

## Appendix 2B. Figures

Figure 2-1. General Location

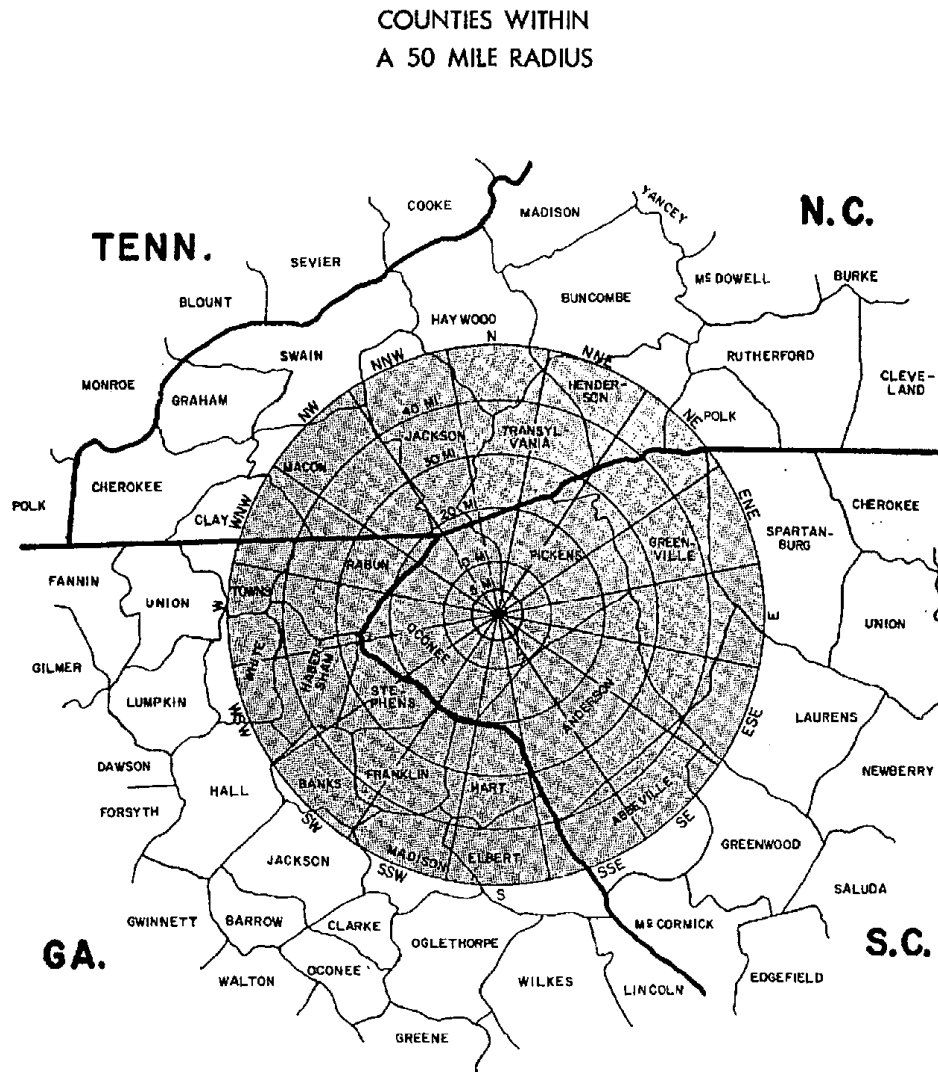


Figure 2-2. Topography within 5 Miles

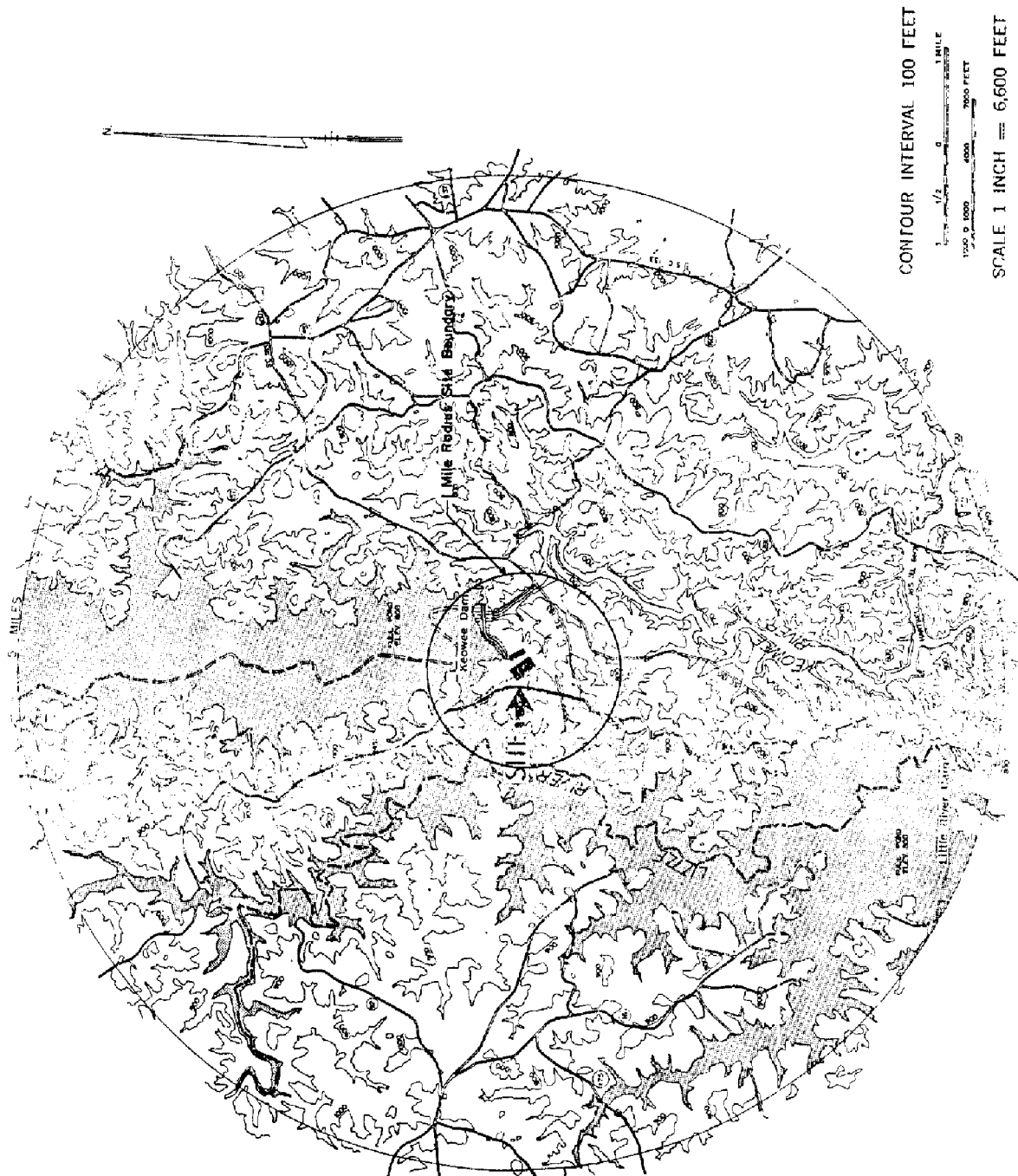


Figure 2-3. General Area Map

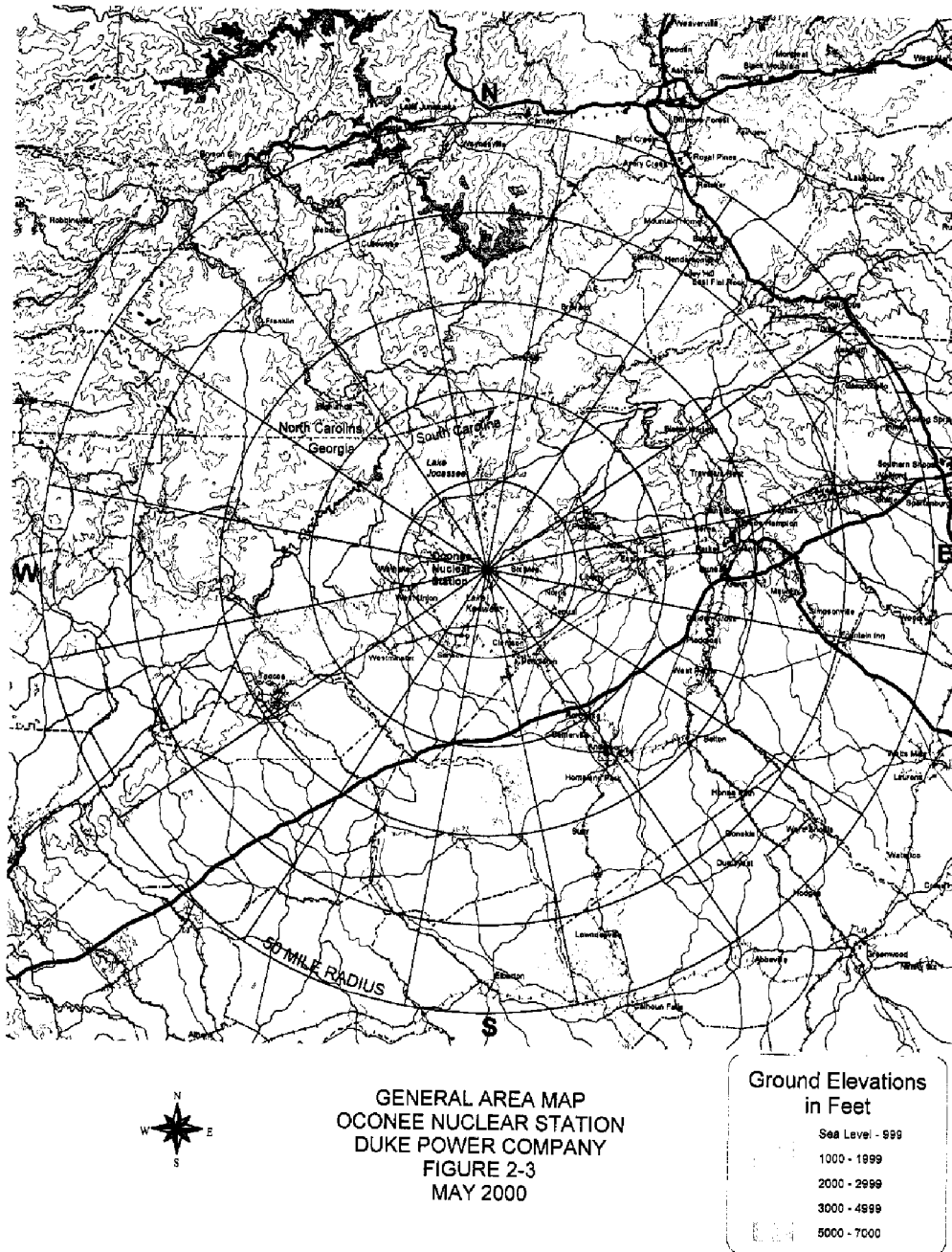


Figure 2-4. Site Plan



Figure 2-5. Radioactive Effluent Site Boundaries

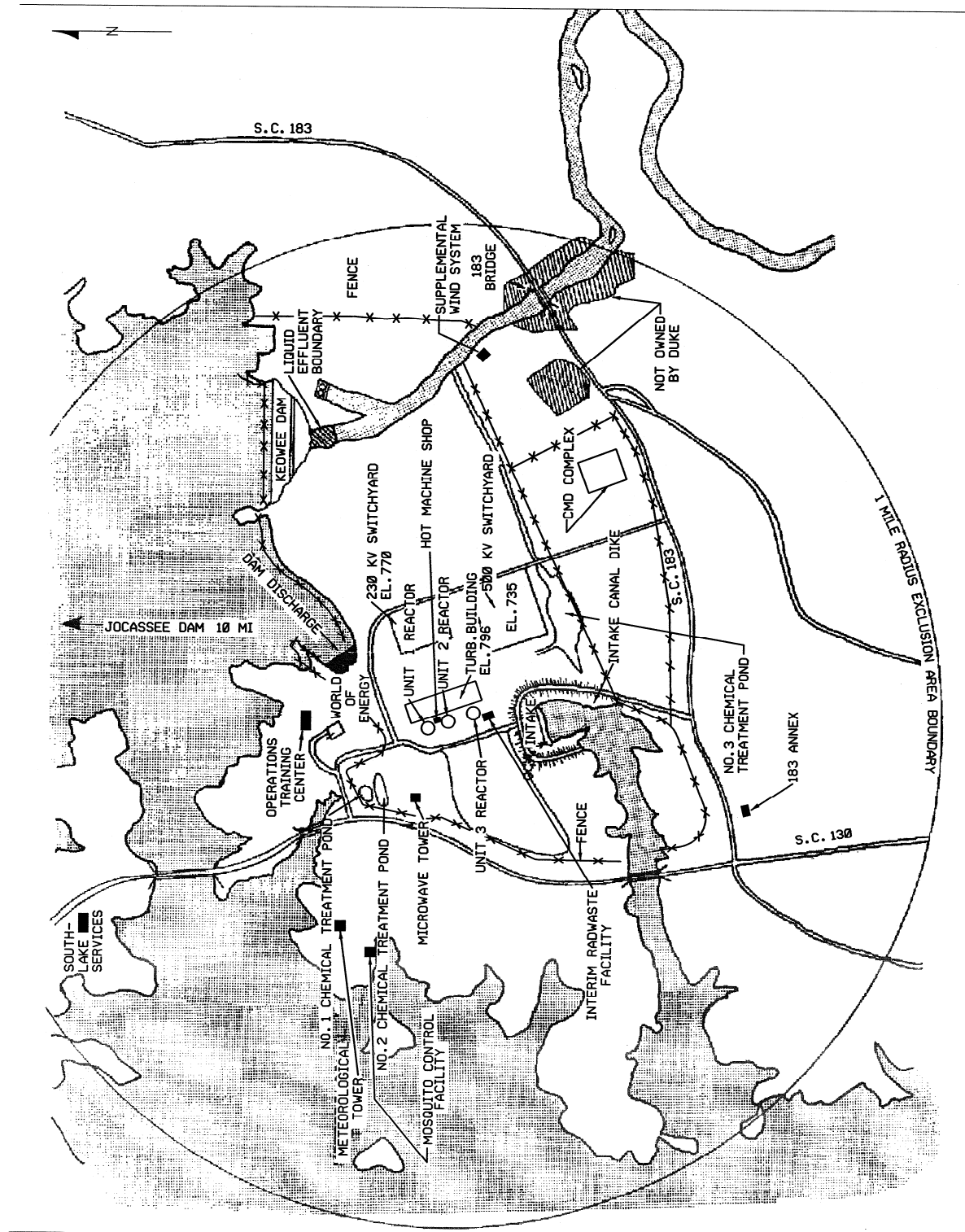
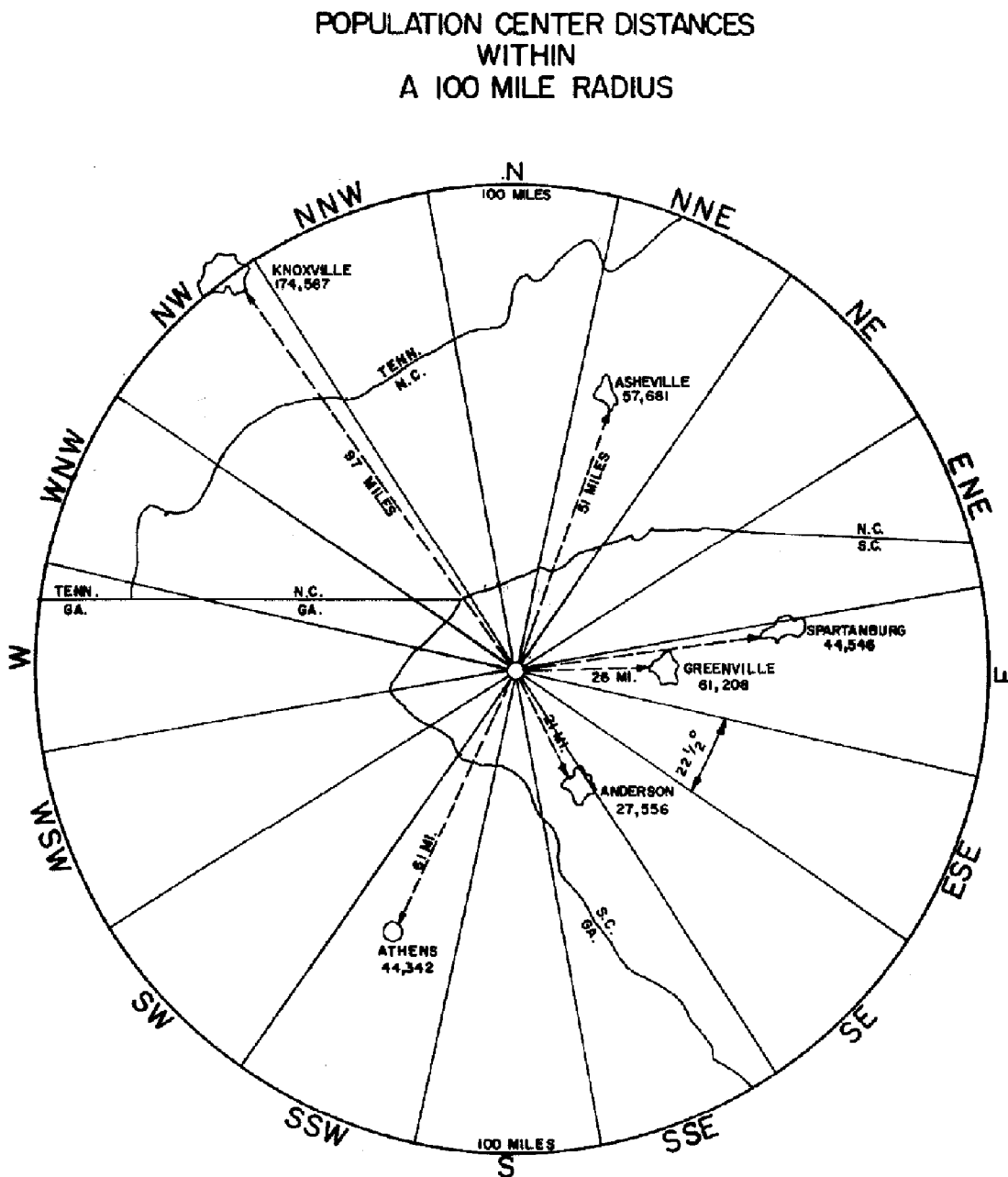


Figure 2-6. Population Centers within 100 Miles

"HISTORICAL INFORMATION NOT REQUIRED TO BE REVISED"



SOURCE: U. S. CENSUS 1970

(31 DEC 2000)

Figure 2-7. Forecast of High-Pollution-Potential Days in the U.S.

["HISTORICAL INFORMATION NOT REQUIRED TO BE REVISED"]

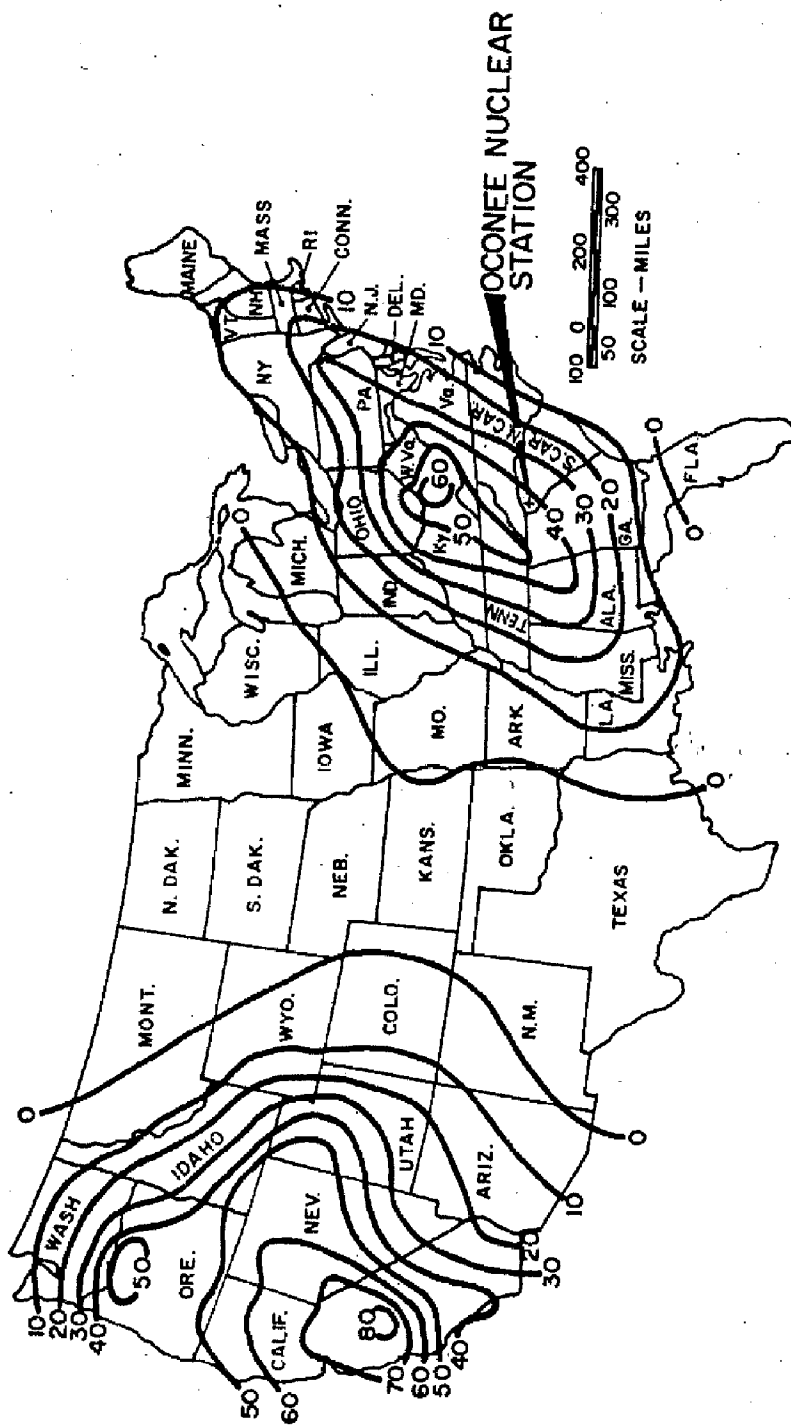
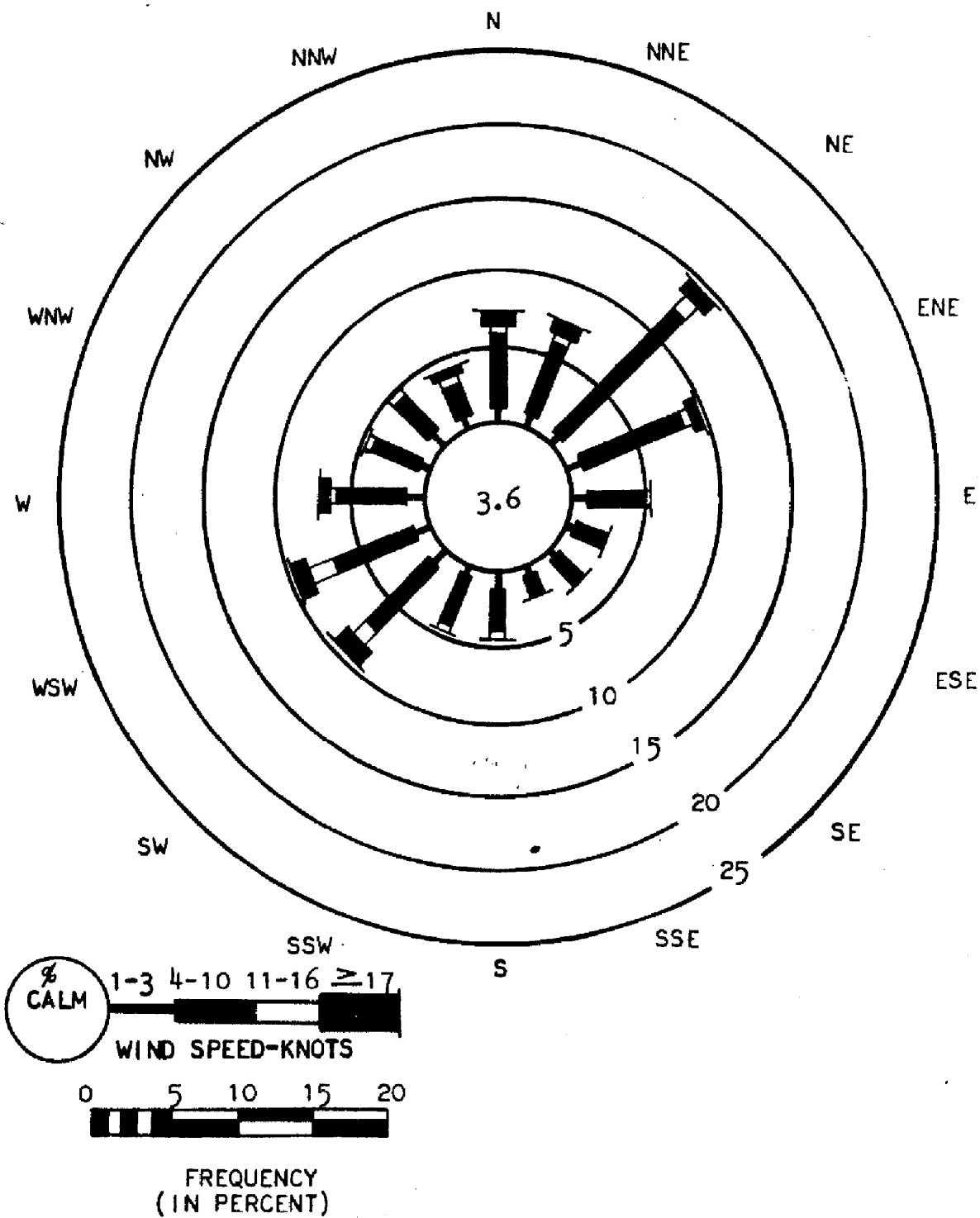




Figure 2-8. Annual Surface Wind Rose for Greenville, South Carolina, WBAS (1959-1963)

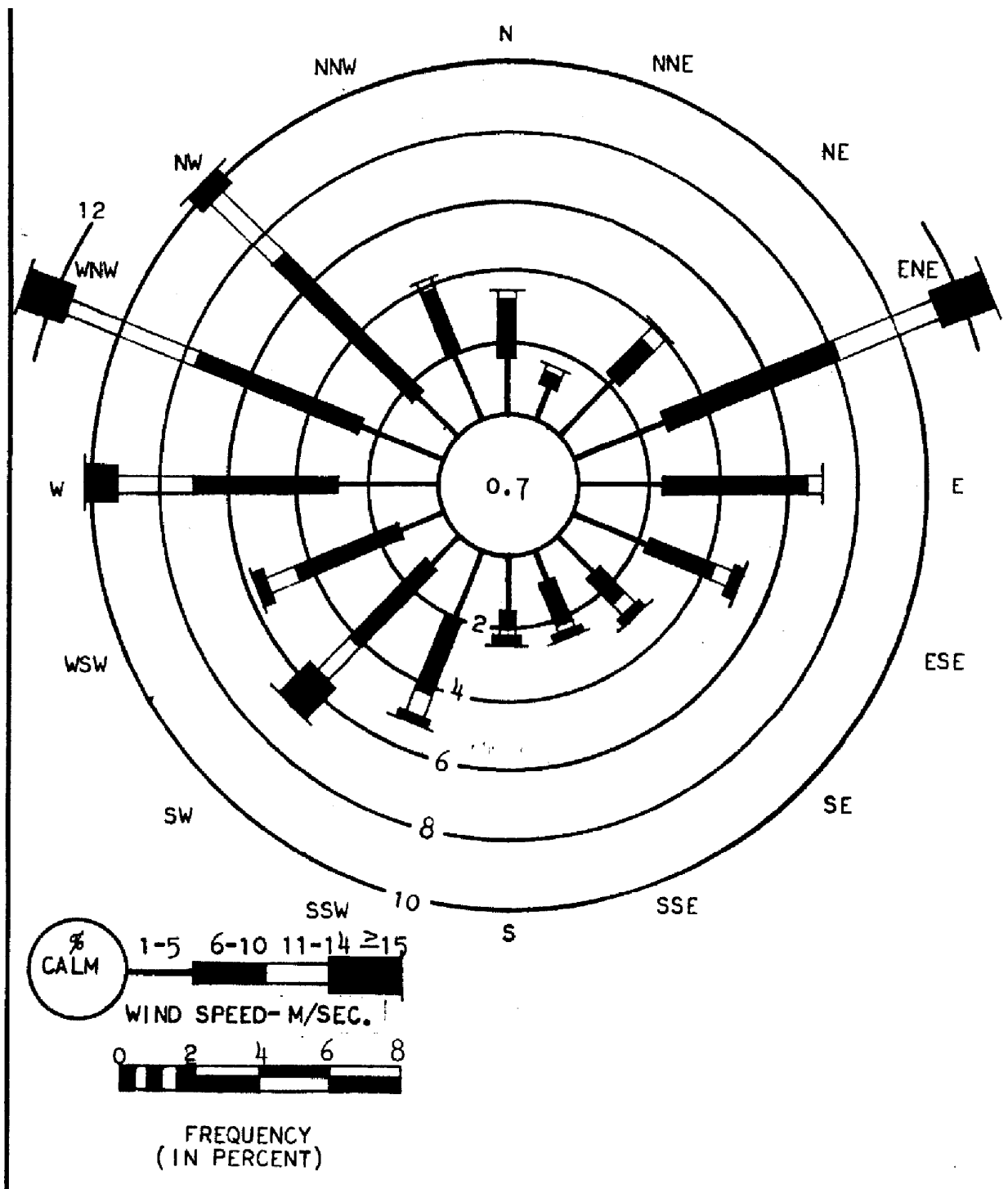
[“HISTORICAL INFORMATION NOT REQUIRED TO BE REVISED”]



(31 DEC 2008)

Figure 2-9. Upper Air Wind Rose-Athens, Georgia. 800-1300 ft above ground. (Dec 1954 - Nov 1961)

["HISTORICAL INFORMATION NOT REQUIRED TO BE REVISED"]

