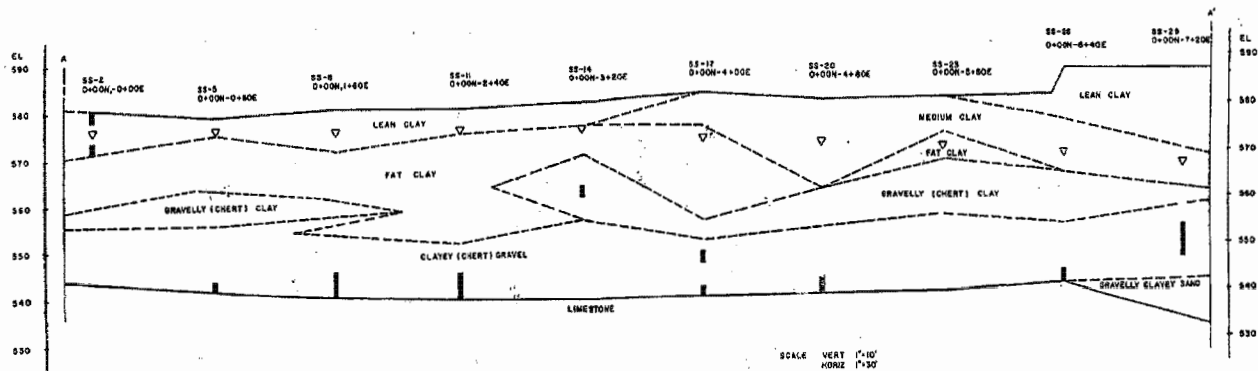
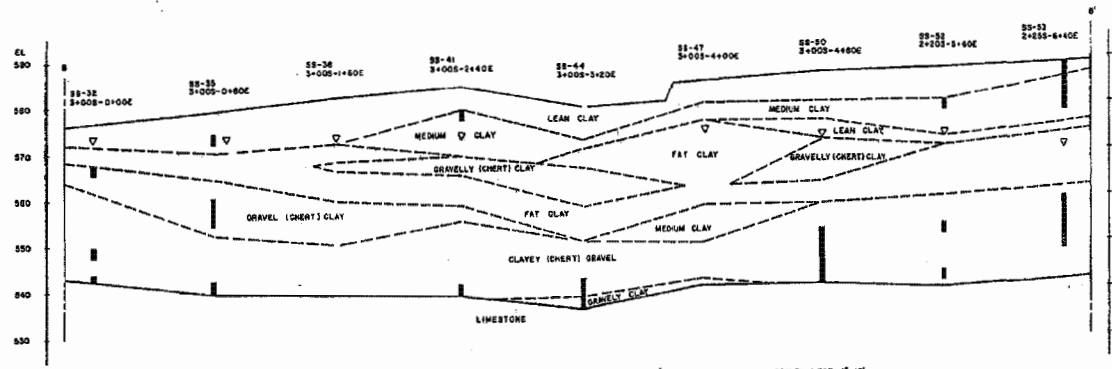


40



NOTE: STRATA CONTINUITY BETWEEN BORINGS ASSUMED



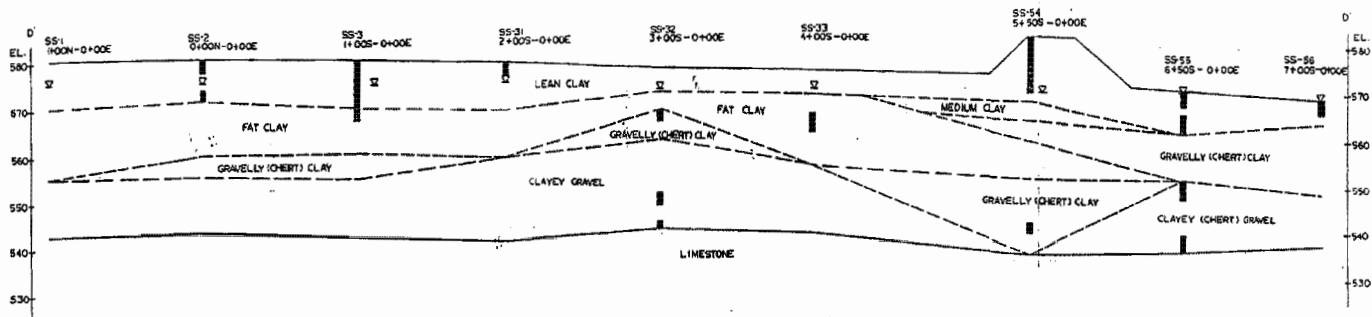
NOTE: STRATA CONTINUITY BETWEEN BORINGS ASSUMED

SYMBOLS  
 WATER TABLE

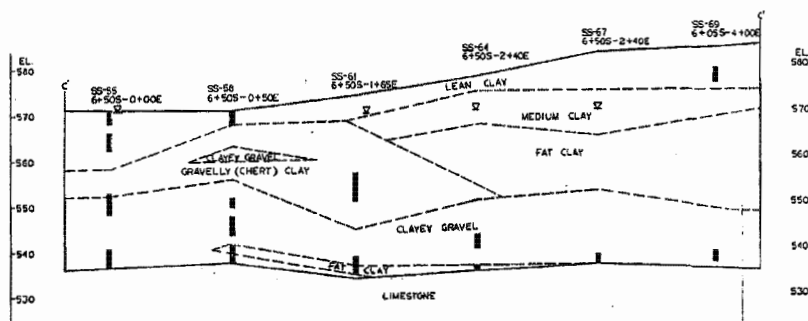
# AMENDMENT 16

BROWNS FERRY NUCLEAR PLANT  
 FINAL SAFETY  
 ANALYSIS REPORT  
 GENERALIZED CROSS SECTION  
 LLRW & A&B STRUCTURES  
 Figure 2.5-S3  
 (Added by Amendment 1)

1" = 10' VERT 1" = 30' HORIZ



NOTE: STRATA CONTINUITY BETWEEN BORINGS ASSUMED



NOTE: STRATA CONTINUITY BETWEEN BORINGS ASSUMED

# SYMBOLS

■ N 10  
 ▽ WATERTABLE

## AMENDMENT 16

BROWNS FERRY NUCLEAR PLANT  
 FINAL SAFETY  
 ANALYSIS REPORT

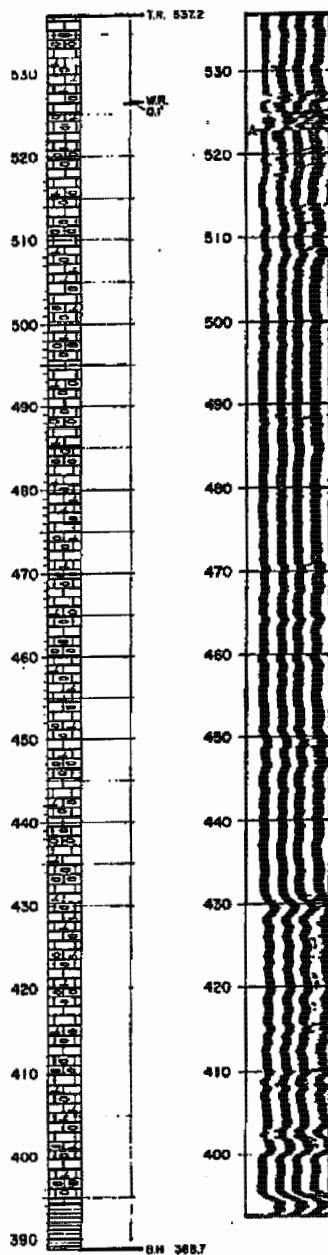
GENERALIZED CROSS SECTION  
 LLRW 0600E B6C STRUCTURES  
 Figure 2.5-84  
 (Added by Amendment 1)

1/8" = 1' HORIZONTAL SCALE 1/8" = 1' VERTICAL SCALE

# **GEOLOGIC LOG** SURFACE ELEVATION 555.2

ELEVATION  
ROCK TYPE  
WEATHERING  
ELEVATION  
SONIC  
FT/SEC X 10<sup>3</sup>

CIG2



CORE RECOVERY  
% Core % Core Loss % Rock  
01 0 99.5

## **LEGEND**



FORT PAYNE  
FORMATION

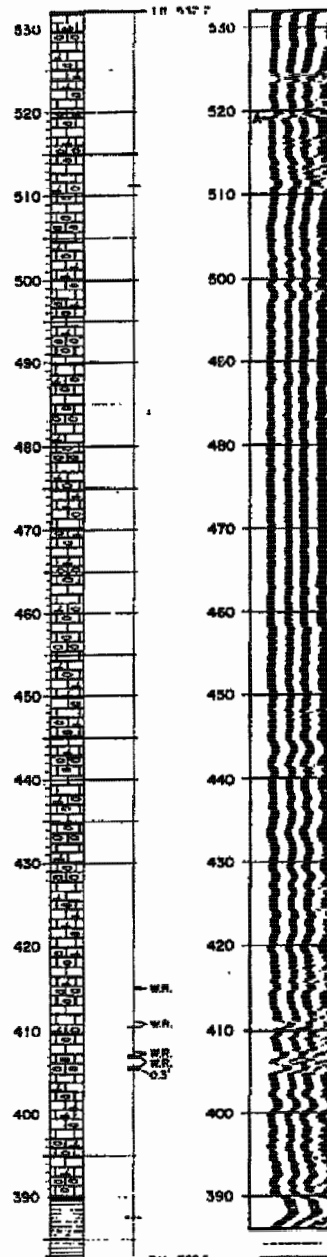
UNCONSOLIDATED  
SAND, SILTSTONE,  
AND LIMESTONE

- TR - TOP OF ROCK  
ELEVATION
- CAVITY
- WEATHERED PARTING
- WR - WEATHERED ROCK
- CLAY SEAM
- BH - BOTTOM OF HOLE  
ELEVATION

# **GEOLOGIC LOG** SURFACE ELEVATION 578.7

ELEVATION  
ROCK TYPE  
WEATHERING  
ELEVATION  
SONIC  
FT/SEC X 10<sup>3</sup>

C60

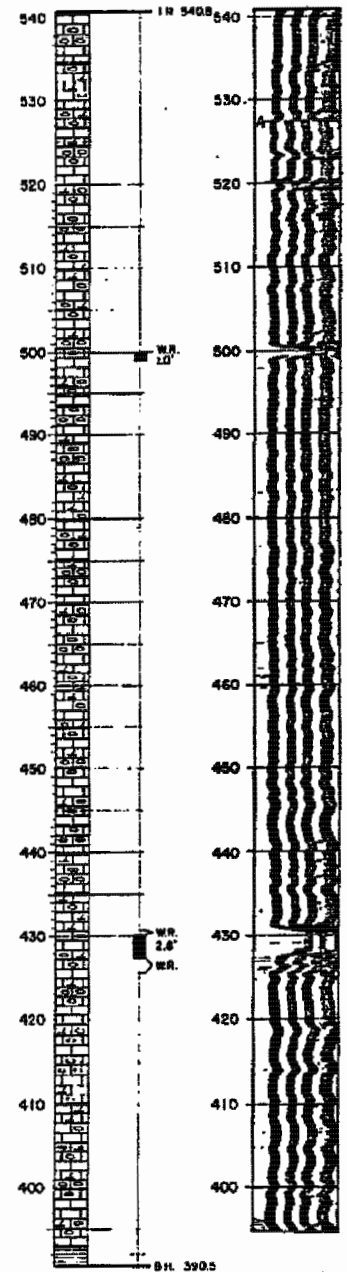


CORE RECOVERY  
% Core % Core Loss % Rock  
0.2 0 99.8

# **GEOLOGIC LOG** SURFACE ELEVATION 587.3

ELEVATION  
ROCK TYPE  
WEATHERING  
ELEVATION  
SONIC  
FT/SEC X 10<sup>3</sup>

C97



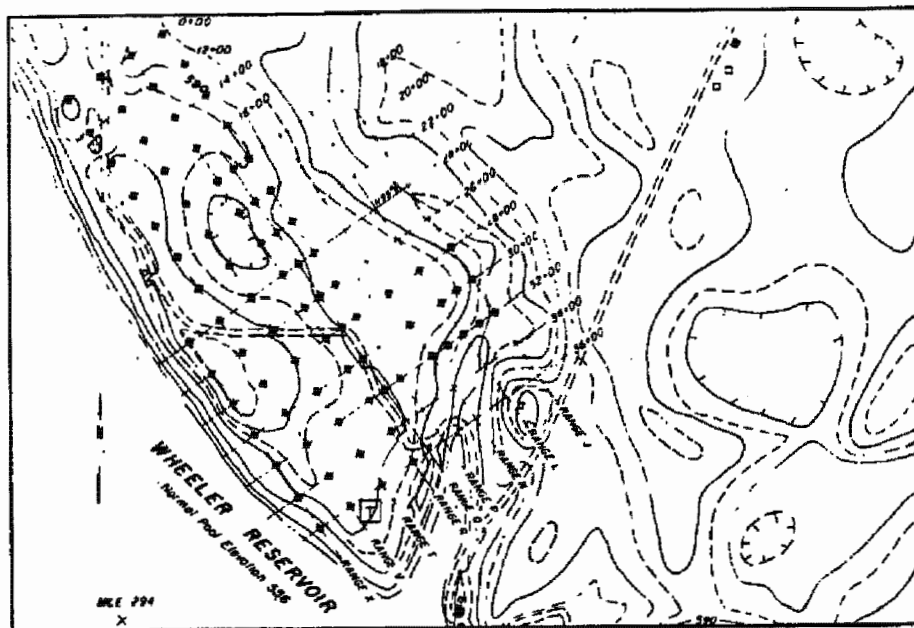
CORE RECOVERY  
% Core % Core Loss % Rock  
2.5 0 97.5

