314	54.5	1250	3.2	106.1	38	0.10	3.67E-05	Knox	Knox Group
B-42	11/5/1973	60 - 301.5	241.5	360	2.92	101.1	10	0.03	9.66E-06	B	Chickamauga Group
	11/5/1973	85 - 301.5	216.5	400	0	--	0	0	0	B	Chickamauga Group
	11/5/1973	140 - 301.5	161.5	500	1.22	101.1	6	0.02	5.80E-06	B/U.A.S.S.	Chickamauga Group
	11/5/1973	150 - 301.5	151.5	530	1.54	101.1	8	0.02	7.73E-06	U.A.S.S.	Chickamauga Group
B-46	11/6/1973	30 - 78.9	48.9	1380	6.24	77.9	111	0.30	1.07E-04	U.A.S.S.	Chickamauga Group
	11/6/1973	65 - 78.9	13.9	3900	0.15	101	6	0.02	5.80E-06	U.A.S.S.	Chickamauga Group
B-47	12/4/1973	83 - 92	9	5300	6	83.7	380	1.04	3.67E-04	A.L.S.	Chickamauga Group
	12/3/1973	89 - 98	9	5300	4.8	83.7	304	0.83	2.94E-04	A.L.S.	Chickamauga Group
	12/3/1973	98 - 107	9	5300	11.0	83.7	697	1.91	6.73E-04	A.L.S.	Chickamauga Group
	11/30/1973	108 - 370	262	340	3.7	83.7	15	0.04	1.45E-05	L.A.S.S.	Chickamauga Group
	11/30/1973	115 - 370	255	340	3.1	106.8	10	0.03	9.66E-06	L.A.S.S.	Chickamauga Group
	11/30/1973	140 - 370	230	380	1.1	106.8	4	0.01	3.86E-06	L.A.S.S.	Chickamauga Group
	11/30/1973	150 - 370	220	400	1.2	106.8	4	0.01	3.86E-06	L.A.S.S.	Chickamauga Group
B-48	9/20/1973	33 - 114	81	900	2.5	52.4	43	0.12	4.15E-05	B	Chickamauga Group
	9/20/1973	43 - 114	71	1000	1.4	53.1	27[e]	0.07	2.61E-05	B	Chickamauga Group
	--	56 - 114	58	1200	0.7	60.9	14	0.04	1.35E-05	B	Chickamauga Group
	9/17/1973	85 - 114	29	2000	0.5	68.6	15	0.04	1.45E-05	U.A.S.S.	Chickamauga Group

Table 2.3-B (Sheet 5 of 6)
Clinch River Breeder Reactor Project Investigation Packer Test Results