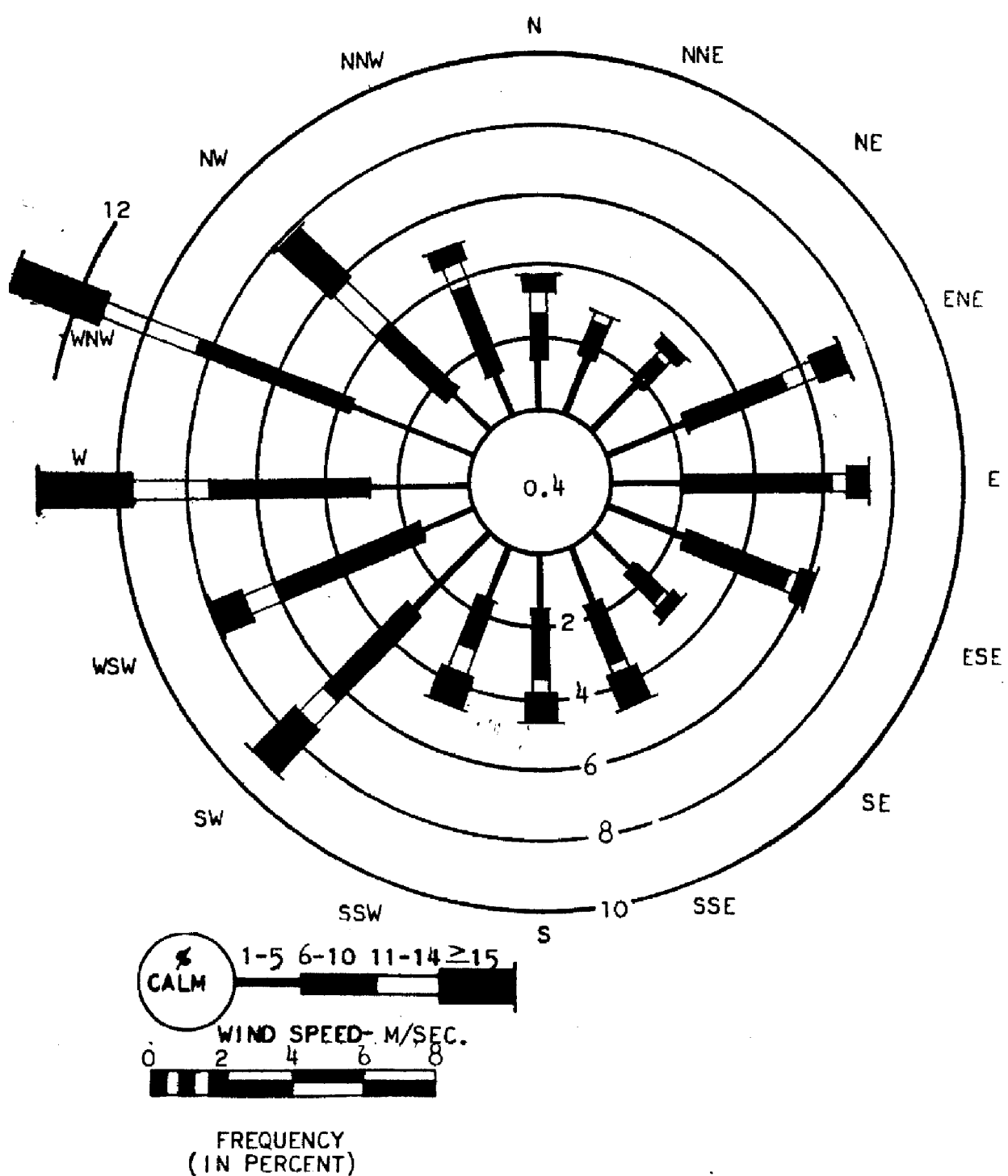


Reference [16](#)

(31 DEC 2008)

Figure 2-10. Upper Air Wind Rose-Athens, Georgia. 2300-2800 ft above ground. (Dec 1959 - Nov 1961))

["HISTORICAL INFORMATION NOT REQUIRED TO BE REVISED"]

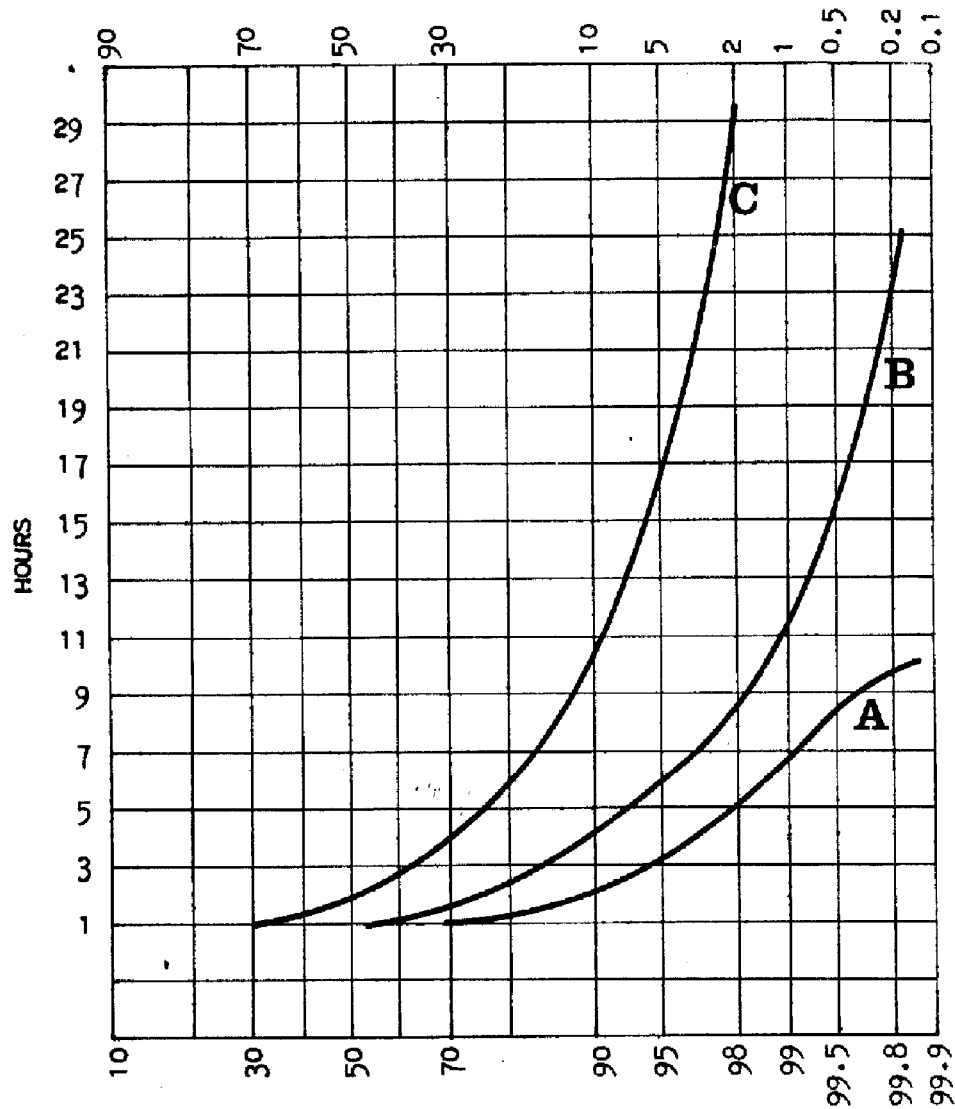


Reference [16](#)

(31 DEC 2008)

**Figure 2-11. Cumulative Probability of Wind Direction Persistence Duration at Greenville, SC**

["HISTORICAL INFORMATION NOT REQUIRED TO BE REVISED"]



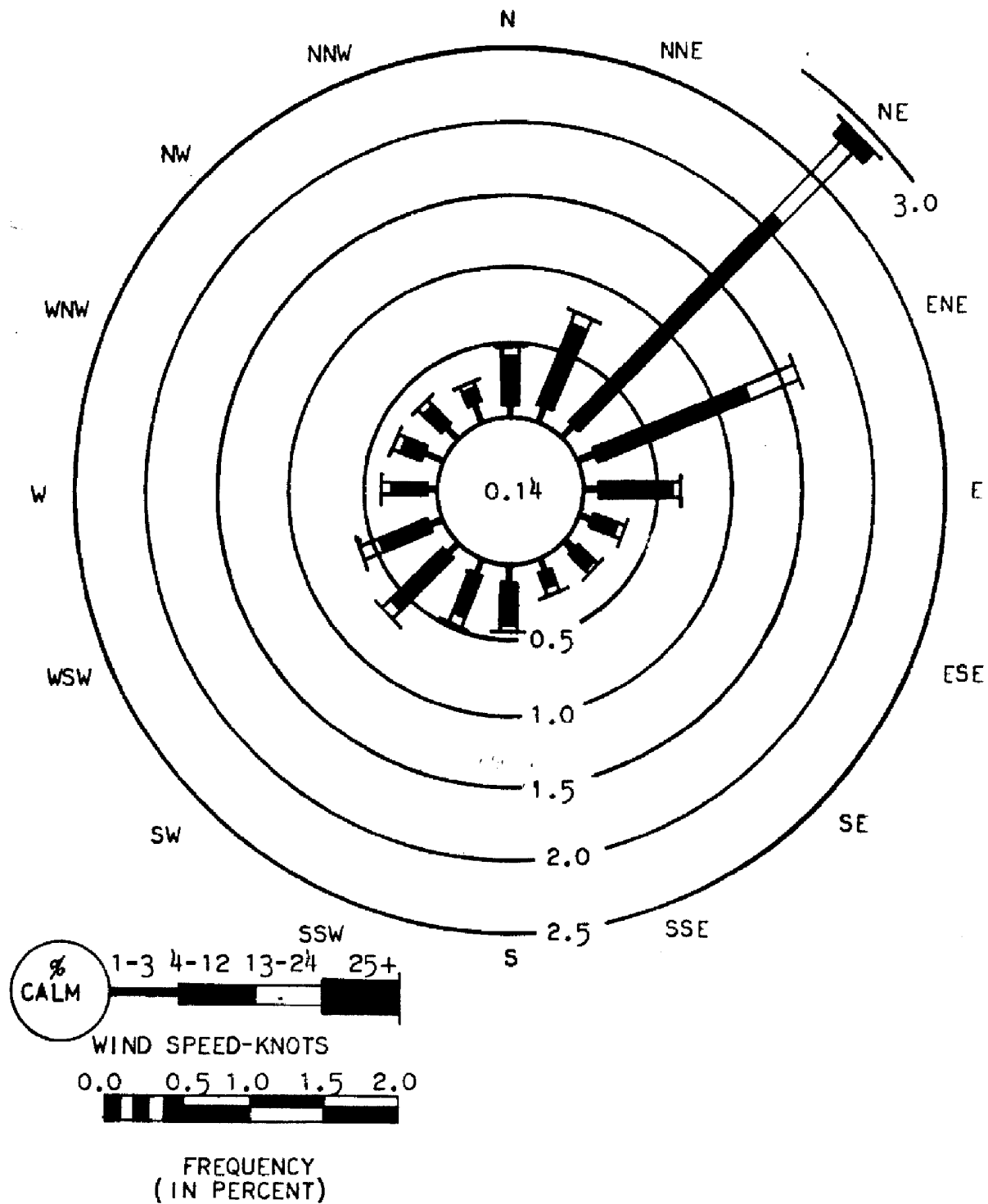
CURVE A-SINGLE SECTOR WINDS

CURVE B-SINGLE SECTOR WINDS PLUS AND MINUS  
ONE ADDITIONAL SECTOR

CURVE C-SINGLE SECTOR WINDS PLUS AND MINUS  
TWO ADDITIONAL SECTORS

Figure 2-12. Precipitation Surface Wind Rose for Greenville, South Carolina, WBAS (1959 - 1963)

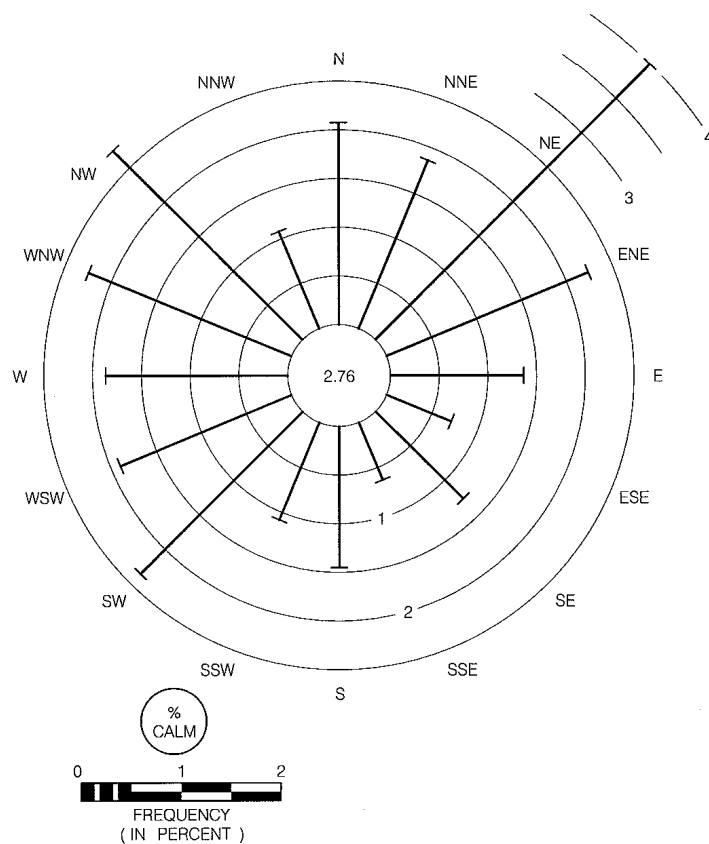
["HISTORICAL INFORMATION NOT REQUIRED TO BE REVISED"]



(Reference [17](#))

**Figure 2-13. Surface Wind Direction Frequency Distribution During Low-Level Temperature Inversion Conditions**

["HISTORICAL INFORMATION NOT REQUIRED TO BE REVISED"]

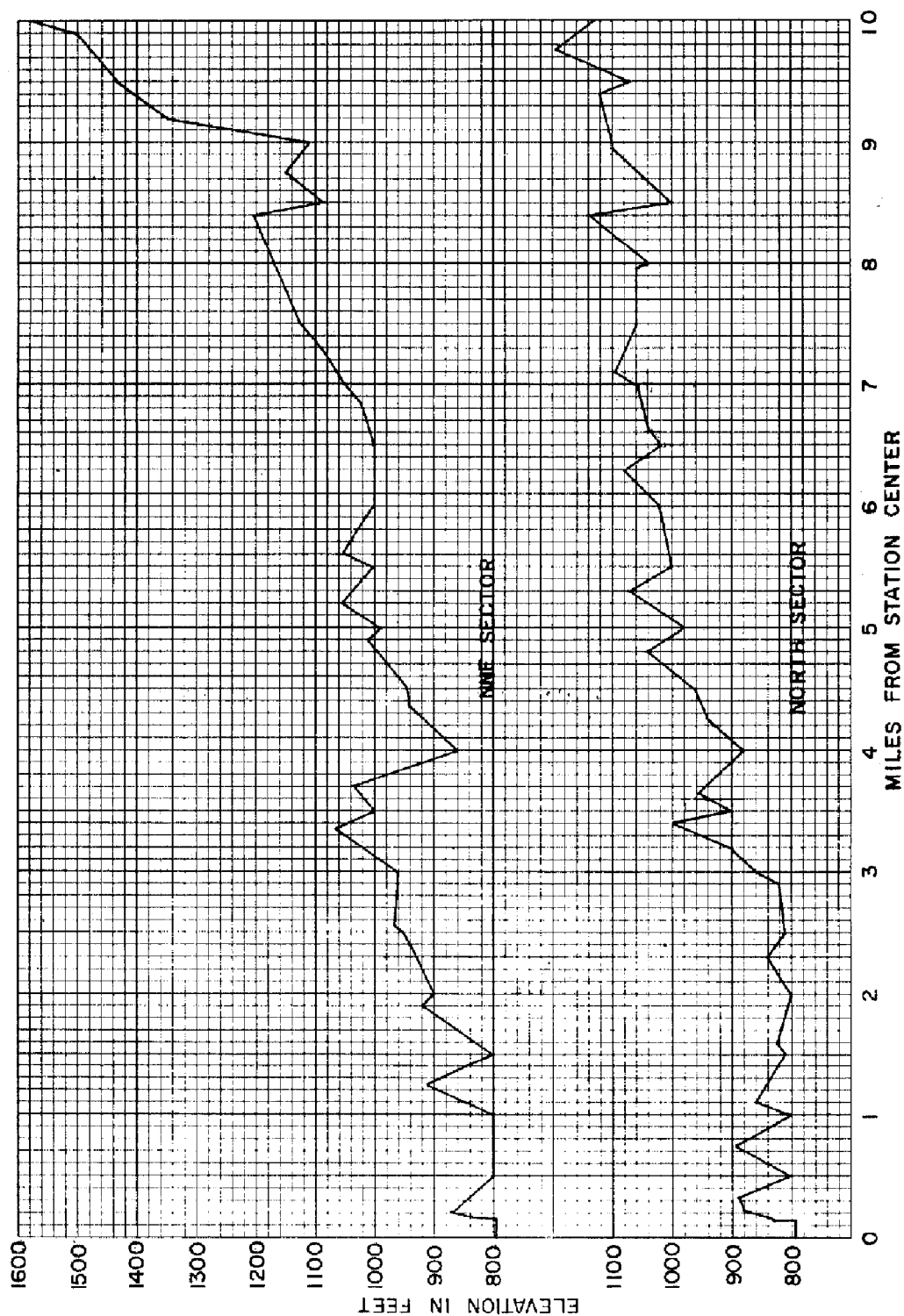


DEC. 1959 - NOV. 1961 DATA FROM GREENVILLE, S.C.  
WBAS DURING PASQUILL E & F CONDITIONS  
(REFERENCES 20 and 21)



**Figure 2-14. Maximum Topographic Elevation versus Distance (NNE and N sectors)**

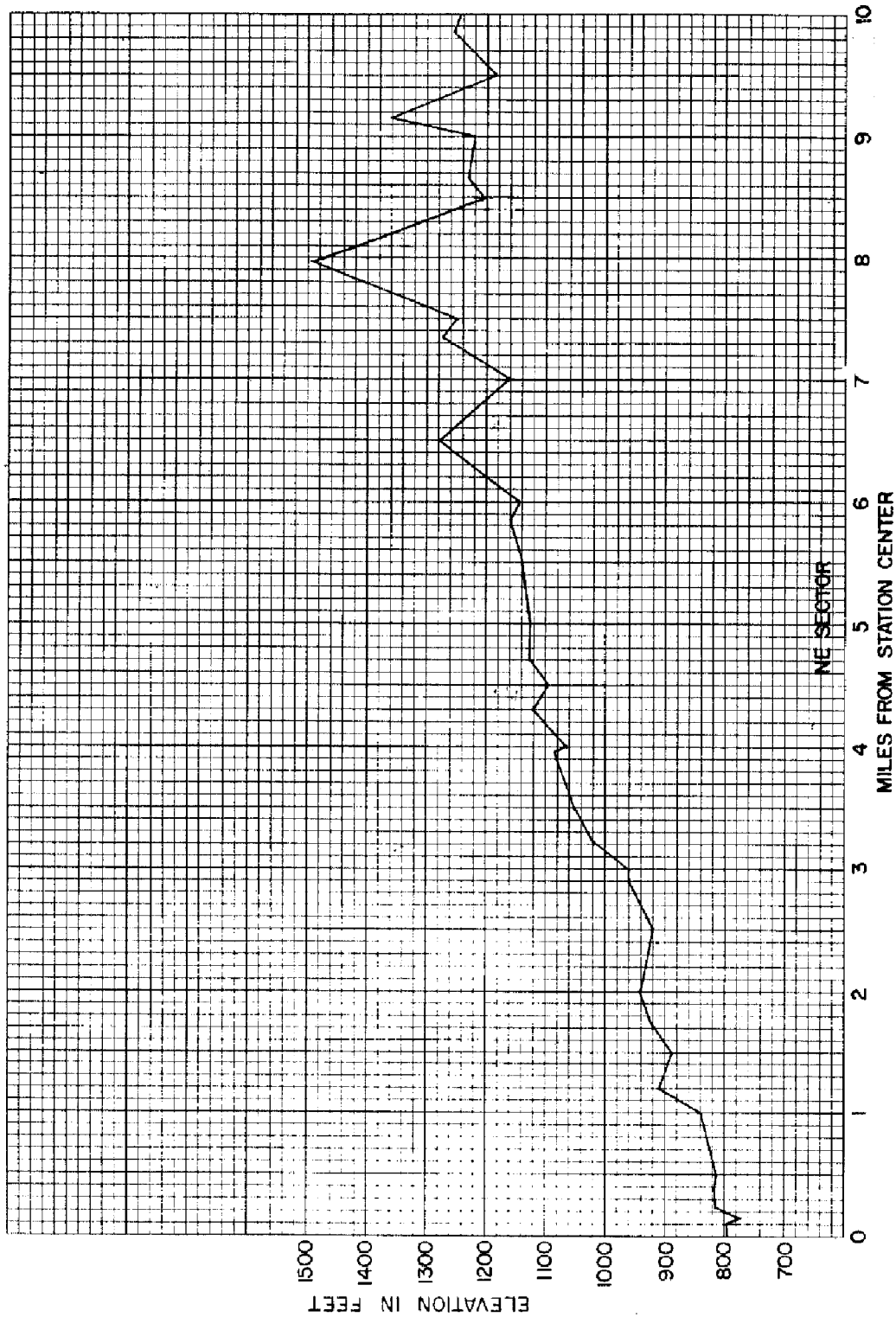
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(31 DEC 2008)

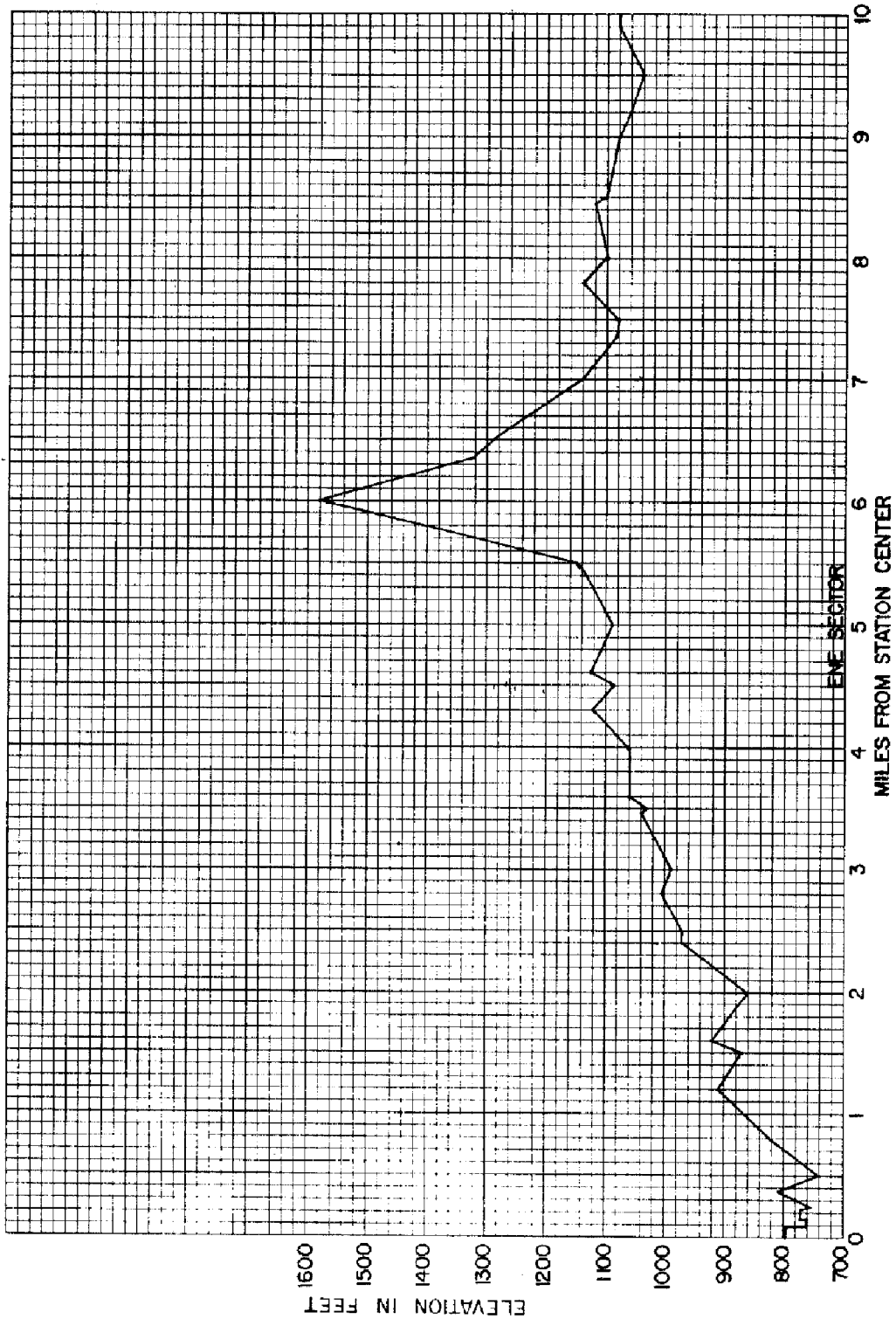
**Figure 2-15. Maximum Topographic Elevation versus Distance (NE sector)**

["HISTORICAL INFORMATION NOT REQUIRED TO BE REVISED"]



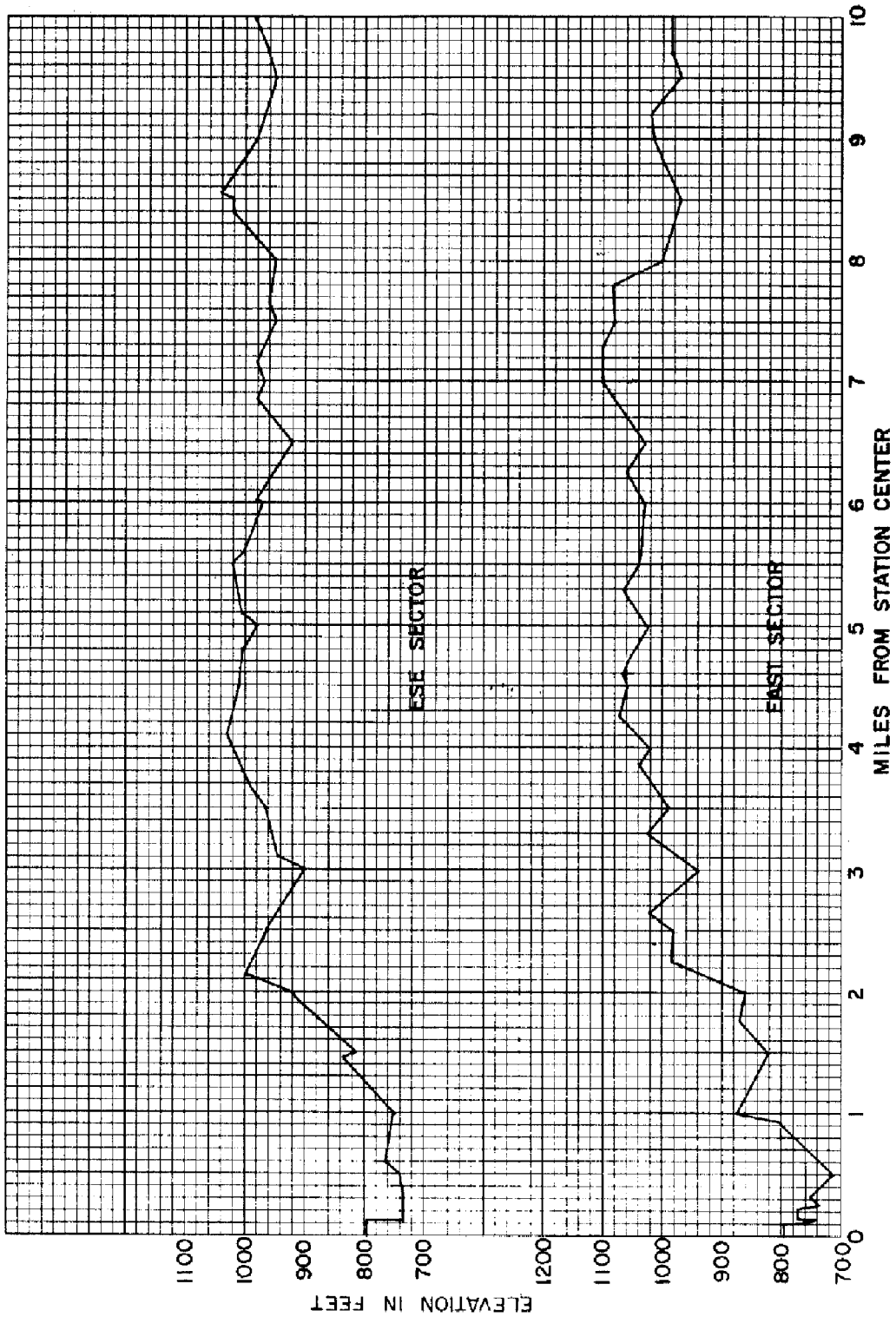
(31 DEC 2008)

**Figure 2-16. Maximum Topographic Elevation versus Distance (ENE sector)**  
[“HISTORICAL INFORMATION NOT REQUIRED TO BE REVISED”]



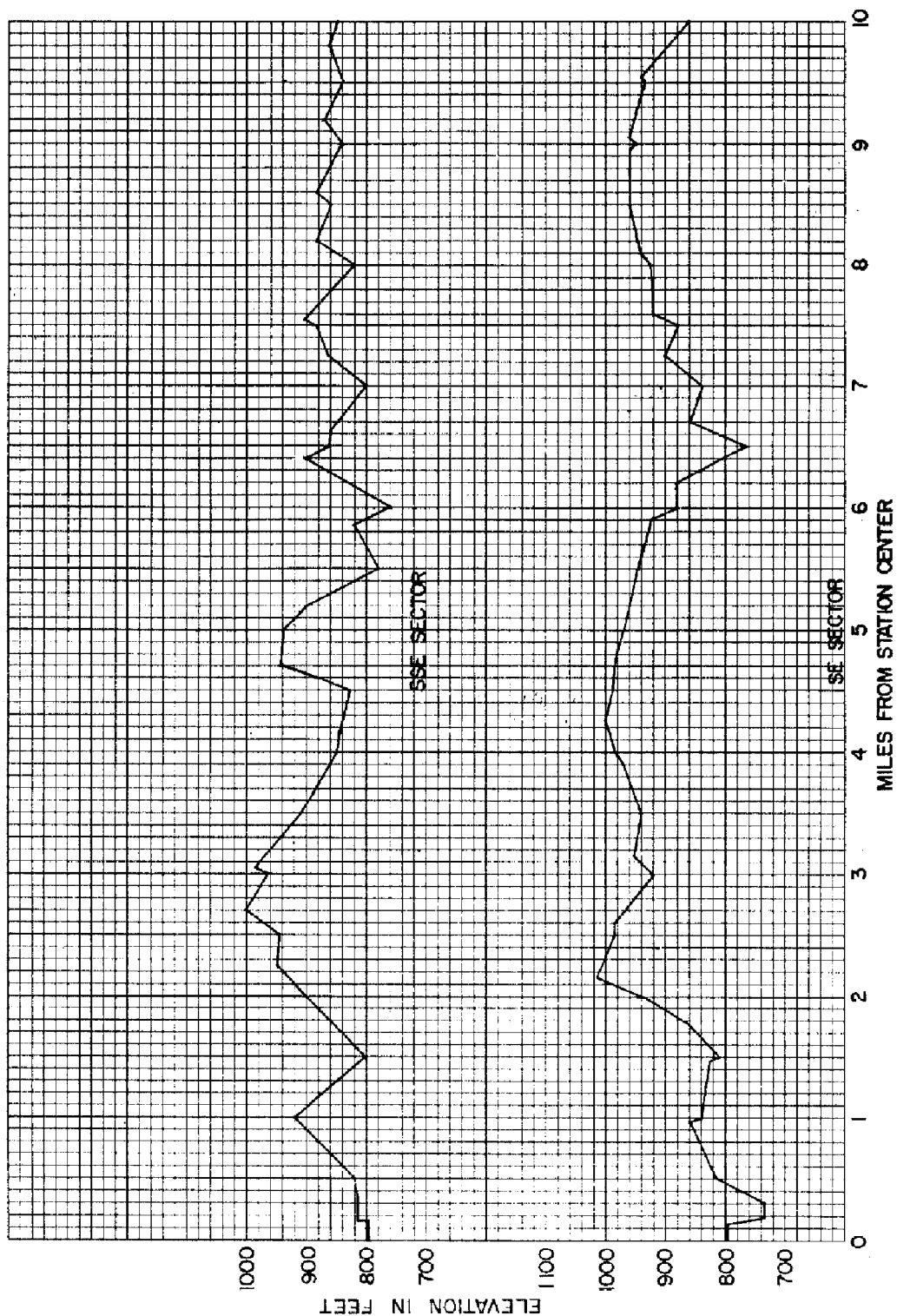
(31 DEC 2008)