## **BROWNS FERRY NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT**

## **CORE HOLE CORRELATION**

Figure 2.5-S5  
(Added by Amendment 1)

AMENDMENT 16



### BROWNS FERRY SITE

ELEVATION					ELEVATION				
HOLE NUMBER	DEPTH	TOP OF ROCK	TOP OF SOUND ROCK	BOTTOM OF HOLE	HOLE NUMBER	DEPTH	TOP OF ROCK	TOP OF SOUND ROCK	BOTTOM OF HOLE
J-05+00	566.4	509.4	507.6	494.4	T-10+00	564.4	533.7	528.7	523.7
J-10+00	564.8	510.8	506.2	499.8	T-12+00	567.5	531.3	531.3	521.3
J-12+00	560.7	516.7	515.7	499.7	T-14+00	567.2	534.4	534.4	523.7
K-10+00	571.8	514.8	510.8	499.8	T-16+00	568.3	535.4	535.4	524.4
K-12+00	562.3	510.8	510.8	500.3	T-18+00	560.4	531.2	532.3	521.4
L-10+00	577.2	513.4	509.2	496.7	T-20+00	570.4	536.4	536.4	524.4
L-12+00	576.3	511.3	511.3	499.3	T-22+00	562.4	535.1	535.1	522.5
L-14+00	564.4	516.7	516.7	498.7	T-24+00	567.2	536.2	536.2	525.9
M-10+00	575.4	517.5	514.3	500.4	T-26+00	569.3	536.5	536.5	525.5
M-12+00	574.4	510.9	504.6	499.9	T-28+00	567.4	536.4	537.4	523.6
M-14+00	574.4	509.6	509.1	500.4	T-30+00	567.7	534.2	534.2	520.7
M-16+00	574.4	509.6	509.1	500.4	T-32+00	561.5	535.3	533.7	499.5
M-18+00	574.4	509.6	509.1	500.4	T-34+00	561.1	535.1	536.2	500.3
M-20+00	574.4	509.6	509.1	500.4	T-36+00	561.4	533.4	532.4	500.9
N-10+00	575.6	524.2	524.2	514.2	V-10+00	563.4	535.4	530.4	521.5
N-12+00	574.7	526.7	526.5	514.3	V-12+00	568.9	534.1	534.1	521.4
N-14+00	575.4	525.5	523.5	523.4	V-14+00	590.0	534.5	534.5	524.2
N-16+00	584.5	529.7	528.4	519.2	V-16+00	590.8	534.6	534.6	524.6
N-18+00	582.7	521.4	521.4	501.1	V-18+00	590.9	537.9	537.5	524.7
N-20+00	580.5	523.4	523.4	500.7	V-20+00	590.0	547.2	547.2	525.0
N-22+00	579.9	520.3	520.3	497.7	V-22+00	590.8	537.8	537.3	521.3
N-24+00	579.3	518.0	518.0	500.8	V-24+00	596.7	546.7	546.7	525.2
N-26+00	577.4	516.2	516.2	500.8	V-26+00	595.4	537.6	537.6	524.4
N-28+00	577.4	516.2	516.2	500.8	V-28+00	595.5	540.8	540.8	528.0
N-30+00	577.4	516.2	516.2	500.8	V-30+00	587.7	534.1	532.2	520.3
N-32+00	577.4	516.2	516.2	500.8	V-32+00	583.8	529.6	529.6	512.2
N-34+00	577.4	516.2	516.2	500.8	V-34+00	581.2	517.2	516.8	500.8
N-36+00	577.4	516.2	516.2	500.8	V-36+00	581.1	520.1	519.6	506.1
O-10+00	583.1	534.4	530.0	508.9	K-24+00	595.3	542.7	540.6	523.3
O-12+00	580.3	526.3	526.3	516.3	K-26+00	598.0	543.0	544.5	523.5
O-14+00	579.0	530.1	530.1	519.3	K-28+00	592.7	544.3	544.3	520.7
O-16+00	582.8	532.6	529.6	515.3	K-30+00	595.8	542.0	539.2	521.5
O-18+00	579.8	526.1	526.1	515.5	K-32+00	586.7	533.7	531.7	506.0
O-20+00	581.5	531.5	531.5	515.5	K-34+00	588.0	537.0	536.5	506.0
O-22+00	579.5	531.3	526.3	515.3	K-36+00	578.9	517.1	517.1	506.9
O-24+00	577.6	517.4	517.4	504.6					
R-10+00	580.8	526.5	526.3	514.8					
R-12+00	585.0	536.9	536.6	524.0					
R-14+00	585.4	534.1	534.1	521.9					
R-16+00	588.4	533.6	532.3	521.9					
R-18+00	580.6	529.7	528.9	519.1					
R-20+00	577.7	524.9	522.7	515.1					
R-22+00	577.0	522.5	520.9	513.9					
R-24+00	584.9	534.9	534.3	522.1					
R-26+00	587.0	534.2	534.2	521.0					
R-28+00	588.4	535.4	535.4	521.0					
R-30+00	581.1	532.5	531.7	520.2					
R-32+00	580.8	516.8	516.2	495.8					
R-34+00	579.9	518.2	518.2	495.8					
R-36+00	578.5	511.5	511.5	500.0					

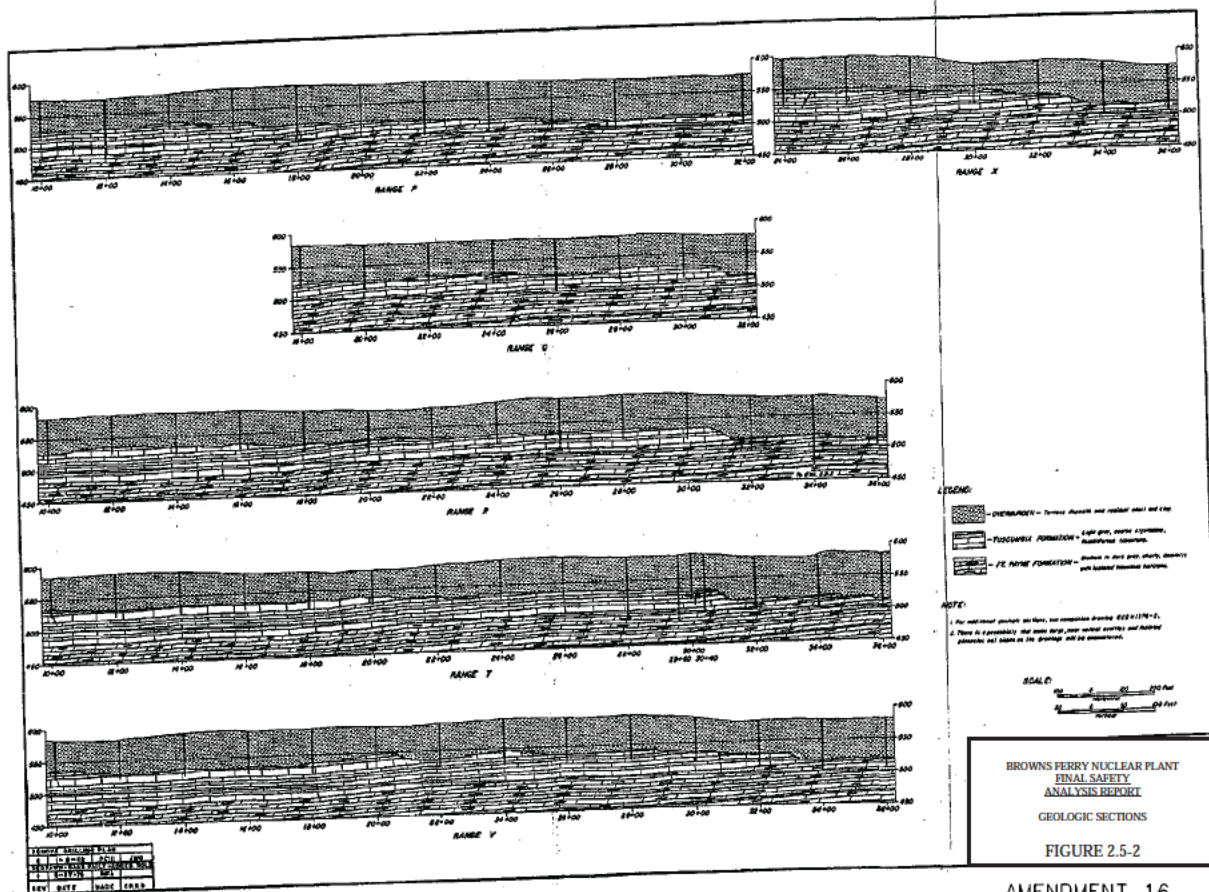
SCALE:

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## AMENDMENT 16

### BROWNS FERRY NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT

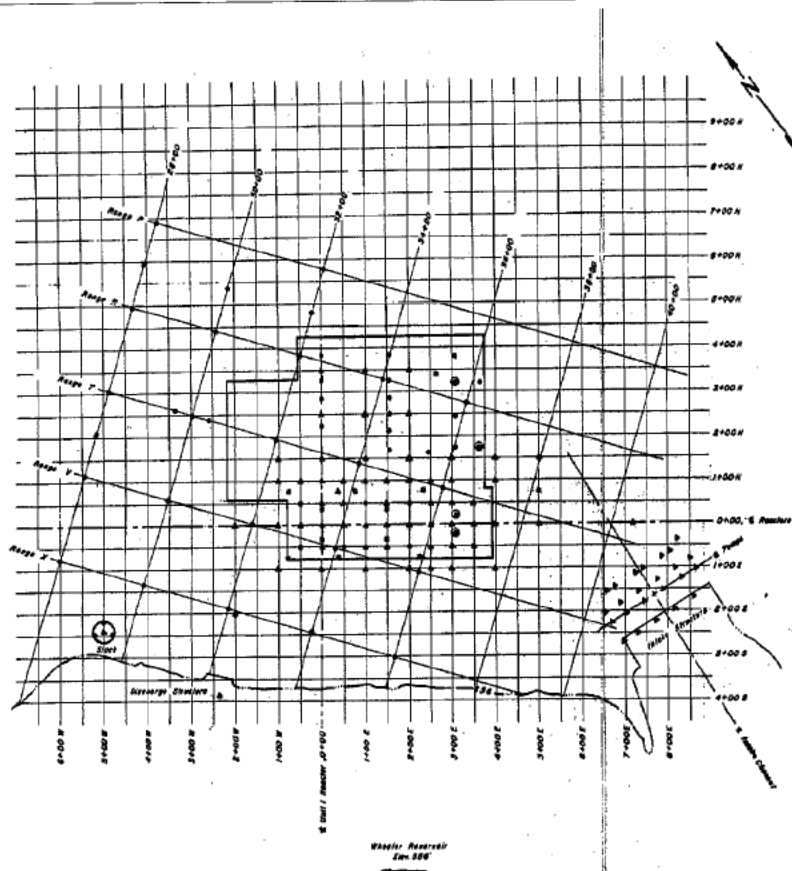
Location and Summary  
of Exploratory Drilling  
FIGURE 2.5-1











