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

March 5, 1982

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US NUCLEAR REGULATORY COMMISSION
DOCUMENT MANAGEMENT BR
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Director of Nuclear Reactor Regulation
Attention: Ms. E. Adensam, Chief
Licensing Branch No. 4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Ms. Adensam:

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

Enclosed is a revised response to NRC question 362.29 concerning differential settlement at Watts Bar Nuclear Plant. This information pertains to open item 8 of the draft Safety Evaluation Report.

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Regulation and Safety

Sworn to and subscribed before me
this 5th day of March 1982
Bryant M. Lamery
Notary Public
My Commission Expires 4/4/82

Enclosure
cc: U.S. Nuclear Regulatory Commission
Region II
Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303

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ENCLOSURE
WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
SETTLEMENT MONITORING

Question 362.29 (2.5.4)

The measured settlement data given in Figures Q362.19-1 through Q362.19-5 of the FSAR is provided only up to June 1978. Provide time versus settlement plots of up-to-date settlement data obtained for all category I structures where settlements are being monitored. Tabulate values of the measured maximum differential settlements and show comparisons of the measured data with anticipated settlements assumed in the analysis of these structures and their appurtenances, and evaluate the impact of any differences between the measured and anticipated settlements on the design and construction of these structures and appurtenances. Staff requires that the settlement of safety related structures and appurtenances be monitored for a period of at least five years after the issuance of the operating license and the impact of observed settlement, if any, on the design limits of category I structures be evaluated periodically.

Response

A settlement monitoring program began in October 1973, to record structural movements during construction. The location of the settlement stations are provided in Figures 3.8.4-66 and -67. In general, the monuments were read monthly until 1978, when the frequency was reduced to quarterly for selected monuments and terminated for the rest. The recorded settlement data are given in Tables Q362.29-3 through -6. The differential settlement readings between rock supported structures are provided in Table Q362.29-2. During the course of construction several settlement stations became inaccessible (and are so labeled) either because they were physically buried or were impossible or extremely difficult to reach. All accessible settlement stations were last read during December 1981 and January 1982 when three additional surveys were run. During each of these surveys all accessible stations were read except for locations SS-4, -5, -6, -7, -13, -14, -15, and -16. These eight were read once in January 1982 and again in a special survey during February 1982. All eight are in highly congested areas and were previously labeled as inaccessible. These stations were only accessible using specially modified level tripods and survey rods. Six of these eight stations are in the annulus.

During construction, several monuments were relocated for various reasons. Monuments 1 and 2 had associated relocated monuments 1A, 1B, and 2A. These and their corresponding old monuments were all read for a sufficiently long period that they constitute essentially separate data. The diesel generator building monuments were relocated from the inside to the outside of the building in April 1980. In excess of 7 years data are available for the interior monuments. Other monuments were relocated several months after original installation and were subsequently read for periods of more than 7 years. These are not identified by a letter, but the relocation dates are given in the attached table and the monuments are identified as reset. Their settlements prior to reset are small and are not carried forward; in effect truncating several months of earlier records. This is done for 2 reasons. First, the total duration of record (over 7 years) is large compared to the several months truncated. Second, the magnitudes of

the "measured settlements" at the time of reset are small and generally less than the apparent random fluctuations of the data. Absolute magnitude of error allowed in typical surveys of these monuments is on the order of from 0.01 to 0.06 feet depending on the monument and length of run. However, the actual error of closure for the surveys was generally less than 0.01 feet.

All rock supported category I structures were designed to meet the settlement requirements stated in the FSAR (section 2.5.4.2.2.9.2) for total settlement of 1 to 2 inches and differential settlements of 1 inch. The settlement of rock supported structures was not deemed to control the design of the building. Table Q362.29-1 provides the design settlement (total and differential), the maximum recorded settlement, and the current settlement measurement for each rock supported structure. The maximum recorded settlement shown in table Q362.29-1 is for a single monthly reading with both preceding and following readings indicating smaller settlement. The current settlement reading is the average of the three readings from December 1981 to January 1982 unless otherwise noted.

The updated time versus settlement plots are provided in Figures Q362.29-1 and -2 for the auxiliary-control building, the diesel generator building, and the intake pumping station.

The time versus settlement plots of the unit 1 and 2 reactor buildings of Figures Q362.19-1 and -2 are not updated. The survey data of January and February 1982 were not used for the plots of the units 1 and 2 reactor building because the surveyors experienced considerable difficulty in reaching the settlement stations in the annulus. However, the current data is presented in the table. For the unit 1 reactor building, the maximum and minimum settlement stations were inaccessible after March 1978, and October 1977, respectively. The unit 2 reactor building settlement monitoring was discontinued in June 1978, because the settlement stations became inaccessible.

The measured settlements have not approached the design criteria of 1-inch of differential settlement between buildings or 1- to 2-inches of total settlement with respect to the surrounding area. In general the maximum settlement of rock-supported structures had occurred by 1977, and thereafter the settlements have been stable. The maximum settlement of 0.056 feet was recorded April 1980. The maximum differential settlement of 0.038 feet between the reactor building unit 1 and the auxiliary building was recorded August 3, 1977. The measured differential settlement of .060 feet, August 1977, between settlement stations (SS) 18 and 23 was judged to be a measurement error for three reasons. First the differential settlements one month before and after were recorded to be .018 feet and 0.024 feet respectively, second the latest reading between SS18 and SS23 was recorded to be .023 feet of differential settlement, and third the maximum settlement recorded a year before and after the error was .036 feet between SS18 and SS23.

The settlement monitoring of the soil supported category I structures include the diesel generator building and the waste packaging area. Table Q362.29-1 provides the design settlement (total and differential), the maximum recorded settlement, and the current settlement measurement for these structures. The diesel generator building is founded on compacted 1032 crushed stone (an engineered granular fill) underlain by basal gravel and bedrock. This foundation was deemed to have negligible settlement or differential settlement. The diesel generator building as laid out and designed is not controlled by settlement. The connections were designed to allow for a differential settlement of 3 inches for the ERCW piping, 3/4 inches for OZ expansion/deflection fitting (on electrical conduits), and 1 inch between the cable trays and rigid conduits in conduit banks (electrical conduits).

The design of the waste packaging area was similar to that of the diesel generator building. The settlement of the building was taken into account when designing the connections between the buildings. The waste packaging area does not have connecting ERCW pipes, other category I pipes, or category I electrical conduits. The waste packaging area was designed for 1-inch of differential settlement between the auxiliary building and itself.

We have fulfilled our commitment of monitoring rock supported structures since the structure loading is essentially complete on all rock supported buildings, and all the total and differential settlements are well within the design criteria allowables. Settlement readings will no longer be reported for rock supported structures.

Based on our evaluation, the total and differential settlements are not significant; there are no adverse trends being exhibited; there has been no adverse structural performance; and there are no anticipated structural problems from the settlement of category I structures.

However, the design 1-inch differential settlement between adjacent rock-supported structures was not incorporated into the design of piping and electrical components passing between adjacent rock-supported structures. The affected items pass between the unit 1 reactor building and auxiliary building and between the unit 2 reactor building and the auxiliary building. TVA is presently evaluating this problem and will provide the design differential settlements for piping and electrical components to the NRC by April 1, 1982 in the form of revised FSAR material.

TABLE Q362.29-1

SETTLEMENT MONITORING PROGRAM OF CATEGORY I STRUCTURES

Structure	Foundation Material	Design Total Settlement	Design Differential Settlement	Maximum Measured Total Settlement (inches)	Date	Updated Measured Total Settlement (inches)	Date	Settlement Station
Unit 1 R.B.	Rock	1 to 2 inches	1 inch	0.60	8-03-77	0.55(1)	2-12-82	SS-13
Unit 2 R.B.	Rock	1 to 2 inches	1 inch	0.37	8-03-77	0.35(1)	2-12-82	SS-7
Aux. & Control Building	Rock	1 to 2 inches	1 inch	0.67	4-29-80	0.55(2)	2-12-82	SS-10
Intake Pumping Station	Rock	1 to 2 inches	1 inch	0.38	2-2-79	0.13(3)	4-23-80	SS-3A
Diesel Generator Building	Compacted Granular Backfill on In Situ Gravel on Rock	NEGLIGIBLE	NEGLIGIBLE	0.59	4-10-81	0.53(4&5)	1-29-82	SS-1
Waste Packaging Area	Compacted Granular Backfill on Rock	NEGLIGIBLE	NEGLIGIBLE	0.52	4-28-80	0.48(4)	1-27-82	SS-45

(1) Average of two readings from January 27, 1982, and February 12, 1982; difficult conditions.

(2) Average of four readings from December 22, 1981; January 18, 1982; January 27, 1982; and February 12, 1982.

