

May 17, 1979

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
Attn: Mr. O. D. Parr, Chief
Light Water Reactors Branch No. 3
Division of Project Management
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Serial No. 349
LQA/ESG:esh

Docket Nos. 50-338
50-339

License No. NPF-4

Dear Mr. Denton:

AMENDMENT TO OPERATING LICENSE
SUPPLEMENT TO PROPOSED TECHNICAL SPECIFICATION
CHANGE NO. 12
NORTH ANNA POWER STATION UNIT NO. 1

By our letter, Serial No. 329, dated June 13, 1978, we requested an amendment to Operating License No. NPF-4 for the North Anna Power Station, Unit No. 1. This proposed amendment revised Technical Specification 3/4.7.12, "Settlement of Class I Structures," to increase the amount of allowable settlement for the Service Water Pump House. Later, by letter dated November 22, 1978, (Serial No. 646), and during a meeting with the Staff on December 5, 1978, we indicated that we were experiencing difficulties in completing the surveillance requirements of other portions of TS 3/4.7.12, as a result of typographical errors and incorrect settlement base dates in the specification. During the December 5 meeting, we stated we were conducting an extensive review of the entire settlement monitoring program. Based on this review, we are proposing the attached revisions to TS 3/4.7.12.

A general discussion of the proposed changes is included in Attachment 1. Attachment 2 consists of a "marked-up" copy of the present Unit 1 specification, with each proposed change indicated and explained. The revised version of the specification is provided in Attachment 3.

The revisions to the settlement monitoring program should also be reflected in the operating license for Unit No. 2 when it is issued. The proposed specification for Unit 2 is included as Attachment 4.

It will be noted that these proposed specifications include the limits on settlement of the Service Water Pump House which were established by the Staff in its January 9, 1979 transmittal to the Atomic Safety and Licensing Appeal Board. These limits are included in this submittal for the purposes of consistency. We understand that it is the Staff's position that the limits on the settlement of the Service Water Pump House will not be changed without direction from the Appeal Board. We believe, however, that the other changes in this submittal should be approved no later than the time of issuance of an operating license for Unit 2. A copy of these proposed changes will be provided to the Appeal Board by separate correspondence.

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The proposed changes for Unit 1 have been reviewed and approved by the Station and System Nuclear Safety and Operating Committees. It has been determined that these changes do not involve an unreviewed safety question, as defined in 10 CFR 50.59.

Very truly yours,

C. M. Stallings

C. M. Stallings
Vice President-Power Supply
and Production Operations

Attachments

cc: Mr. James P. O'Reilly, Director
Office of Inspection and Enforcement
Region II

COMMONWEALTH OF VIRGINIA)
) S. S.
CITY OF RICHMOND)

Before me, a Notary Public, in and for the City and Commonwealth aforesaid, today personally appeared C. M. Stallings, who being duly sworn, made oath and said (1) that he is Vice President-Power Supply and Production Operations, of the Virginia Electric and Power Company, (2) that he is duly authorized to execute and file the foregoing Amendment in behalf of that Company, and (3) that the statements in the Amendment are true to the best of his knowledge and belief.

Given under my hand and notarial seal this 17th day of
May, 1929.

My Commission expires January 20, 1931.

Robert M. Neil
Notary Public

(SEAL)

ATTACHMENT 1
REQUEST TO CHANGE TECHNICAL SPECIFICATION
T.S. 3/4.7.12 - SETTLEMENT OF CLASS 1 STRUCTURES
NORTH ANNA UNIT 1

Background Information

By letter, Serial No. 646, dated November 22, 1978, the NRC Staff was informed of difficulties Vepco had experienced in completing the surveillance requirements of Technical Specifications 3/4.7.12 due to:

1. Inconsistencies between the surveillance requirements and the bases for the requirements.
2. Deficiencies in the survey monitoring program.
3. Typographical errors in T.S. Table 3.7-5.

The referenced letter stated that a review of the settlement monitoring program was being performed. The proposed changes to the T.S. are a result of that review.

Explanation of Proposed Changes

Included in Attachment 2 is a marked-up copy of the existing T.S. showing proposed changes. A sheet of "Explanatory Notes" is also included to aid in understanding the need for the requested changes.