# CORE DRILL SUMMARY

SECTION	SECTION	Top of Soil	Top of Soil	Bottom	Bottom
SECTION	SECTION	Top of Soil	Top of Soil	Bottom	Bottom
2-83-10	275.0	275.0	275.0	275.0	275.0
2-83-11	274.5	274.5	274.5	274.5	274.5
2-83-12	274.0	274.0	274.0	274.0	274.0
2-83-13	273.5	273.5	273.5	273.5	273.5
2-83-14	273.0	273.0	273.0	273.0	273.0
2-83-15	272.5	272.5	272.5	272.5	272.5
2-83-16	272.0	272.0	272.0	272.0	272.0
2-83-17	271.5	271.5	271.5	271.5	271.5
2-83-18	271.0	271.0	271.0	271.0	271.0
2-83-19	270.5	270.5	270.5	270.5	270.5
2-83-20	270.0	270.0	270.0	270.0	270.0
2-83-21	269.5	269.5	269.5	269.5	269.5
2-83-22	269.0	269.0	269.0	269.0	269.0
2-83-23	268.5	268.5	268.5	268.5	268.5
2-83-24	268.0	268.0	268.0	268.0	268.0
2-83-25	267.5	267.5	267.5	267.5	267.5
2-83-26	267.0	267.0	267.0	267.0	267.0
2-83-27	266.5	266.5	266.5	266.5	266.5
2-83-28	266.0	266.0	266.0	266.0	266.0
2-83-29	265.5	265.5	265.5	265.5	265.5
2-83-30	265.0	265.0	265.0	265.0	265.0
2-83-31	264.5	264.5	264.5	264.5	264.5
2-83-32	264.0	264.0	264.0	264.0	264.0
2-83-33	263.5	263.5	263.5	263.5	263.5
2-83-34	263.0	263.0	263.0	263.0	263.0
2-83-35	262.5	262.5	262.5	262.5	262.5
2-83-36	262.0	262.0	262.0	262.0	262.0
2-83-37	261.5	261.5	261.5	261.5	261.5
2-83-38	261.0	261.0	261.0	261.0	261.0
2-83-39	260.5	260.5	260.5	260.5	260.5
2-83-40	260.0	260.0	260.0	260.0	260.0
2-83-41	259.5	259.5	259.5	259.5	259.5
2-83-42	259.0	259.0	259.0	259.0	259.0
2-83-43	258.5	258.5	258.5	258.5	258.5
2-83-44	258.0	258.0	258.0	258.0	258.0
2-83-45	257.5	257.5	257.5	257.5	257.5
2-83-46	257.0	257.0	257.0	257.0	257.0
2-83-47	256.5	256.5	256.5	256.5	256.5
2-83-48	256.0	256.0	256.0	256.0	256.0
2-83-49	255.5	255.5	255.5	255.5	255.5
2-83-50	255.0	255.0	255.0	255.0	255.0
2-83-51	254.5	254.5	254.5	254.5	254.5
2-83-52	254.0	254.0	254.0	254.0	254.0
2-83-53	253.5	253.5	253.5	253.5	253.5
2-83-54	253.0	253.0	253.0	253.0	253.0
2-83-55	252.5	252.5	252.5	252.5	252.5
2-83-56	252.0	252.0	252.0	252.0	252.0
2-83-57	251.5	251.5	251.5	251.5	251.5
2-83-58	251.0	251.0	251.0	251.0	251.0
2-83-59	250.5	250.5	250.5	250.5	250.5
2-83-60	250.0	250.0	250.0	250.0	250.0
2-83-61	249.5	249.5	249.5	249.5	249.5
2-83-62	249.0	249.0	249.0	249.0	249.0
2-83-63	248.5	248.5	248.5	248.5	248.5
2-83-64	248.0	248.0	248.0	248.0	248.0
2-83-65	247.5	247.5	247.5	247.5	247.5
2-83-66	247.0	247.0	247.0	247.0	247.0
2-83-67	246.5	246.5	246.5	246.5	246.5
2-83-68	246.0	246.0	246.0	246.0	246.0
2-83-69	245.5	245.5	245.5	245.5	245.5
2-83-70	245.0	245.0	245.0	245.0	245.0
2-83-71	244.5	244.5	244.5	244.5	244.5
2-83-72	244.0	244.0	244.0	244.0	244.0
2-83-73	243.5	243.5	243.5	243.5	243.5
2-83-74	243.0	243.0	243.0	243.0	243.0
2-83-75	242.5	242.5	242.5	242.5	242.5
2-83-76	242.0	242.0	242.0	242.0	242.0
2-83-77	241.5	241.5	241.5	241.5	241.5
2-83-78	241.0	241.0	241.0	241.0	241.0
2-83-79	240.5	240.5	240.5	240.5	240.5
2-83-80	240.0	240.0	240.0	240.0	240.0
2-83-81	239.5	239.5	239.5	239.5	239.5
2-83-82	239.0	239.0	239.0	239.0	239.0
2-83-83	238.5	238.5	238.5	238.5	238.5
2-83-84	238.0	238.0	238.0	238.0	238.0
2-83-85	237.5	237.5	237.5	237.5	237.5
2-83-86	237.0	237.0	237.0	237.0	237.0
2-83-87	236.5	236.5	236.5	236.5	236.5
2-83-88	236.0	236.0	236.0	236.0	236.0
2-83-89	235.5	235.5	235.5	235.5	235.5
2-83-90	235.0	235.0	235.0	235.0	235.0
2-83-91	234.5	234.5	234.5	234.5	234.5
2-83-92	234.0	234.0	234.0	234.0	234.0
2-83-93	233.5	233.5	233.5	233.5	233.5
2-83-94	233.0	233.0	233.0	233.0	233.0
2-83-95	232.5	232.5	232.5	232.5	232.5
2-83-96	232.0	232.0	232.0	232.0	232.0
2-83-97	231.5	231.5	231.5	231.5	231.5
2-83-98	231.0	231.0	231.0	231.0	231.0
2-83-99	230.5	230.5	230.5	230.5	230.5
2-83-100	230.0	230.0	230.0	230.0	230.0

## LEGEND:

- - Damaged or rare hole.
- - Core hole investigated with resistivity gamma log.
- ▲ - Permeable drill hole.
- - Permeable drill hole investigated with shortlog permeability.