(3) Single reading on April 23, 1980.

(4) Average of three readings from December 22, 1981; January 18, 1982; and January 27, 1982.

(5) Corrected to reset value on April 10, 1981.

TABLE 362.29-2

DIFFERENTIAL SETTLEMENT BETWEEN ROCK SUPPORTED STRUCTURES

	Settlement Station	Initial Reading Date	Initial Reading Elevation (Feet)	Maximum Differential Settlement Date	Maximum Differential Settlement Elevation (Feet)	Maximum Differential Settlement S (Feet)	Maximum Differential Settlement ΔS (Feet)	Most Recent Differential Settlement Date	Most Recent Differential Settlement Elevation (Feet)	Most Recent Differential Settlement S (Feet)	Most Recent Differential Settlement ΔS (Feet)
Auxiliary Control Building and Turbine Building Settlement Stations (The turbine building is noncategory I.)	SS20	10-17-74	693.972	04-25-80	693.975	+0.003	0.031	01-22-82	693.968(1)	-0.004	0.021
	SS21	10-17-74	710.006	04-25-80	709.978	-0.028		01-22-82	709.981(1)	-0.025	
	SS19	08-18-75	694.027	08-04-78	694.042	+0.015	0.008	01-22-82	694.032(1)	+0.005	0.001
	SS22	08-18-75	709.999	08-04-78	710.006	+0.007		01-22-82	710.003(1)	+0.004	
	SS18	09-16-74	694.032	06-11-76	694.022	-0.010	0.037*	01-22-82	694.031(1)	-0.001	0.021
	SS23	09-16-74	709.840	06-11-76	709.867	+0.027		01-22-82	709.860(1)	+0.020	
Reactor Building Unit 1 and Auxiliary Building Settlement Stations	SS15	01-14-76	704.764	08-03-77	704.726	-0.038	0.038	02-12-82	704.732(2)	-0.032	0.001
	SS16	01-14-76	728.980	08-03-77	728.980	0.000		02-12-82	728.949(2)	-0.031	
	SS12	07-14-76	728.995	01-12-77	728.991	-0.004	0.013	03-03-78	728.982(3)	-0.013	0.003
	SS13	07-14-76	704.787	01-12-77	704.770	-0.017		03-03-78	704.771(3)	-0.016	
Reactor Building Unit 2 and Auxiliary Building Settlement Stations	SS4	01-14-76	729.033	07-14-76	729.031	-0.002	0.029	02-12-82	728.994(2)	-0.039	0.020
	SS5	01-14-76	705.284	07-14-76	705.311	+0.027		02-12-82	705.265(2)	-0.019	
	SS7	07-14-76	705.336	12-09-76	705.300	-0.036	0.028	02-12-82	705.296(2)	-0.040	0.015
	SS8	07-14-76	729.034	12-09-76	729.026	-0.008		02-12-82	729.009(4)	-0.025	

*This is the second highest differential settlement for SS18 and SS23, the highest is peculiarly high in August of 1977.

S=Settlement ΔS=Differential Settlement

(1) Average of three readings from December 22, 1981, January 18, 1982, and January 27, 1982.
(2) Average of two readings from January 27, 1982 and February 12, 1982, difficult conditions.
(3) Single reading of March 3, 1978.
(4) Average of four readings from December 22, 1981, January 18, 1982, January 27, 1982, and February 12, 1982.

SETTLEMENT MONITORING PROGRAM

TABLE [illegible]
Sheet 1

Watts Bar Nuclear Plant

Diesel Generator Building

	SETTLEMENT POINTS									
	SS - 1 SE		SS - 2 SW		SS - 3 NE		SS - 4 NW			
DATE	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	BY	CHKD
10-31-75			i 742.015	–			i 742.033	–	FRH 12-30-81	BTB 1-26-82
11-24-75	i 742.047	–	742.017	.002	i 742.044	–	742.038	.005	↓	↓
12-16-75	742.046	-.001	742.013	.003	742.044	.000	742.038	.005		
1-14-76	742.045	-.002	742.017	.002	742.041	-.003	742.036	.003		
2-11-76	742.043	-.004	742.015	.000	742.038	-.006	742.034	.001		
3-18-76	742.035	-.012	742.006	-.009	742.031	-.013	Not Run			
4-15-76	742.037	-.010	742.009	-.006	742.032	-.012	"			
5-11-76	742.041	-.006	742.011	-.004	742.037	-.007	"			
6-11-76	742.035	-.012	742.005	-.010	742.030	-.014	742.021	-.012		
7-14-76	742.033	-.015	742.004	-.011	742.028	-.016	742.023	-.010		
8-10-76	742.040	-.007	742.010	-.005	742.034	-.010	742.030	-.003		
9-14-76	742.035	-.012	742.006	-.009	742.031	-.013	742.025	-.008		
10-13-76	742.038	-.009	742.008	-.007	742.026	-.018	742.031	-.002		
11-9-76	Poor Closure		Not Used							
12-9-76	742.027	-.020	741.996	-.019	742.026	-.018	742.018	-.015		
1-12-77	742.032	-.015	742.001	-.014	742.033	-.011	742.024	-.009		
2-10-77	742.033	-.014	742.004	-.011	742.032	-.012	742.026	-.007		
3-15-77	742.032	-.015	742.002	-.013	742.028	-.016	742.023	-.010		
4-11-77	742.030	-.017	742.000	-.015	742.026	-.018	742.021	-.012		
5-10-77	742.028	-.019	741.997	-.018	742.023	-.021	742.017	-.016		
6-6-77	742.027	-.020	741.997	-.018	742.022	-.022	742.017	-.016		
7-6-77	742.032	-.015	742.000	-.015	742.025	-.019	742.021	-.012		
8-3-77	742.021	-.026	741.989	-.026	742.015	-.029	742.011	-.022		
9-12-77	742.024	-.023	741.992	-.023	742.023	-.021	742.018	-.015		

i => initial reading + => up – => down

SETTLEMENT MONITORING PROGRAM

TABLE Q362.29-3(c)
Sheet 2

Watts Bar Nuclear Plant

Diesel Generator Building

	SETTLEMENT POINTS									
	SS-1 SE		SS-2 SW		SS-3 NE		SS-4 NW			
DATE	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	BY	CHKD
10-11-77	742.024	-.023	741.991	-.024	742.023	-.021	742.017	-.016	FRH 12-30-81	BTB 1-25-82
11-7-77	742.021	-.026	741.990	-.025	742.021	-.023	742.017	-.016	↓	↓
12-15-77	742.026	-.021	741.995	-.020	742.027	-.017	742.022	-.011		
1-9-78	742.021	-.026	741.990	-.025	742.020	-.024	742.017	-.016		
2-2-78	742.022	-.025	741.992	-.023	742.023	-.021	742.020	-.013		
3-3-78	742.017	-.030	741.985	-.030	742.018	-.026	742.011	-.022		
4-3-78	742.015	-.032	741.984	-.031	742.016	-.028	742.008	-.025		
5-4-78	742.015	-.032	741.984	-.031	742.015	-.029	742.010	-.023		
6-5-78	742.013	-.034	741.982	-.033	742.013	-.031	742.008	-.025		
7-10-78	742.012	-.035	741.982	-.033	742.011	-.033	742.009	-.024		
8-4-78	742.010	-.037	741.979	-.036	742.010	-.034	742.006	-.027		
9-29-78	742.013	-.034	741.983	-.032	742.013	-.031	742.010	-.023		
1-21-79	742.019	-.028	741.989	-.026	742.020	-.024	742.015	-.018		
4-11-79	742.009	-.038	741.977	-.038	742.010	-.034	742.004	-.029		
7-26-79	742.006	-.041	741.976	-.039	742.010	-.034	742.003	-.030		
10-23-79	742.009	-.038	741.977	-.038	742.012	-.032	742.005	-.028		
1-20-80	742.003	-.044	741.972	-.043	742.004	-.040	742.000	-.033		
4-29-80	742.003	-.044	741.971	-.044	742.004	-.040	741.998	-.035		
10-9-80	742.009	-.038	741.976	-.039	742.011	-.033	742.005	-.028		
4-10-81	741.998	-.049	741.966	-.049	741.999	-.045	741.993	-.040		
4-10-81	* 743.744	—	* 743.454	—	* 744.010	—	* 744.044	—		
10-7-81	743.757	+.013	743.467	+.013	744.023	+.013	744.058	+.014		
12-22-81	743.752	+.008	NOT RUN	—	744.019	+.009	744.056	+.012		BTB 1-26-82
1-20-82	743.744	0.0	NR	—	744.013	+.003	744.048	+.004	VAD 2-11-82	BTB 2-17-82