**Figure 2-17. Maximum Topographic Elevation versus Distance (ESE and E sectors)**  
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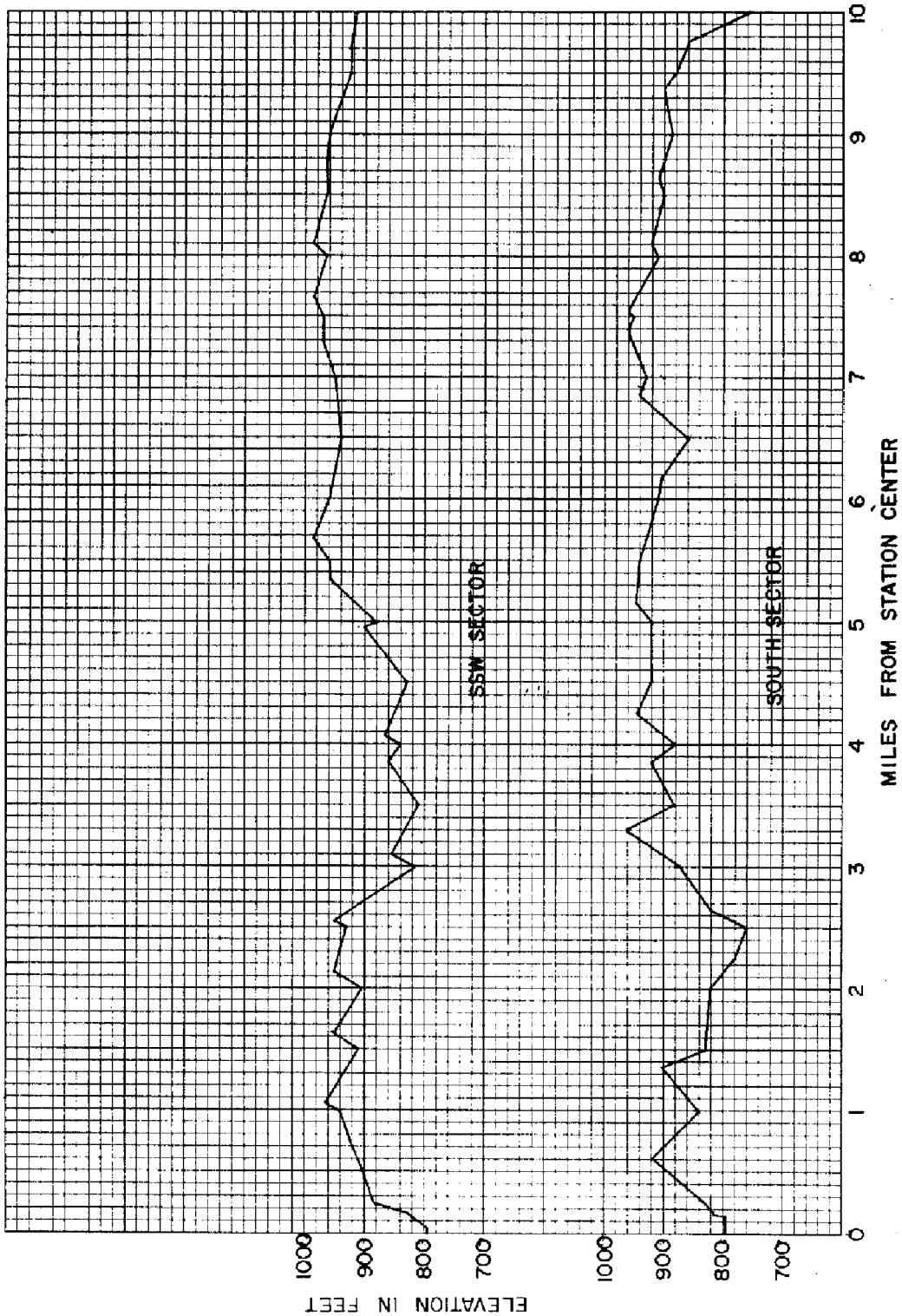


**Figure 2-18. Maximum Topographic Elevation versus Distance (SSE and SE sectors)**

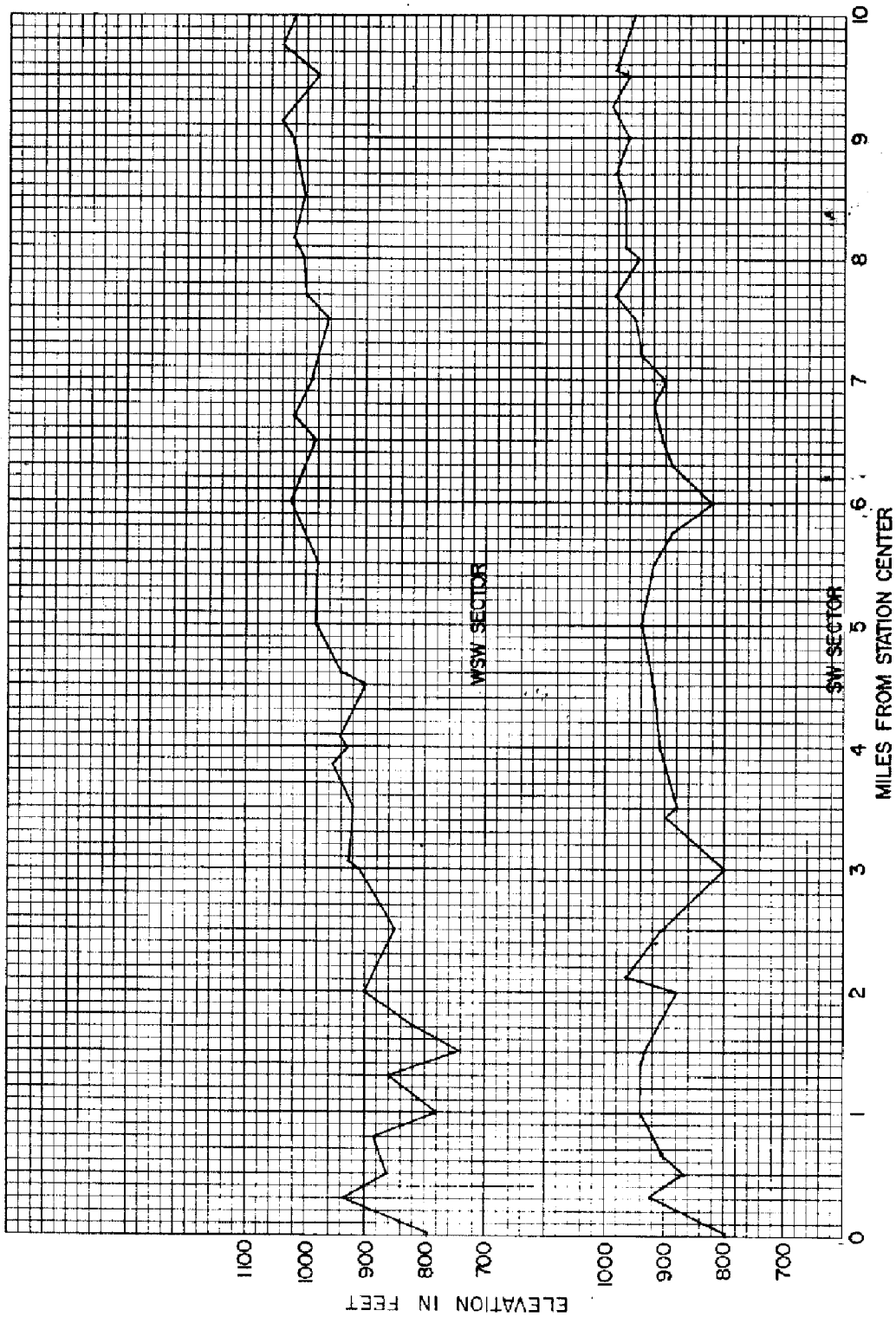
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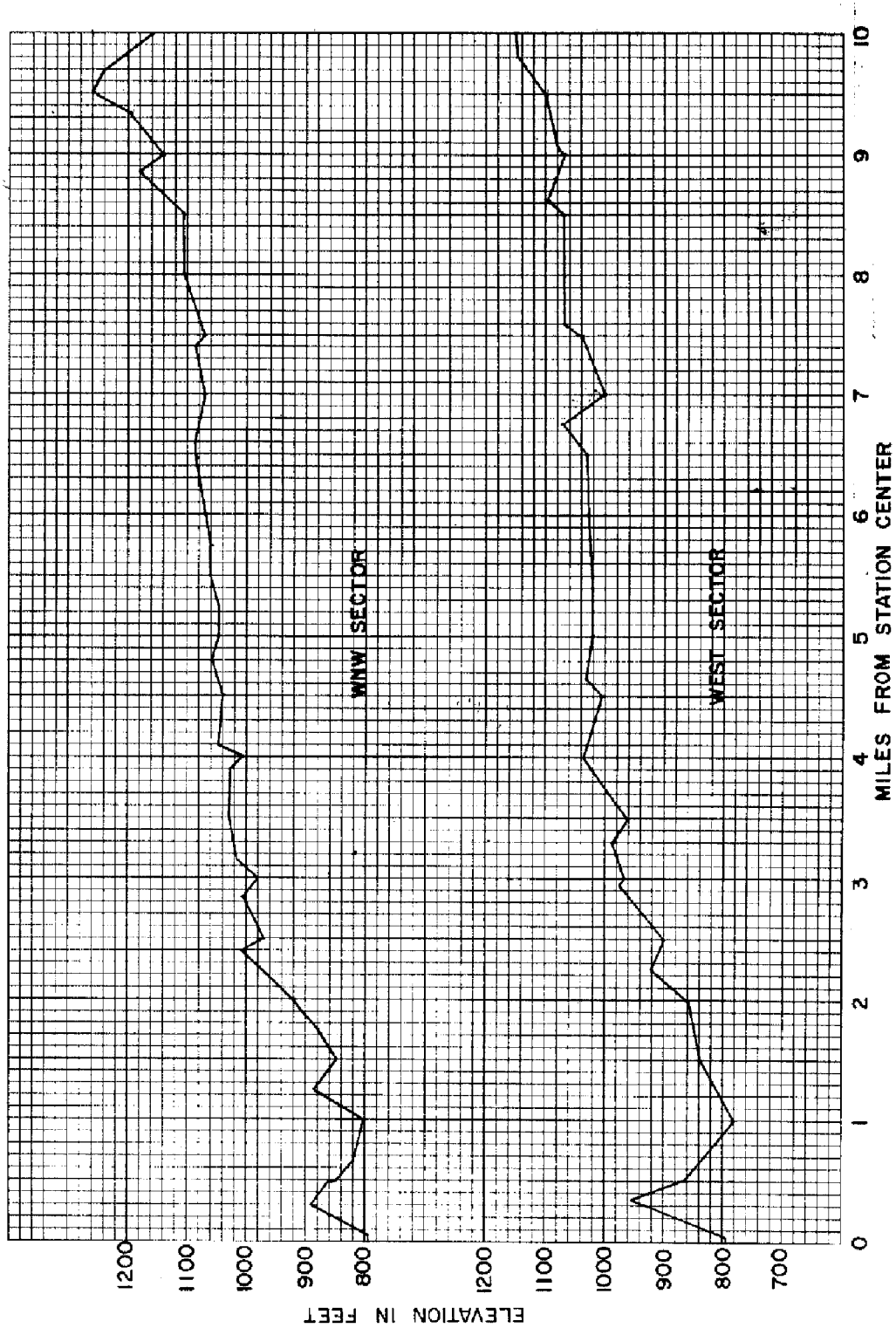
**Figure 2-19. Maximum Topographic Elevation versus Distance (SSW and S sectors)**  
 ["HISTORICAL INFORMATION NOT REQUIRED TO BE REVISED"]



**Figure 2-20. Maximum Topographic Elevation versus Distance (WSW and SW sectors)**  
 ["HISTORICAL INFORMATION NOT REQUIRED TO BE REVISED"]

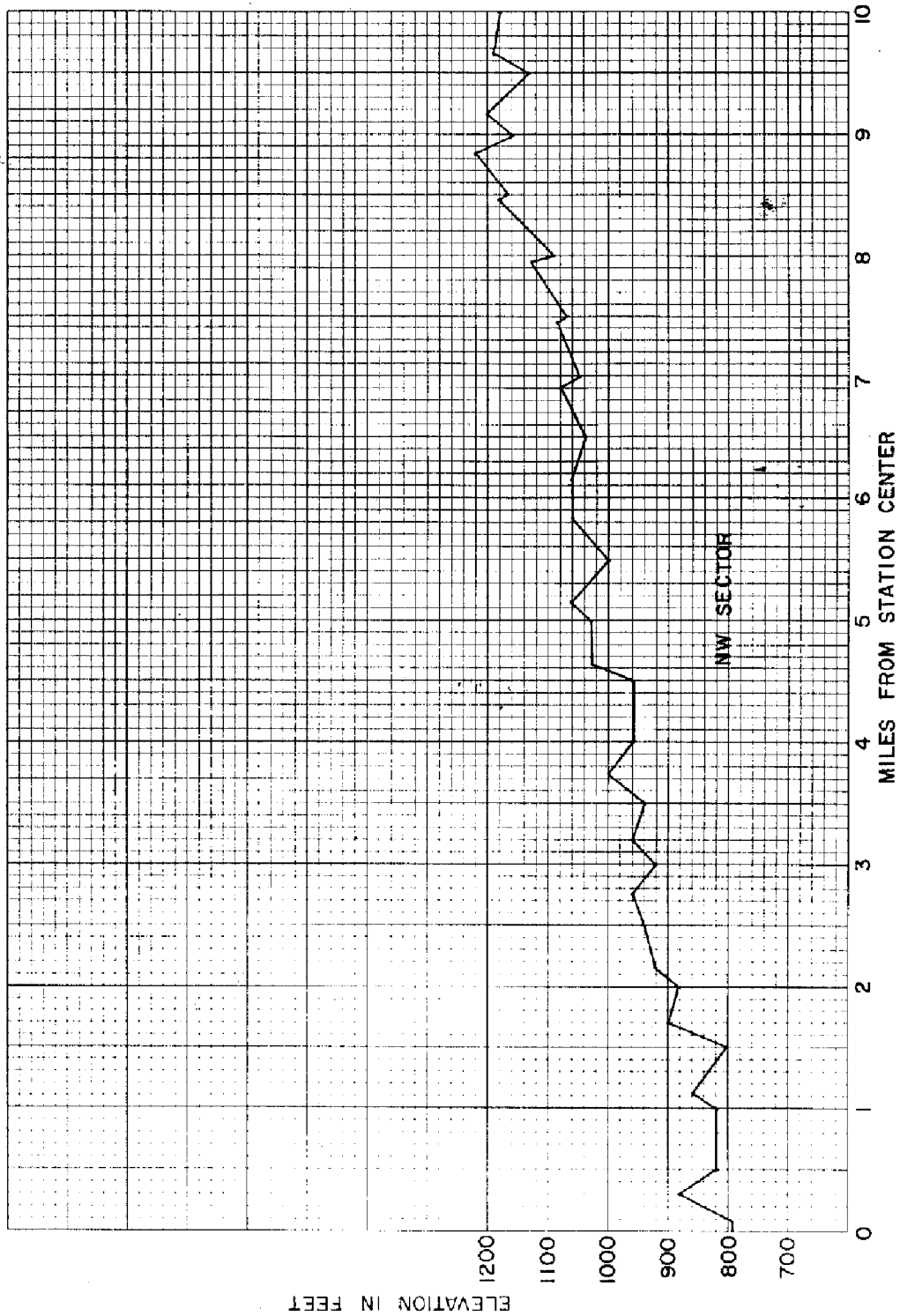


**Figure 2-21. Maximum Topographic Elevation versus Distance (WNW and W sectors)**  
[“HISTORICAL INFORMATION NOT REQUIRED TO BE REVISED”]





**Figure 2-22. Maximum Topographic Elevation versus Distance (NW sector)**  
[“HISTORICAL INFORMATION NOT REQUIRED TO BE REVISED”]



(31 DEC 2008)

**Figure 2-23. Maximum Topographic Elevation versus Distance (NNW sector)**  
 ["HISTORICAL INFORMATION NOT REQUIRED TO BE REVISED"]

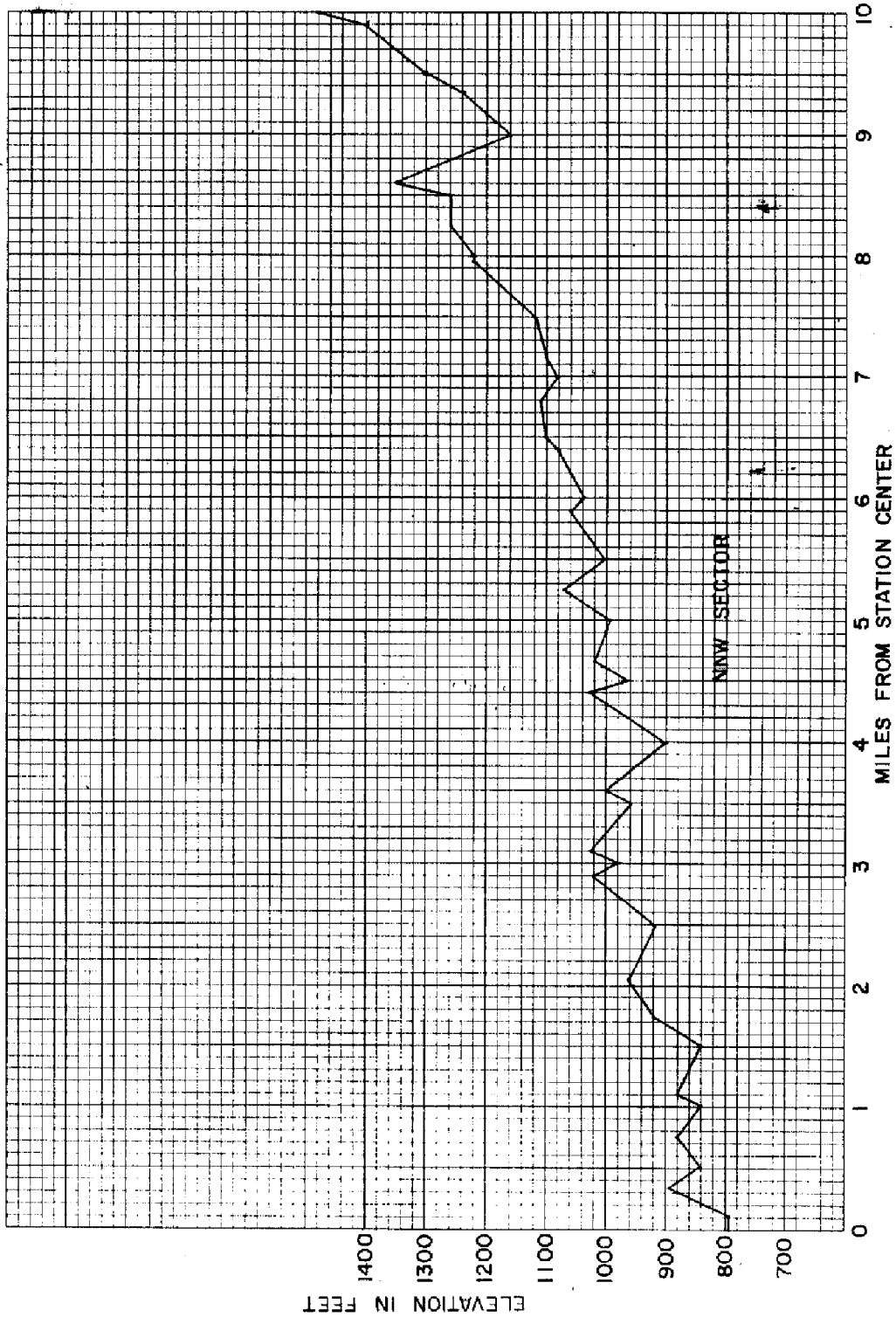
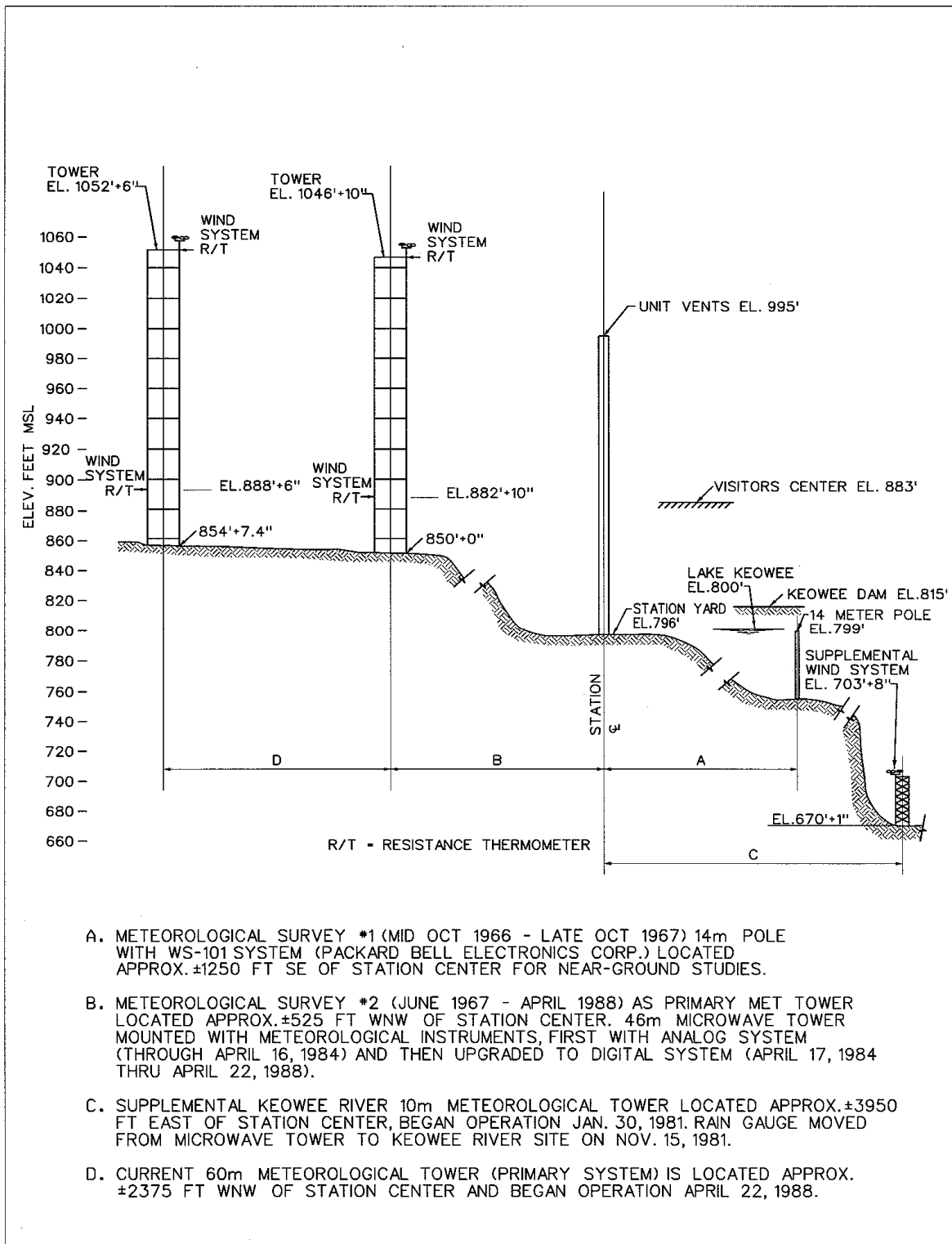
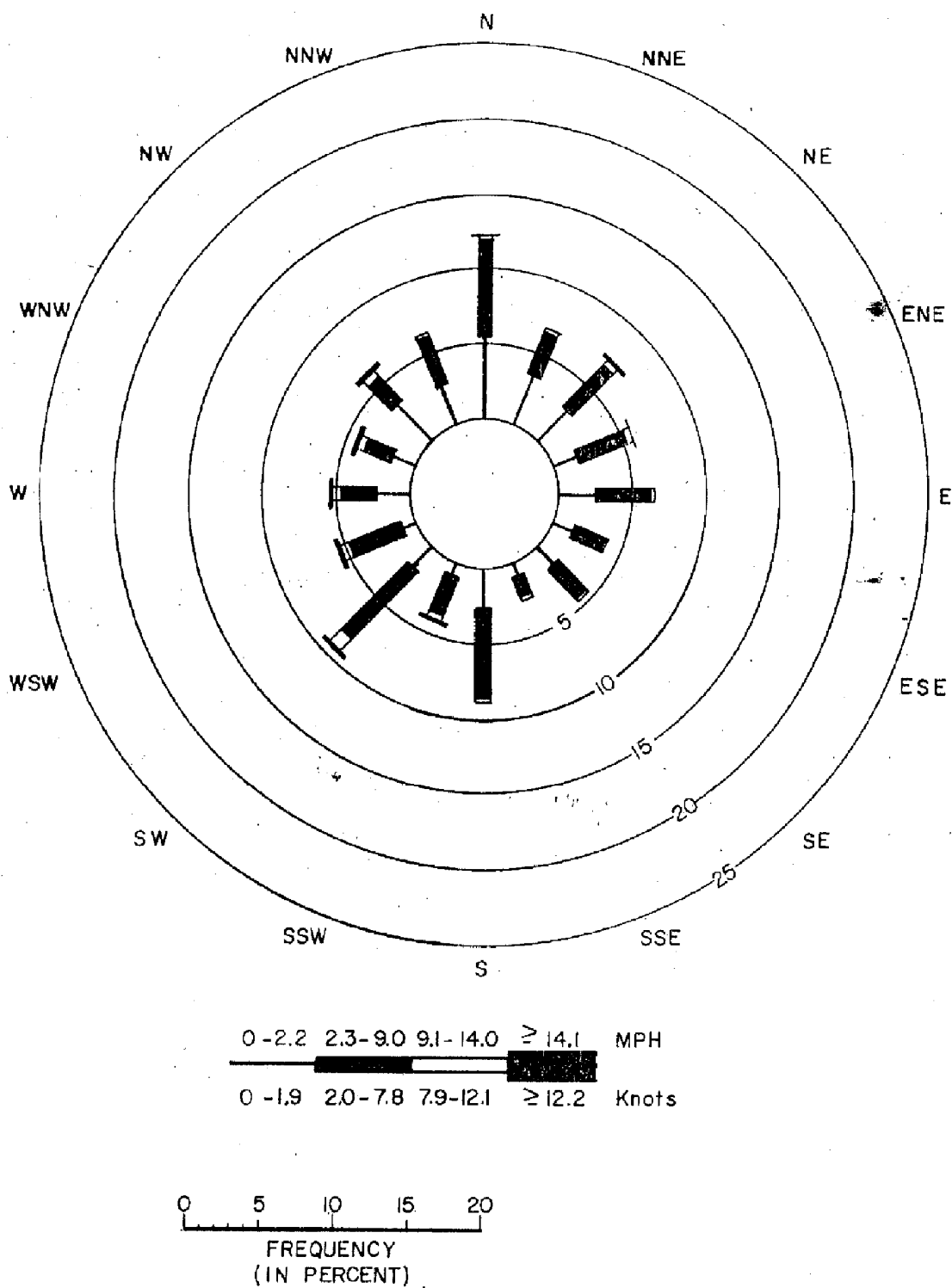


Figure 2-24. Relative Elevations of Meteorological



**Figure 2-25. Annual Surface Wind Rose (October 19, 1966 - October 31, 1967)**

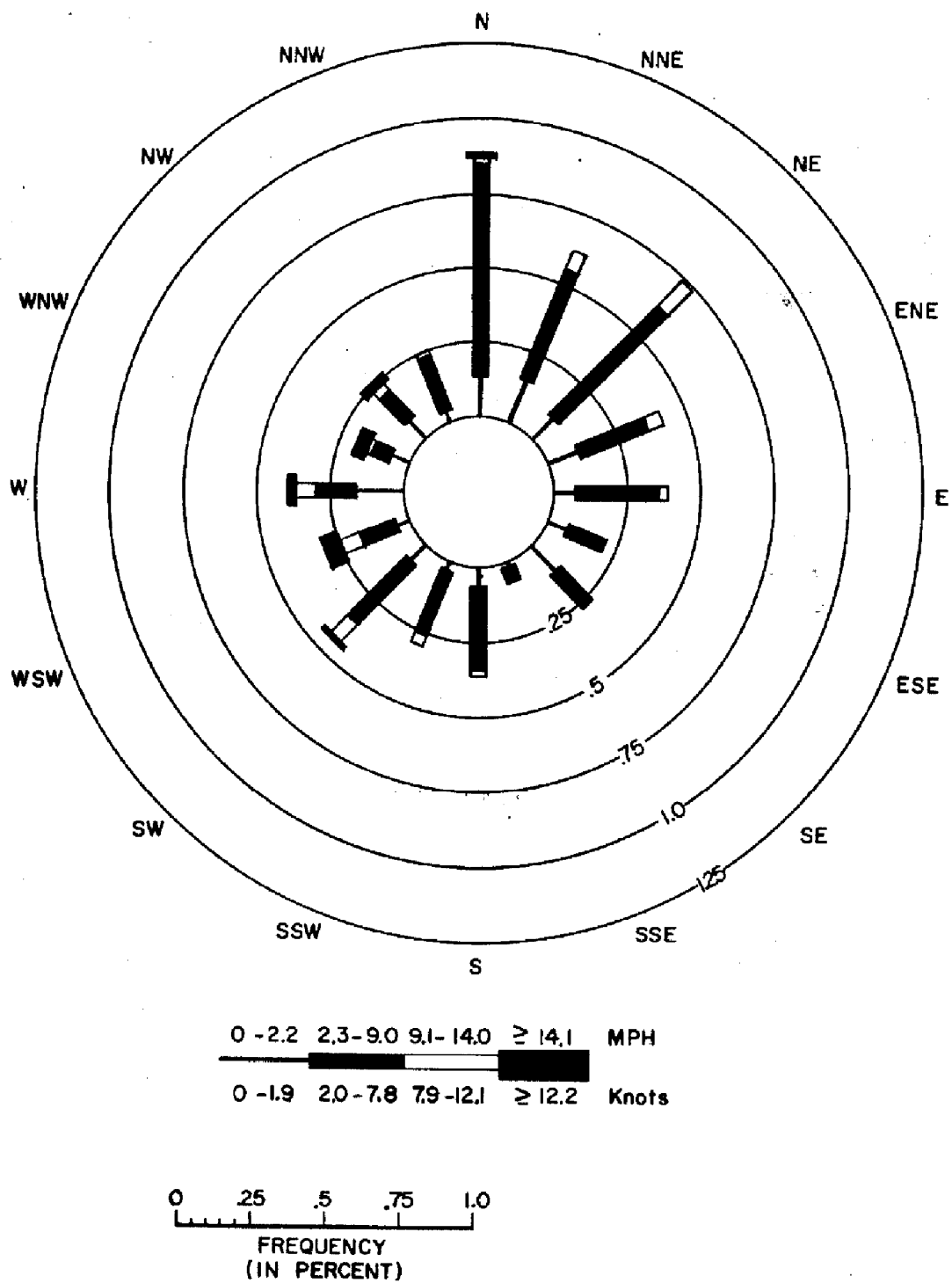
["HISTORICAL INFORMATION NOT REQUIRED TO BE REVISED"]