In general, the proposed changes are the results of our review of the settlement monitoring program in which the problems experienced in completing the surveillance requirements of T.S. 3/4.7.12 have been addressed as follows:

1. The first survey was conducted in May 1976 to establish a base value for all survey points. Previously, T.S. Table 3.7-5 specified bases other than the May 1976 basis in some cases and did not specify base value dates for survey points established after May 1976. Corrections have been made referencing bases to the May 1976 basis. Points established after the May 1976 survey are referenced to the date the first survey was taken on the established point. The allowable settlement values of points 114 (Column E-17 of Service Building), 158 (Column B-9½ of Turbine Building), and 245 and 246 (Fuel Oil Pump House) have been corrected to include settlement affecting limiting items that occurred prior to May 1976. Other base survey references are explained in the "Explanatory Notes" attached to the marked-up copy of the T.S.

2. Deficiencies in the survey monitoring program as referenced in our letter (Serial No. 646) basically referred to destroyed and reset survey points resulting from construction activities. Statements have been added to the proposed T.S. Bases that specifically address what action or evaluation is to be performed to ensure continuity in the data for points that may be inaccessible or damaged. In addition, the review of the settlement monitoring program will probably result in protection of settlement monitoring points to preclude, if possible, damage to points.
3. Corrections to typographical errors in T.S. Table 3.7-5 have been made and are indicated in the "Explanatory Notes" to the marked-up copy of the T.S.

The changes are proposed in an effort to clarify the discrepancies in the T.S. which have presented difficulties in completing the surveillance requirements of the T.S. The proposed changes do not involve any safety implications. As stated in our letter (Serial No. 646) to the NRC, the existing data which have been collected, verify that there has been no occurrence of significant settlement of the points in question.

MARKED-UP UNIT 1 SPECIFICATIONPLANT SYSTEMS3/4.7.12 SETTLEMENT OF CLASS 1 STRUCTURESLIMITING CONDITION FOR OPERATION

3.7.12.1 The total settlement of each Class ¹/~~X~~ structure or the differential settlement between Class ¹/~~2~~ structures shall not exceed the allowable values of Table 3.7-5. ¹

(1)
(1)

APPLICABILITY: ALL MODES

ACTION:

- a. With either the total settlement of any structure or ^{per cent} the differential settlement of any structures exceeding 75% of the allowable settlement value, conduct an engineering review of field conditions and evaluate the consequences of additional settlement. Submit a special report to the Commission pursuant to Specification 6.9.2 within 60 days, containing the results of the investigation, the evaluation of existing and possible continued settlement and the remedial action to be taken if any, including the date of the next survey.
- b. With the total settlement of any structure or the differential settlement of any two structures exceeding the allowable settlement value of Table 3.7-5, be in at least HOT STANDBY within 6 hours and COLD SHUTDOWN within the following 30 hours.

(1)
(1)

SURVEILLANCE REQUIREMENTS

4.7.12.1 The total settlement of each Class ¹/~~1~~ structure or the differential settlement between Class ¹/~~1~~ structures listed in Table 3.7-5 shall be determined to the nearest 0.01 foot by measurement and calculation at least once per 6 months.

(1)
(1)

NORTH ANNA - UNIT 1

3/4 7-77

TABLE 3.7-5

ALLOWABLE TOTAL SETTLEMENT OR DIFFERENTIAL SETTLEMENT FOR CLASS 1 STRUCTURES

SETTLEMENT POINT	STRUCTURE	SETTLEMENT POINT	STRUCTURE / COMPONENT	ALLOWABLE TOTAL SETTLEMENT* (FEET)	ALLOWABLE DIFFERENTIAL SETTLEMENT* (FEET)	
130	Containment Unit 1	223	Fuel Building	N/A	0.13 0.12	(2)
130	Containment Unit 1	129	Auxiliary Building	N/A	0.13 0.12	(3)
143	Containment Unit 1	142	Unit 1 Safeguards Area	N/A	0.04	(4)
144	Containment Unit 1	145	Unit 1 Safeguards Area	N/A	0.04	(4)
149	Containment Unit 1	239	Unit 1 Main Steam Valve House	N/A	0.15 0.12	(4)
144	Containment Unit 1	243, 199, 132	Service Building	N/A	0.13 0.12	(4)
146	Safeguards Unit 1	239	Unit 1 Main Steam Valve House	N/A	0.07	(5)
128	Auxiliary Building	238	Unit 1 Main Steam Valve House	N/A	0.08	
129	Auxiliary Building	239	Unit 1 Main Steam Valve House	N/A	0.08	
129	Auxiliary Building	223	Fuel Building	N/A	0.05	
123	Auxiliary Building	224	Fuel Building	N/A	0.05	
122	Auxiliary Building	119	Service Building Tunnel	N/A	0.07	
7, 10	Service Water Pump House	15, 16, 17, 18	Service Water Piping @ SUMP North Side of expansion joint	N/A N/A	0.15 0.22 from 7/77	(1) (3)
243, 132	Service Building (E-5, E-6)	238	Unit 1 Main Steam Valve House	N/A	0.15 0.04	(4)
117	* Service Building (E-14)	113	Unit 2 Main Steam Valve House	N/A	0.03 7-77 0.13 from 4/77	(7, 6, 8)
222	Auxiliary Feedwater Pump House - Unit 1	248	Pipe Tunnel	N/A	0.12	(5)