* [illegible]

TABLE QS62.27-5 [illegible]
Sheet 3

SETTLEMENT MONITORING PROGRAM

WATTS BAR NUCLEAR PLANT

DIESEL GENERATOR BUILDING

	SETTLEMENT POINTS									
	SS-1 SE		SS-2 SW		SS-3 NE		SS-4 NW			
DATE	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	BY	CHKD
1-29-82	743,752	+.008	743.463	+.009	744.020	+.010	744.055	+.011	JAD 2-17-82	LTB 2-17-82
AVG *	743.749	+.005	—	—	744.017	+.007	744.053	+.009	JAD 2-22-82	LTB 2-22-82

TABLE 2562.29-4
sheet 1

SETTLEMENT MONITORING PROGRAM

WATTS BAR NUCLEAR PLANT

WASTE MANAGEMENT BUILDING

	SETTLEMENT POINTS									
	SS-45		SS-46		SS-47		SS-48			
DATE	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	BY	CHKD
3-15-77	728.982	i	728.981	i	728.996	i	728.975	i	JAD 12/30/81	1-27-82
4-11-77	728.980	-.002	728.977	-.004	728.992	-.004	728.970	-.005	↓	↓
5-10-77	728.976	-.006	728.973	-.008	728.988	-.008	728.966	-.009		
6-6-77	728.980	-.002	728.976	-.005	728.991	-.005	728.970	-.005		
7-6-77	728.982	0	728.976	-.005	728.991	-.005	728.972	-.003		
8-3-77	728.962	-.020	728.957	-.024	728.973	-.023	728.953	-.022		
9-12-77	728.974	-.008	728.970	-.011	728.985	-.011	728.965	-.010		
10-11-77	728.976	-.006	NOT RUN	—	728.989	-.007	728.968	-.007		
11-7-77	NOT RUN	-	728.961	-.020	728.978	-.018	728.956	-.019		
12-15-77	N.R.	-	728.976	-.005	728.993	-.003	728.970	-.005		
1-9-78	N.R.	-	728.974	-.007	728.990	-.006	728.968	-.007		
2-2-78	728.973	-.009	NR	-	728.979	-.017	728.995	-.020		
3-3-78	728.971	-.011	728.969	-.012	728.985	-.011	728.963	-.012		
4-3-78	728.968	-.014	728.966	-.016	728.981	-.015	728.959	-.016		
5-4-78	728.974	-.008	728.971	-.010	728.986	-.010	728.963	-.012		
6-5-78	728.963	-.019	728.960	-.021	728.977	-.019	728.955	-.020		
7-10-78	728.961	-.021	728.957	-.024	728.975	-.021	728.955	-.020		
8-4-78	728.955	-.027	728.951	-.030	728.968	-.028	728.952	-.023		
9-29-78	728.968	-.014	NR	—	728.983	-.013	728.962	-.013		
1-21-79	728.969	-.013	NR	—	728.992	-.004	728.968	-.007		
4-11-79	728.950	-.032	728.951	-.030	728.973	-.023	728.949	-.026		
7-25-79	728.959	-.023	728.961	-.020	728.980	-.016	728.958	-.017		
10-22-79	Not Run	-	728.955	-.026	728.976	-.020	728.953	-.022		
1-19-80	728.945	-.037	728.946	-.035	728.968	-.028	Not Run	—		

SETTLEMENT MONITORING PROGRAM

TABLE Q 362.29-4 (cor
Sheet 2

WATTS BAR NUCLEAR PLANT

WASTE MANAGEMENT BUILDING

	SETTLEMENT POINTS									
	SS-45		SS-46		SS-47		SS-48			
DATE	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	BY	CHKD
4-28-80	728.939	-.043	728.940	-.041	728.962	-.034	NOT RUN	–	JAD 1-25-82	LTB 1-27-82
10-9-80	728.955	-.027	728.953	-.028	728.974	-.022	NOT RUN	–		↓
4-10-81	NOT RUN	–	728.947	-.034	728.970	-.026	NR	–		
10-7-81	NR	–	728.957	-.024	728.981	-.015	NR	–		
12-22-81	728.943	-.039	728.947	-.034	728.973	-.023	NR	–		LTB 1-27-82
1-18-82	728.940	-.042	728.946	-.035	728.970	-.026	NR	–	JAD 2-11-82	LTB 2-17-82
1-27-82	728.942	-.040	728.947	-.034	728.972	-.024	728.946	-.029	JAD 2-17-82	LTB 2-17-82
2-11-82							728.944	-.031	JMH 2-25-82	LTB 2-25-82
AVG	*728.942	-.040	*728.947	-.034	*728.972	-.024	**728.945	-.030	JMH 2-25-82	LTB 2-25-82

TABLE Q362.29-5
Sheet 1

SETTLEMENT MONITORING PROGRAM

WATTS BAR NUCLEAR PLANT

INTAKE PUMPING STATION

	SETTLEMENT POINTS									
	SS-1		SS-2		SS-3		SS-4			
DATE	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	BY	CHKD
10-17-74	652.031	i	652.009	i					JAD 1-12-82	BTB 1-27-82
11-25-74	INACCESSIBLE	—	652.008	-.001					↓	↓
12-19-74	652.039	+.008	NOT READ	—	652.051	i				
1-23-75	652.037	+.006	NR	—	652.049	-.002				
2-24-75	652.036	+.005	NR	—	652.046	-.005				
3-21-75	NO DATA	—	NR	—	652.033	-.018				
5-9-75	652.049	+.018	652.021	+.012	652.062	+.011				
6-4-75	652.037	+.006	652.011	+.002	652.050	-.001				
7-2-75	NOT READ	—	NR		NOT READ	-				
7-21-75	NR	—	NR		NR	-				
8-22-75	NR	—	NR		NR	-				
9-10-75	NR	—	NR		NR	-				
10-31-75	652.036	+.005	652.006	-.003	652.049	-.002				
11-24-75	652.038	+.007	652.008	-.001	652.050	-.001				
12-16-75	652.040	+.009	652.007	-.002	652.053	+.002				
1-14-76	652.040	+.009	652.009	0.0	652.051	0.0				
2-11-76	652.041	+.010	652.008	-.001	652.052	+.001				
3-18-76	652.046	+.015	652.016	+.007	652.057	+.006				
4-15-76	652.050	+.019	652.017	+.008	652.059	+.008				
5-11-76	652.067	+.036	652.014	+.005	652.047	-.004				
6-11-76	652.042	+.011	652.010	+.001	652.054	+.003				
7-14-76	652.038	+.007	652.007	-.002	652.052	+.001				
8-10-76	652.036	+.005	652.001	-.008	652.052	+.001				
9-14-76	652.030	-.001	652.000	-.009	652.048	-.003				

SETTLEMENT MONITORING PROGRAM

WATTS BAR NUCLEAR PLANT

INTAKE PUMPING STATION

TABLE Q362.29-5 (cont)
Sheet 2

	SETTLEMENT POINTS																					
	SS-1		SS-1A		SS-2		SS-3		SS-3A		SS-4											
DATE	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	BY	CHKD
10-13-76	652.034	+.003			652.004	-.005	652.048	-.003													JAD 1-20-82	JTB 1-26-82
11-9-76	Poor Closure Not Used	–			Poor Closure Not Used	–	Poor Closure Not Used	–													↓	↓
12-9-76	Not Run	–			Not Run	–	Not Run	–														
1-12-77	NR	–			NR	–	NR	–														
2-10-77	NR	–			NR	–	NR	–														
3-15-77	652.036	+.005	741.128	i	652.022	+.013	652.052	+.001			727.829	i										
4-11-77	652.029	-.002	Not Run	–	651.997	-.012	652.049	-.002			727.826	-.003										
5-10-77	652.022	-.009	741.121	-.007	651.991	-.018	652.046	-.005			727.827	-.002										
6-6-77	652.027	-.004	741.131	+.003	651.999	-.010	652.052	+.001			727.833	+.004										
7-6-77	NR	–	NR	–	NR	–	NR	–			727.833	+.004										
8-3-77	NR	–	741.128	0.0	NR	–	NR	–	741.418	i	727.828	-.001										
9-12-77	NR	–	741.114	-.014	NR	–	NR	–	741.402	-.016	727.816	-.013										
10-11-77	NR	–	741.117	-.011	NR	–	NR	–	741.404	-.014	727.815	-.014										
11-7-77	NR	–	741.109	-.019	NR	–	NR	–	741.396	-.022	727.816	-.013										
12-15-77	Permanently Inaccessible		741.124	-.004	Permanently Inaccessible		Permanently Inaccessible		741.412	-.006	727.826	-.003										
1-9-78			741.109	-.019					741.397	-.021	727.811	-.018										
2-2-78			741.105	-.023					741.391	-.027	NR	–										
3-3-78			741.111	-.017					741.396	-.022	727.815	-.014										
4-3-78			741.120	-.008					741.405	-.013	727.821	-.008										
5-4-78			741.125	-.003					741.412	-.006	727.828	-.001										
6-5-78			741.118	-.010					741.407	-.011	727.822	-.007										
7-10-78			741.135	+.007					741.421	+.003	727.841	+.012										
8-4-78			741.129	+.001					741.416	-.002	727.830	+.001										
9-29-78			741.119	-.009					741.410	-.008	727.826	-.003										