(31 DEC 2008)

**Figure 2-26. Precipitation Surface Wind Rose (October 19, 1966 - October 31, 1967)**

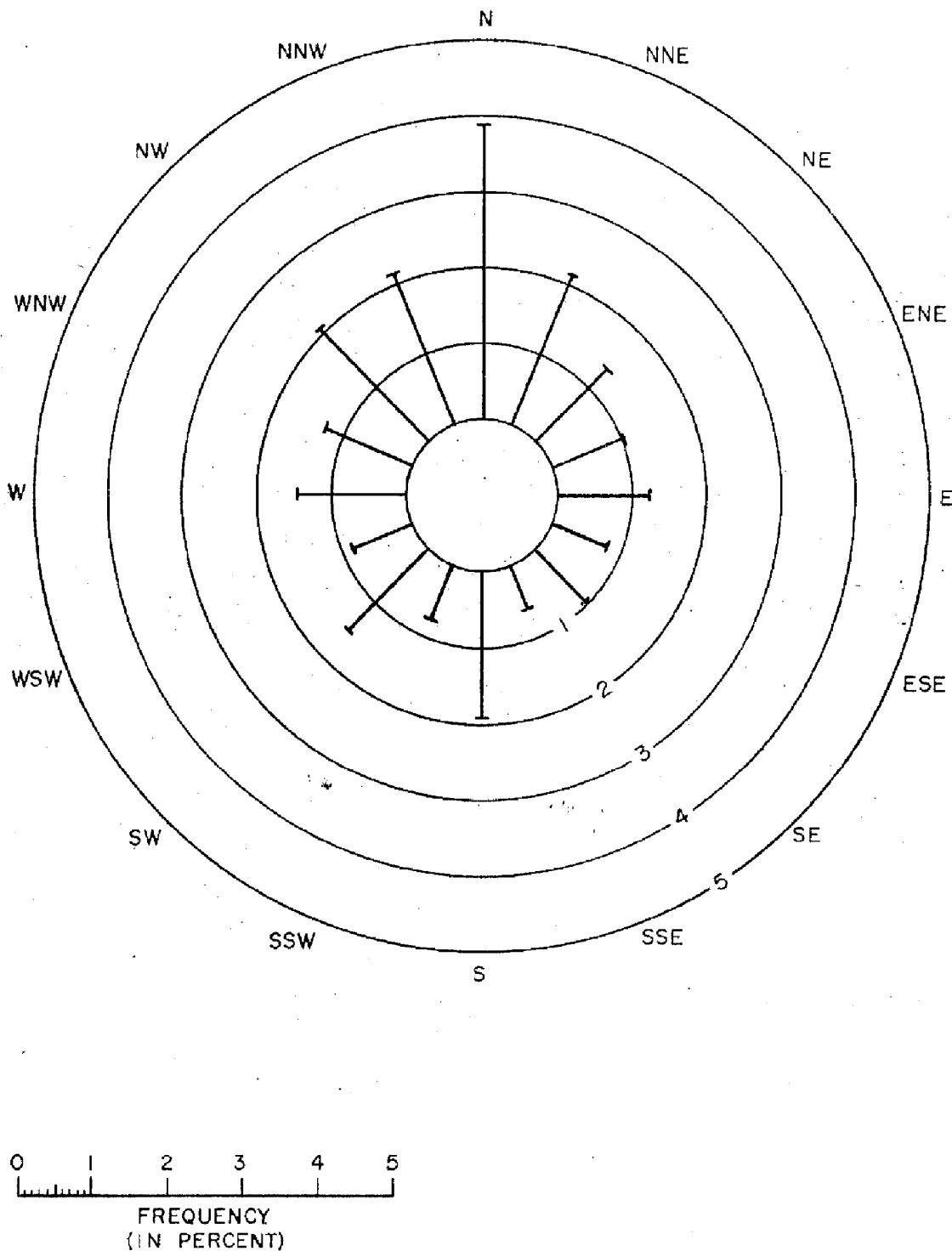
["HISTORICAL INFORMATION NOT REQUIRED TO BE REVISED"]



(31 DEC 2008)

**Figure 2-27. Surface Wind Frequency Distribution during Low-Level Temperature Inversion Conditions (October 19, 1966 - October 31, 1967)**

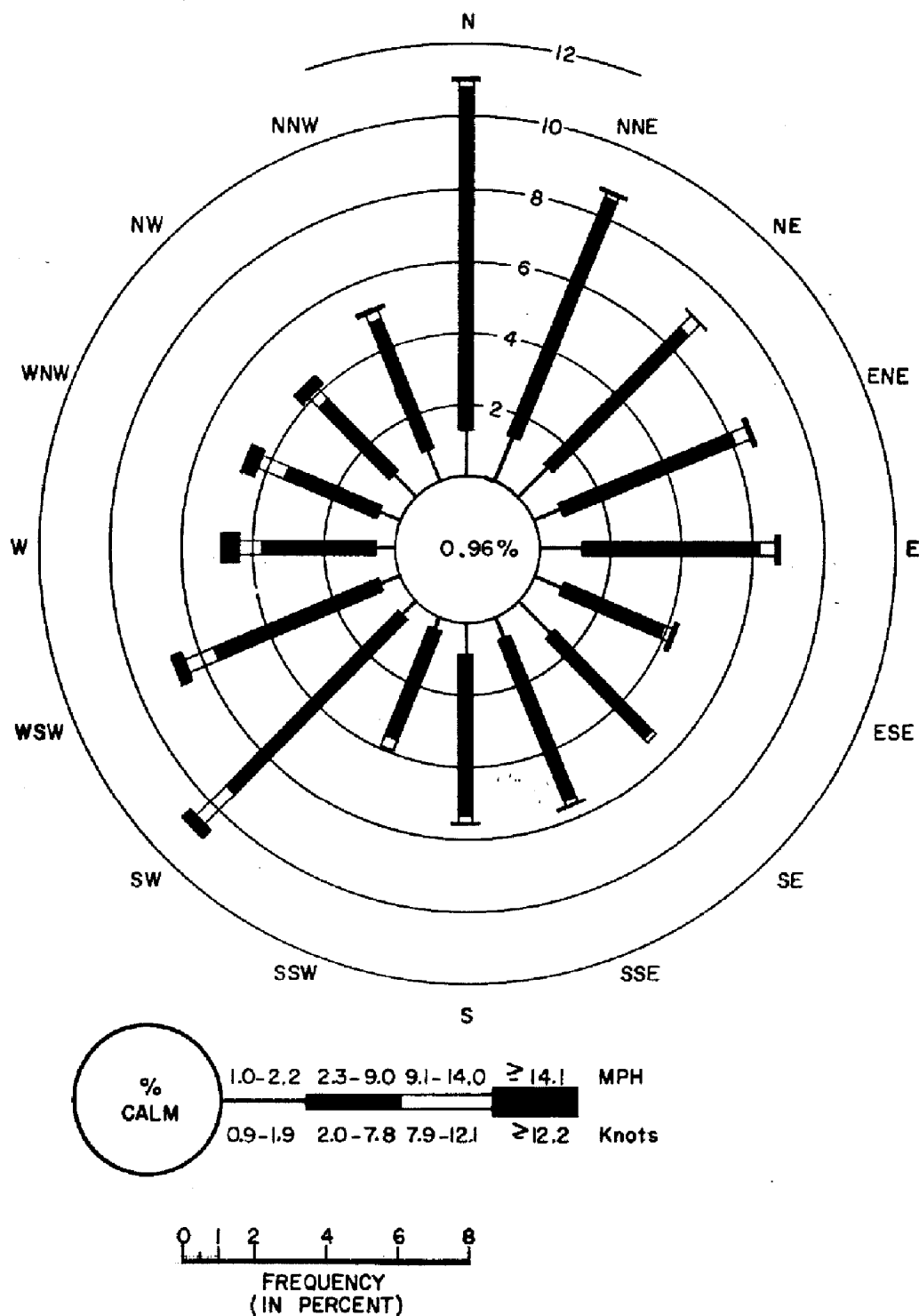
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(31 DEC 2008)

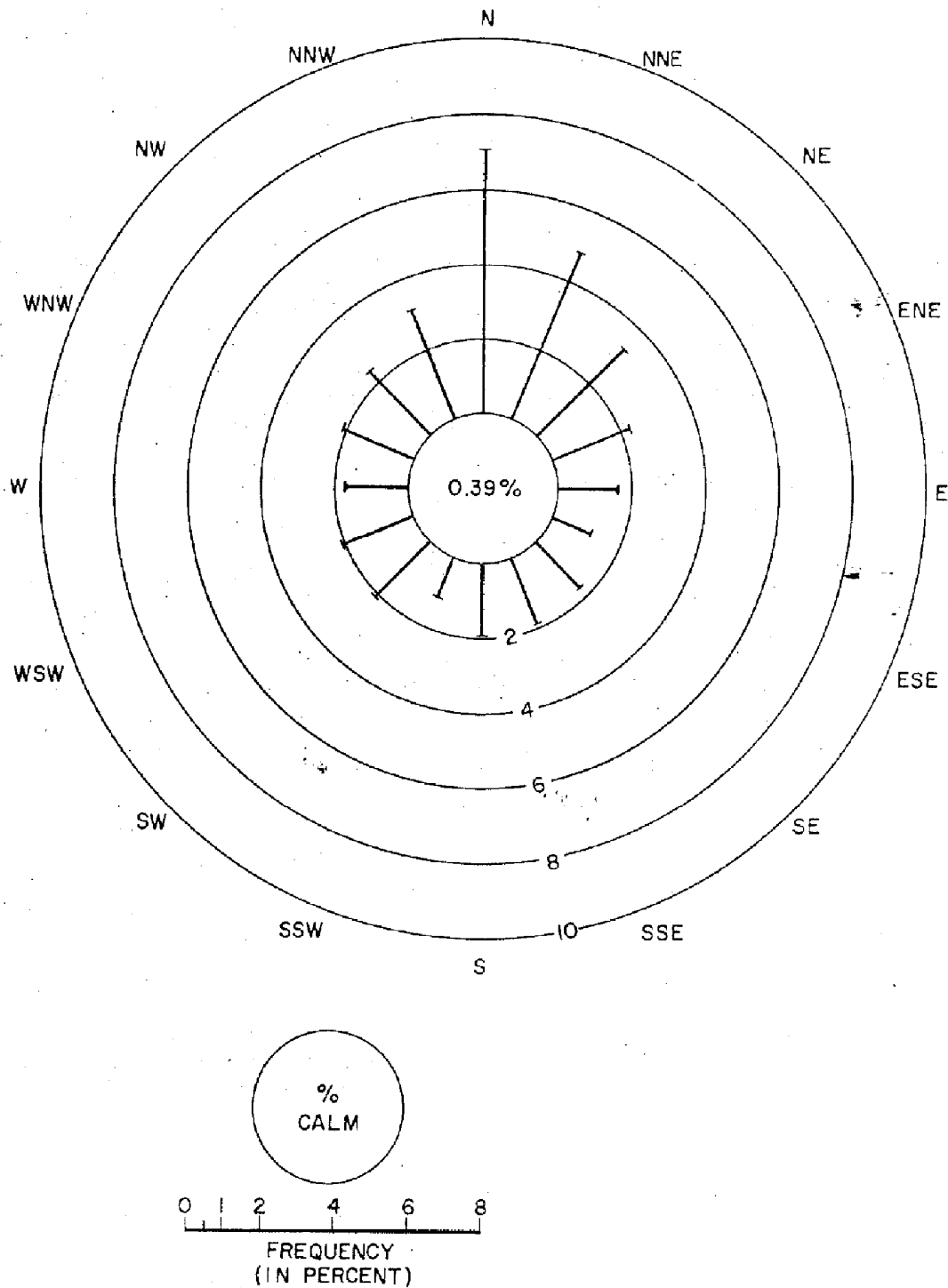
Figure 2-28. Wind Rose for Tower Winds (June 19, 1967 - May 31, 1968)

["HISTORICAL INFORMATION NOT REQUIRED TO BE REVISED"]



**Figure 2-29. Frequency Distribution for Tower Winds During Low-Level Temperature Inversion Conditions (June 19, 1967 - May 31, 1968)**

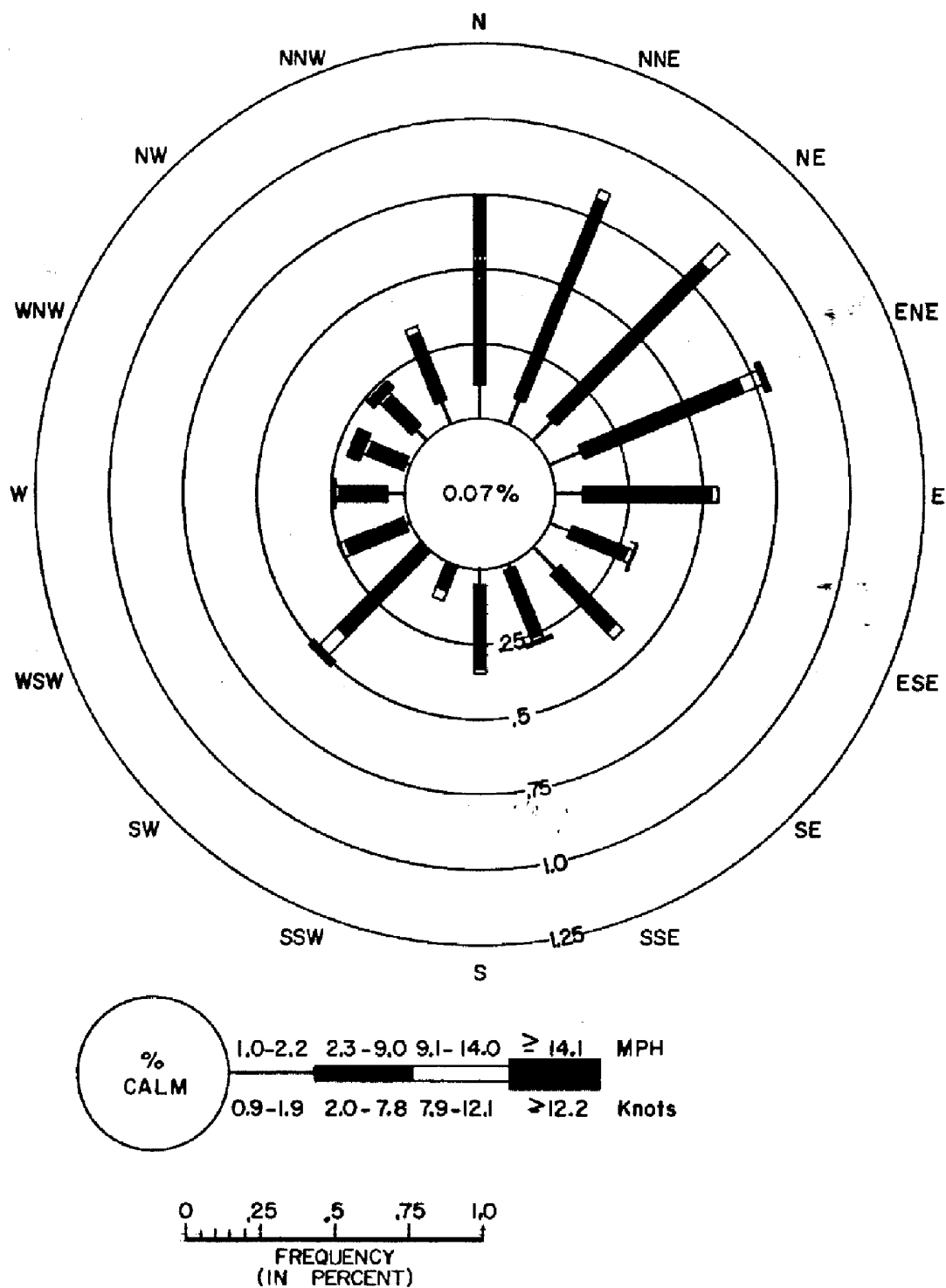
["HISTORICAL INFORMATION NOT REQUIRED TO BE REVISED"]





**Figure 2-30. Precipitation Wind Rose for Tower Winds (June 19, 1967 - May 31, 1968)**

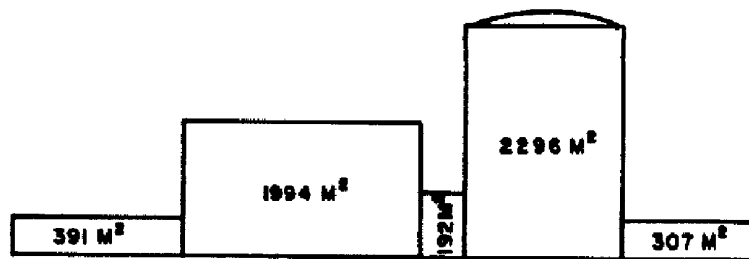
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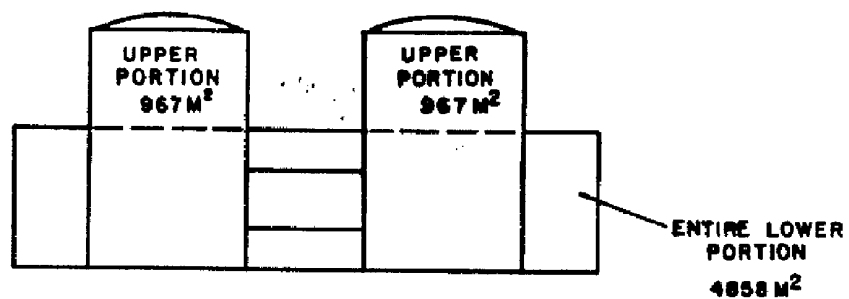
(31 DEC 2008)

**Figure 2-31. General Building Arrangements**

["HISTORICAL INFORMATION NOT REQUIRED TO BE REVISED"]



GENERAL BUILDING ARRANGEMENT — SIDE VIEW  
CROSS-SECTIONAL AREAS  
TOTAL AREA 5180 M<sup>2</sup>



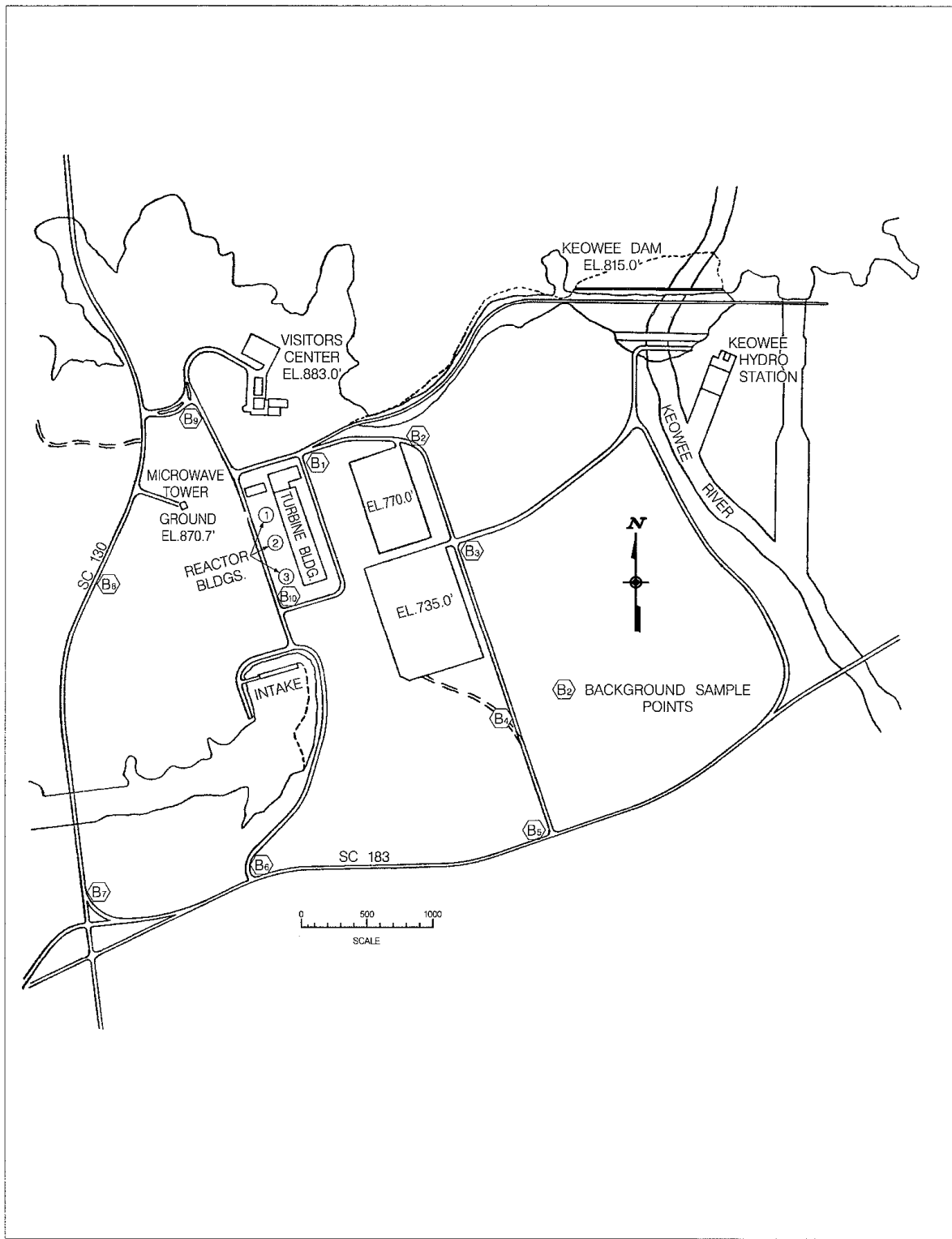
GENERAL BUILDING ARRANGEMENT — FRONT VIEW  
CROSS SECTIONAL AREAS  
TOTAL AREA 6792 M<sup>2</sup>

**Figure 2-32. Plot Plan and Site Boundary During Early Meteorological Studies**  
[“HISTORICAL INFORMATION NOT REQUIRED TO BE REVISED”]



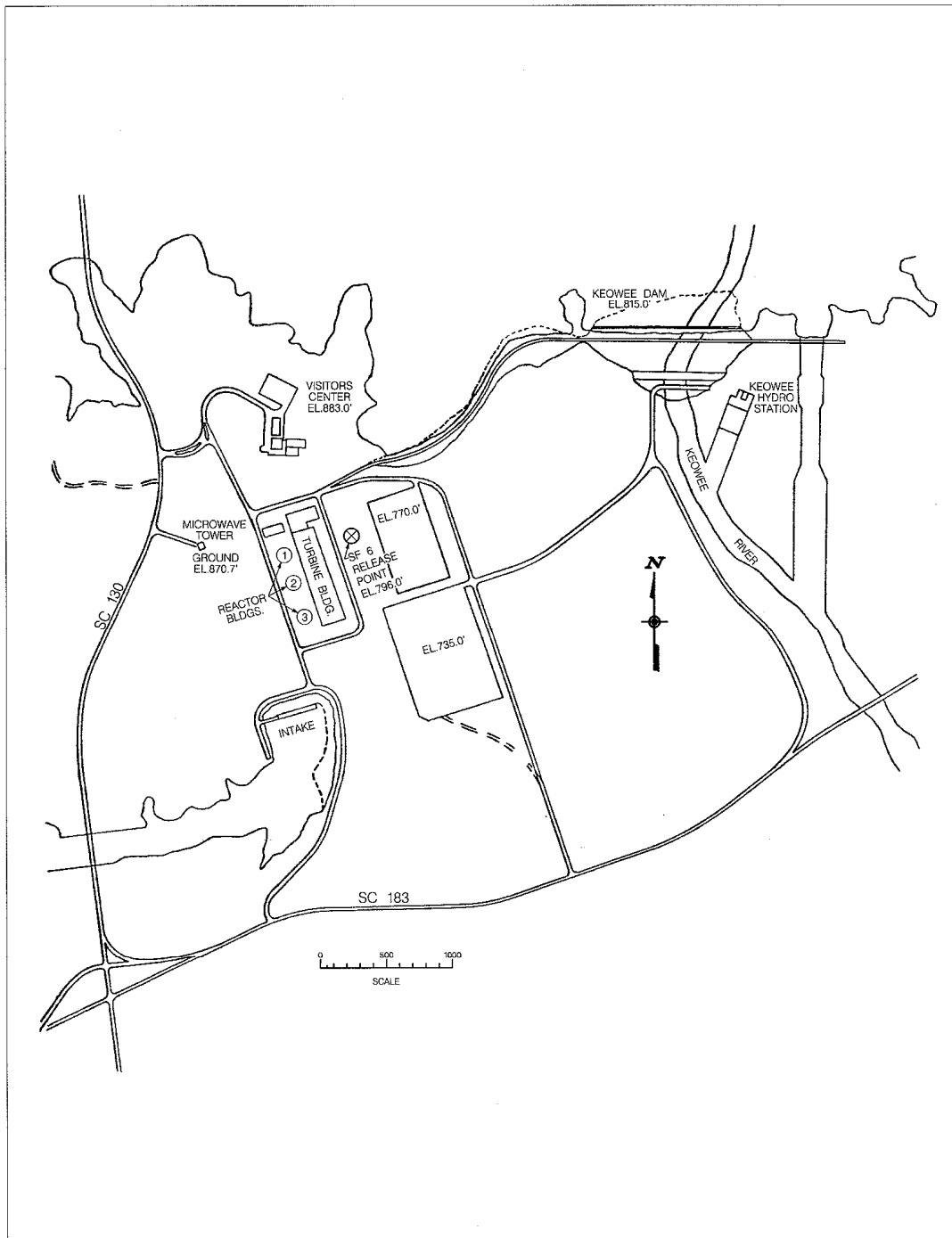
**Figure 2-33. SF<sub>6</sub> Gas Tracer Test Background Sample Points**

["HISTORICAL INFORMATION NOT REQUIRED TO BE REVISED"]



**Figure 2-34. SF<sub>6</sub> Gas Tracer Test Release Point**

["HISTORICAL INFORMATION NOT REQUIRED TO BE REVISED"]



**Figure 2-35. Deleted per 2008 Update**

**Figure 2-36. Deleted per 2008 Update**

**Figure 2-37. SF<sub>6</sub> Gas Tracer Test Release and Sample Stations.** Figure is representative of the 1/15/70 SF<sub>6</sub> Test only. See Original FSAR Appendix 2A Figure 2A-5 for the release and sample station lay outs for the other SF<sub>6</sub> Tests.

["HISTORICAL INFORMATION NOT REQUIRED TO BE REVISED"]

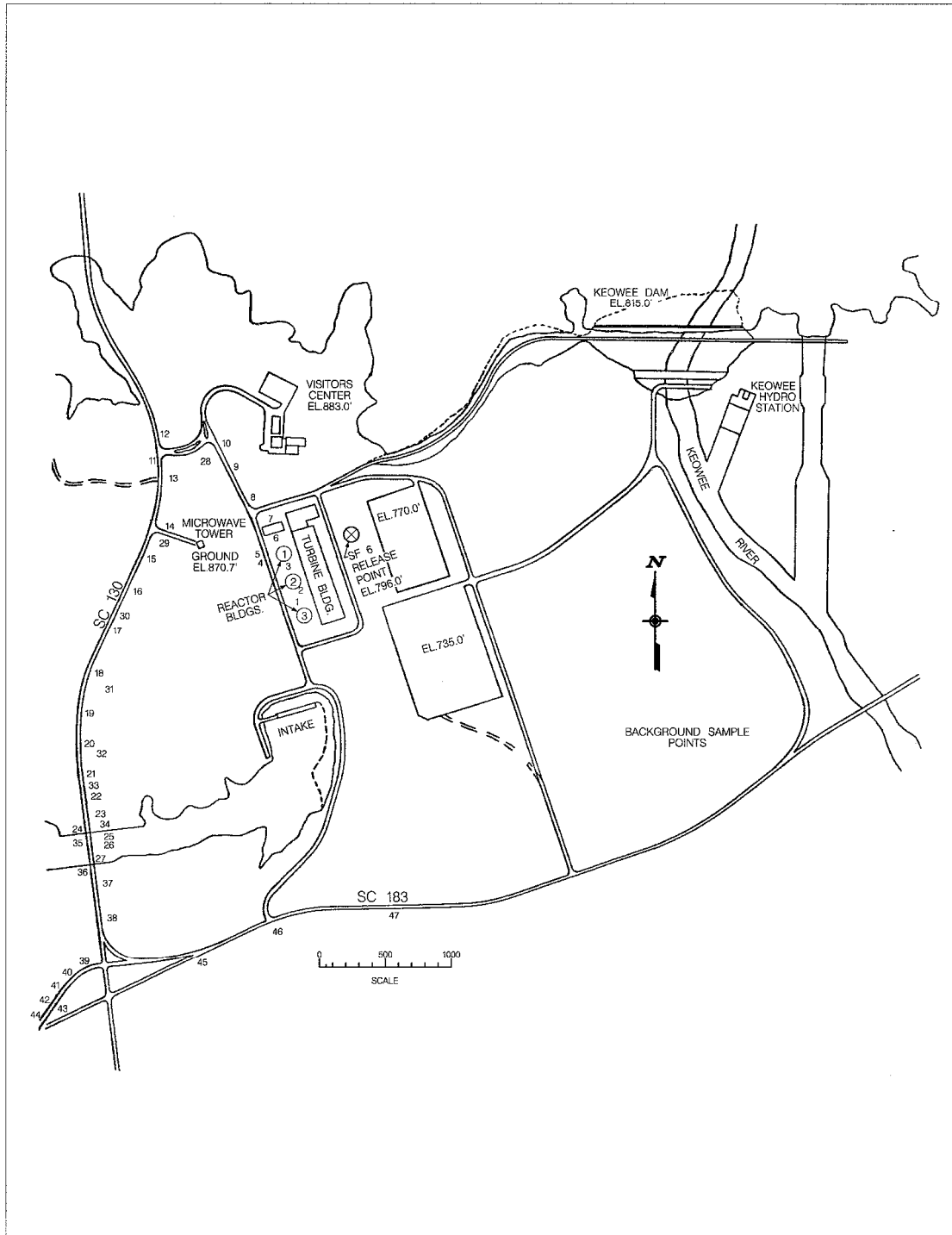


Figure 2-38. Approximate Terrain at Nuclear Site

["HISTORICAL INFORMATION NOT REQUIRED TO BE REVISED"]