11-26-77

PLANT SYSTEMS

BASES

3/4.7.11 SEALED SOURCE CONTAMINATION

The limitations on sealed source removable contamination ensure that the total body or individual organ irradiation does not exceed allowable limits in the event of ingestion or inhalation of the source material. The limitations on removable contamination for sources requiring leak testing, including alpha emitters, is based on 10 CFR 70.39(c) limits for plutonium. Leakage of sources excluded from the requirements of this specification represent less than one maximum permissible body burden for total body irradiation if the source material is inhaled or ingested.

3/4.7.12 SETTLEMENT OF CLASS 1 STRUCTURES

In order to assure that settlement does not exceed ² ~~predicted and~~ allowable settlement values, a program has been established to conduct a survey of a specified number of points at the site on an semi-annual basis. The first survey was conducted in May 1976 to establish ^{insert "A"} ~~base~~ value for all the points. Additional surveys will be performed semi-annually. The determination of the elevation of the points shall be by precise leveling with second order Class 2 accuracy as defined by the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Survey. ^{insert 8} If the total settlement or differential settlement exceeds 75% ^{per cent} of the allowable value, the frequency of surveillance shall be increased as dictated by the engineering review. (3) (14) (15,16) (1)

Allowable differential movement is controlled by pipe deflections permitted by fixation points in buildings. The items limiting differential settlement are as follows:

<u>Reference</u>	<u>Monitoring Points</u>	<u>Limiting Item</u>
Containment Unit 1	Fuel Building	Fuel Transfer Tube
Containment Unit 1	Auxiliary Building	3"-WGC8-14
Containment Unit 1	Unit 1 Safeguards Area	12"-SI-1

NORTH ANNA - UNIT 1

B 3/4 7-7

insert

"A" base-line elevations for most of the points. Where applicable, the baseline elevations of point established subsequent to the May 1976 survey have been adjusted to the May 1976 survey by an evaluation of the settlement records of settlement points on the same structure or on nearby structures.

TABLE 3.7-5 (CONT'D)

ALLOWABLE TOTAL SETTLEMENT OR DIFFERENTIAL SETTLEMENT FOR CLASS 1 STRUCTURES

SETTLEMENT POINT	STRUCTURE	SETTLEMENT POINT	STRUCTURE/COMPONENT	ALLOWABLE TOTAL SETTLEMENT (FEET)	ALLOWABLE DIFFERENTIAL SETTLEMENT (FEET)	
(231)	Auxiliary Feedwater Pump House - Unit 2	(249)	Pipe Tunnel	N/A	0.125	(2)
220	Decontamination Building	250	Pipe Tunnel	N/A	0.06	(9)
226	Fuel Building	251	Waste Gas Decay Tank Enclosure	N/A	0.06	(6)
206, 207, 208, 209	Service Water Pump House Service Building (E-17)			0.15 avg from 12/75 0.15 avg from 2/77	N/A	(3)
150	Turbine Building (B-9)			0.15 to 0.06	N/A	(1, 11)
245, 246	Fuel Oil Pump House			0.04 from 5/74 to 0.03	N/A	(6, 11)
206, 207, 208, 209	Boron Recovery Tank Dike			0.03 (a)	N/A	(5, 12)
204	Circulating Water Intake Structure			0.15 (a)	N/A	(1, 12)

Class Category I Structure. Settlements affects Category I pipeline. (a) As measured from "as-built" survey.

141	Safeguards Area Unit 1	253	Unit 1 Casing Cooling Bldg.	N/A	0.12 from 2/79	(1)
8	Service Water Pump House	H-569	Pipe Hanger in Reservoir	N/A	0.17	(13)
15, 16, 17, 18	Service Water Piping @ Swift - North Side of Expansion Joint					(3)
7, 8, 9, 10	Service Water Pump House	7, 8, 9, 10	Service Water Pump House	0.22 from 8/78	N/A	(3)
ALLOWABLE OUT-OF-PLANE DISTORTION (FEET)						
0.06 for any settlement point						
* unless otherwise indicated, allowable settlements are from base-line elevations established in May 1976 or reference elevations corrected to May 1976 survey						
1.0 in. measured movement of point 117 with respect to point 113						