SETTLEMENT MONITORING PROGRAM

WATTS BAR NUCLEAR PLANT

INTAKE PUMPING STATION

TABLE Q362.29-5 (cont)
Sheet 3

	SETTLEMENT POINTS																					
	SS-1		SS-1A		SS-2		SS-3		SS-3A		SS-4											
DATE	ELEV	DIFF	ELEV	DIFF	ELEV.	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	BY	CHKD
2-2-79			741.102	-.026					741.386	-.032	727.810	-.019									JAD 1-20-82	1-26-82
4-7-79			741.109	-.019					741.398	-.020	727.820	-.009										
7-19-79			741.123	-.005					741.414	-.004	727.834	+.005										
10-17-79			741.115	-.013					741.404	-.014	727.824	-.005										
1-21-80			741.107	-.021					741.397	-.021	727.815	-.014										
4-23-80			741.118	-.010					741.407	-.011	727.827	-.002										
12-18-81			Not Run	-					Not Run	-	727.807	-.022										1-26-82
1-7-82			NR	-	NR	-	NR	-	NR	-	727.820	-.009									JAD 2-11-82	2-12-82
1-21-82			NR	-	NR	-	NR	-	NR	-	727.814	-.015										2-12-82
AVG *			-	-	-	-	-	-	-	-	727.814	-.015									JAD 2-22-82	2-22-82

* LAST THREE READINGS

SETTLEMENT MONITORING PROGRAM

TABLE Q362.29-6

Sheet 1

WATTS BAR NUCLEAR PLANT

POWERHOUSE

	SETTLEMENT POINTS																					
	SS-1		SS-1A		SS-1B		SS-2		SS-2A		SS-3		SS-4		SS-5		SS-6		SS-7			
DATE	ELEV	DIFF	ELEV	DIFF	ELEV.	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	BY	CHKD
10-16-73																					JAB 12-11-01	BT 1-2
11-19-73																						
12-17-73	666.536	i																				
1-16-74	NOT READ	–																				
2-20-74	656.534	-.002					672.176	i														
3-13-74	INACC.*						672.173	-.003														
4-15-74							672.175	-.001			690.079	i										
5-13-74							672.171	-.005			690.076	-.003										
6-11-74							675.693 RS*	–			690.081	+.002										
7-15-74							675.695	+.002			690.085	+.006										
8-13-74							675.688	-.005			690.077	-.002										
9-16-74							675.691	-.002			694.125**	-.001										
10-17-74							675.693	0			694.120	-.006										
11-18-74							675.682	-.011			694.118	-.008										
12-18-74							675.691	-.002	692.017	i	694.120	-.006										
1-20-75							675.690	-.003	692.012	-.005	694.118	-.008					696.641	i				
2-19-75							675.686	-.007	692.014	-.003	694.119	-.007			696.632	i	696.649	+.008	696.616	i		
3-17-75			676.014	i			675.689	-.004	692.014	-.003	694.122	-.004			696.626	-.006	696.641	0	696.609	-.007		
5-6-75			676.020	+.006			675.694	+.001	692.015	-.002	694.122	-.004			696.625	-.007	696.640	-.001	696.605	-.011		
6-2-75			676.015	+.001			675.688	-.005	692.015	-.002	694.122	-.004			705.292	*0 0	705.318 *1	0	705.324 *2	-.001		
7-7-75			676.012	-.002			675.681	-.012	692.005	-.012	694.119	-.007			705.281	-.011	705.306	-.012	705.313	-.012		
7-21-75			676.020	+.006			675.691	-.002	692.019	+.002	694.127	+.001			NOT RUN	–	705.325	+.007	705.331	+.006		
8-18-75			676.012	-.002			675.681	-.012	692.015	-.002	694.114	-.012			705.281	-.011	705.308	-.010	705.313	-.012		
9-10-75			676.018	+.004			675.688	-.005	692.016	-.001	694.124	-.002			N R	–	NOT RUN	–	NOT RUN	–		

*RS POINT RESET TO NEW LOCATION

** Reset to 694.126 on 8/23/74

*0 Reset TO 705.292 on 5-6-75

*1 Reset TO 705.318 ON 5/6/75

*2 Reset to 705.325 on 5/6/75

SETTLEMENT MONITORING PROGRAM

WATTS BAR NUCLEAR PLANT

POWERHOUSE

TABLE Q362.29-6 (cont.)
Sheet 2

	SETTLEMENT POINTS																					
	SS-1		SS-1A		SS-1B		SS-2		SS-2A		SS-3		SS-4		SS-5		SS-6		SS-7			
DATE	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	BY	CHKD
10-31-75			676.012	-.002	692.008	i	675.685	-.008	692.009	-.008	694.116	-.010			NOT RUN	-	NOT RUN	-	NOT RUN	-	JAD 12-31-81	1-26-82
11-22-75			676.021	+.007	692.017	+.009	675.695	+.002	692.021	+.004	694.125	-.001			NR	-	NR	-	NR	-	↓	↓
12-16-75			676.003	-.011	691.999	-.009	675.675	-.018	692.000	-.017	694.107	-.019			705.290	-.002	705.318	0	705.324	+.001		
1-14-76			676.016	+.002	692.012	+.004	675.688	-.005	692.014	-.003	694.120	-.006	729.033	i	705.284	-.008	705.308	-.010	705.318	-.007		
2-11-76			676.018	+.004	692.016	+.008	675.688	-.005	692.014	-.003	694.124	-.002	729.040	+.007	705.290	-.002	705.317	-.001	705.326	+.001		
3-18-76			676.022	+.008	692.020	+.012	675.693	0	692.019	+.002	694.126	0	729.027	-.006	705.279	-.013	705.307	-.011	705.315	-.010		
4-15-76			676.016	+.002	692.014	+.006	675.684	-.009	692.011	-.006	694.120	-.006	729.036	+.003	705.301	+.009	705.325	+.007	705.331	+.006		
5-11-76			676.019	+.005	692.020	+.012	675.689	-.004	692.017	0	694.126	0	729.037	+.004	705.307	+.015	705.330	+.012	705.335	+.010		
6-11-76			676.014	0	692.010	+.002	675.680	-.013	692.004	-.013	694.115	-.011	729.028	-.005	705.294	+.002	705.317	-.001	705.322	-.003		
7-14-76			676.012	-.002	692.016	+.008	675.677	-.016	692.009	-.008	694.121	-.005	729.031	-.002	705.311	+.019	705.332	+.014	705.336	+.011		
8-10-76			676.023	+.009	692.023	+.015	675.688	-.005	692.015	-.002	694.129	+.003	729.037	+.004	705.308	+.016	705.329	+.011	705.334	+.009		
9-14-76			676.006	-.008	692.003	-.005	675.670	-.023	691.996	-.021	694.110	-.016	729.027	-.006	705.280	-.012	705.311	-.007	705.314	-.011		
10-13-76			676.014	0	692.010	+.002	675.677	-.016	692.004	-.013	694.117	-.009	729.030	-.003	705.294	+.002	705.320	+.002	705.327	+.002		
11-9-76			Poor Closure Not Used	-	Poor Closure Not Used	-	Poor Closure Not Used	-	Poor Closure Not Used	-	Poor Closure Not Used	-	Poor Closure Not Used	-	Poor Closure Not Used	-	Poor Closure Not Used	-	Poor Closure Not Used	-		
12-9-76			675.994	-.020	691.992	-.016	675.658	-.035	691.984	-.033	694.099	-.027	729.020	-.013	705.264	-.028	705.295	-.023	705.300	-.025		
1-12-77			676.002	-.012	692.000	-.008	675.664	-.029	691.993	-.024	694.109	-.017	729.017	-.016	NOT RUN	-	NOT RUN	-	NOT RUN	-		
2-10-77			676.009	-.005	692.011	+.003	675.673	-.020	692.002	-.015	694.119	-.007	729.026	-.007	NR	-	NR	-	NR	-		
3-15-77			676.012	-.002	692.016	+.008	675.673	-.020	692.006	-.011	694.123	-.003	NOT RUN	-	705.283	-.009	705.313	-.005	705.318	-.007		
4-11-77			676.010	-.004	NOT RUN	-	675.673	-.020	692.001	-.016	694.115	-.011	NR	-	705.282	-.010	705.311	-.007	705.315	-.010		
5-10-77			676.005	-.009	691.996	-.012	675.666	-.027	691.986	-.031	694.102	-.024	729.018	-.015	705.273	-.019	705.303	-.015	705.306	-.019		
6-6-77			676.026	+.012	692.018	+.010	675.685	-.008	692.010	-.007	694.123	-.003	729.026	-.007	705.287	-.005	705.312	-.006	705.316	-.009		
7-6-77			676.018	+.004	692.017	+.009	675.677	-.016	692.007	-.010	694.118	-.008	729.035	+.002	705.287	-.005	705.316	-.002	705.317	-.008		
8-3-77			675.989	-.025	691.993	-.015	675.648	-.045	691.982	-.035	694.098	-.028	729.011	-.022	705.264	-.028	705.292	-.026	705.294	-.031		
9-12-77			676.009	-.005	692.006	-.002	675.669	-.024	691.995	-.022	694.111	-.015	729.024	-.009	705.279	-.013	705.304	-.014	705.308	-.017		