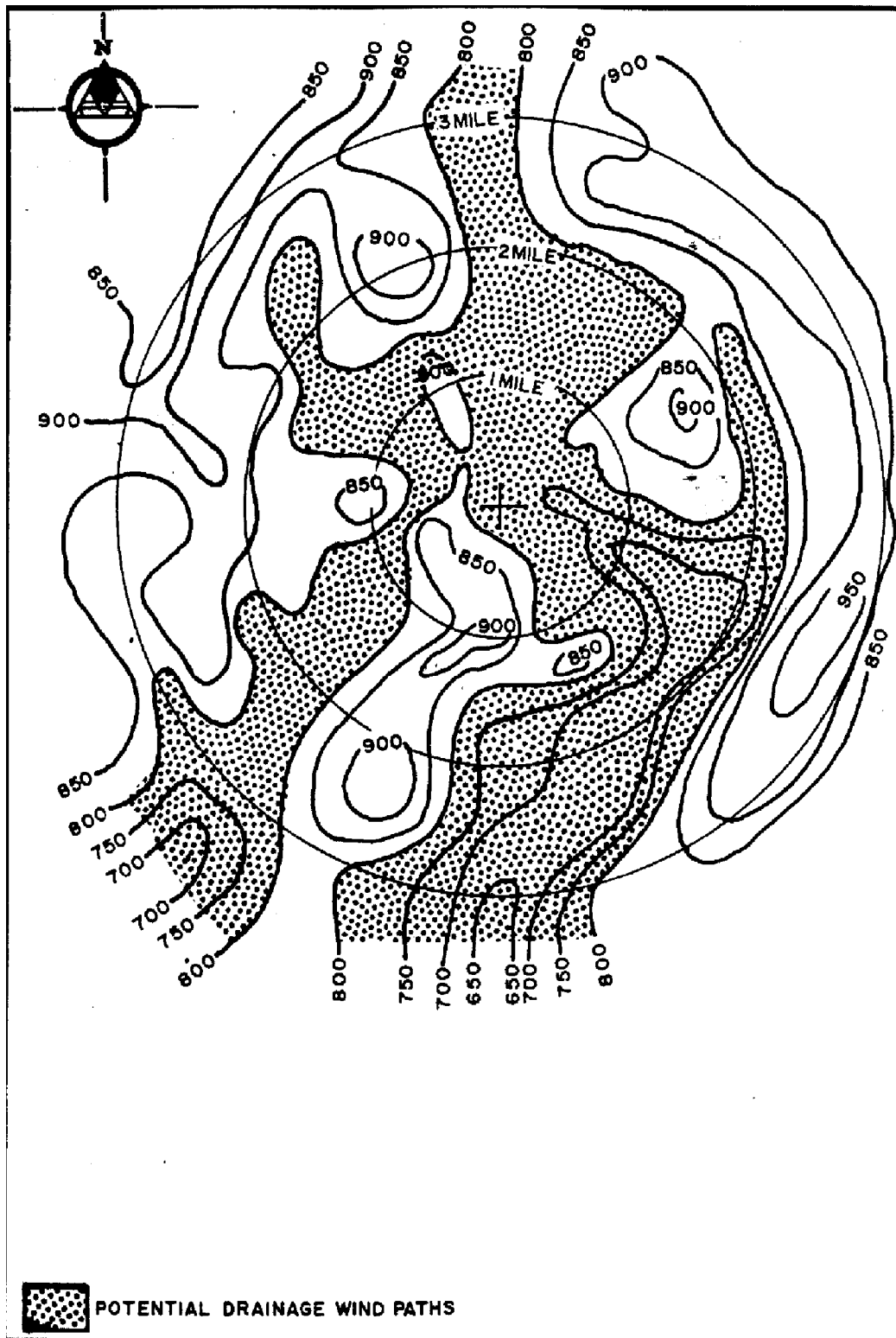
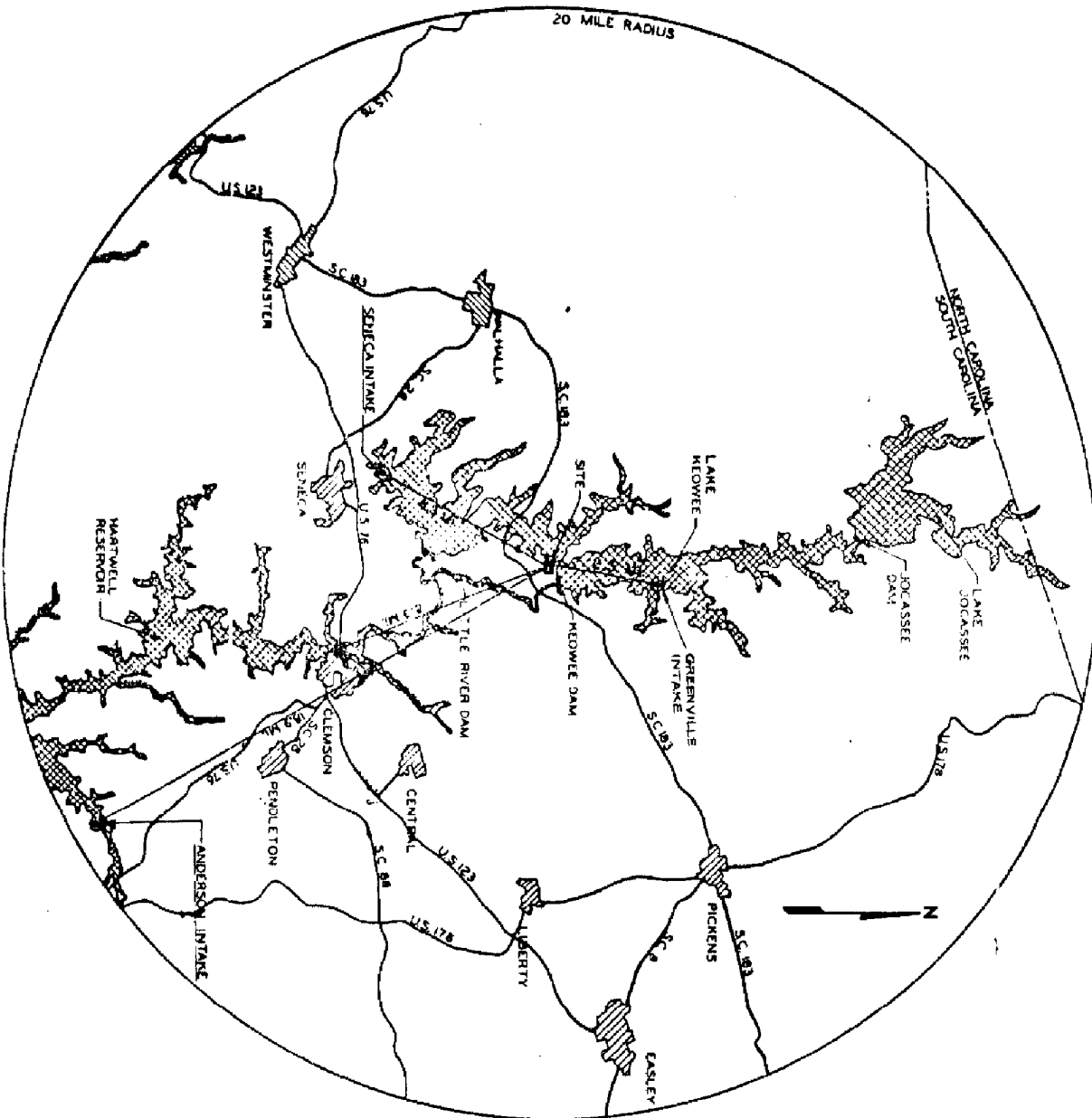




Figure 2-39. Location of Municipal Water Supply Intakes



### Figure 2-40. Areal Groundwater Survey

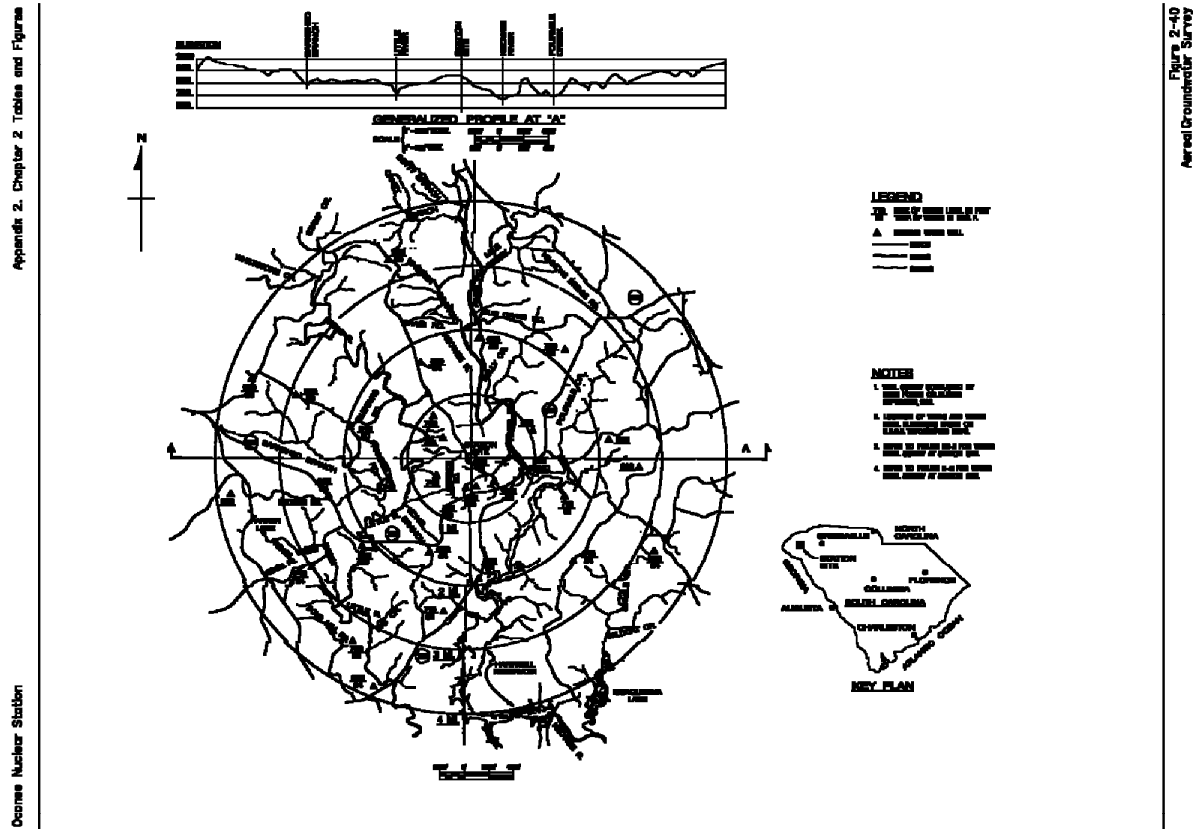
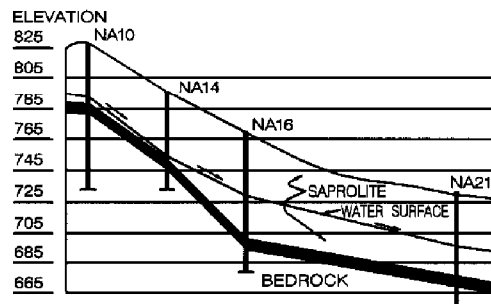
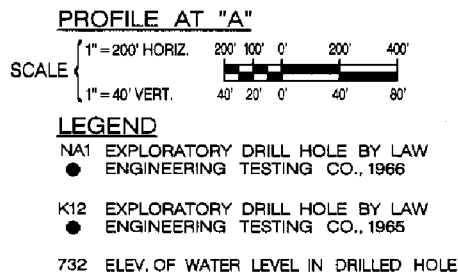
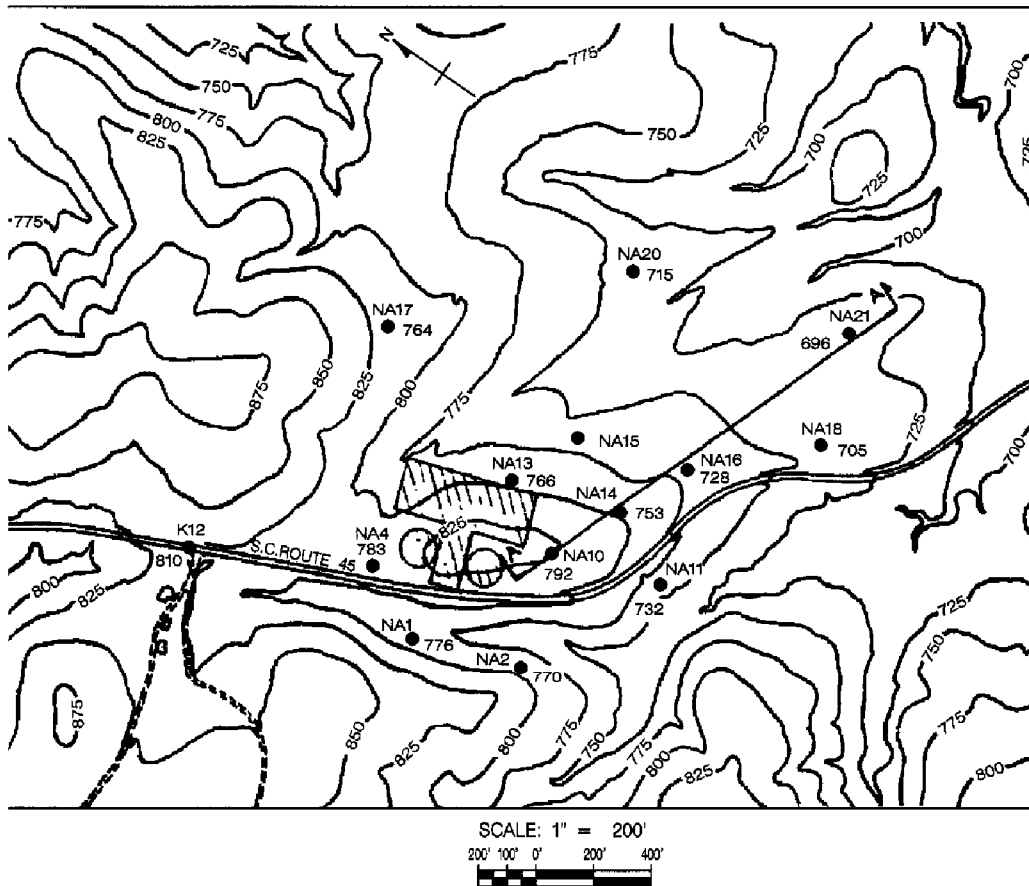


Figure 2-41. Groundwater Survey at Station Site

**NOTES**

1. WATER LEVELS IN "NA" HOLES MEASURED DURING SEPTEMBER, 1966 AND K12 MEASURED DURING DECEMBER, 1965.
2. REFER TO FIGURE 2-40 FOR GENERAL LOCATION AND AREAL GROUNDWATER SURVEY.

Figure 2-42. Well Permeameter Test Apparatus

Appendix 2, Chapter 2 Tables and Figures

Oconee Nuclear Station

## FIELD PERMEABILITY TESTING

The tests were run according to the Bureau of Reclamation's Field Permeability Tests, Designation E-56. The immediate vicinity of each of the exploratory borings were assessed as the location for the wells. NA-4, NA-10, NA-25 and NA-35. Figure 2-42. Two 8 in. diameter holes were drilled at each location to the extent of the auger used. The NA-4 test wells were drilled with a 27 in. auger. Generally, the test wells were within 20 ft. of the exploratory borings.

The wells were prepared with care in order to cause as little disturbance to the surrounding soil as possible. No water was encountered in any of the wells. After the wells were excavated, the sides and bottoms were lightly cleaned where necessary, and the loose soil was removed from the bottom.

After clearing, all wells were backfilled with 36 in. to Number 4 size crushed stone and covered with plastic sheels until time of testing. The equipment used for these permeability tests is shown to the right, each 50 gallon drum was calibrated in increments of 1/8 of an inch change in water level which corresponds to 0.0142 cubic feet of water.

For each test the permeability equipment as shown, was set up, the crushed stone was removed to a depth of approximately 1 ft. in the well from the ground surface and the Robert's type float valve float bob was adjusted so that a water level would be maintained constant at about a 9 in. depth. All depths from the ground surface were measured from a baseline string stretched across the hole at ground level. The drum was filled with water and the test started. Water and ground temperatures were taken and recorded at varied time intervals. Readings of water level (to the nearest 1/8 of an inch) and time (to the nearest minute) were taken throughout the test. Rate of cumulative water volume versus time were prepared during each test. In general, the dry soil at the start of the test absorbed water at a comparatively high rate, but as the soil below the test became saturated the rate decreased to a point where it was practically constant. When this occurred, as evidenced by the plotted points on pressure falling on practically a straight line for several hours, the tests were discontinued. This data is available but has not been included on the test summary. The slope of the straight line gave the rate of flow to be used in calculations of coefficient of permeability,  $k$ . Figure 2-43 shows the formula used for determining the coefficient of permeability,  $k$  and Table 2-50 summarizes the results of the test.

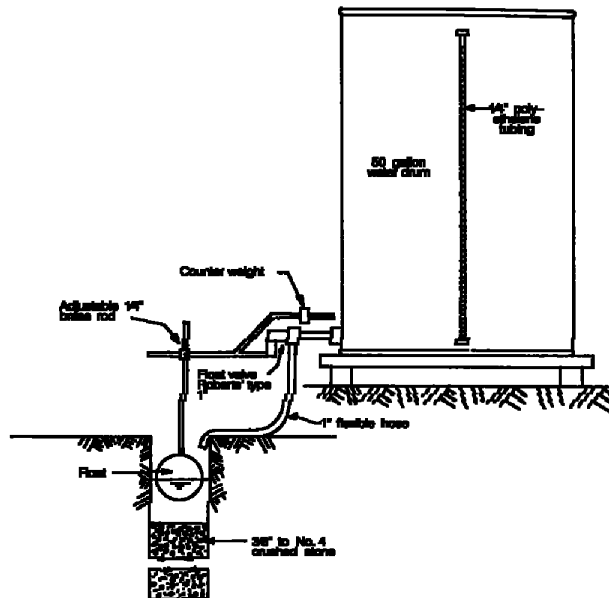
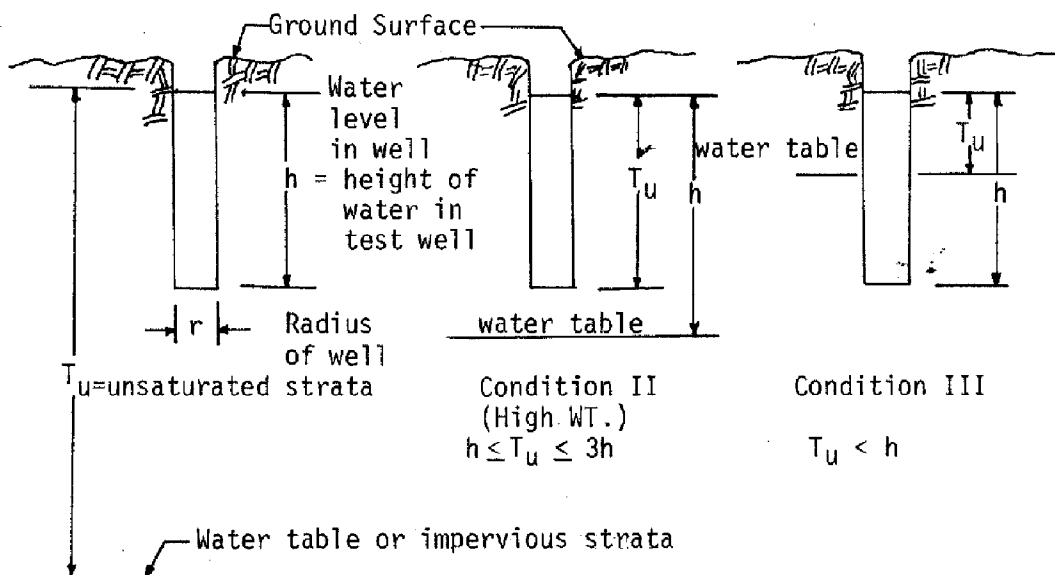
Figure 2-42  
Well Permeameter Test Apparatus

Figure 2-43. Formulae for Determining Permeability



Condition I  
(Low Wt.)  
 $T_u > 3h$

$$\text{Condition I: } k_{20} = 525,600 \frac{\left[ \sinh^{-1} \frac{h}{r} - 1 \right] \frac{Q}{2\pi}}{h^2} \left( \frac{\mu_T}{\mu_{20}} \right)$$

$$\text{Condition II: } k_{20} = \frac{525,600 \log_e \frac{h}{r} \frac{Q}{2\pi}}{h^2 \left[ \frac{1}{6} + \frac{1}{3} \left( \frac{h}{T_u} \right) - 1 \right]} \left( \frac{\mu_T}{\mu_{20}} \right)$$

$k_{20}$  = coefficient of permeability, feet per year

$h$  = height of water in the well, feet

$r$  = radius of well, feet

$Q$  = discharge rate of water from the well for steady state condition,  $\text{ft}^3/\text{min}$ .

$\mu_T$  = viscosity of water at temperature  $T$

$\mu_{20}$  = viscosity of water at  $20^\circ\text{-C}$

$T_u$  = unsaturated distance between the water surface in the well and the water table, feet

Figure 2-44. Regional Geologic Map



<u>SYMBOL</u>	<u>EXPLANATION</u>	<u>AGE</u>
Qal	Alluvium	Quaternary
TrPb	Brevard Belt	Permian - Triassic (?)
PMp	Muscovite Pegmatite Dikes	Permian (?)
DOgg	Biotite Granite Gneiss	Ordovician to Devonian
DOhg	Henderson Gneiss	Ordovician
Ogs	Gabbro and Soapstone	Ordovician
MOim	Quartzite	Upper Precambrian to Devonian
DpCh	Hornblende Gneiss	
DpCm	Biotite Gneiss and Migmatite	

From Geological Map of the Crystalline Rocks of South Carolina  
by

William C. Overstreet and Henry Bell, III

Miscellaneous Geologic Investigations Map I - 413

Figure 2-45. Topographic Map of Area

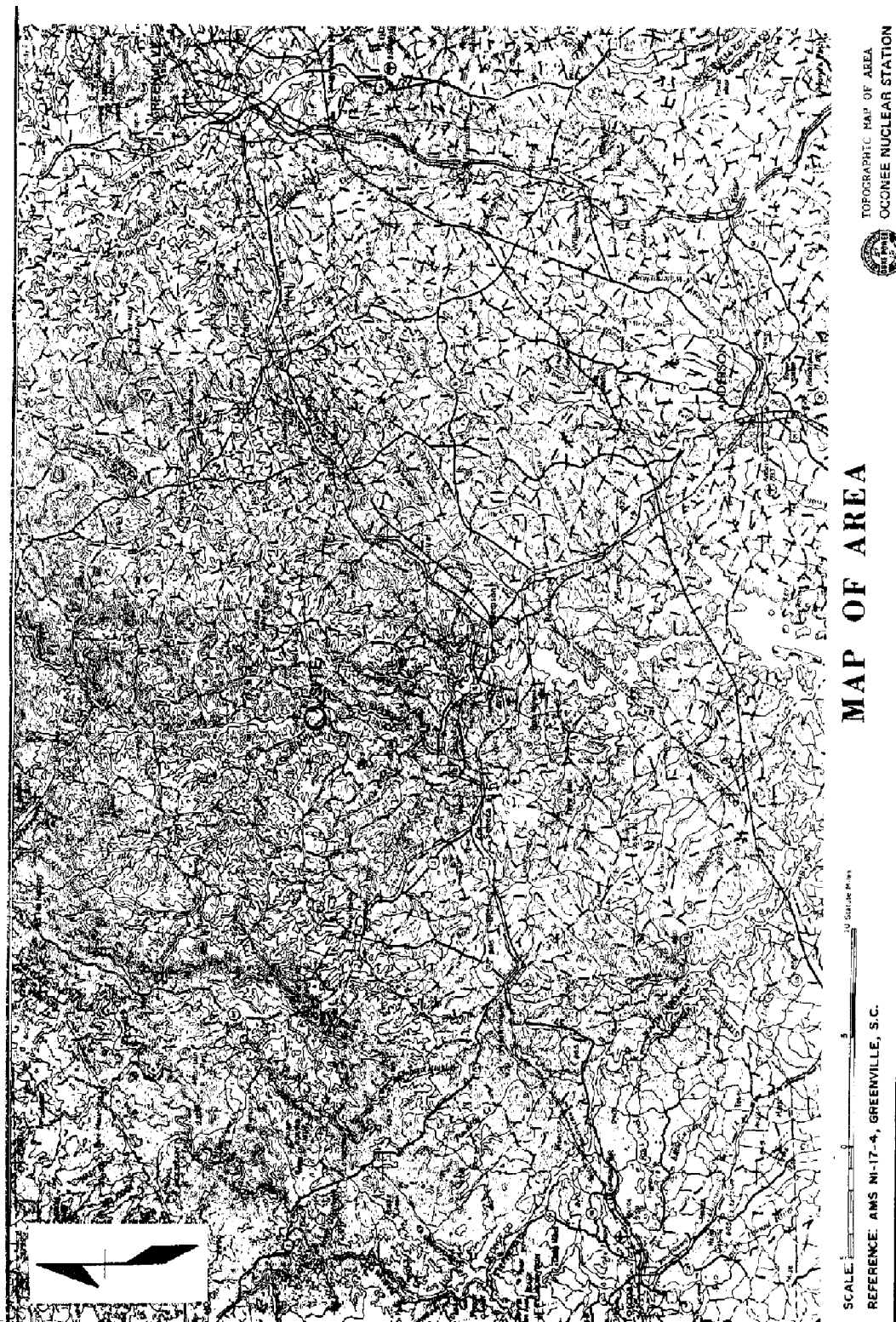


Figure 2-46. Location and Topographic Map



LOCATION AND TOPOGRAPHIC MAP

OCONEE NUCLEAR STATION

DUKE POWER COMPANY

From Old Pickens, South Carolina Quadrangle, 1961.  
Mapped, edited, and published by the United States  
Geological Survey.