PLANT SYSTEMS

CASES

Reference	Monitoring Points	Limiting Item	
Containment Unit 1	Unit 1 Main steam Valve House	6"-SI-16	(1)
Containment Unit 1 Area	Service Building (3-line) E-3	32"-SH-2	(1, 6)
Safeguards Unit 1	Unit 1 Main Steam Valve House	8"-CS-5	(1, 6)
Auxiliary Building	Unit 1 Main Steam Valve House	8"-WS-113	(1)
Auxiliary Building	Fuel Building	4"-RP-23	
Auxiliary Building	Service Building Tunnel	24"-HS-102	2
Service Water Pump House	Service Water Piping @ SWPH	expansion joint	(1)
Service Building (E-5)	Unit 1 Main Steam Valve House	24"-WS-2-151-Q3	(1, 10)
Service Building (E-14)	Unit 2 Main Steam Valve House	24"-WS-425-151-Q3	(10)
Auxiliary Feedwater Pump House - Unit 1	Pipe Tunnel	3"-MAPD-9-601-Q3	
Auxiliary Feedwater Pump House - Unit 2	Pipe Tunnel	6"-WCMV-412-151-Q3	(9)
Decontamination Building	Pipe Tunnel	3"-CC-90-151-Q3 and 3"-CC-332-151-Q3	(17)
Fuel Building	Waste Gas Decay Tank Enclosure	4"-GM-30-154-Q3	

INSERT "C" HERE

Those items limiting total settlement of structures are as follows:

Monitoring Points	Limiting Items	
Service Water Pump House	FSAR Prediction	(3)
Service Building (E-17)	36"-WS-1-151-Q3	(17)
	36"-WS-2-151-Q3	(17)
	36"-WS-3-151-Q3	(17)
	36"-WS-4-151-Q3	(17)
Turbine Building (B-9½)	24"-WS-25-151-Q3	
	24"-WS-425-151-Q3	(17)
Fuel Oil Pump House	2½"-FOF-151-S	(1)
Boron Recovery Tank Dike	NOTE (1)	(1)
Circulating Water Intake Structure	Service Water Piping expansion joints	(1)
	MOVE	
Service Water Piping @ SWPH	36"-WS-1-151-Q3	(3)
NOTE (1)	No settlement expected; Settlement in excess of .03 feet would indicate an abnormality.	(1, 5)

insert "B" when any settlement point listed in Table 3.7-5 is inaccessible during a survey, comparison to allowable settlement shall be based on settlement of other points on the same structure or on nearby structures having similar foundation conditions. When any settlement point listed in Table 3.7-5 is dislocated or replaced, a documented review of the settlement records of points on the same structure and additionally points on nearby structures having similar foundation conditions shall provide a new reference elevation for the point that reflects the estimated settlement since the base-line survey.

NORTH AREA - UNIT 1

B 3/4 7-8

insert "C"

Safeguards Area Unit 1	Unit 1 Casing Cooling Building	6"-RS-E15-153A-Q3	(1)
Service water Pump House	Service water Piping @ SWPH	Expansion Joint	(1)
Service water Pump House	Pipe Hanger in Reservoir	24"-WS-11-151-Q3	(3)
Service water Pump House	Service water Pump House	Mat	(3)

EXPLANATORY NOTES

- 1 Editorial change only.
- 2 Note to explain dates of base-line elevations.
- 3 Change indicated by NZC in draft of Revision 1 to Technical Specification 3/4.7.12.
- 4 Rounding of 0.125 ft to nearest hundredth of foot should be to 0.12 ft rather than 0.13 ft so that value of 0.125 ft is not exceeded.
- 5 Rounding all values to nearest hundredth of foot for consistency.
- 6 Correction of typographical error.
- 7 Note to explain critical direction of differential settlement.
- 8 Change to indicate nearest date of survey.
- 9 Unit 2 item; does not affect Unit 1.
- 10 Correction of mistake.
- 11 Reduction of allowable settlement since May 1976 to reflect apparent settlement prior to May 1976.
- 12 Elimination of reference to "as-built" survey by adjustment of values to reflect apparent settlement prior to May 1976.
- 13 Addition of new structure.
- 14 Specific recognition of base-line surveys other than May 1976.
- 15 Reference to year of publication of definition in case of possible changes in the future.
- 16 Provisions to utilize measurements of nearby points when a point is inaccessible or has been destroyed and replaced.
- 17 Elimination of extraneous items.