SETTLEMENT MONITORING PROGRAM

WATTS BAR NUCLEAR PLANT

POWERHOUSE

TABLE Q362.29-6 (cont.)

Sheet 3

	SETTLEMENT POINTS																					
	SS-1		SS-1A		SS-1B		SS-2		SS-2A		SS-3		SS-4		SS-5		SS-6		SS-7			
DATE	ELEV	DIFF	ELEV	DIFF	ELEV.	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	BY	CHKD
10-11-77			676.018	+.004	692.015	+.007	675.677	-.016	692.002	-.015	694.124	-.002	729.026	-.007	705.282	-.010	705.312	-.006	705.314	-.011	JAD 12/31/81	ATB 1-[illegible]
11-7-77			675.995	-.019	691.997	-.011	675.656	-.037	691.986	-.031	694.104	-.022	729.010	-.023	705.268	-.024	705.296	-.022	705.279	-.026	↓	↓
12-15-77			676.019	+.005	692.014	+.006	675.680	-.013	692.005	-.012	694.124	-.002	729.022	-.011	705.281	-.011	705.311	-.007	705.311	-.014		
1-9-78			676.010	-.004	692.010	+.002	675.669	-.024	691.998	-.019	694.120	-.006	729.022	-.011	NOT RUN	-	NOT RUN	-	NOT RUN	-		
2-2-78			676.016	+.002	692.016	+.008	675.676	-.017	692.008	-.009	694.126	0	729.027	-.006	NR	-	NR	-	NR	-		
3-3-78			676.006	-.008	692.004	-.004	675.667	-.026	691.994	-.023	694.113	-.013	729.017	-.016	705.280	-.012	705.310	-.008	705.310	-.015		
4-3-78			NOT RUN	-	692.004	-.004	675.664	-.029	691.991	-.026	694.112	-.014	729.017	-.016	705.274	-.018	705.304	-.014	705.304	-.021		
5-4-78			N.R.	-	NOT RUN	-	675.670	-.023	691.998	-.019	694.117	-.009	729.017	-.011	NR	-	NR	-	NR	-		
6-5-78			PERMANENTLY INACCESSIBLE		NR	-	675.672	-.021	692.000	-.017	694.116	-.010	729.014	-.019	705.271	-.021	705.300	-.018	705.301	-.024		
7-10-78					692.006	-.002	675.662	-.031	691.992	-.025	694.110	-.016	729.015	-.018	705.271	-.021	NR	-				
8-4-78					691.996	-.012	NOT RUN	-	691.984	-.033	694.101	-.025	729.010	-.023								
9-29-78					692.011	+.003	NOT RUN	-	691.999	-.018	694.115	-.011	729.020	-.013								
1-19-79					692.012	+.004	NOT RUN	-	NR		694.122	-.004										
4-11-79					692.004	-.004	675.659	-.034	NR		694.108	-.018										
7-20-79					692.013	+.005	NR	-	NR		NR	-										
10-18-79					692.012	+.004	675.673	-.020	NR		694.117	-.009										
1-10-80					691.999	-.009	675.656	-.037	NR		694.105	-.021										
4-29-80					691.994	-.014	675.655	-.038	NR		694.098	-.028										
10-4-80																						
4-8-81																						
10-6-81																						
12-18-81					691.981	-.027	675.643	-.050	NOT RUN	-	694.091	-.035	NOT RUN	-	NOT RUN	-	NOT RUN	-	NOT RUN	-	JAD 1-25-82	ATB 1-26-81
1-8-82					692.007	-.001	675.663	-.030	NR	-	694.113	-.013	NR	-	NR	-	NR	-	NR	-	JAD 2-11-82	ATB 2-12-82
1-22-82					692.001	-.007	675.660	-.033	NR	-	694.110	-.016	728.993	-.040	705.266	-.026	705.296	-.022	705.297	-.028	JAD 2-17-82	ATB 2-17-82

SETTLEMENT MONITORING PROGRAM

WATTS BAR NUCLEAR PLANT

POWERHOUSE

TABLE Q 362.29-6 (CONT.)

Sheet 4

	SETTLEMENT POINTS																					
	SS-1		SS-1A		SS-1B		SS-2		SS-2A		SS-3		SS-4		SS-5		SS-6		SS-7			
DATE	ELEV	DIFF	ELEV	DIFF	ELEV.	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	BY	CHKD
2-12-82													728.995	-.038	705.263	-.029	705.293	-.025	705.294	-.031	JMH 2-25-82	[illegible]
AVG					*691.996	-.012	*675.655	-.038	-	-	*694.105	-.021	**728.994	-.039	**705.265	-.027	**705.295	-.023	**705.296	-.029	JMH 2-25-82	[illegible] 2-25-82

* LAST THREE READING ** LAST TWO READING

SETTLEMENT MONITORING PROGRAM

WATTS BAR NUCLEAR PLANT

POWERHOUSE

TABLE Q362.29-6 (cont.)

Sheet 5

	SETTLEMENT POINTS																					
	SS-8		SS-9		SS-10		SS-11		SS-12		SS-13		SS-14		SS-15		SS-16		SS-17			
DATE	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	BY	CHKD
3-18-74					690.032	i															JAD 1-8-82	JTS 1-24-82
4-15-74					690.033	+.001													690.071	i	↓	↓
5-13-74					690.031	-.001													690.088	-.003		
6-11-74					690.035	+.003													690.086	-.005		
7-15-74					690.035	+.003													690.090	-.001		
8-13-74					690.027	-.005													690.081	-.010		
8-23-74					694.217	RS -													694.098	RS		
9-16-74					694.220	+.003					696.590	i			696.605	i			694.091	-.007		
10-17-74					694.212	-.005					696.585	-.005	696.593	i	696.605	0			694.095	-.003		
11-18-74					694.212	-.005					696.585	-.005	696.593	0	696.604	-.001			694.095	-.003		
12-18-74					694.214	-.003					704.807*	+.001	704.792**	0	704.767***	0			694.095	-.003		
1-20-75					694.213	-.004					704.803	-.003	704.793	+.001	704.766	-.001			694.097	-.001		
2-19-75					694.211	-.006					704.805	-.001	704.796	+.004	704.770	+.003			694.097	-.001		
3-17-75					694.210	-.007					704.802	-.004	704.792	0	704.766	-.001			694.097	-.001		
5-6-75					694.208	-.009					704.801	-.005	704.790	-.002	704.763	-.004			694.100	+.002		
6-2-75					694.207	-.010					704.793	-.013	704.786	-.006	704.760	-.007			694.097	-.001		
7-7-75					694.193	-.024					704.790	-.016	704.783	-.009	704.759	-.008			694.093	-.005		
7-21-75					694.208	-.009					704.802	-.004	704.794	+.002	704.772	+.005			694.101	+.003		
8-18-75					694.203	-.014					704.787	-.019	704.778	-.014	704.756	-.011			694.088	-.010		
9-10-75					694.202	-.015					704.799	-.007	704.788	-.004	704.766	-.001			694.096	-.002		
10-31-75					694.198	-.019					704.788	-.018	704.778	-.014	704.755	-.012			694.091	-.007		
11-24-75					694.212	-.005					704.804	-.002	704.796	+.004	704.771	+.004			694.103	+.005		
12-17-75					694.190	-.027					704.791	-.015	704.783	-.009	704.758	-.009			694.086	-.012		
1-14-76					694.206	-.011					704.797	-.009	704.788	-.004	704.764	-.003	728.980	i	694.098	+.001		

RS - POINT RESET

* POINT RESET TO 704.806 on 11-18-74

** POINT RESET TO 704.792 on 11-18-74

*** POINT RESET TO 704.767 on 11-18-74

SETTLEMENT MONITORING PROGRAM

WATTS BAR NUCLEAR PLANT

POWERHOUSE

TABLE Q362.29-6 (cont.)