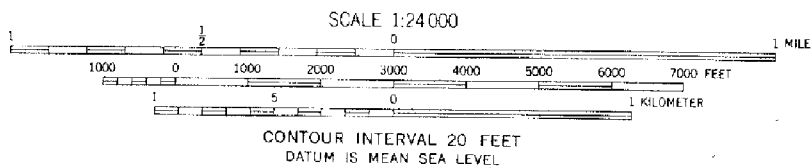




Figure 2-47. Strike and Dip of Joint Pattern

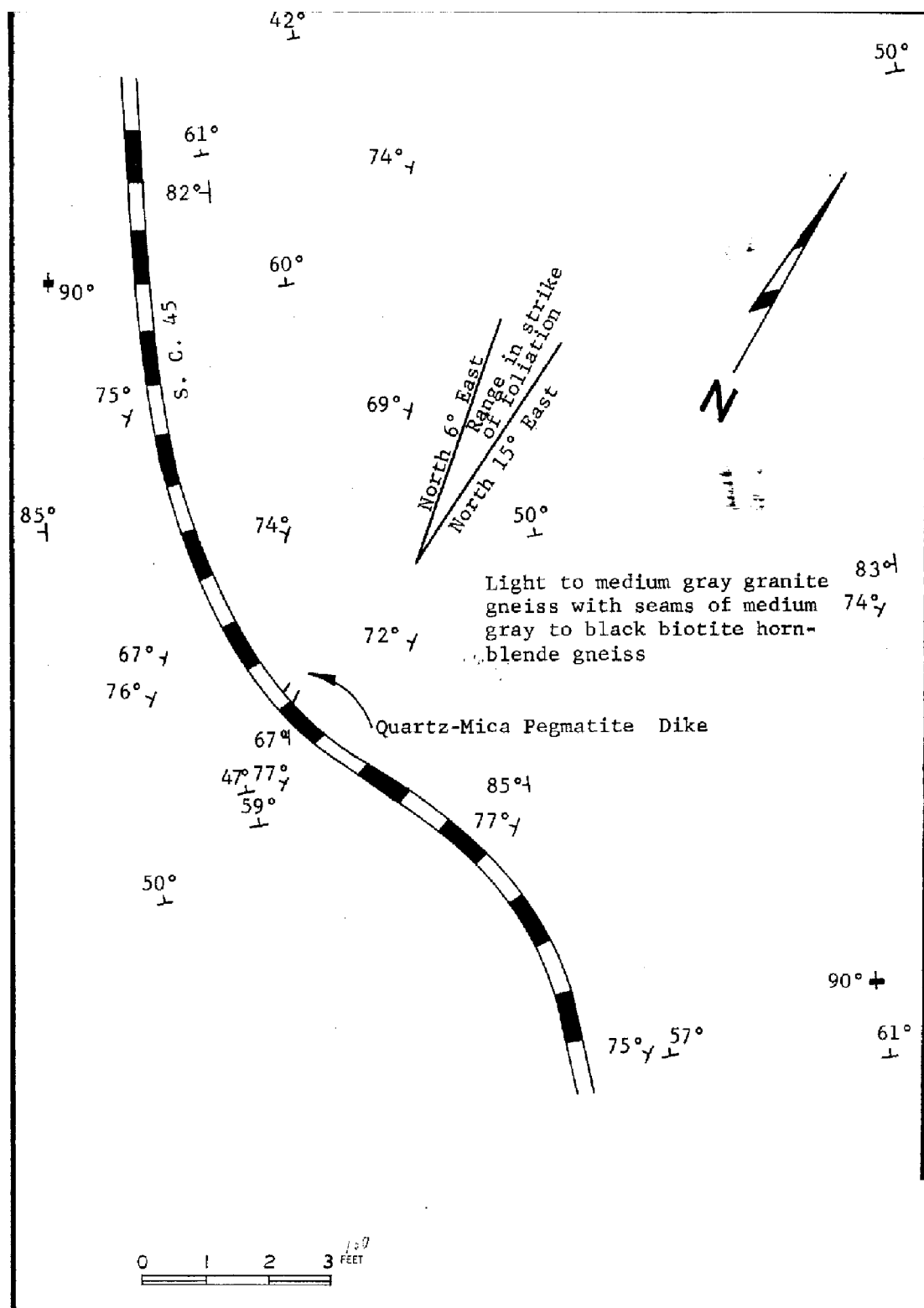


Figure 2-48. Earthquake Epicenters

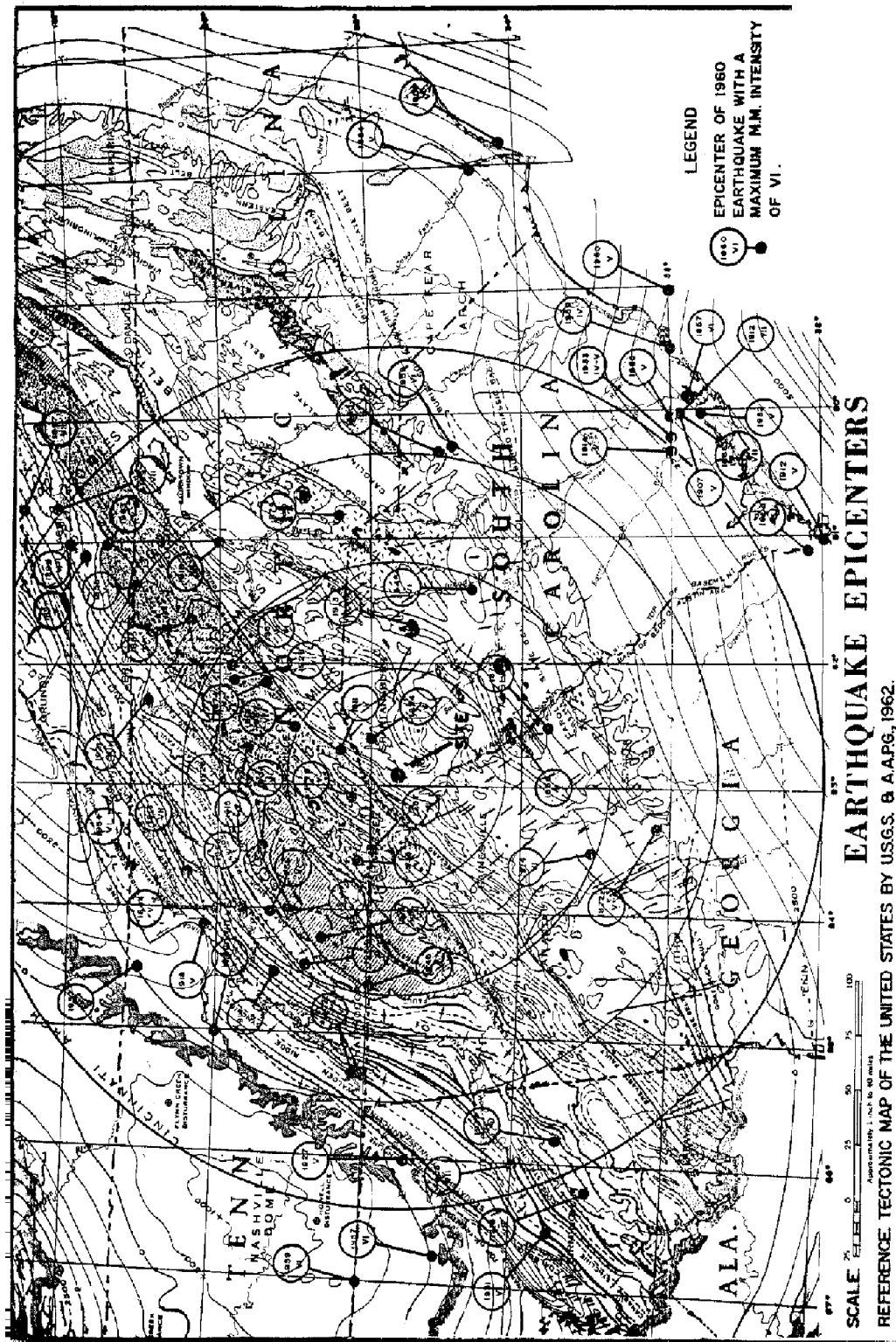


Figure 2-49. Regional Techtonics

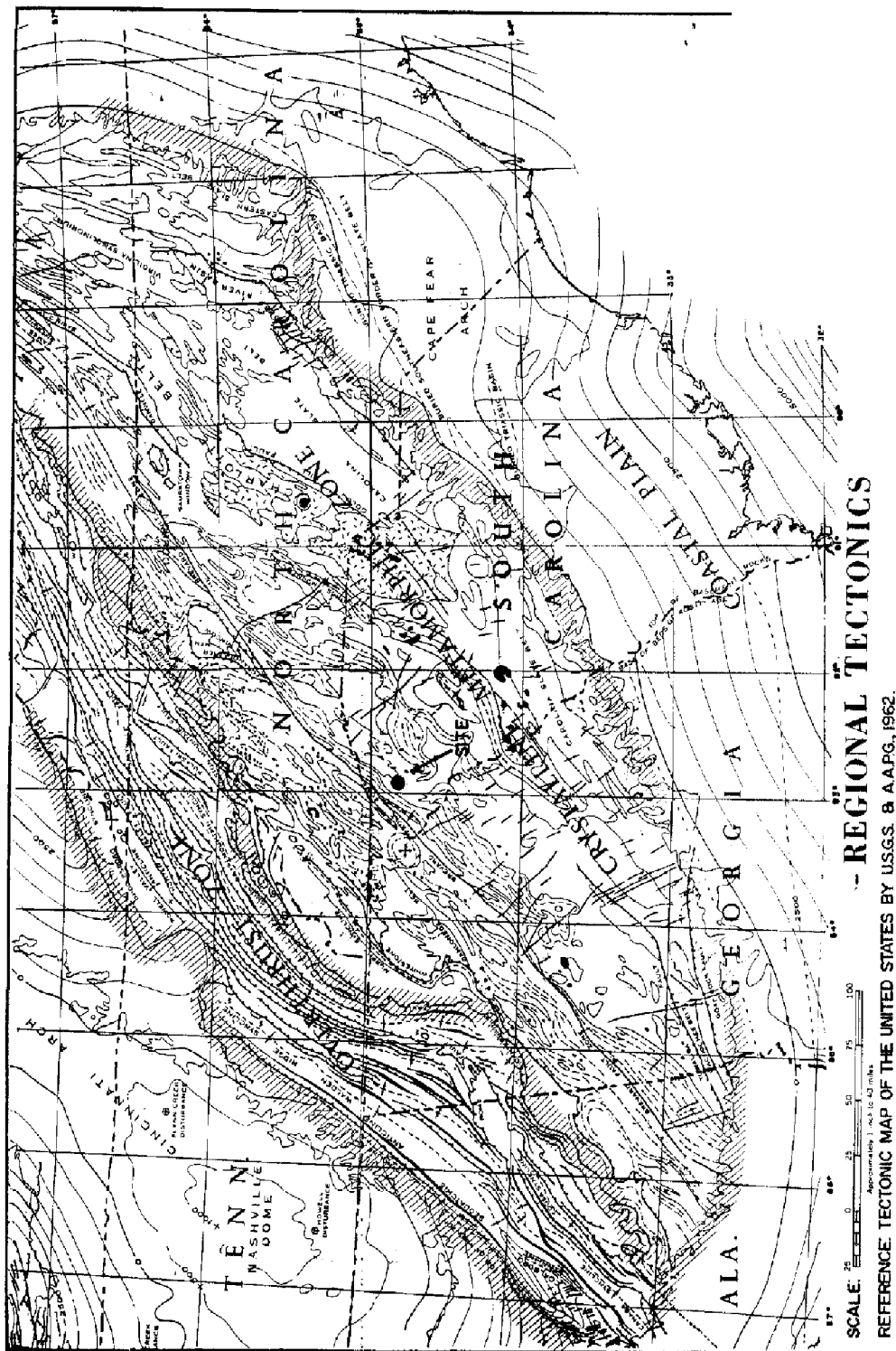


Figure 2-50. Ground Motion Spectra

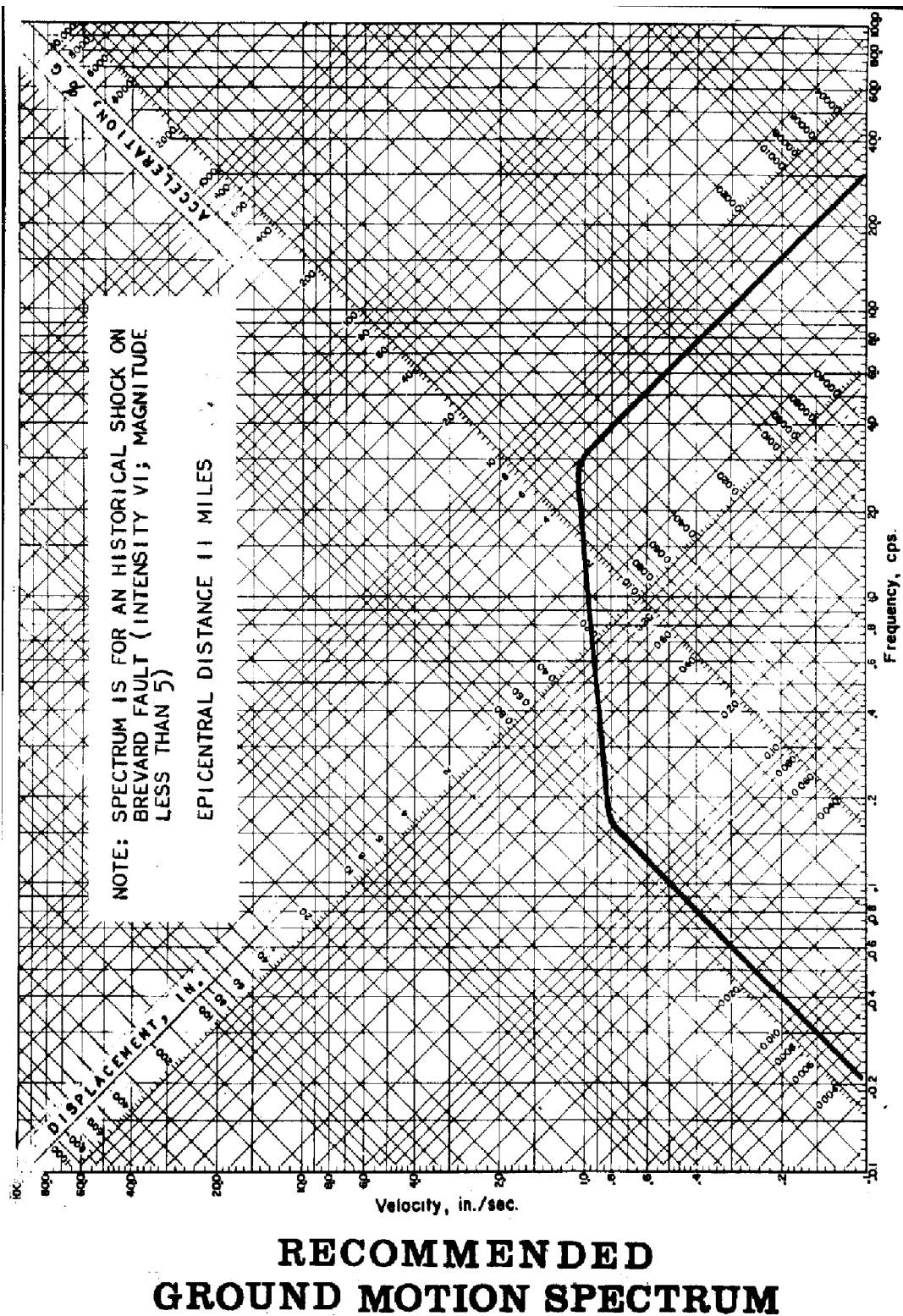
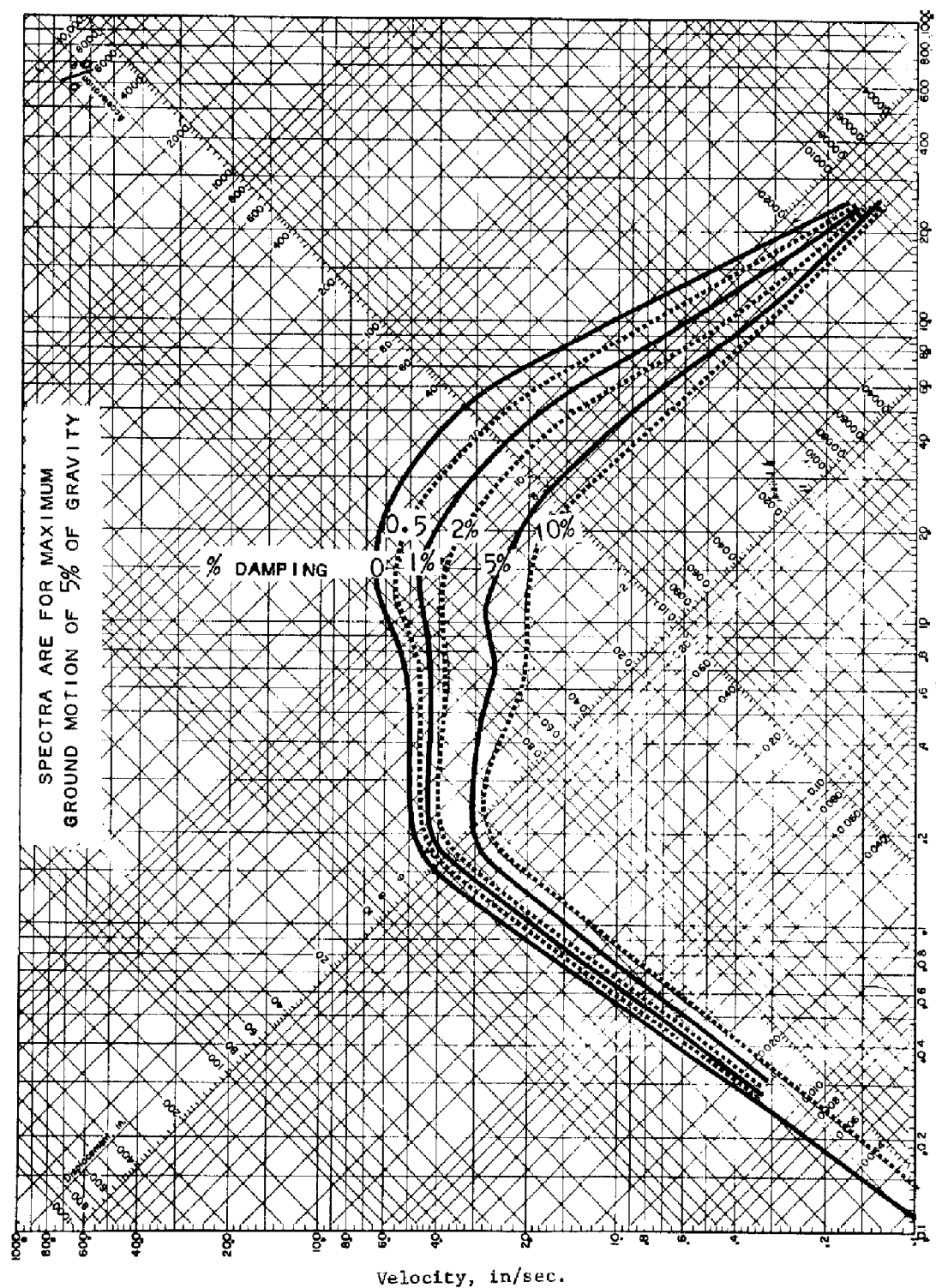


Figure 2-51. Recommended Response Spectra



## RECOMMENDED RESPONSE SPECTRA

Figure 2-52. Ground Motion Spectra

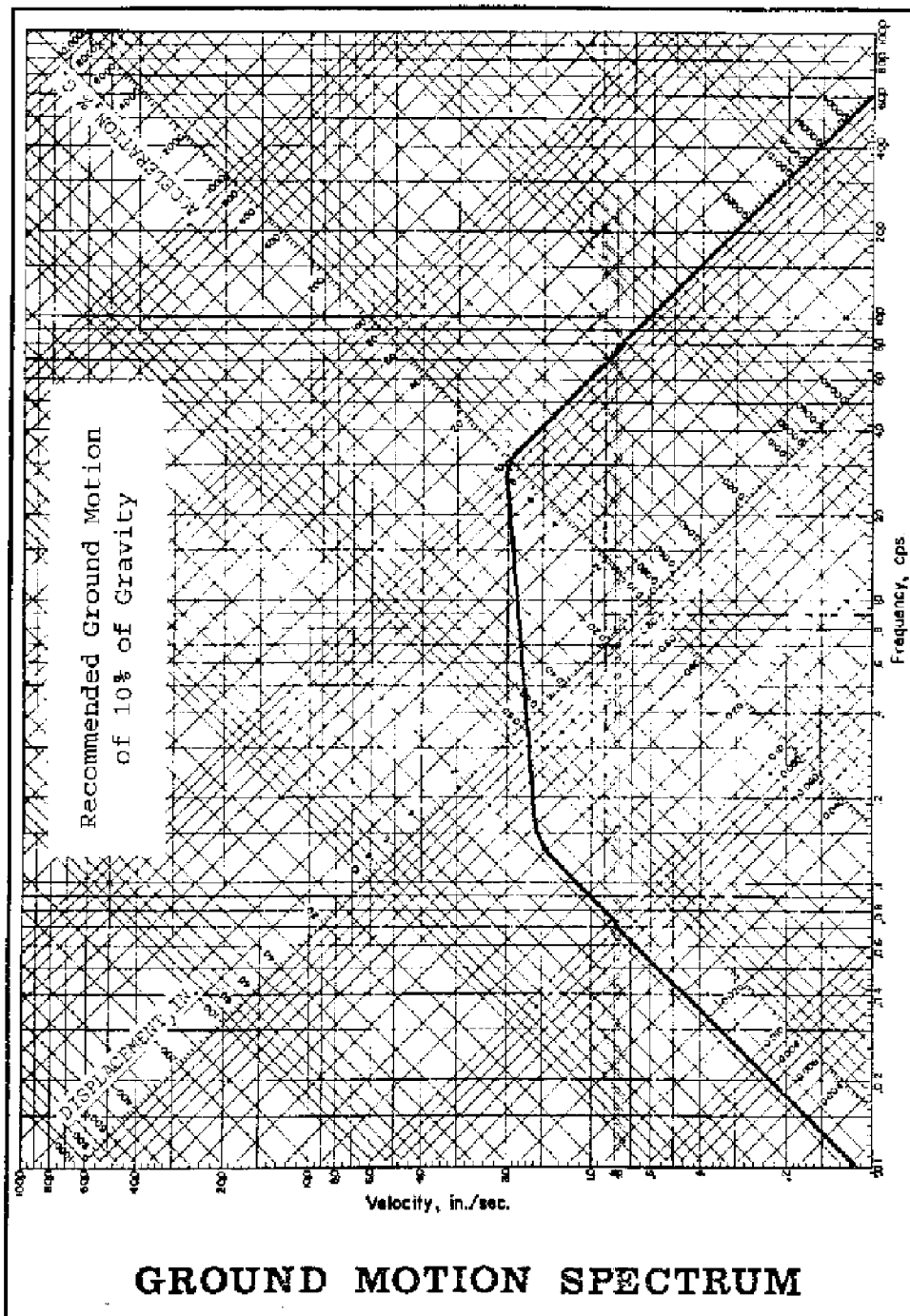


Figure 2-53. Recommended Response Spectra

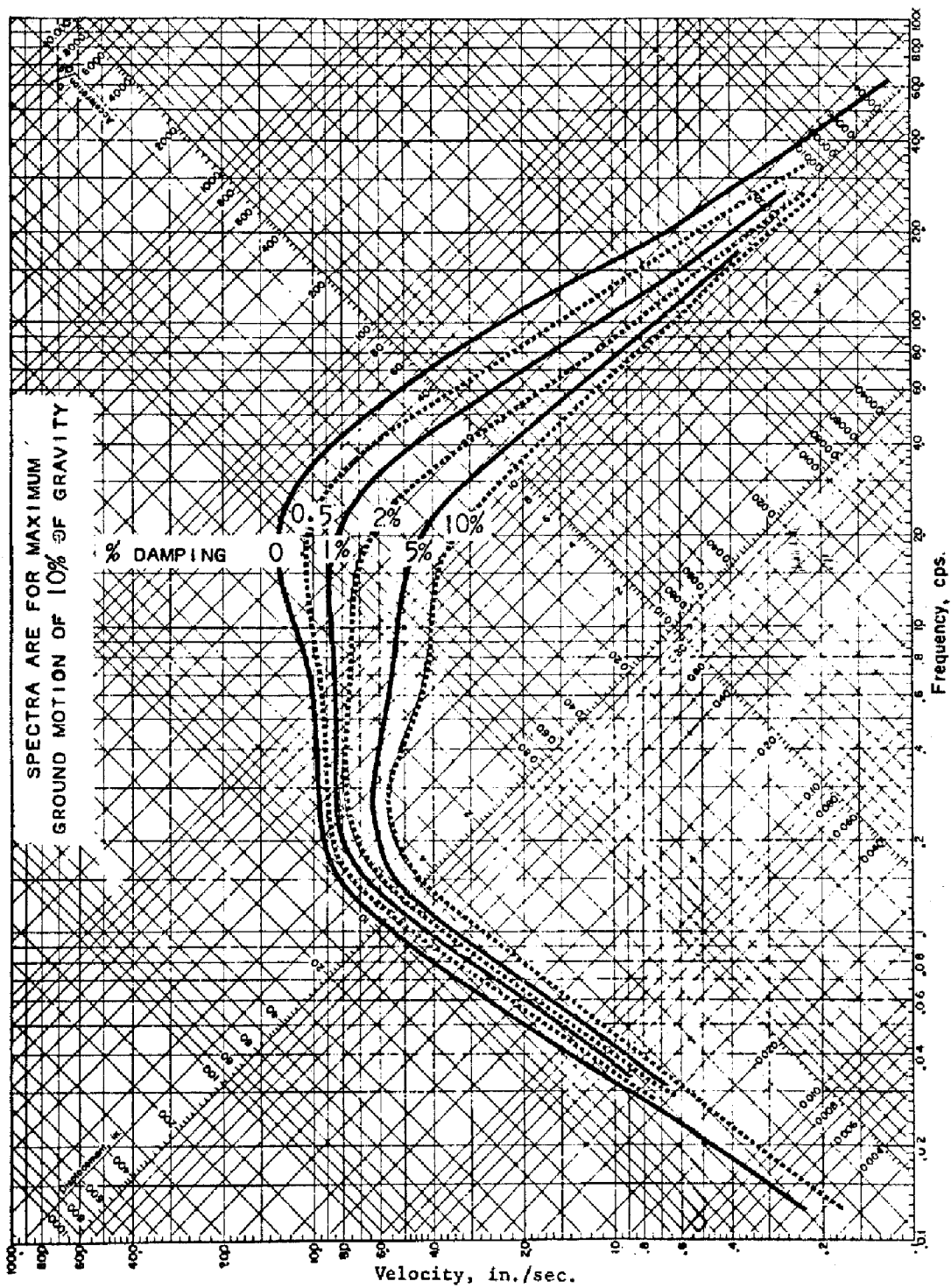
**RECOMMENDED RESPONSE SPECTRA**

Figure 2-54. Ground Motion Spectra

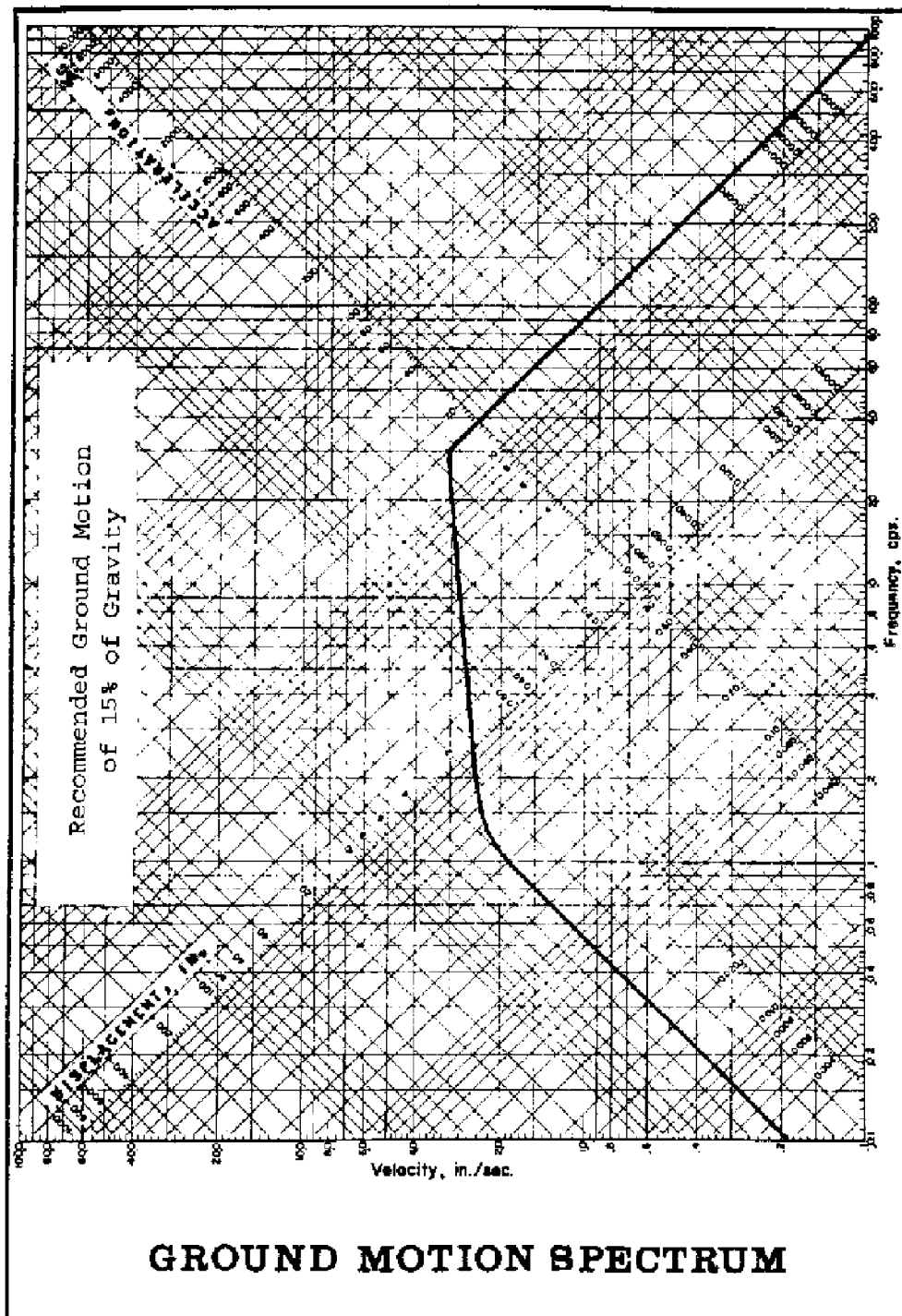
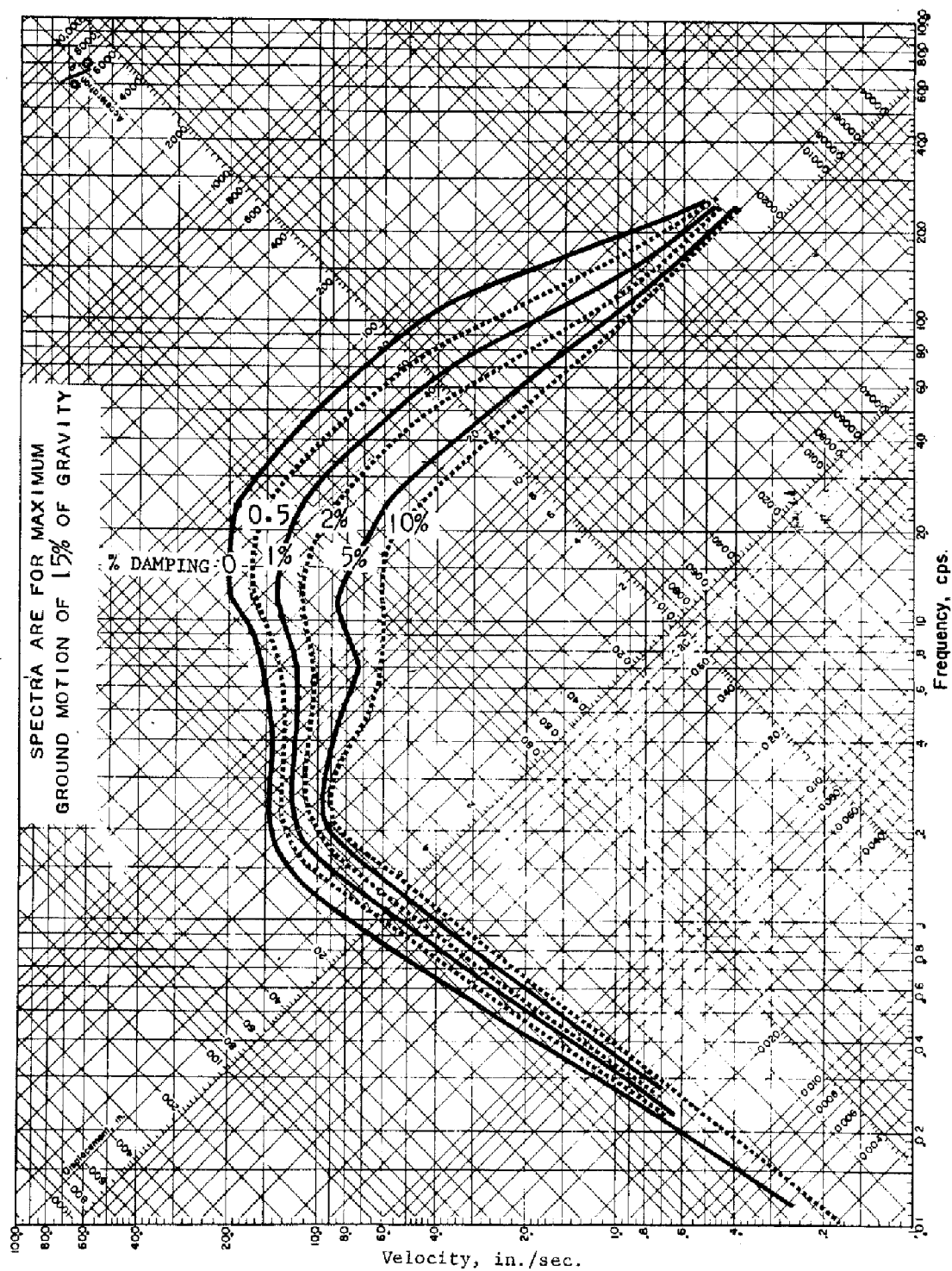