ATTACHMENT 3
PROPOSED UNIT 1 SPECIFICATION

PLANT SYSTEMS

3/4.7.12 SETTLEMENT OF CLASS 1 STRUCTURES

LIMITING CONDITION FOR OPERATION

3.7.12.1 The total settlement of each Class 1 structure or the differential settlement between Class 1 structures shall not exceed the allowable values of Table 3.7-5.

APPLICABILITY: ALL MODES

ACTION:

- a. With either the total settlement of any structure or the differential settlement of any structures exceeding 75 percent of the allowable settlement, conduct an engineering review of field conditions and evaluate the consequences of additional settlement. Submit a special report to the Commission pursuant to Specification 6.9.2 within 60 days, containing the results of the investigation, the evaluation of existing and possible continued settlement, and the remedial action to be taken, if any, including the date of the next survey.
- b. With the total settlement of any structure or the differential settlement of any two structures exceeding the allowable settlement of Table 3.7-5, be in at least HOT STANDBY within 6 hours and COLD SHUT-DOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.12.1 The total settlement of each Class 1 structure or the differential settlement between Class 1 structures listed in Table 3.7-5 shall be determined to the nearest 0.01 foot by measurement and calculation at least once per 6 months.

TABLE 3.7-5

ALLOWABLE TOTAL OR DIFFERENTIAL SETTLEMENT FOR CLASS 1 STRUCTURES

<u>SETTLEMENT POINT</u>	<u>STRUCTURE</u>	<u>SETTLEMENT POINT</u>	<u>STRUCTURE/COMPONENT</u>	<u>ALLOWABLE TOTAL SETTLEMENT* (FEET)</u>	<u>ALLOWABLE DIFFERENTIAL SETTLEMENT* (FEET)</u>
130	Containment Unit 1	223	Fuel Building	N/A	0.12
130	Containment Unit 1	129	Auxiliary Building	N/A	0.12
143	Containment Unit 1	142	Unit 1 Safeguards Area	N/A	0.04
144	Containment Unit 1	145	Unit 1 Safeguards Area	N/A	0.04
149	Containment Unit 1	239	Unit 1 Main Steam Valve House	N/A	0.12
144	Containment Unit 1	132, 199, 243	Service Building	N/A	0.12
146	Safeguards Area Unit 1	239	Unit 1 Main Steam Valve House	N/A	0.07
128	Auxiliary Building	238	Unit 1 Main Steam Valve House	N/A	0.08
129	Auxiliary Building	239	Unit 1 Main Steam Valve House	N/A	0.03
123	Auxiliary Building	224	Fuel Building	N/A	0.05
129	Auxiliary Building	223	Fuel Building	N/A	0.05
122	Auxiliary Building	119	Service Building Tunnel	N/A	0.07
243, 132	Service Building (E-5, E-6)	238	Unit 1 Main Steam Valve House	N/A	0.04
117	**Service Building (E-14)	113	Unit 2 Main Steam Valve House	N/A	0.03 from 7/77
222	Auxiliary Feedwater Pump House Unit 1	248	Pipe Tunnel	N/A	0.12

TABLE 3.7-5 (CONT'D)

ALLOWABLE TOTAL OR DIFFERENTIAL SETTLEMENT FOR CLASS 1 STRUCTURES

<u>SETTLEMENT POINT</u>	<u>STRUCTURE</u>	<u>SETTLEMENT POINT</u>	<u>STRUCTURE/COMPONENT</u>	<u>ALLOWABLE TOTAL SETTLEMENT" (FEET)</u>	<u>ALLOWABLE DIFFERENTIAL SETTLEMENT" (FEET)</u>
228	Decontamination Building	250	Pipe Tunnel	N/A	0.06
226	Fuel Building	251	Waste Gas Decay Tank Enclosure	N/A	0.06
141	Safeguards Area Unit 1	253	Unit 1 Casing Cooling Building	N/A	0.12 from 2/79
7,10	Service Water Pump House	15,16, 17,18	Service Water Piping @ SWPH North Side of Expansion Joint	N/A	0.22 from 7/77
8	Service Water Pump House	H-569 H-584	Pipe Hanger in Reservoir	N/A	0.17
15,16,17,18	Service Water Piping @ SWPH North Side of Expansion Joint			0.22 from 8/73	N/A
204	Circulating Water Intake Structure			0.15	N/A
158	***Turbine Building (B-9 1/2)			0.06	N/A
114	Service Building (E-17)			0.09	N/A
245, 246	Fuel Oil Pump House			0.03	N/A
205, 207, 208, 209	Boron Recovery Tank Dike			0.03	N/A

TABLE 3.7-5 (CONT'D)

ALLOWABLE TOTAL OR DIFFERENTIAL SETTLEMENT FOR CLASS 1 STRUCTURES

<u>SETTLEMENT POINT</u>	<u>STRUCTURE</u>	<u>SETTLEMENT POINT</u>	<u>STRUCTURE/COMPONENT</u>	<u>ALLOWABLE OUT-OF-PLANE DISTORTION (FEET)</u>
7,8,9,10	Service Water Pump House	7,8,9,10	Service Water Pump House	0.06 for any settlement point

*Unless otherwise indicated, allowable settlements are from base-line elevations established in May 1976 or reference elevations corrected to May 1976 survey.