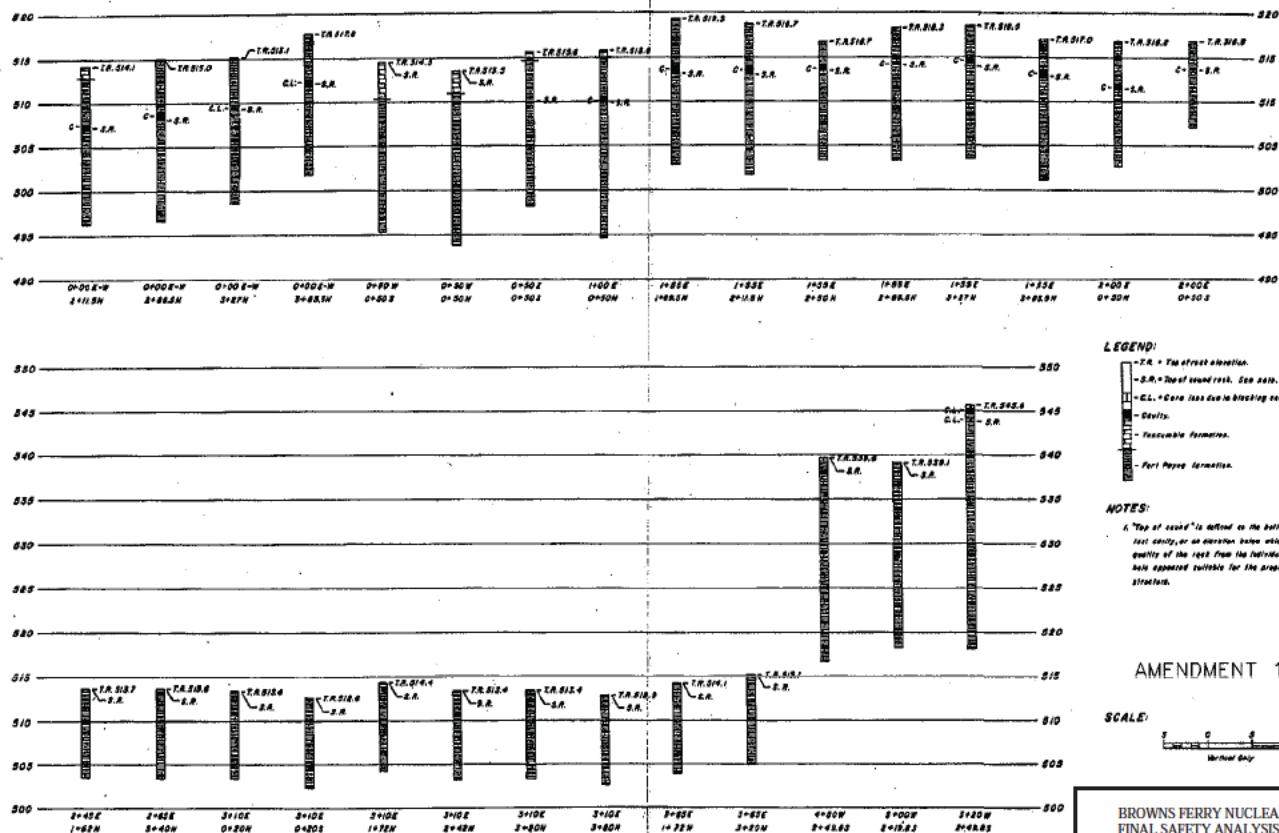
AMENDMENT 16

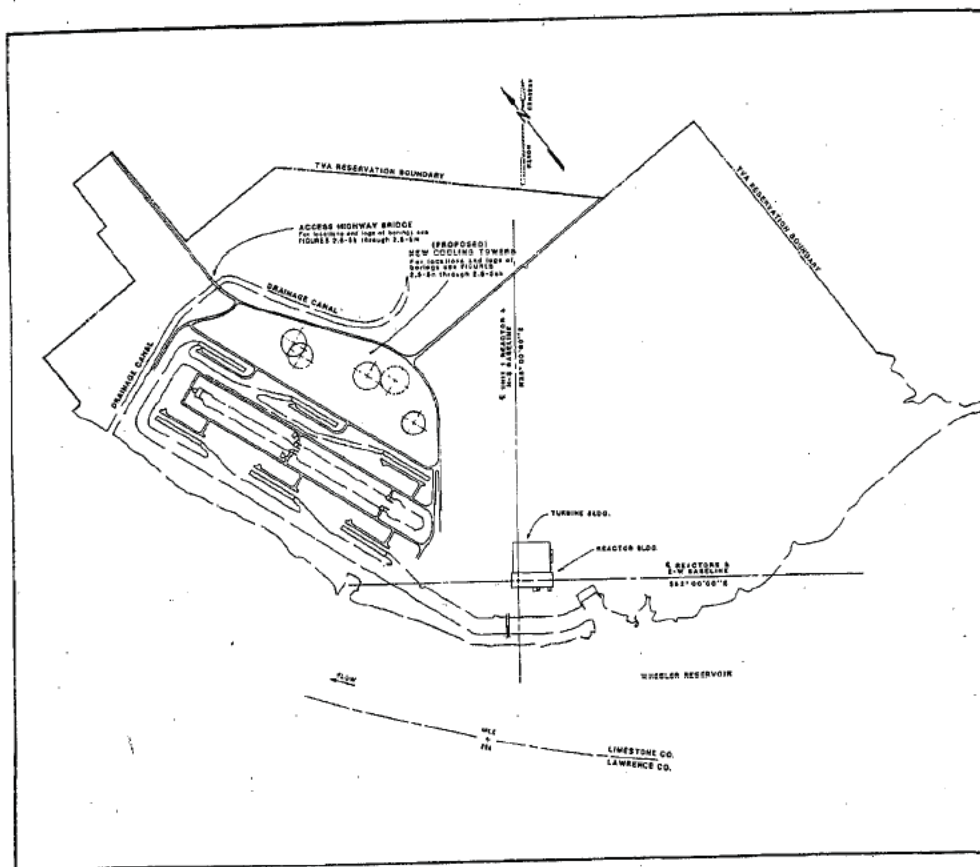
SCALE: 0 100 200 Feet

BROWNS FERRY NUCLEAR PLANT  
FINAL SAFETY ANALYSIS REPORT

Drill Hole Locations  
and  
Core Drill Summary

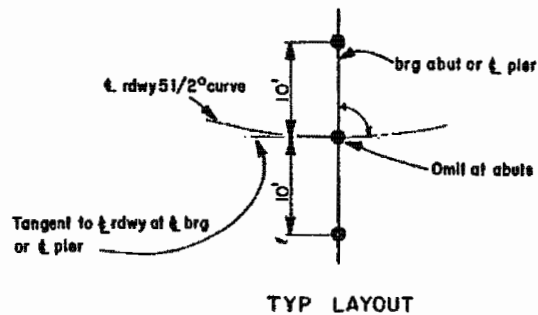
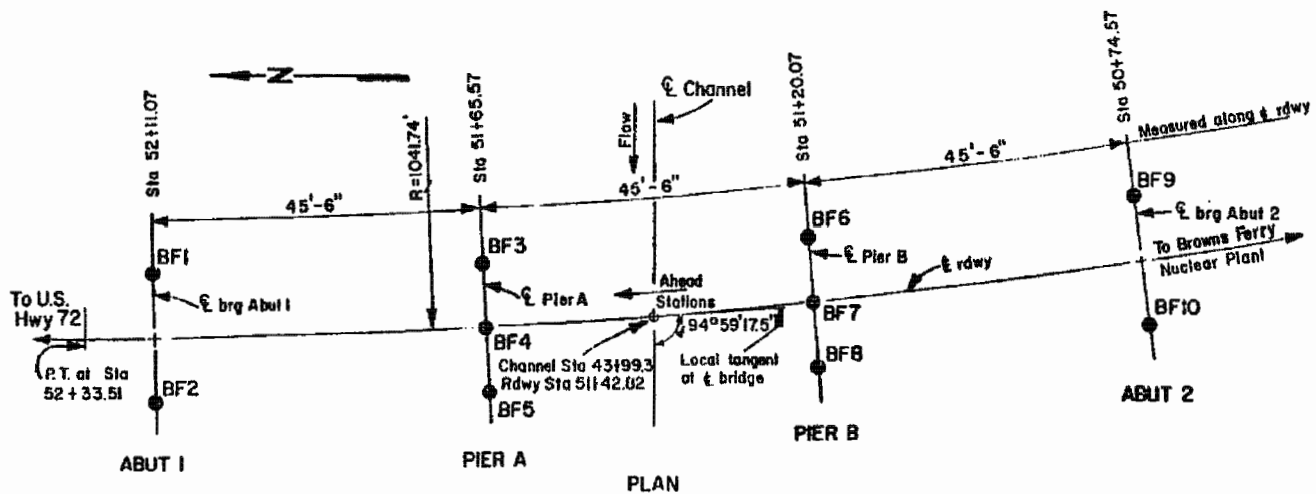
FIGURE 2.5-4





# AMENDMENT 16

BROWNS FERRY NUCLEAR PLANT  
 FINAL SAFETY ANALYSIS REPORT  
 MISCELLANEOUS FOUNDATION  
 INVESTIGATIONS 1972 TO 1980  
 FIGURE 2.5-5a



Not to Scale  
AMENDMENT 16

BROWNS FERRY NUCLEAR PLANT  
FINAL SAFETY  
ANALYSIS REPORT

ACCESS HIGHWAY BRIDGE  
DRILL LAYOUT  
FIGURE 2.5-5b

## GEOLOGIC RECORD OF DRILL HOLE

PROJECT BROWNS FERRY BRIDGE

Hole Number	Location	Geologic Formation	
BF-1	Exploration Abutment #1	Ft. Payne	
Elevation of Surface		Elevation of Water Loss	
579.6		None	
Elevation Top of Bedrock	Thickness of Overburden	Elevation of Water Gained	
531.0	48.6	None	
Elevation Bottom of Hole	Size of Core	Driller	
525.2	Nx-wireline	Collins	
Recommended Foundation Grade	Bottom of Weathering Encountered	Date Started	Date Completed
-----	530.7	4/25/72	

Material	Elevation of Stratum	Depth From Surface	Thickness of Stratum	Dip	Description
		OVERBURDEN			
Red clay	579.6	0.0	3.0		
Gray clay	576.6	3.0	6.0		
Yellow clay	570.6	9.0	12.0		
Yellow clay and chert	558.6	21.0	27.6		
		ROCK DRILLING			
Limestone	531.0	48.6	5.8		Light gray, fine grain, broken and ground to 530.7; calcite vug at 528.7, 528.3, 525.2
BOTTOM OF HOLE	525.2	54.4			

## REMARKS:

Water test:  
Elevation      G.P.M.      P.S.I.

For location of boring,  
see figure 2.5-5b.

AMENDMENT 16

BROWNS FERRY NUCLEAR PLANT  
FINAL SAFETY  
ANALYSIS REPORT

ACCESS HIGHWAY BRIDGE  
HOLE BF-1  
FIGURE 2.5-5c

Logged By A. D. Soderberg



## GEOLOGIC RECORD OF DRILL HOLE

PROJECT BROWNS FERRY BRIDGE

Hole Number <b>BF-3</b>	Location  <b>Exploration Pier A</b>	Geologic Formation <b>Ft. Payne</b>	
Elevation of Surface <b>579.5</b>		Elevation of Water Loss <b>None</b>	
Elevation Top of Bedrock <b>531.8</b>	Thickness of Overburden <b>47.7</b>	Elevation of Water Gained <b>None</b>	
Elevation Bottom of Hole <b>515.2</b>	Size of Core <b>Nx-wireline</b>	Driller <b>Anderson</b>	
Recommended Foundation Grade <b>-----</b>	Bottom of Weathering Encountered <b>531.8</b>	Date Started <b>4/25/72</b>	Date Completed <b>4/25/72</b>

Material	Elevation of Stratum	Depth From Surface	Thickness of Stratum	Dip	Description
			<b>OVERBURDEN</b>		
Red clay	579.5	0.0	3.0		
Brown clay	576.5	3.0	2.0		
Gray clay	574.5	5.0	5.0		
Brown clay and boulders	569.5	10.0	37.7		
			<b>ROCK DRILLING</b>		
Limestone	531.8	47.7	16.6		Light to medium gray, fine grain, calcite vug at 528.5, 528.1, 527.2, 522.8, 515.6; 0.1' shale at 523.0; near vertical joint 522.5 to 521.9
<b>BOTTOM OF HOLE</b>	<b>515.2</b>	<b>64.3</b>			

REMARKS:

Water test:  
Elevation      G.P.M.      P.S.I.

For location of boring,  
see figure 2.5-5b.

**AMENDMENT 16**

**BROWNS FERRY NUCLEAR PLANT  
FINAL SAFETY  
ANALYSIS REPORT**

**ACCESS HIGHWAY BRIDGE  
HOLE BF-3  
FIGURE 2.5-5e**

Logged By A. D. Soderberg



## GEOLOGIC RECORD OF DRILL HOLE

PROJECT BROWNS FERRY BRIDGE

Hole Number	Location	Geologic Formation
BF-4	Exploration Pier A	Ft. Payne
Elevation of Surface		Elevation of Water Loss
579.4		None
Elevation Top of Bedrock	Thickness of Overburden	Elevation of Water Gained
	46.9	None
Elevation Bottom of Hole	Size of Core	Driller
	Nx-wireline	Collins
Recommended Foundation Grade	Bottom of Weathering Encountered	Date Started
	532.3	4/27/72
		Date Completed
		4/27/72

Material	Elevation of Stratum	Depth From Surface	Thickness of Stratum	Dip	Description
			OVERBURDEN		
Yellow and red clay	579.4	0.0	2.0		
Yellow clay & chert	577.4	2.0	44.9		
			ROCK DRILLING		
Limestone	532.5	46.9	15.6		Light gray, fine grain, weathered to 532.3; calcite vug at 531.8, 529.0, 528.0; 0.1' clay seam at 529.4; weathered parting 519.8; cherty 518.5 to 518.1
BOTTOM OF HOLE	516.9	62.5			

REMARKS:

Water test:

Elevation

G.P.M.

P.S.I.

For location of boring,  
see figure 2.5-5b.

AMENDMENT 16

BROWNS FERRY NUCLEAR PLANT  
FINAL SAFETY  
ANALYSIS REPORTACCESS HIGHWAY BRIDGE  
HOLE BF-4  
FIGURE 2.5-5fLogged By A. D. Soderberg



## GEOLOGIC RECORD OF DRILL HOLE

PROJECT \_\_\_\_\_

Hole Number BF-6	Location  Exploration Pier B	Geologic Formation Ft. Payne	
Elevation of Surface 579.6		Elevation of Water Loss None	
Elevation Top of Bedrock 540.8	Thickness of Overburden 48.8	Elevation of Water Gained None	
Elevation Bottom of Hole 515.2	Size of Core Nx-wireline	Driller Collins	
Recommended Foundation Grade 540.8	Bottom of Weathering Encountered 526.1	Date Started 4/24/72	Date Completed 4/24/72

Material	Elevation of Stratum	Depth From Surface	Thickness of Stratum	Dip	Description
					<u>OVERBURDEN</u>
Red clay	579.6	0.0	5.0		
Gray clay	574.6	5.0	6.0		
Yellow clay	568.6	11.0	7.0		
Red & yellow clay	561.6	18.0	17.0		
Brown clay and sand	544.6	35.0	13.8		
					<u>ROCK DRILLING</u>
Limestone	540.8	48.8	15.6		Medium gray, fine grain, weathered parting 530.5, vuggy 528.8, weathered parting 526.1, near vertical joint 525.6 to 525.4, 524.7 to 524.3, cherty 525.8 to 525.3
BOTTOM OF HOLE	515.2	64.4			

REMARKS:

Water test:  
Elevation      G.P.M.      P.S.I.

For location of boring,  
see figure 2.5-5b.

AMENDMENT 16

BROWNS FERRY NUCLEAR PLANT  
FINAL SAFETY  
ANALYSIS REPORT

ACCESS HIGHWAY BRIDGE  
HOLE BF-6  
FIGURE 2.5-5h

Logged By A. D. Soderberg

## GEOLOGIC RECORD OF DRILL HOLE

PROJECT BROWNS FERRY BRIDGE

Hole Number BF-7	Location Exploration Pier B	Geologic Formation Ft. Payne
Elevation of Surface 579.8	Thickness of Overburden 47.4	Elevation of Water Loss None
Elevation Top of Bedrock 532.4	Size of Core Nx-wireline	Elevation of Water Gained None
Elevation Bottom of Hole 516.0	Bottom of Weathering Encountered 531.1	Driller Anderson
Recommended Foundation Grade		Date Started 4/27/72
		Date Completed 4/27/72

Material	Elevation of Stratum	Depth From Surface	Thickness of Stratum	Dip	Description
					OVERBURDEN
Red clay	579.8	0.0	2.0		
Brown clay	577.8	2.0	3.0		
Yellow clay	574.8	5.0	2.0		
Brown clay and boulders	572.8	7.0			
					ROCK DRILLING
Limestone	532.4	47.4	6.1		Light gray, fine grain; weathered to 531.1; calcite vug at 527.9, 527.7; near vertical joint 529.4; clay seam 528.1
Limestone	526.3	53.5	10.3		Medium gray, fine grain with scattered shale
BOTTOM OF HOLE	516.0	63.8			

REMARKS:

Water test:  
Elevation      G.P.M.      P.S.I.

For location of boring,  
see figure 2.5-5b.