Figure 2-55. Recommended Response Spectra



## RECOMMENDED RESPONSE SPECTRA

Figure 2-56. Subsurface Profile

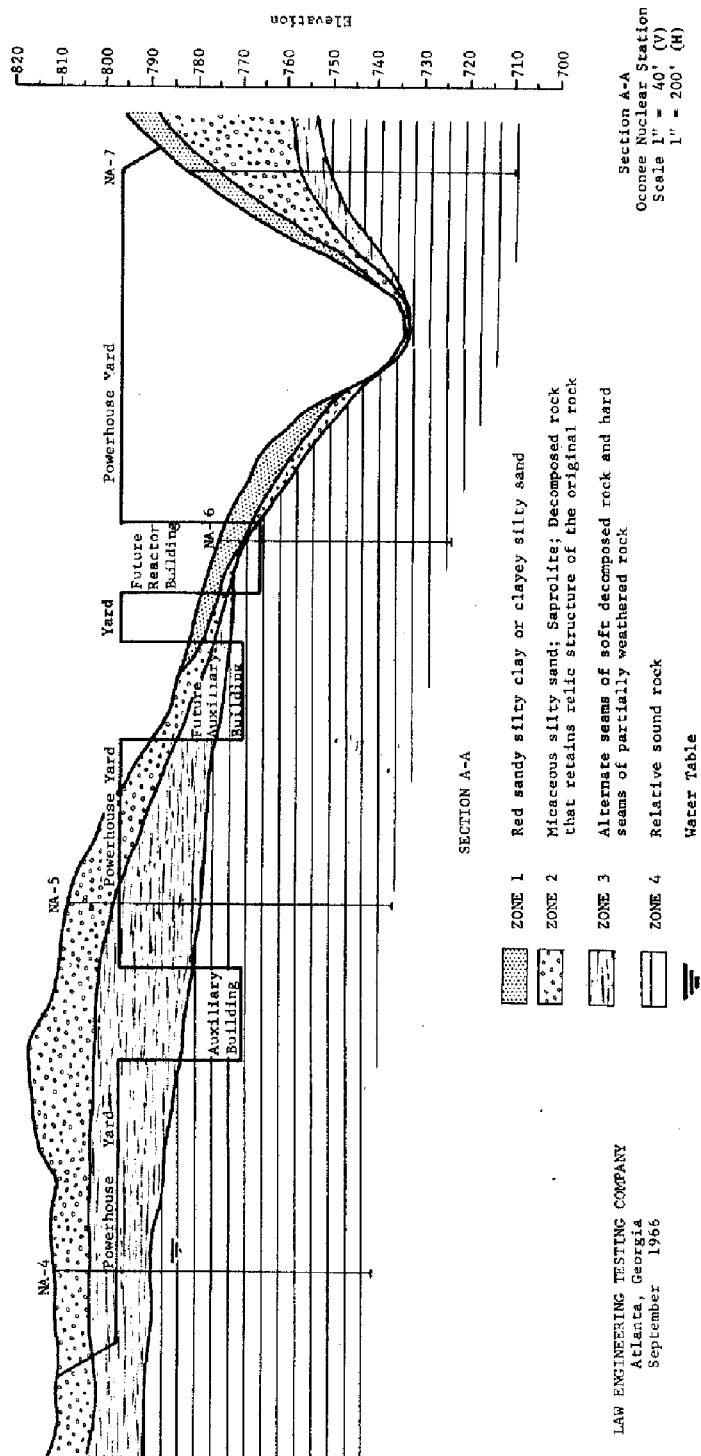


Figure 2-57. Subsurface Profile

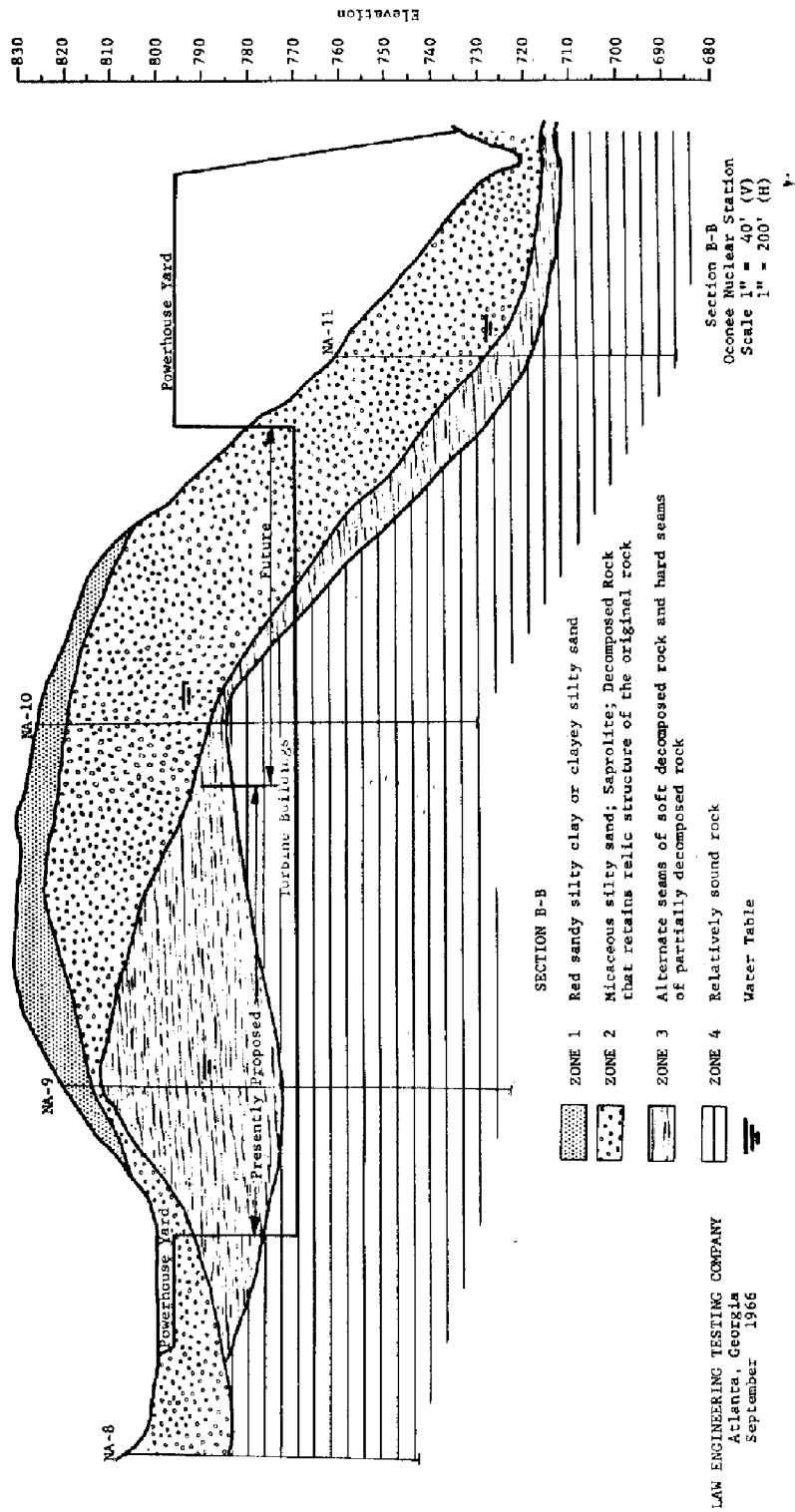


Figure 2-58. Subsurface Profile

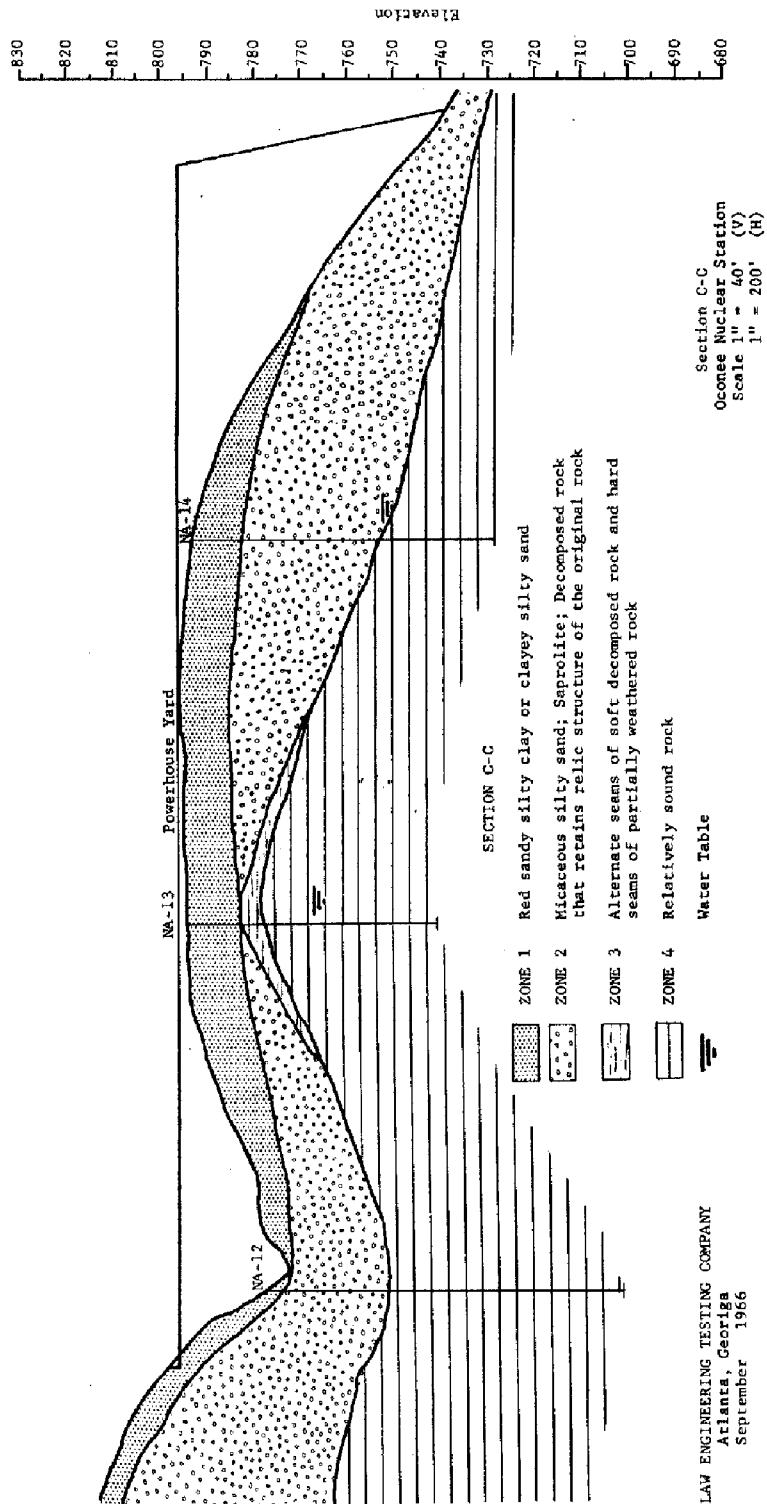


Figure 2-59. Subsurface Profile

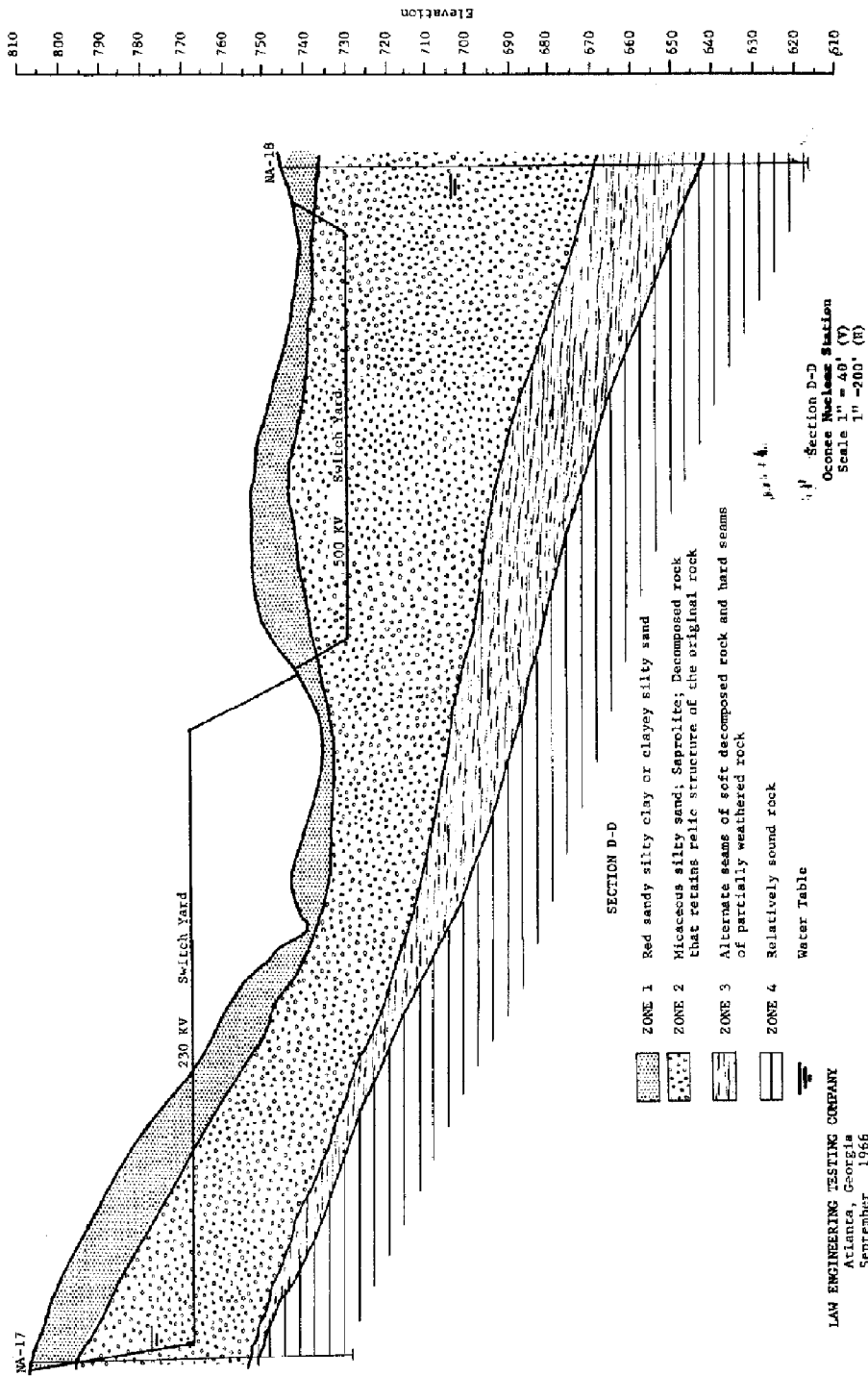


Figure 2-60. Subsurface Profile

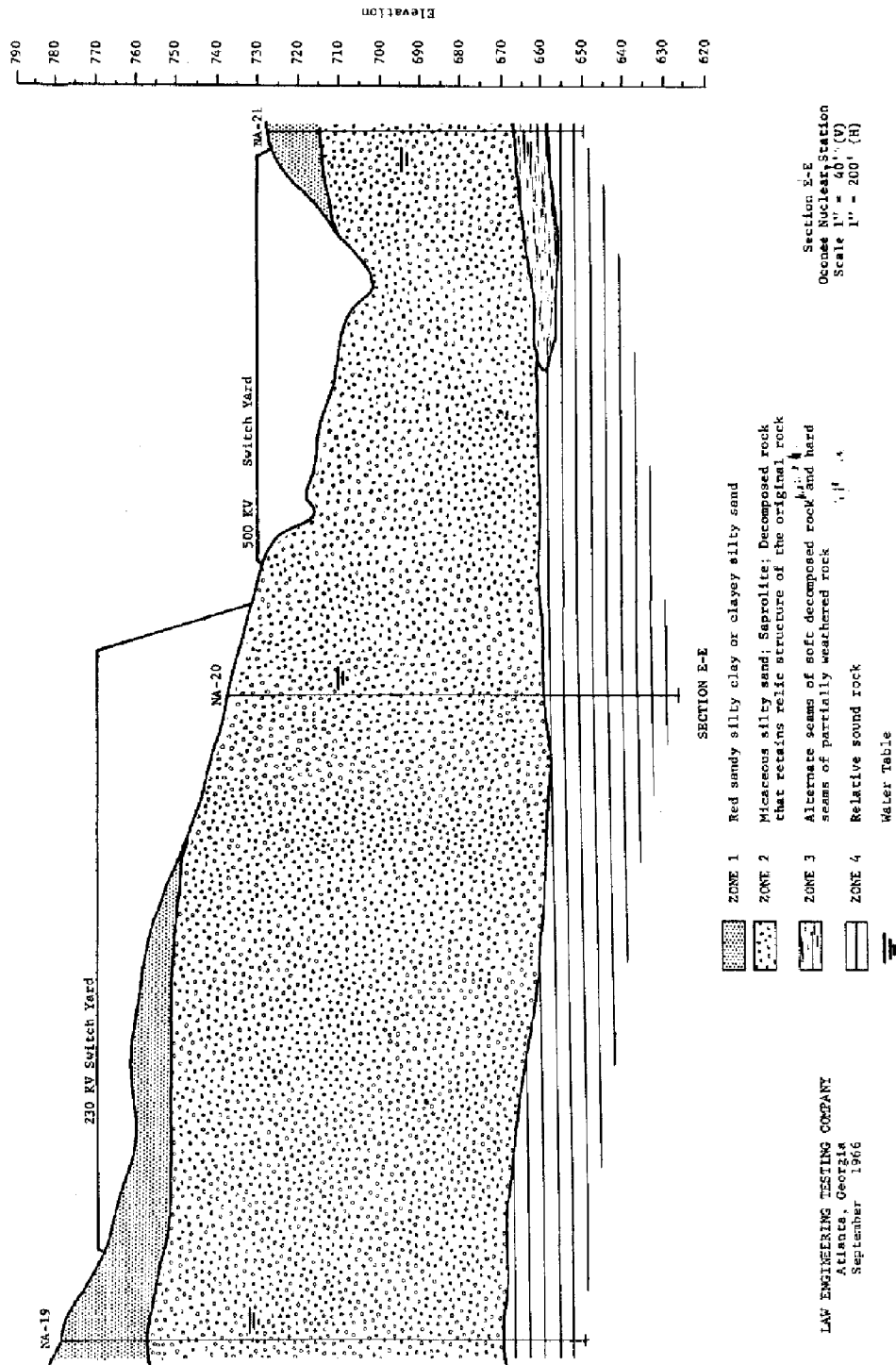


Figure 2-61. Subsurface Profile

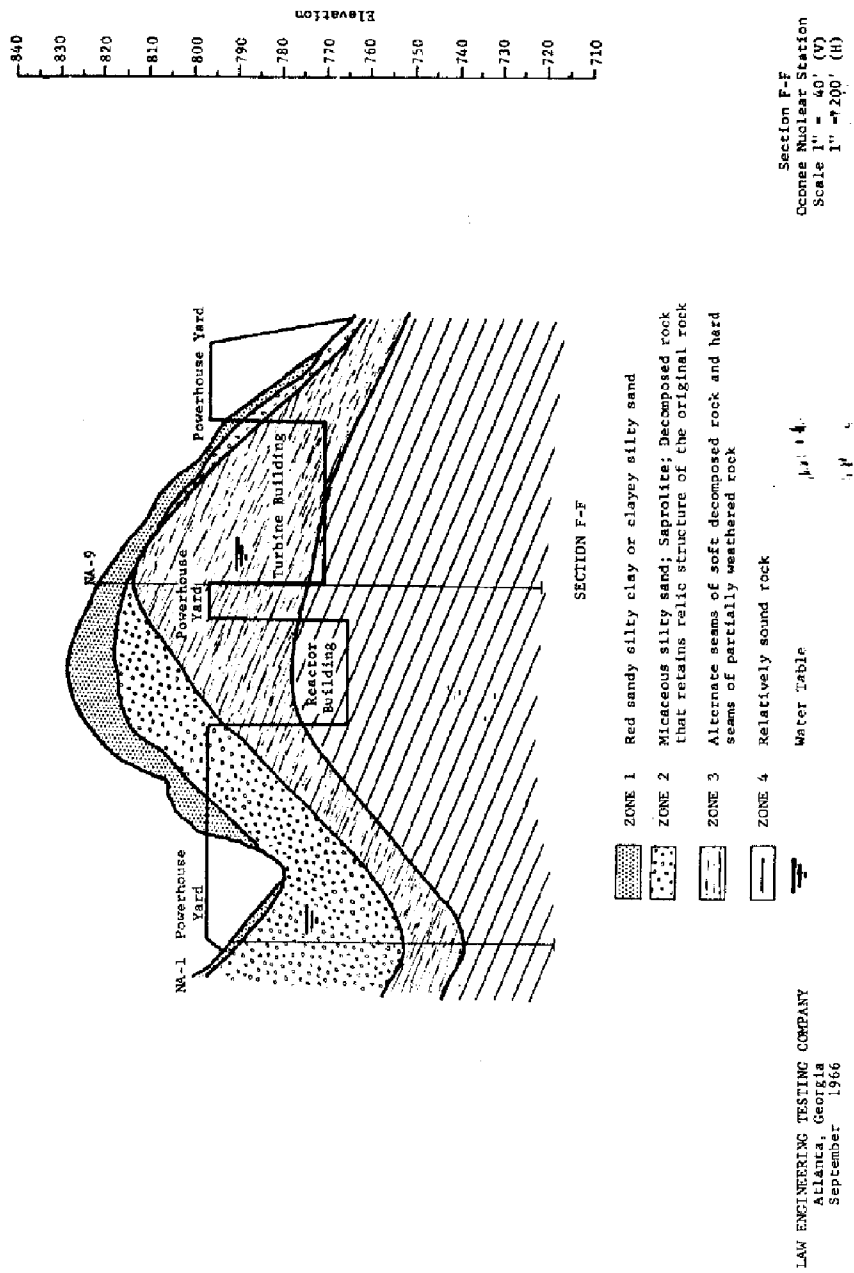


Figure 2-62. Subsurface Profile

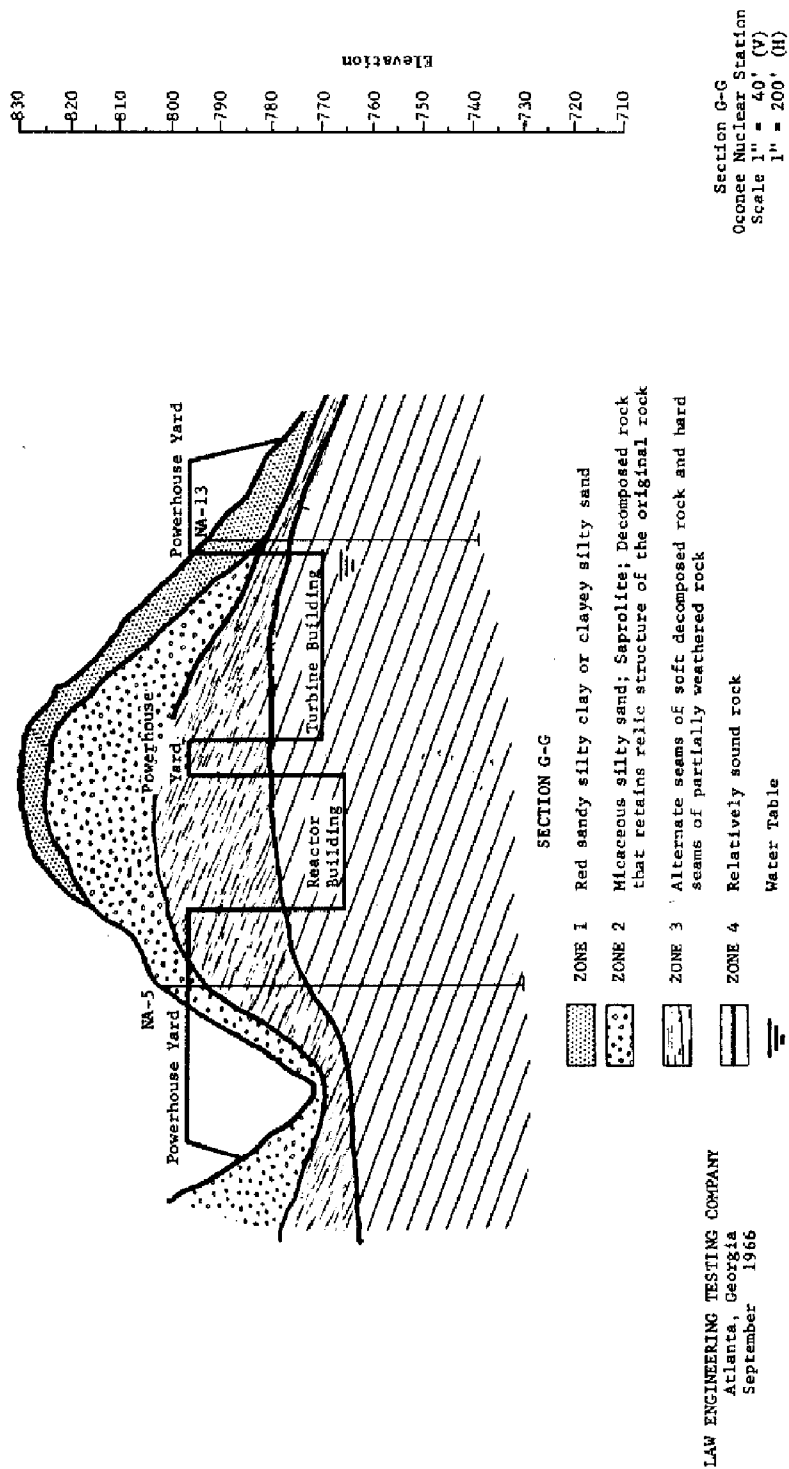




Figure 2-63. Subsurface Profile

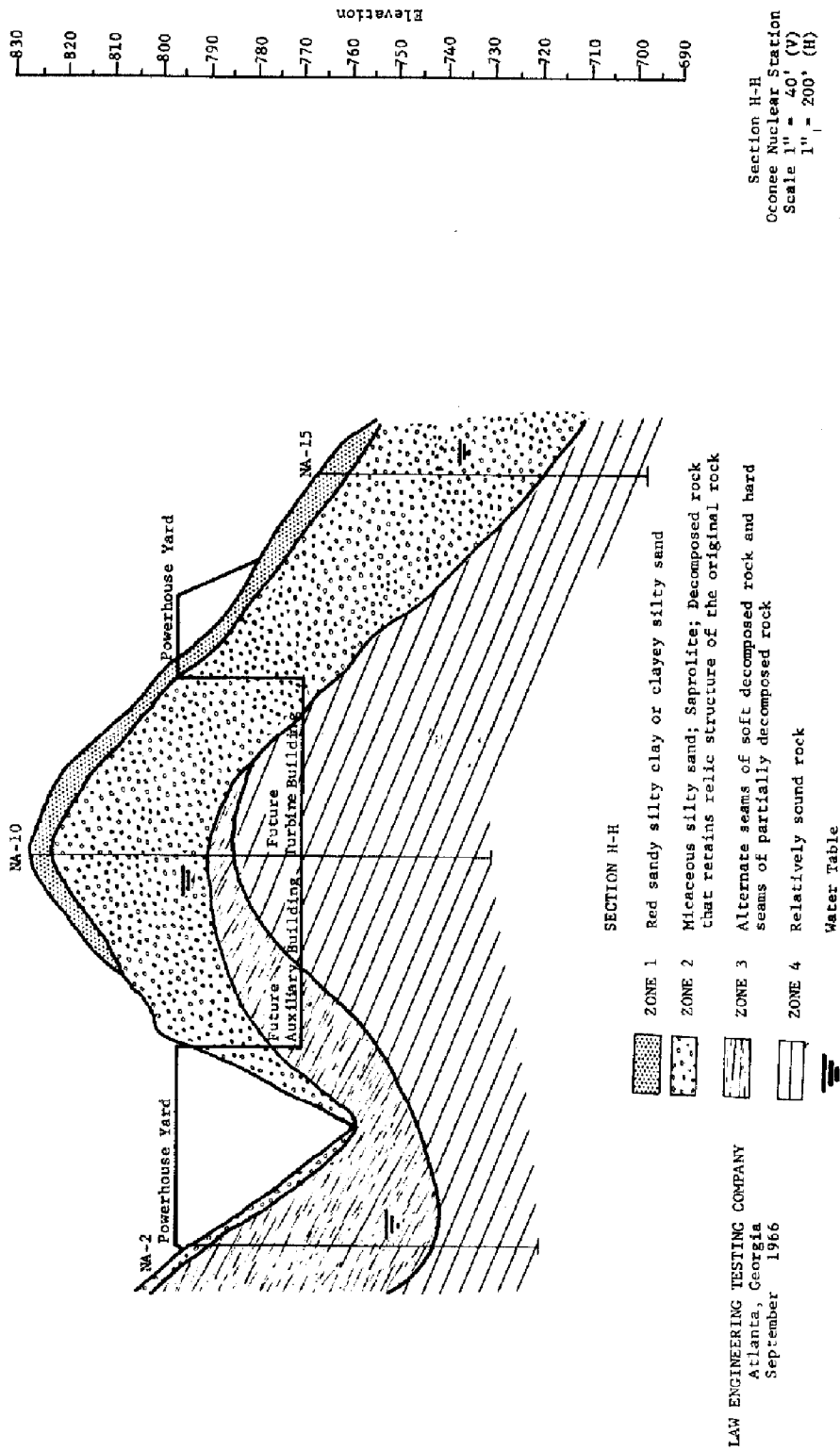


Figure 2-64. Subsurface Profile

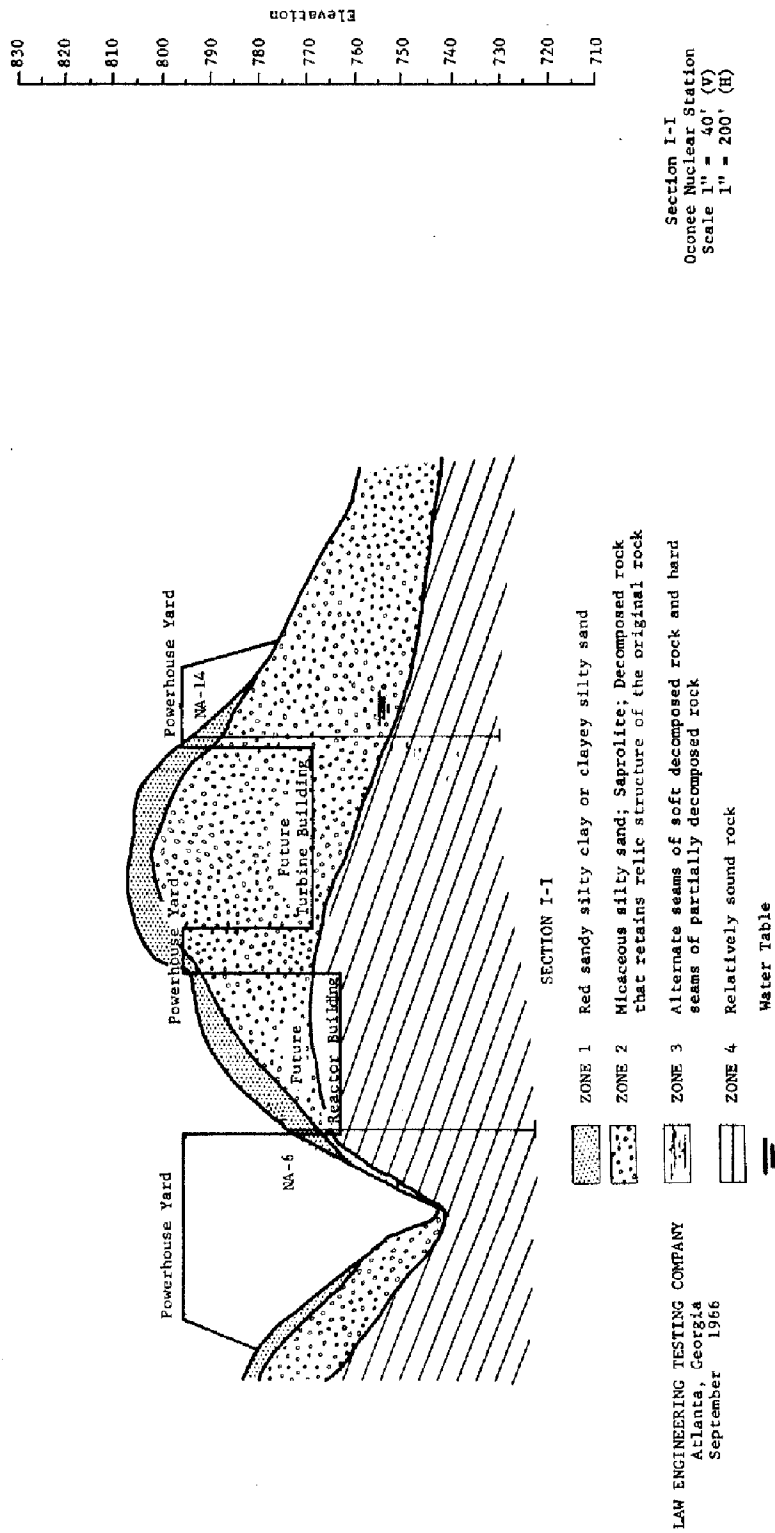


Figure 2-65. Boring Plan

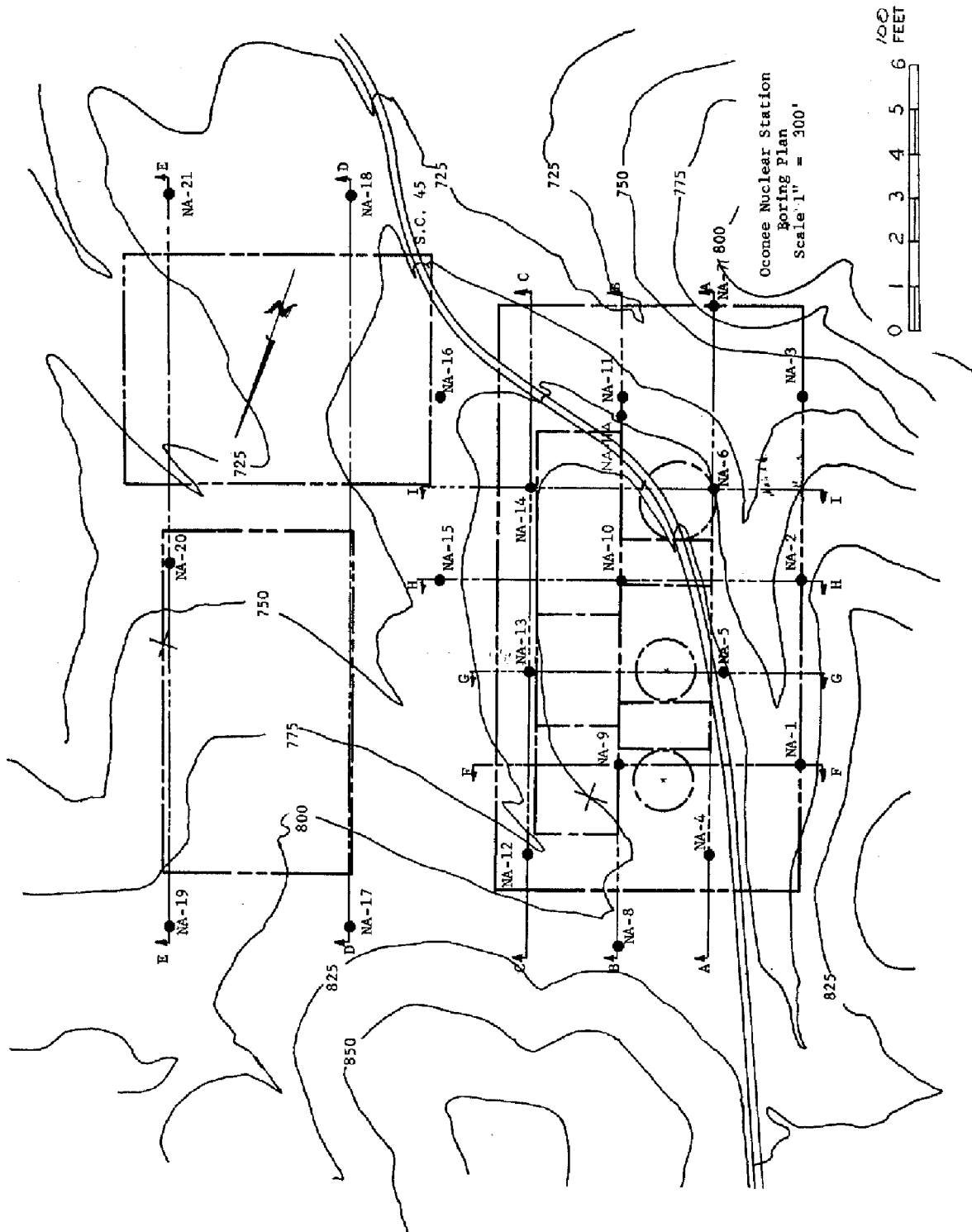


Figure 2-66. Core Boring Record, Boring Log NA-1

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
0			794.1	
3.6	RED MICACEOUS SANDY CLAYEY SILT			
	STIFF TO VERY STIFF RED YELLOW BROWN MICACEOUS FINE TO MEDIUM SANDY SILT		789.1	N = 11
				Undisturbed Sample 4.0 to 5.0 feet
			784.1	N = 20
			779.1	N = 26
18.0	VERY STIFF TO HARD GRAY BROWN MICACEOUS FINE TO MEDIUM SANDY SILT		774.1	N = 28
			769.1	N = 38
28.0	VERY DENSE GRAY BROWN BLACK MICACEOUS SILTY FINE TO COARSE SAND		764.1	N = 50
32.0	VERY DENSE YELLOW BROWN MICACEOUS SILTY FINE TO COARSE SAND		759.1	N = 65
40.0			754.1	