Sheet 6

	SETTLEMENT POINTS																					
	SS-8		SS-9		SS-10		SS-11		SS-12		SS-13		SS-14		SS-15		SS-16		SS-17			
DATE	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	BY	CHKD
2-11-76			728.953	i	694.207	-.010	729.033	i			704.804	-.002	704.795	+.003	704.771	+.004	728.991	+.011	694.101	+.003	JAS 4-82	BTD 1-26-82
3-18-76			728.942	-.011	694.205	-.012	729.023	-.010			704.797	-.009	704.790	-.002	704.764	-.003	728.987	+.007	694.105	+.007	↓	↓
4-15-76			728.946	-.007	694.201	-.016	729.027	-.006			704.795	-.011	704.787	-.005	704.763	-.004	728.990	+.010	694.096	-.002		
5-11-76			728.946	-.007	694.205	-.012	729.028	-.005			704.795	-.011	704.785	-.007	704.763	-.004	728.986	+.006	694.101	+.003		
6-11-76			728.934	-.019	694.192	-.025	729.016	-.017			NOT RUN	—	NOT RUN	—	NOT RUN	—	728.986	+.006	694.099	-.009		
7-14-76	729.034	i	728.936	-.017	694.195	-.022	729.019	-.014	728.995	i	704.787	-.019	704.779	-.013	704.757	-.010	728.987	+.007	694.094	-.004		
8-10-76	729.039	+.005	728.940	-.013	694.200	-.017	729.023	-.010	729.002	+.007	704.785	-.021	704.778	-.014	704.755	-.012	728.983	+.003	694.102	+.004		
9-14-76	729.033	-.001	728.934	-.019	694.183	-.034	729.020	-.013	728.997	+.002	704.786	-.020	704.779	-.013	704.754	-.013	728.989	+.008	694.088	-.010		
10-13-76	729.039	+.005	728.942	-.011	694.191	-.026	729.026	-.007	729.001	+.006	704.787	-.019	704.779	-.013	704.758	-.009	728.982	+.002	694.095	-.003		
11-9-76	POOR CLOSURE NOT USED	—	POOR CLOSURE NOT USED	—	POOR CLOSURE NOT USED	—	POOR CLOSURE NOT USED	—	POOR CLOSURE NOT USED	—	POOR CLOSURE NOT USED	—	POOR CLOSURE NOT USED	—	POOR CLOSURE NOT USED	—	POOR CLOSURE NOT USED	—	POOR CLOSURE NOT USED	—		
12-9-76	729.026	-.008	728.932	-.021	694.174	-.043	729.013	-.020	728.987	-.008	704.766	-.040	704.762	-.030	704.737	-.030	728.979	-.001	694.074	-.024		
1-12-77	729.029	-.005	728.937	-.016	694.184	-.033	NOT RUN	—	728.991	-.004	704.770	-.036	704.767	-.025	704.741	-.026	NOT RUN	—	694.082	-.016		
2-10-77	729.030	-.004	728.951	-.002	694.193	-.024	729.027	-.006	728.991	-.004	704.785	-.021	704.780	-.012	704.761	-.006	NR	—	694.093	-.005		
3-15-77	729.032	-.002	NOT RUN	—	694.195	-.022	729.018	-.015	728.991	-.004	704.787	-.019	704.784	-.008	704.758	-.009	728.978	-.002	694.096	-.002		
4-11-77	729.027	-.007	728.933	-.020	694.189	-.028	729.015	-.018	728.988	-.007	704.780	-.026	704.776	-.016	704.752	-.015	NOT RUN	—	694.090	-.008		
5-10-77	729.023	-.011	728.926	-.027	694.174	-.043	729.013	-.020	728.984	-.011	704.772	-.034	704.771	-.021	704.743	-.024	728.977	-.003	694.082	-.016		
6-6-77	729.027	-.007	728.932	-.021	694.196	-.021	729.011	-.022	728.989	-.006	704.780	-.026	704.779	-.013	704.753	-.014	728.975	-.005	694.097	-.001		
7-6-77	729.035	+.001	728.937	-.016	694.190	-.027	729.015	-.018	728.997	+.002	704.783	-.023	704.780	-.012	704.754	-.013	728.975	-.005	694.094	-.004		
8-3-77	729.016	-.018	728.915	-.038	694.165	-.052	729.000	-.033	728.976	-.019	704.756	-.050	704.755	-.037	704.726	-.041	728.980	.000	694.070	-.028		
9-12-77	NOT RUN	—	728.929	-.024	694.178	-.039	729.007	-.026	728.988	-.007	704.770	-.036	704.769	-.023	704.743	-.024	728.974	-.006	694.081	-.017		
10-11-77	NR	—	728.936	-.017	694.188	-.029	729.013	-.020	728.984	-.011	NOT RUN	—	NOT RUN	—	704.752	-.015	728.968	-.012	694.095	-.003		
11-7-77	729.015	-.019	728.920	-.033	694.172	-.045	729.012	-.021	728.975	-.020	NR	—	NR	—	NR	—	728.971	-.009	694.076	-.020		
12-15-77	NOT RUN INACCESSIBLE	—	728.936	-.017	694.194	-.023	729.018	-.015	NOT RUN INACC.	—	NR INACCES.	—	NR	—	NR	—	728.971	-.009	694.096	-.002		
1-9-78	729.025	-.009	728.934	-.019	694.187	-.030	729.012	-.021	728.985	-.010	NR	—	NR	—	NR	—	NOT RUN		694.092	-.006		

SETTLEMENT MONITORING PROGRAM

WATTS BAR NUCLEAR PLANT

POWERHOUSE

TABLE Q362.29-6 (cont.

Sheet 7

	SETTLEMENT POINTS																					
	SS-8		SS-9		SS-10		SS-11		SS-12		SS-13		SS-14		SS-15		SS-16		SS-17			
DATE	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	BY	CHKD
2-2-78	729.033	-.001	728.940	-.013	694.193	-.024	729.016	-.017	NOT RUN.	—	NOT RUN	—	NOT RUN	—			728.965	-.015	694.058	.000	JAD 1-4-82	1-26-82
3-3-78	NOT RUN	—	728.928	-.025	694.183	-.034	729.007	-.026	728.982	-.013	704.771	-.035	704.768	-.024			728.963	-.017	694.086	-.012		
4-3-78	729.022	-.012	728.925	-.028	694.178	-.039	729.003	-.030	728.980	-.015	NR	—	NR	—			NOT RUN	—	694.084	-.014		
5-4-78	729.025	-.009	728.933	-.020	694.186	-.031	729.007	-.026	728.984	-.011	NR	—	NR	—			NR	—	694.090	-.008		
6-5-78	729.019	-.015	728.922	-.031	694.186	-.031	729.003	-.030	728.978	-.017	NR	—							694.089	-.009		
7-10-78	729.019	-.015	728.921	-.032	694.174	-.043	729.002	-.031	728.980	-.015									694.082	-.016		
8-4-78	729.015	-.019	728.913	-.040	694.168	-.049	728.995	-.038	728.976	-.019									694.073	-.025		
9-29-78			728.929	-.024	694.183	-.034	729.008	-.025											NOT RUN	—		
1-19-79			728.934	-.019	694.184	-.033	729.016	-.017											NR	—		
4-9-79			728.916	-.037	694.175	-.042	729.000	-.033									728.966	-.014	694.083	-.015		
7-24-79	NR	—	728.926	-.027	694.182	-.035	728.999	-.034	NR	—	NR	—	NR	—	NR	—	NR	—	694.090	-.008		
10-22-79	NR	—	728.920	-.033	694.178	-.039	NR	—	NR	—	NR	—	NR	—	NR	—	NR	—	694.090	-.008		
1-19-80	NR	—	728.913	-.040	694.168	-.049	728.991	-.042	NR	—	NR	—	NR	—	NR	—	NR	—	694.076	-.022		
4-29-80	NR	—	728.909	-.044	694.161	-.056	728.993	-.040	"	—	"	—	"	—	"	—	"	—	NOT RUN	—		
12-22-81	729.010	-.024	728.917	-.036	694.157	-.060	729.000	-.033	"	—	"	—	"	—	"	—	"	—	694.063	-.035		
1-18-82	729.006	-.028	728.914	-.039	694.181	-.036	728.995	-.038	"	—	"	—	"	—	"	—	"	—	694.085	-.013	JAD 2-1-82	2-19-82
1-27-82	729.009	-.025	728.917	-.036	694.175	-.042	729.000	-.033	NR	—	704.761	-.045	704.759	-.033	704.733	-.034	728.950	-.030	694.083	-.015	JAD 2-7-82	2-10-82
2-11-82	729.010	-.024	N.R	—	694.170	-.047	N.R.	—	NR	—	704.759	-.047	704.758	-.034	704.731	-.036	728.948	-.032	NR	—	JMH 2-25-82	
AVG.	*** 729.009	-.025	* 728.916	-.037	*** 694.171	-.046	* 728.998	-.035	NR	—	** 704.760	-.046	** 704.759	-.033	** 704.732	-.035	** 728.949	-.031	* 694.077	-.021	JMH 2-25-82	