Boring	Date	Test Section (ft bgs)	Test Length (ft)	C_p (ft^2/gpm-yr)	Flow Q (gpm)	Total Head H (ft)	Hydraulic Conductivity K[(a)] (ft/yr)	Hydraulic Conductivity K[(b)] (ft/d)	Hydraulic Conductivity K[(b)] (cm/s)	Geologic Horizon[(c)]	Geologic Strata[(d)]
B-49	11/7/1973	57.5 - 144	86.5	860	10.8	94.9	98	0.27	9.47E-05	B	Chickamauga Group
	11/7/1973	70 - 144	74	980	2.2	118	18	0.05	1.74E-05	B	Chickamauga Group
	11/7/1973	85 - 144	59	--	0	--	0	0	0	B	Chickamauga Group
	11/6/1973	110 - 144	34	--	0	--	0	0	0	U.A.S.S.	Chickamauga Group
B-50	11/2/1973	78 - 241	163	500	2.7	91.1	15	0.04	1.45E-05	B	Chickamauga Group
	11/2/1973	90 - 241	151	535	2.6	91.1	15	0.04	1.45E-05	B	Chickamauga Group
	11/2/1973	100 - 241	141	560	2.6	91.1	16	0.04	1.55E-05	B	Chickamauga Group
	11/2/1973	201 - 241	40	1650	1.4	91.1	25	0.07	2.41E-05	U.A.S.S.	Chickamauga Group
B-51	11/20/1973	31 - 40	9	5300	1	60.6	91[(e)]	0.25	8.79E-05	A.L.S.	Chickamauga Group
	11/20/1973	36.5 - 45.5	9	5300	0.46	66.1	37	0.10	3.57E-05	A.L.S.	Chickamauga Group
	11/20/1973	45.5 - 54.5	9	5300	0.11	75.1	8	0.02	7.73E-06	A.L.S.	Chickamauga Group
	11/20/1973	34.5 - 63.5	9	5300	17.2	82.1	1110	3.04	1.07E-03	A.L.S.	Chickamauga Group
	11/20/1973	83 - 338.5	255.5	340	2.67	105.2	9	0.02	8.69E-06	A.L.S.	Chickamauga Group
	11/20/1973	100 - 338.5	238.5	365	1.86	105.2	6	0.02	5.80E-06	A.L.S./L.A.S.S.	Chickamauga Group
B-53	11/29/1973	53 - 200	147	540	0.15	131.7	0.6	0.002	5.80E-07	Knox	Knox Group
	11/29/1973	90 - 200	110	700	0.15	108.6	1	0.003	9.66E-07	Knox	Knox Group
B-66	11/29/1973	37 - 101	64	1100	0.12	92.9	1.4	0.004	1.35E-06	Knox	Knox Group
	11/29/1973	50 - 101	51	1350	0.08	92.9	1.2	0.003	1.16E-06	Knox	Knox Group
	11/29/1973	73 - 101	28	2200	0.12	92.9	2.8	0.01	2.70E-06	Knox	Knox Group
B-67	11/17/1973	24 - 33	9	5300	0.08	76.3	5.6	0.02	5.41E-06	Knox	Knox Group
	11/17/1973	33 - 42	9	5300	0	--	0	0	0	Knox	Knox Group
	11/17/1973	42 - 51	9	5300	0	---	0	0	0	Knox	Knox Group
	11/17/1973	51 - 60	9	5300	9.1	59.7	807[(e)]	2.21	7.79E-04	Knox	Knox Group

Table 2.3-B (Sheet 6 of 6)
Clinch River Breeder Reactor Project Investigation Packer Test Results

Boring	Date	Test Section (ft bgs)	Test Length (ft)	C_p (ft^2/gpm-yr)	Flow Q (gpm)	Total Head H (ft)	Hydraulic Conductivity K[(a)] (ft/yr)	Hydraulic Conductivity K[(b)] (ft/d)	Hydraulic Conductivity K[(b)] (cm/s)	Geologic Horizon[(c)]	Geologic Strata[(d)]
B-67	11/16/1973	40 - 100	60	1180	9.2	59.7	182	0.50	1.76E-04	Knox	Knox Group
	11/15/1973	61 - 100	39	--	0	--	0	0	0	Knox	Knox Group

Notes:

(a) $K = C_p \frac{Q}{H}$

(b) Hydraulic conductivity in ft/yr converted to ft/d by dividing by 365 and converted to cm/s by multiplying by 9.6590×10^{-7}

(c) Geologic Horizon from Table 24-17 of Reference
U.A.S.S. = Upper Unit A Siltstone
A.L.S. = Unit A Limestone
L.A.S.S. = Lower Unit A Siltstone
B = Unit B Limestone
Knox = Knox Group

(d) Geologic Strata nomenclature used in current investigation

(e) Yellow highlighted values indicate discrepancy between values reported on Table 24-17 of Reference and values calculated using the formula shown above

(f) Orange highlighted values are duplicate tests- the maximum value is used in hydraulic conductivity analysis

Reference: Reference 2.3-B-1. Project Management Corporation, "Clinch River Breeder Reactor Project, Preliminary Safety Analysis Report," Volume 2, Amendment 68, May, 1982.