**Critical differential settlement is downward movement of point 117 with respect to point 113.

***Not Class 1 structure, but settlement affects Class 1 pipeline.

PLANT SYSTEMS

BASES

3/4.7.12 SETTLEMENT OF CLASS 1 STRUCTURES

In order to assure that settlement does not exceed allowable values, a program has been established to conduct a survey of a specified number of points at the site on a semiannual basis. The first survey was conducted in May, 1976 to establish base-line elevations for most of the points. Where applicable, the baseline elevations of points established subsequent to the May 1976 survey have been adjusted to the May 1976 survey by an evaluation of the settlement records of settlement points on the same structure or on nearby structures. Baseline elevations for some points were established on dates other than May 1976 as indicated in Table 3.7-5. Additional surveys will be performed semiannually. The determination of the elevation of the points shall be by precise leveling with second order Class II accuracy as defined by the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Survey, 1974. When any settlement point listed in Table 3.7-5 is inaccessible during a survey, comparison to allowable settlement shall be based on settlement of other points on the same structure or on nearby structures having similar foundation conditions. When any settlement point listed in Table 3.7-5 is dislocated or replaced, a documented review of the settlement records of points on the same structure and additionally points on nearby structures having similar foundation conditions shall provide a new reference elevation for the point that reflects the estimated settlement since the base-line survey. If the total settlement or differential settlement exceeds 75 percent of the allowable value, the frequency of surveillance shall be increased as dictated by the engineering review.

Allowable differential movement is controlled by pipe deflections permitted by fixation points in buildings. The items limiting differential settlement are as follows:

<u>Reference</u>	<u>Monitoring</u>	<u>Limiting Items</u>
Containment Unit 1	Fuel Building	Fuel Transfer Tube
Containment Unit 1	Auxiliary Building	3"-WGCB-14
Containment Unit 1	Unit 1 Safeguards Area	12"-SI-1
Containment Unit 1	Unit 1 Main Steam Valve	
	House	6"-SI-6
Containment Unit 1	Service Building (E-3)	32"-SHP-2
Safeguards Area Unit 1	Unit 1 Main Steam Valve	
	House	8"-Q5-3
Auxiliary Building	Unit 1 Main Steam Valve	
	House	8"-WS-113
Auxiliary Building	Fuel Building	4"-RP-28
Auxiliary Building	Service Building Tunnel	24"-WS-102
Service Building (E-5, E-6)	Unit 1 Main Steam Valve	
	House	24"-WS-26-151-Q3
Service Building (E-14)	Unit 2 Main Steam Valve	
	House	24"-WS-426-151-Q3

PLANT SYSTEMS

BASES

3/4.7.12 SETTLEMENT OF CLASS 1 STRUCTURES

<u>Reference</u>	<u>Monitoring</u>	<u>Limiting Items</u>
Auxiliary Feedwater Pump House Unit 1	Pipe Tunnel	3"-WAPD-9-601-Q3
Decontamination Building	Pipe Tunnel	3"-CC-90-151-Q3
Fuel Building	Waste Gas Decay Tank Enclosure	4"-GW-30-154-Q3
Safeguards Area Unit 1	Unit 1 Casing Cooling Building	6"-RS-E15-153A-Q3
Service Water Pump House	Service Water Piping @ SWPH	Expansion Joint
Service Water Pump House	Pipe Hanger in Reservoir	24"-WS-11-151-Q3
Service Water Pump House	Service Water Pump House	Mat

The items limiting total settlement of structures are as follows:

<u>Monitoring Points</u>	<u>Limiting Items</u>
Service Water Piping @ SWPH	36"-WS-1-151-Q3
Circulating Water Intake Structure	Service Water Piping Expansion Joint
Turbine Building (B-9 1/2)	24"-WS-25-151-Q3
Service Building (E-17)	36"-WS-1-151-Q3
Fuel Oil Pump House	2 1/2"-FOF-151-S
Boron Recovery Tank Dike	No settlement expected; settlement in excess of 0.03 feet would indicate an abnormality.