AMENDMENT 16

BROWNS FERRY NUCLEAR PLANT  
FINAL SAFETY  
ANALYSIS REPORT

ACCESS HIGHWAY BRIDGE  
HOLE BF-7  
FIGURE 2.5-5i

Logged By A. D. Soderberg

## GEOLOGIC RECORD OF DRILL HOLE

PROJECT BROWNS FERRY BRIDGE

Hole Number BF-8	Location  Exploration Pier B	Geologic Formation Ft. Payne	
Elevation of Surface 579.1		Elevation of Water Loss None	
Elevation Top of Bedrock 531.1	Thickness of Overburden 48.0	Elevation of Water Gained None	
Elevation Bottom of Hole 516.0	Size of Core Nx-wireline	Driller Anderson	
Recommended Foundation Grade	Bottom of Weathering Encountered 530.8	Date Started 4/27/72	Date Completed 4/27/72

Material	Elevation of Stratum	Depth From Surface	Thickness of Stratum	Dip	Description
					<u>OVERBURDEN</u>
Red clay	579.1	0.0	2.0		
Brown clay	577.1	2.0	3.6		
Gray clay	573.5	5.6	3.0		
Red clay and boulders	570.5	8.6	39.4		
					<u>ROCK DRILLING</u>
Limestone	531.1	48.0	15.1		Light gray, fine grain, weathered to 530.8; calcite vug at 529.6, 528.6; calcite on near vertical joint 525.9; clay seam at 526.4, 526.0; calcite on weathered near vertical joint 517.1 to 516.9
BOTTOM OF HOLE	516.0	63.1			

REMARKS:

Water test:  
Elevation      G.P.M.      P.S.I.

For location of boring,  
see figure 2.5-5b.

AMENDMENT 16

BROWNS FERRY NUCLEAR PLANT  
FINAL SAFETY  
ANALYSIS REPORT

ACCESS HIGHWAY BRIDGE  
HOLE BF-8  
FIGURE 2.5-5j

Logged By A. D. Soderberg

## GEOLOGIC RECORD OF DRILL HOLE

PROJECT BROWNS FERRY BRIDGE

Hole Number <b>BF-9</b>	Location  <b>Exploration Abutment #2</b>	Geologic Formation <b>Ft. Payne</b>	
Elevation of Surface <b>579.0</b>		Elevation of Water Loss <b>None</b>	
Elevation Top of Bedrock <b>531.5</b>	Thickness of Overburden <b>47.5</b>	Elevation of Water Gained <b>None</b>	
Elevation Bottom of Hole <b>516.5</b>	Size of Core <b>Nx-wireline</b>	Driller <b>Anderson</b>	
Recommended Foundation Grade <b>531.5</b>	Bottom of Weathering Encountered <b>519.0</b>	Date Started <b>4/24/72</b>	Date Completed <b>4/25/72</b>

Material	Elevation of Stratum	Depth From Surface	Thickness of Stratum	Dip	Description
			<u>OVERBURDEN</u>		
Red clay	579.0	0.0	2.0		
Brown clay	577.0	2.0	1.0		
Gray clay	576.0	3.0	3.0		
Brown clay and boulders	573.0	6.0	41.5		
			<u>ROCK DRILLING</u>		
Limestone	531.5	47.5	15.0		Medium gray, fine grain, near vertical joint 531.5 to 531.0; calcite filled vuggy at 530.5; clay seam 527.2 to 527.1; chert 524.1 to 523.3; weathered parting 519.0
<b>BOTTOM OF HOLE</b>	<b>516.5</b>	<b>62.5</b>			

REMARKS:

Water test:  
Elevation      G.P.M.      P.S.I.

For location of boring,  
see figure 2.5-5b.

AMENDMENT 16

**BROWNS FERRY NUCLEAR PLANT  
FINAL SAFETY  
ANALYSIS REPORT**

**ACCESS HIGHWAY BRIDGE  
HOLE BF-9  
FIGURE 2.5-5k**

Logged By A. D. Soderberg

## GEOLOGIC RECORD OF DRILL HOLE

PROJECT BROWNS FERRY BRIDGE

Hole Number <b>BF-10</b>	Location	Geologic Formation <b>Fr. Payne</b>	
Elevation of Surface <b>579.75</b>	Exploration <b>Abutment #2</b>	Elevation of Water Loss <b>None</b>	
Elevation Top of Bedrock <b>527.8</b>	Thickness of Overburden <b>52.0</b>	Elevation of Water Gained <b>None</b>	
Elevation Bottom of Hole <b>522.1</b>	Size of Core <b>Nx-wireline</b>	Driller <b>Anderson</b>	
Recommended Foundation Grade	Bottom of Weathering Encountered <b>527.8</b>	Date Started <b>4/28/72</b>	Date Completed

Material	Elevation of Stratum	Depth From Surface	Thickness of Stratum	Dip	Description
OVERBURDEN					
Red clay	579.8	0.0	3.0		
Gray clay	576.8	3.0	6.0		
Brown clay	570.8	9.0	41.0		
Gray clay and boulders	529.8	50.0	2.0		
ROCK DRILLING					
Limestone	527.8	52.0	5.7		Light gray, fine grain
BOTTOM OF HOLE	522.1	57.7			

REMARKS:

Water test:  
Elevation      G.P.M.      P.S.I.

For location of boring,  
see figure 2.5-5b.

AMENDMENT 16

BROWNS FERRY NUCLEAR PLANT  
FINAL SAFETY  
ANALYSIS REPORT

ACCESS HIGHWAY BRIDGE  
HOLE BF-10  
FIGURE 2.5-51

Logged By A. D. Soderberg

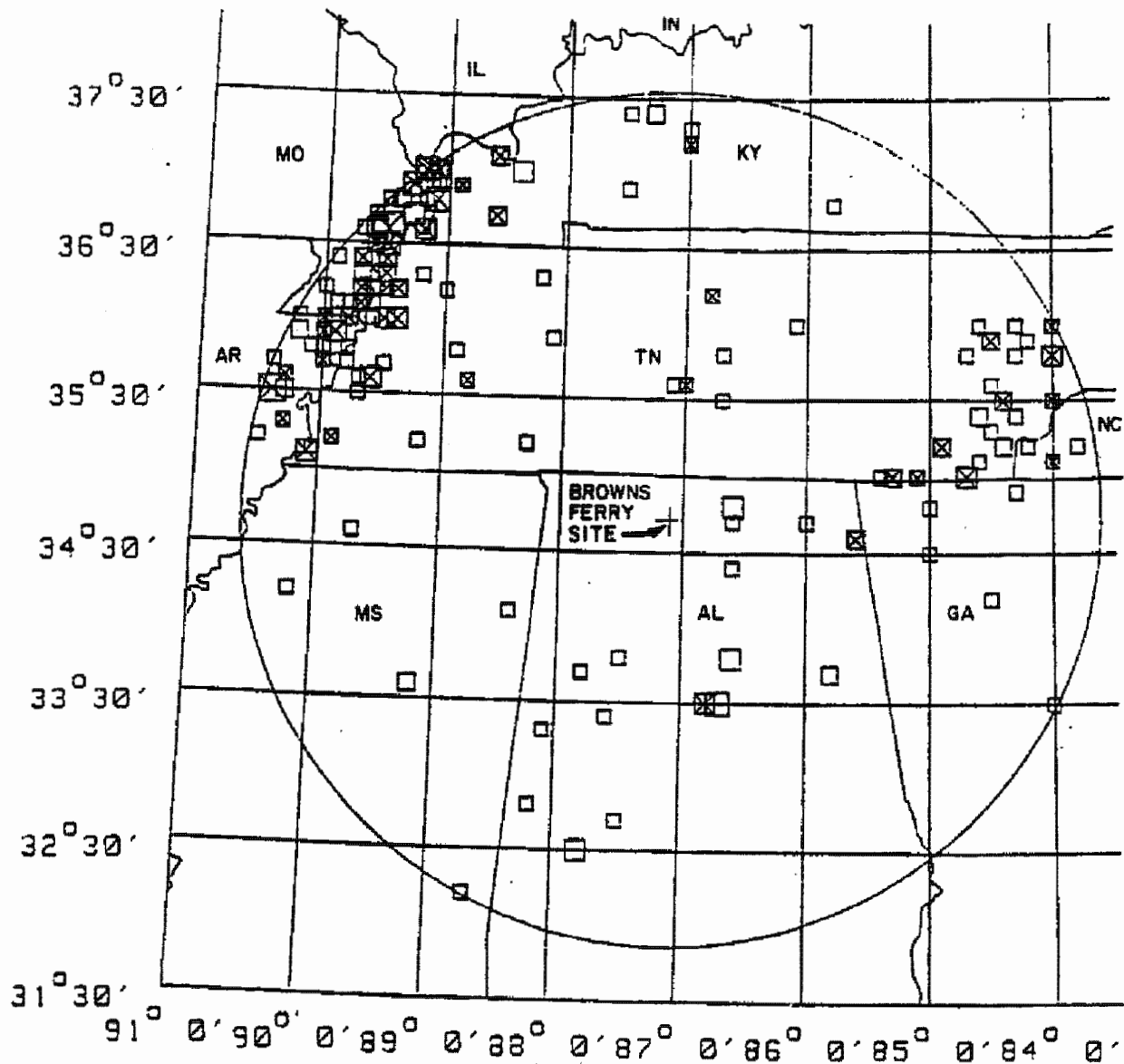


BFN-21

Figures 2.5-5m through 2.5-5aj  
(Deleted by Amendment 13)

|

**BROWNS FERRY PLANT  
HISTORICAL EARTHQUAKE MAP (EPICENTERS THROUGH 1980)  
200 MILE RADIUS AROUND 87° 11' W LON 34.21° N LAT**



STATUTE MILES  
0 40 80 120  
SCALE:

- LEGEND:**
- INTENSITY = IV
  - INTENSITY = V
  - INTENSITY = VI
  - INTENSITY = VII
  - INTENSITY = VIII
  - INTENSITY = IX
  - MULTIPLE EVENTS