* LAST THREE READINGS ** LAST TWO READINGS *** LAST FOUR READINGS

TABLE Q362.29-6 (con
Sheet 8

SETTLEMENT MONITORING PROGRAM

WATTS BAR NUCLEAR PLANT

POWERHOUSE

	SETTLEMENT POINTS									
	SS-18		SS-19		SS-20					
DATE	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	BY	CHKD
10-16-73	689.531	i			689.502	i			JAD 1-4-82	BTB 1-26-92
11-19-73	689.542	+.011	689.505	i	689.505	+.003			↓	↓
12-17-73	689.538	+.007	689.512	+.007	INAC.	–				
1-6-74	689.538	+.007	689.500	-.005	INAC.	–				
2-20-74	689.541	+.010	689.502	-.003	INAC.	–				
3-18-74	689.540	+.009	689.501	-.004	689.509	+.007				
4-15-74	689.538	+.007	689.501	-.004	689.508	+.006				
5-13-74	689.540	+.009	689.504	-.001	689.511	+.009				
6-11-74	689.535	+.004	689.504	-.001	689.510	+.008				
6-11-74	694.039	RS	694.046	RS	693.972	RS				
7-15-74	694.033	-.006	694.043	-.003	693.971	-.001				
8-13-74	694.037	-.002	694.042	-.004	693.972	0.0				
9-16-74	694.032	-.007	694.039	-.007	693.973	+.001				
10-17-74	READING ERROR	–	694.037	-.009	693.972	0.0				
11-18-74	694.027	-.012	694.020	-.026	693.959	-.013				
12-18-74	694.043	+.004	694.036	-.010	693.976	+.004				
1-20-75	694.042	+.003	694.033	-.013	693.971	-.001				
2-19-75	694.043	+.004	694.037	-.009	693.975	+.003				
3-17-75	694.042	+.003	694.033	-.013	693.972	0.0				
5-6-75	694.031	-.008	694.032	-.014	693.964	-.008				
6-2-75	694.037	-.002	694.041	-.005	693.971	-.001				
7-7-75	694.033	-.006	694.037	-.009	693.966	-.006				
7-21-75	694.039	0.0	694.043	-.003	693.975	+.003				
8-18-75	694.021	-.018	694.027	-.019	693.957	-.015				

TABLE Q362.29-6(cor
Sheet 9

SETTLEMENT MONITORING PROGRAM

WATTS BAR NUCLEAR PLANT

POWERHOUSE

	SETTLEMENT POINTS									
	SS-18		SS-19		SS-20					
DATE	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	BY	CHKD
9-10-75	694.035	-.004	694.036	-.010	693.972	0.0			JAD 1-4-82	STB 1-26-82
10-31-75	694.039	0.0	694.035	-.011	693.972	0.0				↓
11-24-75	694.046	+.007	694.037	-.009	693.976	+.004				
12-17-75	694.052	+.013	694.043	-.003	693.983	+.011				
1-14-76	694.053	+.014	694.043	-.003	693.984	+.012				
2-11-76	694.052	+.013	694.043	-.003	693.982	+.010				
3-18-76	694.041	+.002	694.036	-.010	693.972	0.0				
4-15-76	694.047	+.008	694.045	-.001	693.978	+.006				
5-11-76	694.052	+.013	694.049	+.003	693.983	+.011				
6-11-76	694.022	-.017	694.026	-.020	693.957	-.015				
7-14-76	694.038	-.001	694.043	-.003	693.973	+.001				
8-10-76	694.033	-.006	694.038	-.008	693.970	-.002				
9-14-76	694.024	-.015	694.027	-.019	693.959	-.013				
10-13-76	694.042	+.003	694.042	-.004	693.978	+.006				
11-9-76	POOR CLOSURE NOT USED	—	POOR CLOSURE NOT USED	—	POOR CLOSURE NOT USED	—				
12-9-76	694.037	-.002	694.033	-.013	693.971	-.001				
1-12-77	694.043	+.004	694.038	-.008	693.975	+.003				
2-10-77	694.051	+.012	694.049	+.003	693.985	+.013				
3-15-77	694.046	+.007	694.046	0.0	693.980	+.008				
4-11-77	694.033	-.006	694.032	-.014	693.965	-.007				
5-10-77	694.034	-.005	694.035	-.011	693.968	-.004				
6-6-77	694.045	+.006	694.048	+.002	693.979	+.007				
7-6-77	694.034	-.005	694.042	-.004	693.972	0.0				
8-3-77	693.999	-.040	694.006	-.040	693.935	-.037				

TABLE Q362.29-6 (CO
Sheet 10

SETTLEMENT MONITORING PROGRAM

WATTS BAR NUCLEAR PLANT

POWERHOUSE

	SETTLEMENT POINTS									
	SS-18		SS-19		SS-20					
DATE	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	ELEV	DIFF	BY	CHKD
9-12-77	694.027	-.012	694.035	-.011	693.966	-.006			JAD 1-4-82	BTB 1-26-82
10-11-77	694.049	+.010	694.050	+.004	693.978	+.006				↓
11-7-77	694.041	+.002	694.043	-.003	693.980	+.008				
12-15-77	694.044	+.005	694.041	-.005	693.978	+.006				
1-9-78	694.057	+.018	694.055	+.009	693.993	+.021				
2-2-78	694.057	+.018	694.054	+.008	693.992	+.020				
3-3-78	694.039	0.0	694.036	-.010	693.974	+.002				
4-3-78	694.031	-.008	694.032	-.014	693.966	-.006				
5-4-78	694.041	+.002	694.041	-.005	693.976	+.004				
6-5-78	694.035	-.004	694.041	-.005	693.974	+.002				
7-10-78	694.021	-.018	694.032	-.014	693.962	-.010				
8-4-78	694.030	-.009	694.042	-.004	NOT READ	—				
9-29-78	694.036	-.003	694.041	-.005	693.975	+.006				
1-5-79	NOT RUN	—	694.044	-.002	693.984	+.012				
4-9-79	694.029	-.010	694.029	-.017	693.967	-.005				
7-20-79	NOT RUN	—	694.033	-.013	693.969	-.003				
10-19-79	694.029	-.010	694.032	-.014	693.968	-.004				
1-18-80	NR	—	694.030	-.016	693.969	-.003				
4-25-80	NR	—	694.028	-.018	693.975	+.003				
12-15-81	694.024	-.015	694.027	-.019	693.963	-.009				BTB 1-26-82
1-8-82	694.036	-.003	694.037	-.009	693.974	+.002			JAD 2-11-82	BTB 2-17-82
1-22-82	694.033	-.006	694.032	-.014	693.968	-.004			JAD 2-17-82	BTB 2-17-82
AVG *	694.031	-.008	694.032	-.014	693.968	-.004			JAD 2-22-82	BTB 2-22-82

SETTLEMENT MONITORING PROGRAM

TABLE Q 362.29-6 (con't) Sheet 11

WATTS BAR NUCLEAR PLANT

POWER HOUSE

	SETTLEMENT POINTS					
	SS-21		SS-22		SS-23	
DATE	ELEV	DIFF	ELEV	DIFF	ELEV.	DIFF
6-11-74						
7-15-74						
8-13-74						
9-16-74					709.840	i
10-17-74	710.006	i			709.869	+.029
11-18-74	NOT RUN	—			709.870	+.030
12-18-74	710.004	-.002			709.874	+.034
1-20-75	709.997	-.009			709.871	+.031
2-19-75	710.000	-.006			709.869	+.029
3-17-75	709.996	-.010			709.869	+.029
5-6-75	709.991	-.015			709.863	+.023
6-2-75	709.989	-.017			709.861	+.021
7-7-75	709.992	-.014			709.861	+.021
7-21-75	709.995	-.011			709.859	+.019
8-18-75	709.984	-.022	709.999	i	709.858	+.018
9-10-75	709.996	-.010	710.008	+.009	709.861	+.021
10-31-75	NOT RUN	—	710.008	+.009	709.870	+.030
11-24-75	709.997	-.009	710.008	+.009	709.871	+.031
12-16-75	710.005	-.001	710.017	+.018	709.881	+.041
1-14-76	710.002	-.004	710.014	+.015	709.869	+.029
2-11-76	710.004	-.002	710.017	+.018	709.875	+.035
3-18-76	709.995	-.011	710.010	+.011	709.871	+.031
4-15-76	709.998	-.008	710.014	+.015	709.872	+.032
5-11-76	710.003	-.003	710.018	+.019	709.874	+.034