ATTACHMENT 4

PROPOSED UNIT 2 SPECIFICATION

PLANT SYSTEMS

3/4.7.12 SETTLEMENT OF CLASS 1 STRUCTURES

LIMITING CONDITION FOR OPERATION

3.7.12.1 The total settlement of each Class 1 structure or the differential settlement between Class 1 structures shall not exceed the allowable values of Table 3.7-5.

APPLICABILITY: ALL MODES

ACTION:

- a. With either the total settlement of any structure or the differential settlement of any structures exceeding 75 percent of the allowable settlement, conduct an engineering review of field conditions and evaluate the consequences of additional settlement. Submit a special report to the Commission pursuant to Specification 6.9.2 within 60 days, containing the results of the investigation, the evaluation of existing and possible continued settlement, and the remedial action to be taken, if any, including the date of the next survey.
- b. With the total settlement of any structure or the differential settlement of any two structures exceeding the allowable settlement of Table 3.7-5, be in at least HOT STANDBY within 6 hours and COLD SHUT-DOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.12.1 The total settlement of each Class 1 structure or the differential settlement between Class 1 structures listed in Table 3.7-5 shall be determined to the nearest 0.01 foot by measurement and calculation at least once per 6 months.

TABLE 3.7-5

ALLOWABLE TOTAL OR DIFFERENTIAL SETTLEMENT FOR CLASS 1 STRUCTURES

<u>SETTLEMENT POINT</u>	<u>STRUCTURE</u>	<u>SETTLEMENT POINT</u>	<u>STRUCTURE/COMPONENT</u>	<u>ALLOWABLE TOTAL SETTLEMENT² (FEET)</u>	<u>ALLOWABLE DIFFERENTIAL SETTLEMENT² (FEET)</u>
131	Containment Unit 2	224	Fuel Building	N/A	0.12
131	Containment Unit 2	123	Auxiliary Building	N/A	0.05
106	Containment Unit 2	105	Unit 2 Safeguards Area	N/A	0.07
107	Containment Unit 2	108	Unit 2 Safeguards Area	N/A	0.07
131	Containment Unit 2	124	Unit 2 Main Steam Valve House	N/A	0.03
107	Containment Unit 2	116	Service Building (E-15)	N/A	0.12
111	Safeguards Area Unit 2	124	Unit 2 Main Steam Valve House	N/A	0.12
122	Auxiliary Building	120	Unit 2 Main Steam Valve House	N/A	0.04
123	Auxiliary Building	124	Unit 2 Main Steam Valve House	N/A	0.04
123	Auxiliary Building	224	Fuel Building	N/A	0.05
129	Auxiliary Building	223	Fuel Building	N/A	0.05
122	Auxiliary Building	119	Service Building Tunnel	N/A	0.07
243, 132	Service Building (E-5, E-6)	238	Unit 1 Main Steam Valve House	N/A	0.04
117	*Service Building (E-14)	113	Unit 2 Main Steam Valve House	N/A	0.03 from 7/77
231	Auxiliary Feedwater Pump House Unit, 2	249	Pipe Tunnel	N/A	0.12

TABLE 3.7-5 (CONT'D)

ALLOWABLE TOTAL OR DIFFERENTIAL SETTLEMENT FOR CLASS 1 STRUCTURES

<u>SETTLEMENT POINT</u>	<u>STRUCTURE</u>	<u>SETTLEMENT POINT</u>	<u>STRUCTURE/COMPONENT</u>	<u>ALLOWABLE TOTAL SETTLEMENT* (FEET)</u>	<u>ALLOWABLE DIFFERENTIAL SETTLEMENT* (FEET)</u>
228	Decontamination Building	250	Pipe Tunnel	N/A	0.06
226	Fuel Building	251	Waste Gas Decay Tank Enclosure	N/A	0.06
104	Safeguards Area Unit 2	254	Unit 2 Casing Cooling Building	N/A	0.12 from 2/79
7,10	Service Water Pump House	15,16, 17,18	Service Water Piping @ SWPH North Side of Expansion Joint	N/A	0.22 from 7/77
8	Service Water Pump House	H-569 H-584	Pipe Hanger in Reservoir	N/A	0.17
15,16,17,18	Service Water Piping @ SWPH North Side of Expansion Joint			0.22 from 8/78	N/A
204	Circulating Water Intake Structure			0.15	N/A
158	***Turbine Building (B-9 1/2)			0.06	N/A
114	Service Building (E-17)			0.09	N/A
245, 246	Fuel Oil Pump House			0.03	N/A
206, 207, 208, 209	Boron Recovery Tank Dike			0.03	N/A

TABLE 3.7-5 (CONT'D)

ALLOWABLE TOTAL OR DIFFERENTIAL SETTLEMENT FOR CLASS 1 STRUCTURES

<u>SETTLEMENT POINT</u>	<u>STRUCTURE</u>	<u>SETTLEMENT POINT</u>	<u>STRUCTURE/COMPONENT</u>	<u>ALLOWABLE OUT-OF-PLANE DISTORTION (FEET)</u>
7,8,9,10	Service Water Pump House	7,8,9,10	Service Water Pump House	0.06 for any settlement point

*Unless otherwise indicated, allowable settlements are from base-line elevations established in May 1976 or reference elevations corrected to May 1976 survey.