**NOTE:**  
SYMBOL REPRESENTS LARGEST  
EVENT AT THAT LOCATION

## AMENDMENT 16

**BROWNS FERRY NUCLEAR PLANT  
FINAL SAFETY  
ANALYSIS REPORT**

**HISTORICAL EARTHQUAKE MAP**

**FIGURE 2.5-6**

## THE MODIFIED MERCALLI INTENSITY SCALE OF 1931

### (ABRIDGED)

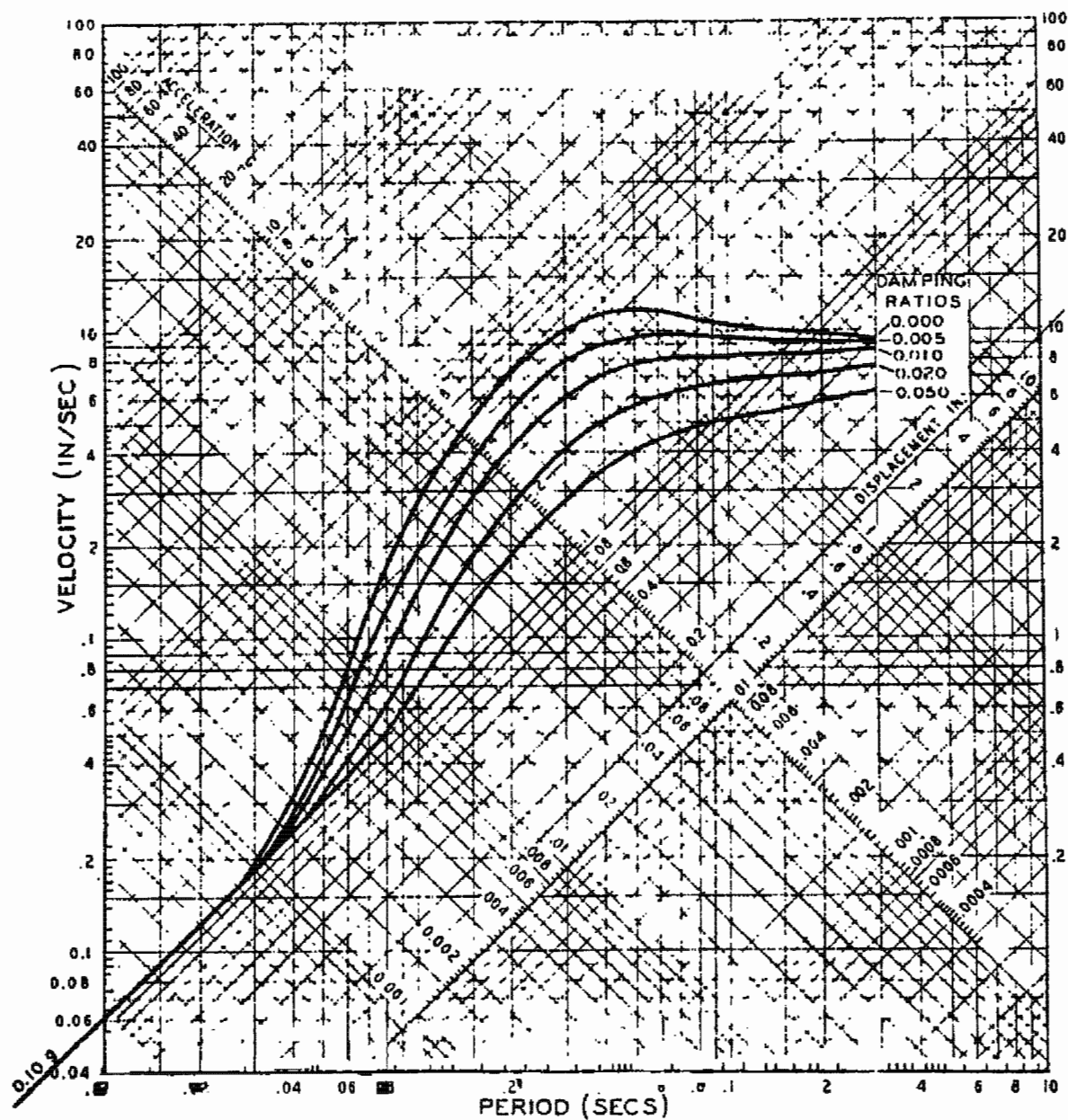
- |   |   |
|---|---|
| <p>I. Not felt except by a very few under specially favorable circumstances. (I Rossi-Forel Scale.)</p> <p>II. Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing. (I to II Rossi-Forel Scale.)</p> <p>III. Felt quite noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motorcars may rock slightly. Vibration like passing of truck. Duration estimated. (III Rossi-Forel Scale.)</p> <p>IV. During the day felt indoors by many, outdoors by few. At night some awakened. Dishes, windows, doors disturbed; walls make creaking sound. Sensation like heavy truck striking building. Standing motorcars rocked noticeably. (IV to V Rossi-Forel Scale.)</p> <p>V. Felt by nearly everyone, many awakened. Some dishes, windows, etc., broken; a few instances of cracked plaster; unstable objects overturned. Disturbances of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop. (V to VI Rossi-Forel Scale.)</p> <p>VI. Felt by all, many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight. (VI to VII Rossi-Forel Scale.)</p> <p>VII. Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures;</p> | <p>considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motorcars. (VIII Rossi-Forel Scale.)</p> <p>VIII. Damage slight in specially designed structures; considerable in ordinary substantial buildings with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving motorcars disturbed. (VIII+ to IX-- Rossi-Forel Scale.)</p> <p>IX. Damage considerable in specially designed frame structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. (IX+ Rossi-Forel Scale.)</p> <p>X. Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from riverbanks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks. (X Rossi-Forel Scale.)</p> <p>XI. Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.</p> <p>XII. Damage total. Waves seen on ground surfaces. Lines of sight and level distorted. Objects thrown upward into air.</p> |
|---|---|