TABLE Q 362.29-6 (CONT.)
Sheet 12

SETTLEMENT MONITORING PROGRAM

WATTS BAR NUCLEAR PLANT

POWER HOUSE

	SETTLEMENT POINTS					
	SS-21		SS-22		SS-23	
DATE	ELEV	DIFF	ELEV	DIFF	ELEV.	DIFF
6-11-76	709.976	-.030	709.994	-.005	709.867	+.027
7-14-76	709.993	-.013	710.012	+.013	709.868	+.028
8-10-76	709.990	-.016	710.010	+.011	709.862	+.022
9-14-76	709.978	-.028	709.996	-.003	709.868	+.028
10-13-76	709.996	-.010	710.011	+.012	709.870	+.030
11-9-76	POOR CLOSURE NOT USED	-	POOR CLOSURE NOT USED	-	POOR CLOSURE NOT USED	-
12-9-76	709.986	-.020	710.003	+.004	NOT RUN	-
1-12-77	710.000	-.006	710.014	+.015	709.871	+.031
2-10-77	710.005	-.001	710.018	+.019	709.885	+.045
3-15-77	709.999	-.007	710.016	+.017	709.868	+.028
4-11-77	709.990	-.016	710.007	+.008	709.873	+.033
5-10-77	709.986	-.020	710.004	+.005	709.869	+.029
6-6-77	710.000	-.006	710.019	+.020	709.867	+.027
7-6-77	709.992	-.014	710.010	+.011	709.860	+.020
8-3-77	709.953	-.053	709.976	-.023	709.867	+.027
9-12-77	709.984	-.022	710.003	+.004	709.859	+.019
10-11-77	710.002	-.004	710.019	+.020	709.864	+.024
11-7-77	709.987	-.019	710.004	+.005	709.869	+.029
12-15-77	709.987	-.019	710.008	+.009	709.866	+.026
1-9-78	710.002	-.004	710.020	+.021	709.872	+.032
2-2-78	709.998	-.008	710.021	+.022	709.871	+.031
3-3-78	709.989	-.017	710.006	+.007	709.865	+.025
4-3-78	709.978	-.028	710.000	+.001	709.864	+.024
5-4-78	709.989	-.017	710.011	+.012	709.863	+.023

TABLE Q 362.29-6 (co
Sheet 13

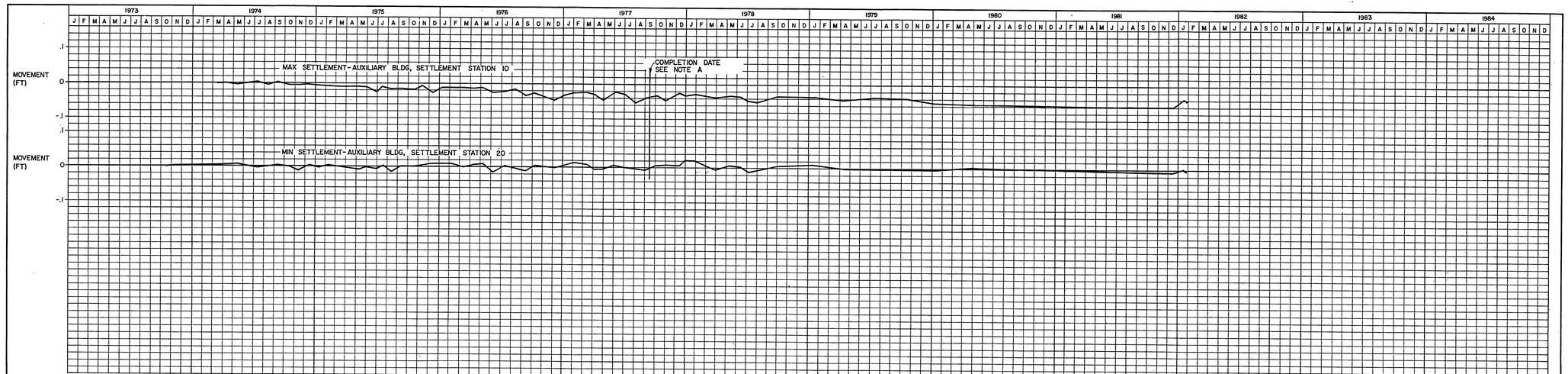
SETTLEMENT MONITORING PROGRAM

WATTS BAR NUCLEAR PLANT

POWERHOUSE

	SETTLEMENT POINTS					
	SS-21		SS-22		SS-23	
DATE	ELEV	DIFF	ELEV	DIFF	ELEV.	DIFF
6-5-78	709.978	-.028	710.002	+.003	709.858	+.018
7-10-78	709.978	-.028	709.997	-.002	709.854	+.014
8-4-78	709.987	-.019	710.006	+.007	709.854	+.014
9-29-78	709.989	-.017	710.011	+.012	709.857	+.017
1-5-79	709.996	-.010	710.012	+.013	709.858	+.018
4-9-79	709.979	-.027	710.000	+.001	709.868	+.028
7-20-79	709.978	-.028	710.002	+.003	709.851	+.011
10-19-79	709.981	-.025	710.007	+.008	709.855	+.015
1-18-80	709.983	-.023	710.005	+.006	709.854	+.014
4-28-80	709.978	-.028	709.999	0.0	709.861	+.021
12-18-81	709.978	-.028	709.997	-.002	709.855	+.015
1-7-82	709.986	-.020	710.009	+.010	709.862	+.022
1-22-82	709.979	-.027	710.003	+.004	709.864	+.024
AVG *	709.981	-.025	710.003	+.004	709.860	+.020

* LAST THREE READINGS



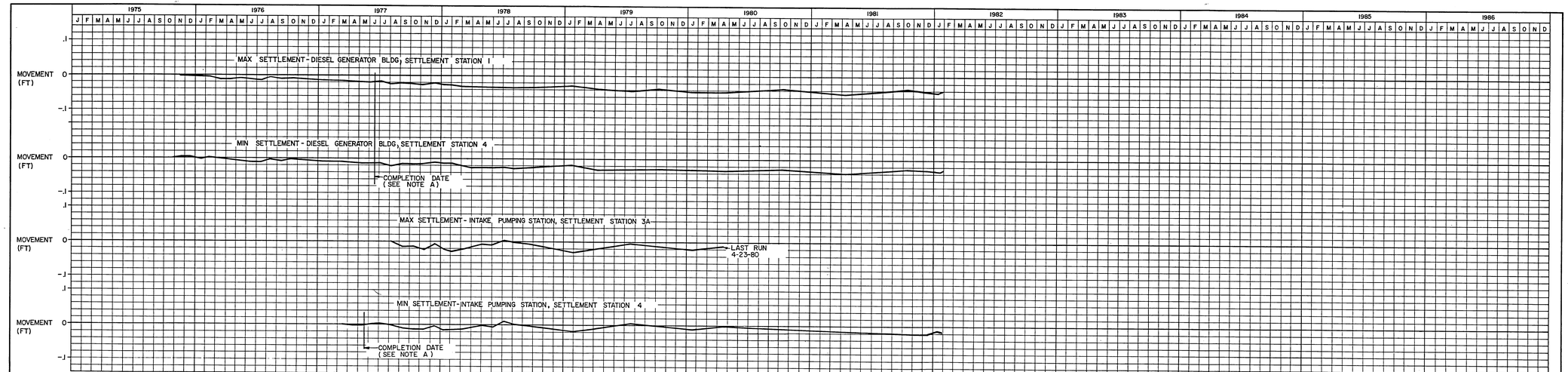
NOTE A: COMPLETION DATE IS THE FINISH DATE OF THE MAJOR STRUCTURAL CONCRETE.

W.O. N° FIG Q 362.29-1

PRC APERTURE CARD

8203100412-01

Docket # 50-390
Control #8203100412
Date 3/5/82 of Document
REGULATORY DOCKET FILE



NOTE: A: COMPLETION DATE IS THE FINISH DATE OF THE MAJOR STRUCTURAL CONCRETE.

FIGURE Q362.29-2

PRC APERTURE CARD

8203100412-02

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