**Critical differential settlement is downward movement of point 117 with respect to point 113.

***Not Class 1 structure, but settlement affects Class 1 pipeline.

PLANT SYSTEMS

BASES

3/4.7.12 SETTLEMENT OF CLASS 1 STRUCTURES

In order to assure that settlement does not exceed allowable values, a program has been established to conduct a survey of a specified number of points at the site on a semiannual basis. The first survey was conducted in May 1976 to establish base-line elevations for most of the points. Where applicable, the baseline elevations of points established subsequent to the May 1976 survey have been adjusted to the May 1976 survey by an evaluation of the settlement records of settlement points on the same structure or on nearby structures. Baseline elevations for some points were established on dates other than May 1976 as indicated in Table 3.7-5. Additional surveys will be performed semiannually. The determination of the elevation of the points shall be by precise leveling with second order Class II accuracy as defined by the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Survey, 1974. When any settlement point listed in Table 3.7-5 is inaccessible during a survey, comparison to allowable settlement shall be based on settlement of other points on the same structure or on nearby structures having similar foundation conditions. When any settlement point listed in Table 3.7-5 is dislocated or replaced, a documented review of the settlement records of points on the same structure and additionally points on nearby structures having similar foundation conditions shall provide a new reference elevation for the point that reflects the estimated settlement since the base-line survey. If the total settlement or differential settlement exceeds 75 percent of the allowable value, the frequency of surveillance shall be increased as dictated by the engineering review.

Allowable differential movement is controlled by pipe deflections permitted by fixation points in buildings. The items limiting differential settlement are as follows:

<u>Reference</u>	<u>Monitoring</u>	<u>Limiting Items</u>
Containment Unit 2	Fuel Building	Fuel Transfer Tube
Containment Unit 2	Auxiliary Building	3"-SI-417
Containment Unit 2	Unit 2 Safeguards Area	6"-RH-418
Containment Unit 2	Unit 2 Main Steam Valve House	6"-SI-416
Containment Unit 2	Service Building (E-15)	16"-WFPD-409
Safeguards Area Unit 2	Unit 2 Main Steam Valve House	24"-WS-426
Auxiliary Building	Unit 2 Main Steam Valve House	8"-SI-440
Auxiliary Building	Fuel Building	4"-RP-28
Auxiliary Building	Service Building Tunnel	24"-WS-102
Service Building (E-5, E-6)	Unit 1 Main Steam Valve House	24"-WS-26-151-Q3
Service Building (E-14)	Unit 2 Main Steam Valve House	24"-WS-426-151-Q3

PLANT SYSTEMS

BASES

3/4.7.12 SETTLEMENT OF CLASS 1 STRUCTURES

<u>Reference</u>	<u>Monitoring</u>	<u>Limiting Items</u>
Auxiliary Feedwater Pump House Unit 2	Pipe Tunnel	6"-WCMU-412-151-Q3
Decontamination Building	Pipe Tunnel	3"-CC-90-151-Q3
Fuel Building	Waste Gas Decay Tank Enclosure	4"-GW-30-154-Q3
Safeguards Area Unit 2	Unit 2 Casing Cooling Building	6"-RS-455-153A-Q3
Service Water Pump House	Service Water Piping @ SWPH	Expansion Joint
Service Water Pump House	Pipe Hanger in Reservoir	24"-WS-11-151-Q3
Service Water Pump House	Service Water Pump House	Mat

The items limiting total settlement of structures are as follows:

<u>Monitoring Points</u>	<u>Limiting Items</u>
Service Water Piping @ SWPH	36"-WS-1-151-Q3
Circulating Water Intake Structure	Service Water Piping Expansion Joint
Turbine Building (B-9 1/2)	24"-WS-425-151-Q3
Service Building (E-17)	36"-WS-1-151-Q3
Fuel Oil Pump House	2 1/2"-FOF-151-S
Boron Recovery Tank Dike	No settlement expected; settlement in excess of 0.03 feet would indicate an abnormality.