## AMENDMENT 16

**BROWNS FERRY NUCLEAR PLANT  
FINAL SAFETY  
ANALYSIS REPORT**

**MODIFIED MERCALLI INTENSITY  
SCALE OF 1931 (ABRIDGED)**

**FIGURE 2.5-7**

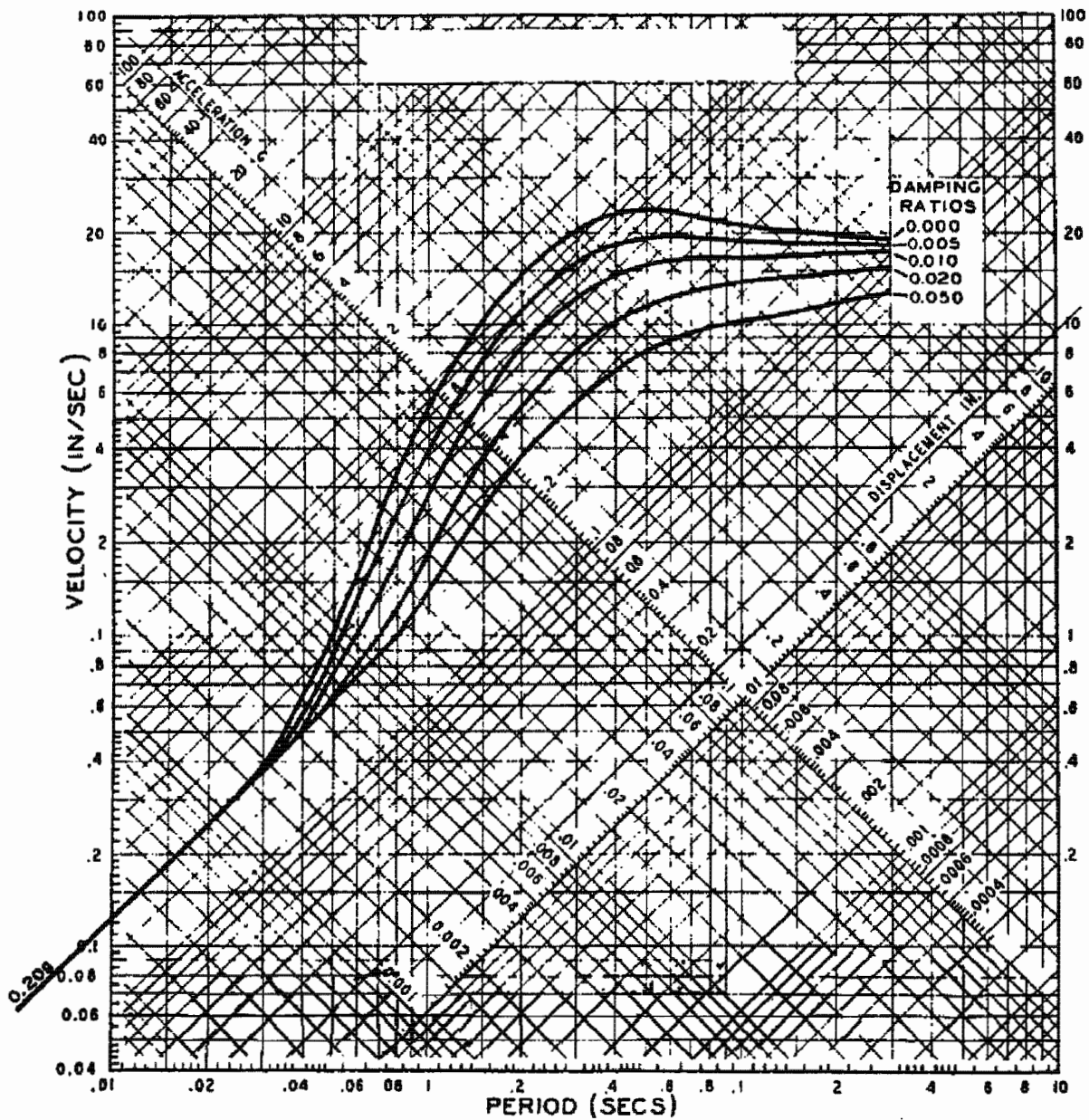


AMENDMENT 16

BROWNS FERRY NUCLEAR PLANT  
FINAL SAFETY  
ANALYSIS REPORT

SITE DESIGN SPECTRUM  
OPERATIONAL BASIS EARTHQUAKE  
HORIZONTAL

FIGURE 2.5-8

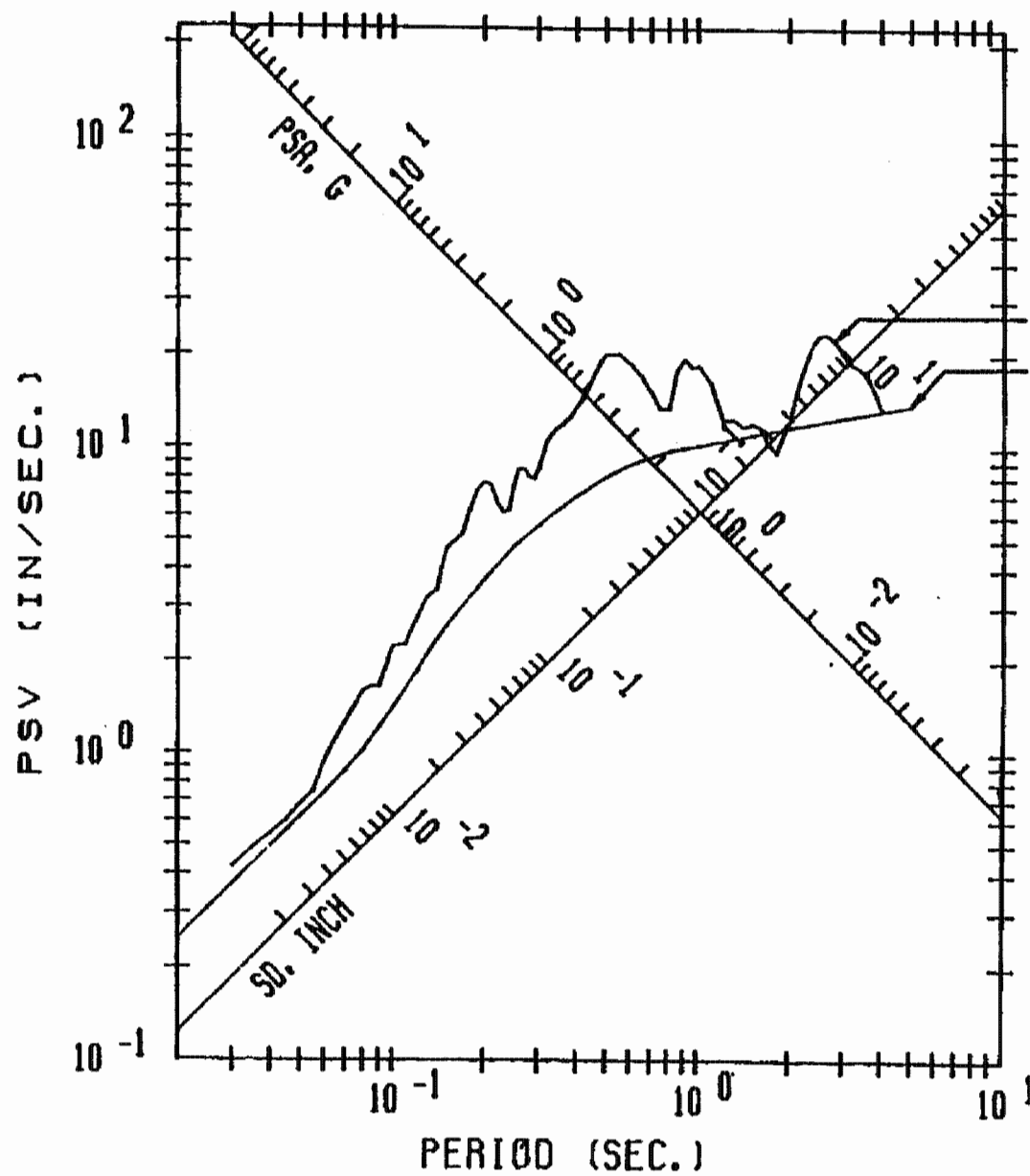


**BROWNS FERRY NUCLEAR PLANT  
FINAL SAFETY  
ANALYSIS REPORT**

SITE DESIGN SPECTRUM  
DESIGN BASIS EARTHQUAKE  
HORIZONTAL

FIGURE 2.5-9

AMENDMENT 16



# **BROWNS FERRY NUCLEAR PLANT RESPONSE SPECTRUM**

FIGURE 2.5-10

EL CENTRO 1940 N-S SSE HOR  
SMOOTH HOUSNER SSE HOR

DAMPING VALUES:  
.05

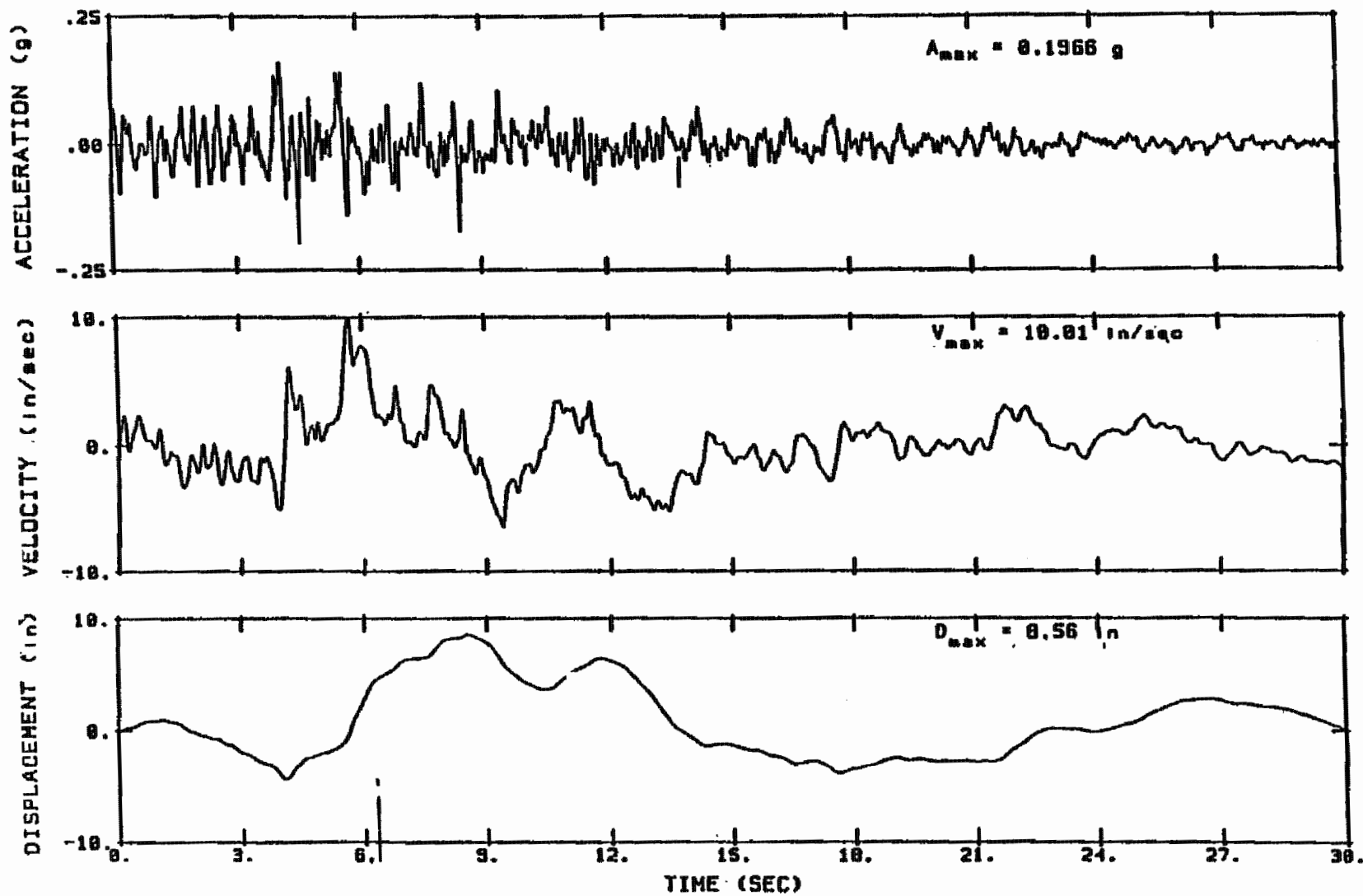


FIGURE 2.5-11 BFP SITE SPECTRUM - COMPATIBLE TIME HISTORY



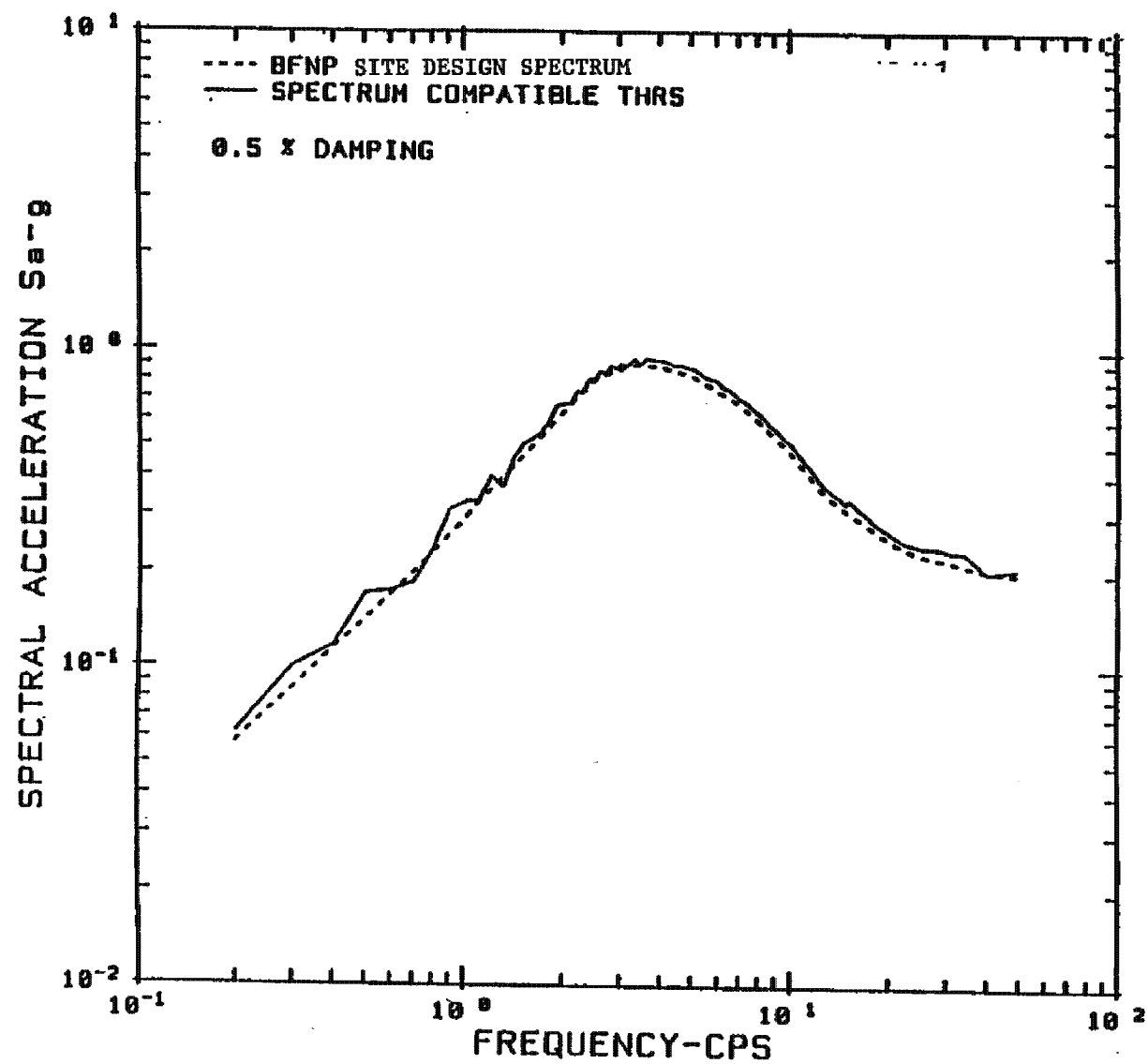


Figure 2.5-12 Comparison of Site Spectrum and Spectrum of Acceleration Time History - 0.5 percent damping

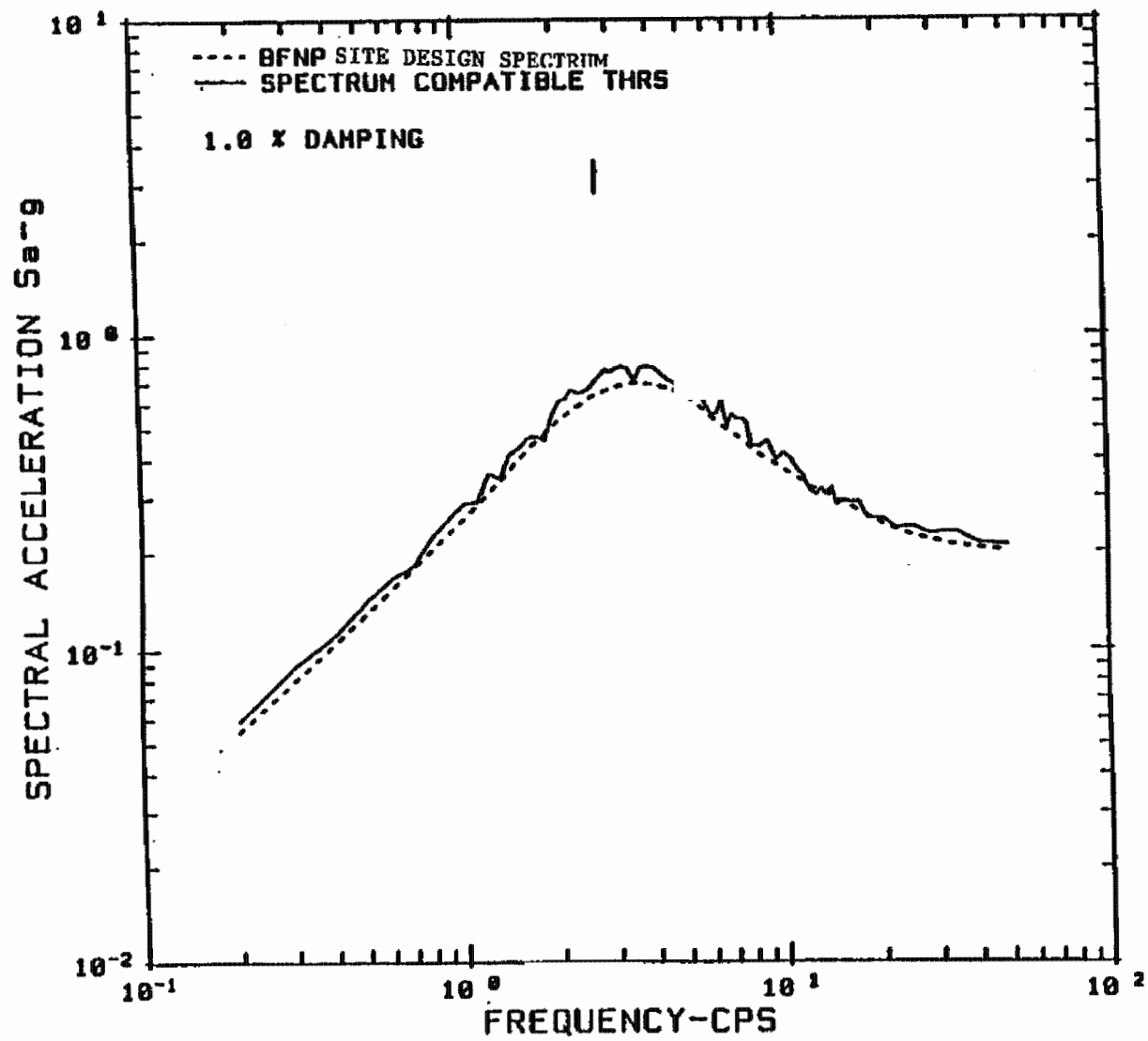


Figure 2.5-13 Comparison of Site Spectrum and Spectrum of Acceleration Time History - 1 percent damping

AMENDMENT 16

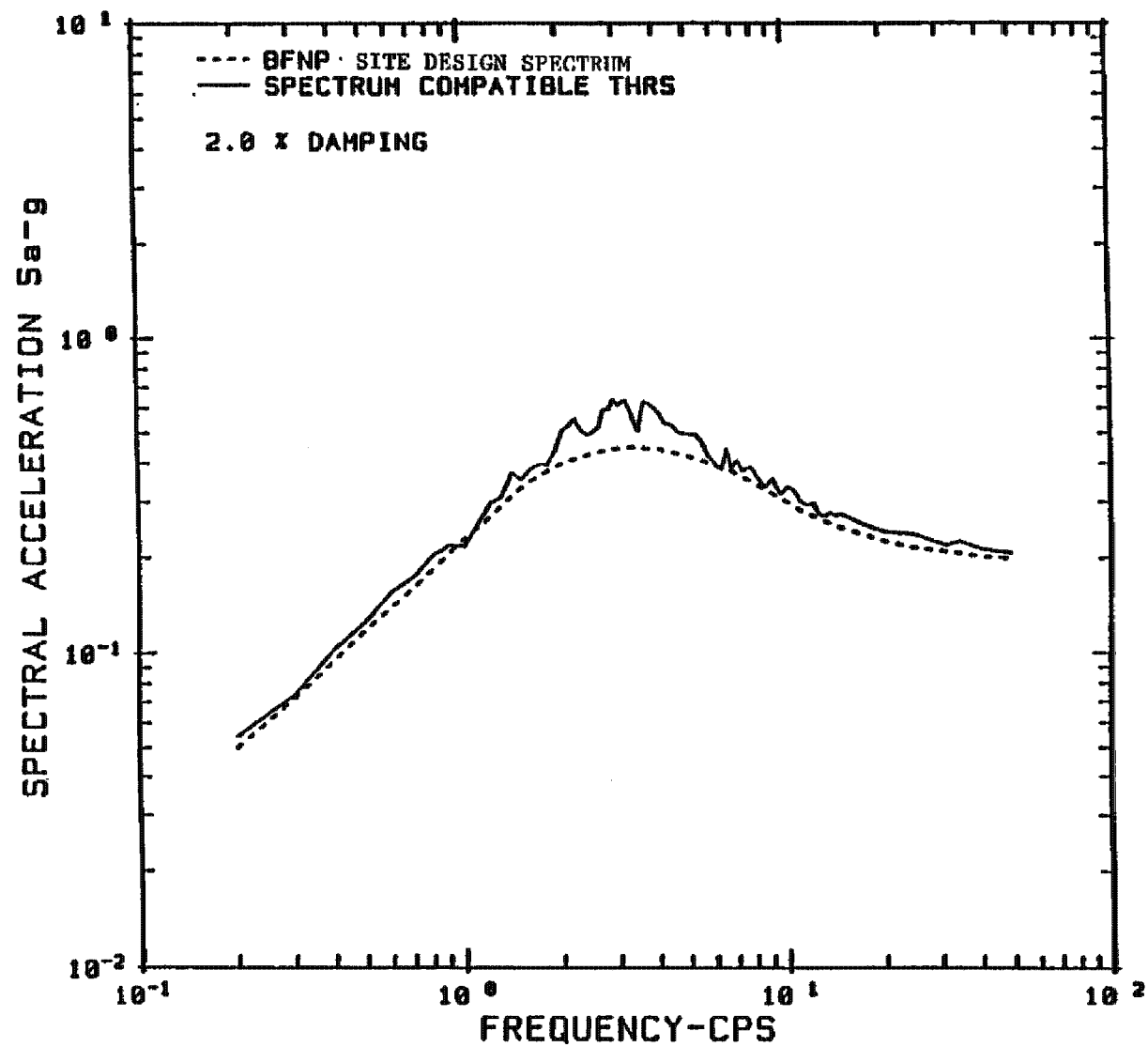


Figure 2.5-14 Comparison of Site Spectrum and Spectrum of Acceleration Time History - 2 percent damping

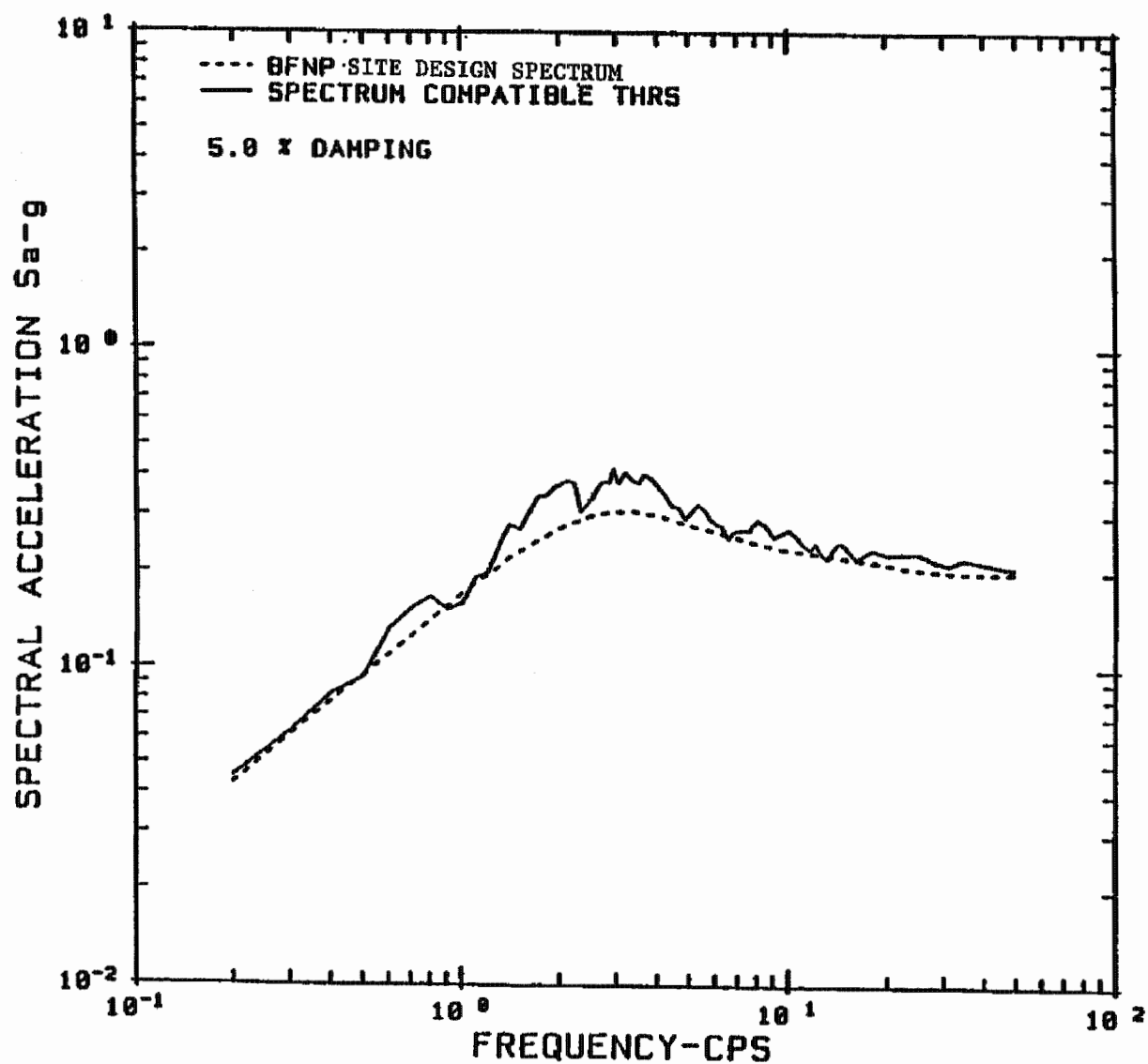


Figure 2.5-15 Comparison of Site Spectrum and Spectrum of Acceleration Time History - 5 percent damping.

AMENDMENT 16

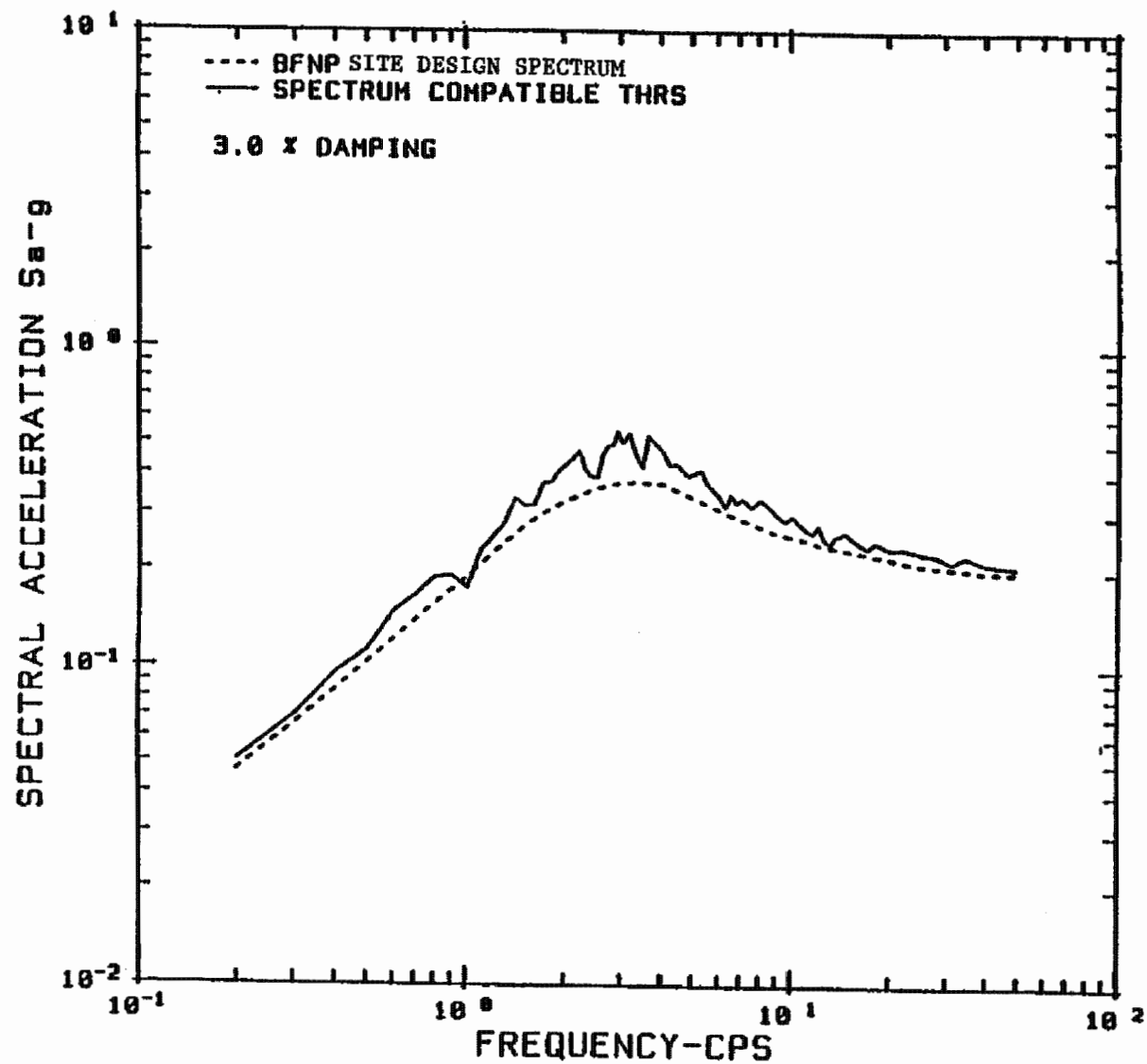


Figure 2.5-16 Comparison of Site Spectrum and Spectrum of Acceleration Time History - 3 percent damping

SECURITY RELATED INFORMATION  
FIGURE WITHHELD UNDER 10 CFR 2.390

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BROWNS FERRY NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
MECH INSTRUMENTS & CONTROLS FIGURE 2.5-17

BFN-16

Figure 2.5-18  
(Deleted)



SECURITY RELATED INFORMATION  
FIGURE WITHHELD UNDER 10 CFR 2.390

POWERHOUSE - REACTOR BUILDING  
UNITS 1, 2 & 3  
BROWNS FERRY NUCLEAR PLANT  
FINAL SAFETY ANALYSIS REPORT  
ROCK EXCAVATION  
FIGURE 2.5-19