LI	Light	HD	Hard
DK	Dark	BI	Biotite
GY	Gray	HO	Hornblende
BK	Black	GRAN	Granite
MOD	Moderately	GN	Gneiss
MED	Medium		

End of Boring

WATER TABLE

Figure 2-67. Core Boring Record, Boring Log NA-1

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV. 754.1	REMARKS
40.0	SOFT GRAY AND BROWN GRANITE GNEISS	75%		
44.9			749.1	
45.6	MOD HD LI GY GN	93%		
45.8	SOFT DK GY BROWN BI HO GN			
46.0	MOD LI GY GRAN GN	NX		28° Foliation Plane at 45.1 Feet
47.3	MOD HD DK GY BROWN BI HO GN			
48.2	SOFT LI GY BROWN GRAN GN			
48.5	SOFT DK GY BROWN BI HO GN			
52.7	SOFT AND MOD HD ALTERNATING LAYERS LI GY BROWN GRAN GN		744.1	
53.6	HARD LI GY QUARTZ SEAM			
	HD LI GY GRAN GN			
		100%	739.1	Vertical Joint at 50 Feet
58.5				
58.8	HD DK GY BI HO GN			
60.9	HD LI GY GRAN GN		734.1	
61.1	HD DK GY BI HO GN	BX		
	HD LI GY GRAN GN			
63.4				
64.1	HD DK GY BI HO GN			
	HD LI GY GRAN GN WITH INCLUSIONS OF HORNBLENDE CONCENTRATIONS		729.1	
66.2		100%		
67.4	MOD HD DK GY BK BI HO GN			
67.9	HD LI GY GRAN GN			
68.2	HD DK GY BI HO GN			
70.1	HD LI GY GRAN GN		724.1	
70.3	HD DK GY BI HO GN			
	HD LI GY GRAN GN WITH THIN HD GN SEAMS		720.3	
73.8				
	CORING TERMINATED		719.1	

WATER TABLE

Figure 2-68. Core Boring Record, Boring Log NA-2

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV. 812.5	REMARKS
0	BROWN MICACEOUS SANDY SILT			
3.8				
4.9	MOD HD LI GY BROWN GRAN GN		807.5	
	VERY SOFT GRAN GN AND BROWN SANDY SILT	36%		
			802.5	
10.5				
	MOD HD LI GY BROWN GRAN GN WITH SOIL SEAMS	86%	797.5	
18.8			792.5	
	VERY SOFT LI GY GRAN GN WITH THIN LAYERS OF MOD HD GRAN GN	50%		
		NX	787.5	
			782.5	
		28%		
			777.5	
38.8				
40.0	HD LI GY GRAN GN	65%	772.5	

LI	Light	HD	Hard
DK	Dark	BI	Biotite
GY	Gray	HO	Hornblende
BK	Black	GRAN	Granite
MOD	Moderately	GN	Gneiss
MED	Medium		

Figure 2-69. Core Boring Record, Boring Log NA-2

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
40.0	HD LI GY GRAN GN		772.5	
		65% NX		
			767.5	
		78%		
48.7	SOFT DK GY BROWN BI HO GN		762.5	
50.9	HD LI GY GRAN GN	85%		
			757.5	
58.3		BX		
59.3	MOD HD DK GY BI HO GN			
	HD LI GY GRAN GN	100%	752.5	
63.2				
63.5	HD DK GY BK BI HO GN			
65.1	HD LI GY GRAN GN		747.5	
	HD DK GY BK BI HO GN			
68.2	HD LI GY GRAN GN	100%	742.5	
			739.7	
72.8	CORING TERMINATED			
			737.5	

80° Joint at 46.0 =  
47.5 Feet

Figure 2-70. Core Boring Record, Boring Log NA-3

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
0	BROWN MICACEOUS SANDY SILT		744.7	
			739.7	N = 25
				Undisturbed Sample 5.5 - 6.5 Feet
			734.7	N = 99
			729.7	Refusal
			724.7	Refusal
22.0	MOD HD DK GY BK BI HO GN			
22.9	HD LI GY GRAN GN		719.7	
26.2	MOD HD DK GY BK BI HO GN			
26.3	HD LI GY GRAN GN	85 %		
26.7	MOD HD DK GY BK BI HO GN			
26.8	HD LI GY GRAN GN	NX	714.7	
		100 %		
33.5	MOD HD DK GY BI HO GN			
34.2	HD LI GY GRAN GN		709.7	
		100 %		
37.7	MOD HD DK GY BK BI HO GN	BX		
38.0	HD LI GY GRAN GN		704.7	
40.0				

LI - Light      BI - Biotite  
 DK - Dark      HO - Hornblende  
 GY - Gray      GRAN - Granite  
 BK - Black      GN - Gneiss  
 MOD - Moderately  
 MED - Medium  
 HD - Hard



[illegible]

Figure 2-72. Core Boring Record, Boring Log NA-4

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
0	VERY STIFF YELLOW BROWN MICACEOUS FINE TO MEDIUM SANDY SILT		810.42	
			805.42	N = 32
7.8	MOD HD LI GY GRAN GN	96%	800.42	Lost Water 9.9 Feet
				82° Joint at 11.8 Feet
				82° Joint at 12.2 Feet
				81° Joint at 13.2 Feet
15.6			795.42	54° Joint at 14.0 Feet
	SOFT LI GY GRAN GN	60%		
17.9	MOD HD LI GY GRAN GN		790.42	
21.1	SOFT DK GY BK BI HO GN	90%		
21.7	HD LI GY GRAN GN			
			785.42	
26.5	HD DK GY BI HO GN	100 %		
26.7	HD LI GY GRAN GN	100 %		
			780.42	
30.8	HD DK GY BK BI HO GN	100 %		
34.1				
34.4	HD LI GY GRAN GN		775.42	
36.6	HD DK GY BK BI HO GN			23° Foliation Plane at 36 Feet
	HD LI GY GRAN GN			
39.3		100 %		
40.0	HD LI GY QUARTZ PEGMATITE		770.43	

31.0 Feet of 2" Plastic  
Pipe left in hole

LI	Light	HD	Hard
DK	Dark	BI	Biotite
GY	Gray	HO	Hornblende
BK	Black	GRAN	Granite
MOD	Moderately	GN	Gneiss
MED	Medium		

WATER TABLE

Figure 2-73. Core Boring Record, Boring Log NA-4

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
40.0	HD LI GY QUARTZ PEGMATITE	100%	770.42	
43.0	HD LI GY GRAN GN	100 %	765.42	
47.6	HD DK GY BI HO GN	100 %	760.42	
48.1	HD DK GY GRAN GN	100 %	755.42	
50.9	HD DK GY BI HO GN	BX		
51.1	HD LI GY GRAN GN	100 %	750.42	
56.8	HD DK GY BK BI HO GN			
57.3	HD LI GY GRAN GN			
58.0	HD DK GY BK BI HO GN			
58.2	HD LI GY GRAN GN	100 %	745.42	
58.7	HD DK GY BK BI HO GN			
58.9	HD LI GY GRAN GN			
59.3	HD BK BI HO GN			
59.7	HD LI GY GRAN GN	100 %	740.02	
70.4	CORING TERMINATED	95%	735.42	

Not to scale

Figure 2-74. Core Boring Record, Boring Log NA-5

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV. 802	REMARKS
0	DENSE <del>RED</del> BROWN MICACEOUS SILTY FINE TO MEDIUM SAND			
			797	N = 42
9.0			792	75° Joint at 10 Feet
	SOFT AND SOME MOD HD LI GY GRAN GN	33%	787	
		NX		
			782	
		39%	777	
28.0		86%		
29.7	MOD HD LI GY GRAN GN			
30.1	MOD HD LI GY AND DK GY BK	*1	772	
31.2	MOD HD LI GY GRAN GN			
31.5	MOD HD DK GY GN			
	MOD HD LI GY GRAN GN			
34.2				
	HD LI GY GRAN GN		767	
38.8		100%		
39.0	MOD HD DK GY BI HO GN			
39.5	HD LI GY GRAN GN			
40.0	MOD HD DK GY BL BI HO GN		762	

\*1 ALTERNATING THIN LAYERS OF GRAN GN AND BI HO GN

LI	Light	HD	Hard
DK	Dark	BI	Biotite
GY	Gray	HO	Hornblende
BK	Black	GRAN	Granite
MOD	Moderately	GN	Gneiss
MED	Medium		

No Water Encountered

Figure 2-75. Core Boring Record, Boring Log NA-5

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV. 762	REMARKS
40.0	MOD HD DK GY BK BI HO GN			
40.7	HD LI GY GRAN GN	92%		
44.5				
44.8	MOD HD DK GY BK BI HO GN		757	
45.8	HD LI GY GRAN GN	86%		
	MOD HD DK GY BK BI HO GN			
47.8	HD LI GY GRAN GN		752	
51.8				
52.5	MOD HD DK GY BK BI HO GN	98%		
	HD LI GY GRAN GN	NX	747	
57.3				
58.2	HD DK GY BI HO GN			
58.8	HD LI GY GRAN GN			
58.9	HD DK GY BI HO GN		742	
61.5	HD LI GY GRAN GN			
	HD DK GY BK BI HO GN			
63.2		100%		
64.2	HD LI GY GRAN GN			
64.4	HD DK GY BK BI HO GN		737	
	HD LI GY GRAN GN	99%		
67.1				
68.1	HD DK GY BI HO GN			
68.9	HD LI GY GRAN GN			
69.3	HD DK GY BI HO GN		BX 732	
	HD LI GY GRAN GN		731.2	
70.8				
	CORING TERMINATED		727	

Figure 2-76. Core Boring Record, Boring Log NA-6

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
0			775.0	
	RED MICACEOUS CLAYEY SILTY SAND			Bag Sample 0 - 6 Feet
			770.0	Undisturbed Sample 5.0 - 5.5 Feet
7.5	MOD HD LI - MED GY GRAN GN		765.0	
		98%	760.0	67° Joint at 15.0 Feet Lost water - 15.6 Feet
			755.0	
20.9	MOD HD DK GY BK BI HO GN			
21.2	MOD HD LI GY GRAN GN			
		98% NX	750.0	76° Joint at 24.5 Feet
27.1				
28.1	SOFT DK GY BK BI HO GN			
29.7	HD LI GY GRAN GN			
30.0	MOD HD DK GY BK BI HO GN		745.0	
	HD LI GY GRAN GN			
		65%		
33.0	HD MED - DK GY BI HO GN			
34.6	HD LI GY GRAN GN		740.0	
35.5				
36.1	HD WHITE QUARTZ PEGMATITE			
	HD LI GR GRAN GN			
38.4				
38.5	HD MED GY BI HO GN	100%		
40.0	HD LI GY GRAN GN		735.0	

LI - Light      HD - Hard  
 DK - Dark      BI - Biotite  
 GY - Gray      HO - Hornblende  
 BK - Black      GRAN - Granite  
 MOD - Moderately GN - Gneiss  
 MED - Medium

Not to scale

**Figure 2-77. Core Boring Record, Boring Log NA-6**

DEPTH FT.	DESCRIPTION	CORE BIT %	SIZE	ELEV.	REMARKS
40.0				735.0	
40.7	HD LI GY GRAN GN				
40.8	HD MED GY BI HO GN				
	HD LI GY GRAN GY				
43.7					
44.7	HD LI-DK GY ALTERNATING LAYERS*1	100 %		730.0	
45.6	HD LI GY GRAN GN				
45.9	HD MED GY BI HO GN		NK		
46.6	HD LI GY GRAN GN				
46.7	HD MED GY BI HO GN				
47.0	HD LI GY GRAN GN				
47.1	HD DK GY BK BI HO GN				
50.3	HD LI GY GRAN GN	100 %		725.0	
50.9	HD MED-DK GY BI HO GN				
51.6	HD LI GY GRAN GN				
51.7	HD MED DK GY BI HO GN			723.3	
	CORING TERMINATED				

\*1 OF BI HO GN AND GRAN GN

Not to scale

Figure 2-78. Core Boring Record, Boring Log NA-7

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV. 784.5	REMARKS
0	VERY DENSE RED MICACEOUS CLAYEY SILTY SAND WITH SOME QUARTZ FRAGMENTS			
5.0	VERY DENSE GRAY TO WHITE MICACEOUS SILTY SAND		779.5 N=50	Undisturbed sample 4.5 to 5.5 feet
			774.5 N=79	
			769.5 N=80	
			764.5 N=44	
25.0	SOFT MED GY GRAN GN		759.5	
29.8	MOD HD LI-MED GY GRAN GN	80% NX	754.5	
			749.5	
		100% BX		
40.0			744.5	

36.0 Feet of 2" Plastic  
Pipe left in hole

LI - Light      HD - Hard  
 DK - Dark      BI - Boitite  
 GY - Gray      HO - Hornblende  
 BK - Black      GRAN - Granite  
 MOD - Moderately      GN - Gneiss  
 MED - Medium



Figure 2-79. Core Boring Record, Boring Log NA-7

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
40.0			744.5	
40.1	MOD HD LI-MED GY GRAN GN	100%		50° Joint at 42.7 Feet 50° Joint at 43.5 Feet
	MOD HD DK GY BK BI HO GN			
44.8			739.5	
	MOD HD LI GY GRAN GN	100%		
46.5	MOD HD DK GY BK BI HO GN			
46.6	MOD HD LI GY GRAN GN			
47.7	MOD HD DK GY BK BI HO GN			
47.8	MOD HD LI GY GRAN GN			
49.2	MOD HD DK GY BI HO GN	98% BX		
49.3	MOD HD LI GY GRAN GN			
49.6	MOD HD DK GY BI HO GN			
49.8	MOD HD LI GY GRAN GN		734.5	
50.5	HD WHITE QUARTZ PEGMATITE			
53.0	HD LI GY GRAN GN	100%		
54.0	HD WHITE QUARTZ PEGMATITE		729.5	
55.2	HD LI GY GRAN GN			
58.0	MOD HD DK GY BI HO GN			
58.1	HD LI GY GRAN GN			
59.5	HD WHITE QUARTZ PEGMATITE	100%	724.5	
60.7	HD LI GY GRAN GN			
63.7	SOFT LI-MED GY GRAN GN	100%	719.5	
64.7	HD LI GY QUARTZ PEGMATITE			
65.3	HD LI GY GRAN GN			
66.0	HD WHITE QUARTZ PEGMATITE			
66.7	HD LI GY GRAN GN			
69.3	MOD HD LI-MED GY GRAN GN		713.5	
70.4	MOD HD DK GY GK BI HO GN			
70.9	MOD HD LI-MED GY GRAN GN		713.2	
71.3	CORING TERMINATED		709.5	

Not to scale

Figure 2-80. Core Boring Record, Boring Log NA-8

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV. 800.9	REMARKS
0	VERY DENSE BROWN GRAY WHITE MICACEOUS SILTY SAND			
			795.9	N = 42
			790.9	N = 42
			785.9	N = 41
			780.9	N = 50/3"
22.0	HD LI GY GRAN GN		775.9	
25.7	MOD HD MED GY GRAN GN			
27.0	HD LI GY GRAN GN	92%		
29.5	MOD HD DK GY BK BI HO GN		770.9	
30.0	MOD HD LI GY GRAN GN			
30.3	MOD HD DK GY BK BI HO GN			
32.0	SOFT DK GY BK BI HO GN			
32.5	HD LI GY GRAN GN			
34.7	MOD HD DK GY BK BI HO GN		765.9	
35.4	HD LI GY GRAN GN			
37.0	SOFT DK GY BK BI HO GN	100%		
38.3	HD LI GY GRAN GN			
40.0			760.9	

LI - Light      HD - Hard  
 DK - Dark      BI - Biotite  
 GY - Gray      HO - Hornblende  
 BK - Black      GRAN - Granite  
 MOD - Moderately      GN - Gneiss  
 MED - Medium

Figure 2-81. Core Boring Record, Boring Log NA-8

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
40.0		100 NX	760.9	
40.9	HD LI GY GRAN GN	%		42° Joint at 40.8 Feet
41.7	MOD HD DK GY BK BI HO GN			
	MOD HD LI-MED GY GRAN GN			
			755.9	
46.7		100 %		
46.8	MOD HD DK GY BK BI HO GN	BX		
47.1	MOD HD LI GY GRAN GN			
47.2	MOD HD DK GY BK BI HO GN			
50.0	HD LI GY GRAN GN		750.9	
50.2	HD DK GY BK BI HO GN	%		
	HD LI GY GRAN GN			
53.4				
54.4	HD DK GY BK BI HO GN	100 %	745.9	
	HD LI GY GRAN GN			
56.0	HD DK GY BK BI HO GN			
57.7	HD LI GY GRAN GN	%		
58.2	HD DK GY BK BI HO GN			
58.7	HD LI GY GRAN GN		740.9	
61.1	HD DK GY BK BI HO GN	100 %		
61.5	HD LI GY GRAN GN			
61.6	HD DK GY BK BI HO GN			
62.1	HD LI GY GRAN GN		736.4	
64.3			735.9	
	CORING TERMINATED			

Not to scale

Figure 2-82. Core Boring Record, Boring Log NA-9

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
0			822.7	
	STIFF RED BROWN MICACEOUS FINE TO COARSE SANDY CLAYEY SILT WITH SOME QUARTZ FRAGMENTS		817.7	N = 27 N = 13
7.5	MOD HD LI GY TO WHITE QUARTZ PECMATITE	54% NX	812.7	N = 25/4" N = 20/0"
12.5	HAWTHORNE BIT - VERY DENSE GY SILTY SAND		807.7	Refusal
20.0			802.7	
20.4	SOFT LI GY GRAN GN			
	MOD HD LI TO MED GY GRAN GN	48% NX	797.7	
		93%	792.7	
		94	787.7	60° Joint at 30.7 Feet Lost water at 30.8 Feet
38.4		100% BX		
39.3	VERY SOFT MED GY GRAN GN		782.7	
40.0	MOD HD LI TO MED GY GRAN GN	100%		

LI - Light      HD - Hard  
 DK - Dark      BI - Biotite  
 GY - Gray      HO - Hornblende  
 BK - Black      GRAN - Granite  
 MOD - Moderately      GN - Gneiss  
 MED - Medium

31.0 Feet of 2" Plastic  
Pine left in hole

bjs

WATER TABLE

Figure 2-83. Core Boring Record, Boring Log NA-9

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
40.0	MOD HD LI TO MED GY GRAN GN		782.7	
46.5		100 %	777.7	
46.6	SOFT MED GY GRAN GN			
47.4	MOD HD MED GY GRAN GN			
48.4	SOFT MED GY GRAN GN			
	MOD HD LI GY GRAN GN		772.7	
52.4				
52.9	MOD HD DK GY BI HO GN			
53.5	HD LI GY GRAN GN	92 %		
54.0	MOD HD DK GY BI HO GN			
	HD LI TO MED GY GRAN GN		767.7	
			762.7	
		100 %	757.7	
67.3		BX		
67.4	HD MED GY BI HO GN			
67.7	HD LI GY GRAN GN			
68.2	HD MED GY BI HO GN		752.7	
71.0	HD LI GY GRAN GN			
71.7	HD MED GY BI HO GN			
72.2	HD LI GY GRAN GN			
72.7	HD MED GY BI HO GN			
	HD LI GY GRAN GN	100 %	747.7	
79.7				
80.0	HD MED GY BI HO GN	100 %	742.7	

Not to scale

bjs

 WATER TABLE

Figure 2-84. Core Boring Record, Boring Log NA-9

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
80.0	HD MED GY BI HO GN		742.7	
80.2	HD LI GY GRAN GN			
81.0	MOD HD DK GY BI HO GN			
81.3	HD LI GY GRAN GN			
82.0	HD MED GY BI HO GN			
83.0	HD LI GY GRAN GN			
83.7	HD DK GY BI HO GN	100		
83.9	HD LI GY GRAN GN			
84.3	HD MED TO DK GY BI HO GN			
84.7	HD LI GY GRAN GN			
87.2	HD MED GY BI HO GN	BX	737.7	
87.5	HD WHITE QUARTZ PEGMATITE			
88.1	HD LI GY GRAN GN		732.7	
92.8	HD DK GY BI HO GN			
93.4	HD LI GY GRAN GN			
94.0	HD MED TO DARK GY BI HO GN			
94.4	HD LI GY GRAN GN	98	727.7	
95.7	HD MED GY BI HO GN			
96.5	HD LI GY GRAN GN			
96.8	HD MED GY BI HO GN			
97.3	HD LI GY GRAN GN		723.5	
99.2	CORING TERMINATED			

Not to scale

WATER TABLE

Figure 2-85. Core Boring Record, Boring Log NA-10

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV. 826.4	REMARKS
0	TOPSOIL AND GRASS			
0.4	STIFF BROWN MICACEOUS CLAYEY SANDY SILT		821.4	N = 10
6.0	FIRM TO VERY DENSE BROWN GRAY WHITE MICACEOUS SILTY FINE TO COARSE SAND WITH ROCK FRAGMENTS		816.4	N = 9
			811.4	- N = 20/0" (Refusal)
			806.4	N = 52
22.0	VERY STIFF BROWN MICACEOUS FINE SANDY SILT		801.4	N = 16
26.0	VERY STIFF YELLOW BROWN MICACEOUS FINE SANDY SILT		796.4	N = 16
30.0	FIRM WHITE GRAY SILTY FINE TO COARSE SAND		791.4	N = 28
37.7	MOD HD LI TO MED GY GRAN GN	90% NX	786.4	
40.0				

LI	Light	HD	Hard
DK	Dark	BI	Biotite
GY	Gray	HO	Hornblende
BK	Black	GRAN	Granite
MOD	Moderately	GN	Gneiss
MED	Medium		

WATER TABLE

Figure 2-86. Core Boring Record, Boring Log NA-10

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
40.0			786.4	
40.1	MOD HD LI TO MED GY GRAN GN	90%		74° Joint at 40.0 Feet
41.6	SOFT MED GY BROWN GRAN GN			
42.8	MOD HD LI TO MED GY GRAN GN			
	HD LI GY GRAN GN	NX		
		94 %	781.4	
46.0	MOD HD LI TO MED GY GRAN GN			
46.8	MOD HD DK GY BK BI HO GN			
48.5	HD LI GY GRAN GN			
48.9	MOD HD DK GY BK BI HO GN	100%	776.4	
49.5	HD LI GY GRAN GN			
			771.4	
		100%		
59.4	HD DK GY BK BI HO GN		766.4	
62.5	HD LI GY GRAN GN			
63.2	HD DK GY BI HO GN			
63.8	HD LI GY GRAN GN			
64.7	HD DK GY BI HO GN	100 %		
64.9	HD LI TO DK GY ALTERNATING THIN	*1	761.4	
65.5	HD DK GY BI HO GN			
65.7	HD LI GY GRAN GN			
65.9	HD DK GY BI HO GN			
66.1	HD LI TO DK GY ALTERNATING	*1		
66.7	HD DK GY BI HO GN			
66.9	HD LI GY GRAN GN		756.4	
			751.4	
		100%		
78.7				
78.9	HD DK GY BI HO GN			
80.0	HD LI GY GRAN GN		746.4	

\*1 LAYERS OF BI HO GN AND GRAN GN

WATER TABLE



**Figure 2-87. Core Boring Record, Boring Log NA-10**

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV. 746.4	REMARKS
80.0	HD LI GY GRAN GN	100		
		100	741.4	
85.0	HD WHITE QUARTZ PEGMATITE			
88.0				
88.6	HD DK GY BI HO GN			
	HD LI GY GRAN GN		736.4	
92.4		96%		
92.5	HD DK GY BI HO GN			
93.0	HD LI GY GRAN GN			
94.2	HD DK GY BI HO GN		731.4	
	HD LI GY GRAN GN		729.7	
96.7	CORING TERMINATED		726.4	

Not to scale

## WATER TABLE

Figure 2-88. Core Boring Record, Boring Log NA-11

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
0			763.85	
	LOOSE RED BROWN SILTY MICACEOUS FINE TO MEDIUM SAND		758.85	N = 9
8.0	STIFF TO VERY STIFF GRAY BROWN MICACEOUS FINE TO MEDIUM SANDY SILT		753.85	N = 12
			748.85	N = 14
			743.85	N = 26
23.0	DENSE BROWN MICACEOUS SILTY FINE SAND		738.85	N = 31
			733.85	N = 30
32.0	WEATHERED ROCK FRAGMENTS			
35.0	VERY SOFT DK BROWN GRAN GN AND BI HO GN	49% NX	728.85	77° Joint at 35.5 Feet 47° Joint at 36.6 Feet
40.0			723.85	

LI	Light	HD	Hard
DK	Dark	BI	Biotite
GY	Gray	HO	Hornblende
BK	Black	GRAN	Granite
MOD	Moderately	GN	Gneiss
MED	Medium		

End of Boring

WATER TABLE

Figure 2-89. Core Boring Record, Boring Log NA-11

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
40.0	VERY SOFT DK BROWN GY GRAN GN AND BI HO GN		723.85	
42.5		49%		46° Joint at 43.0 Feet (Recemented)
43.6	SOFT TO MEDIUM GY GRAN GN			
	MOD HD LI GY GRAN GN		718.85	
		80%		
			713.85	
			708.85	58° Joint at 55.3 Feet 59° Joint at 55.9 Feet
55.0	MOD HD DK GY BK BI HO GN			
56.4	HD LI GY GRAN GN	99% NX		64° Joint at 57. Feet
57.6	HD DK GY BK BI HO GN			
58.8	HD LI GY GRAN GN		703.85	
61.4				
	HD DK GY BI HO GN			
62.1	HD LI GY GRAN GN			
64.5			698.85	
	HD DK GY BI HO GN			
67.3		92%		60° Joint at 67.8 Feet
68.4	HD LI GY QUARTZ PEGMATITE			
	HD LI GY GRAN GN		693.85	
73.0	HD LI GY GRAN GN AND BI HO GN		688.85	
75.0	CORING TERMINATED			
80.0				

WATER TABLE

Figure 2-90. Core Boring Record, Boring Log NA-12

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV. 780.0	REMARKS
0	RED BROWN CLAYEY MICACEOUS SLIGHTLY SANDY SILT			
4.0	YELLOW BROWN MICACEOUS SANDY SILT		775.4	
10.0	GRAY BROWN MICACEOUS SILTY SAND		770.7	
			766.1	
			761.5	
			756.9	
27.8	HD LI GY GRAN GN	100% BX		
			752.2	
32.2	HD DK GY BK BI HO GN			
32.6	HD LI GY GRAN GN	95% BX		
			747.6	
38.1	HD DK GY BK BI HO GN			
39.1	HD WHITE QUARTZ PEGMATITE	94%	740.8	74° Joint at 39.4 Feet
39.2				

LI	Light	HD	Hard
DK	Dark	BI	Biotite
GY	Gray	HO	Hornblende
BK	Black	GRAN	Granite
MDD	Moderately	GN	Gneiss
MED	Medium		

Hole inclined 22° from the vertical

Figure 2-91. Core Boring Record, Boring Log NA-12

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
39.2			740.8	
39.7	HD DK GY BK BI HO GN			
39.9	SOFT DK GY BK BI HO GN			
40.3	HD DK GY BK BI HO GN		742.9	
42.5	HD LI GY GRAN GN			
43.0	HD DK GY BK BI HO GN			
46.0	HD LI GY GRAN GN	94%		
46.4	HD DK GY BK BI HO GN		738.3	
46.5	HD WHITE QUARTZ PEGMATITE			
46.8	HD DK GY BK BI HO GN			
	HD LI GY GRAN GN			
			733.7	
		BX		
		100 %	729.1	
			724.4	
		100%		
			719.8	
71.9			715.2	
72.2	HD DK GY BK BI HO GN			
72.8	HD LI GY GRAN GN			
73.2	HD DK GY BK BI HO GN	98%		
	HD LI GY GRAN GN			
			710.5	
			702.3	
77.7	CORING TERMINATED			
			705.9	Not to scale

Figure 2-92. Core Boring Record, Boring Log NA-13

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
0			793.0	
	HARD BROWN GRAY MICACEOUS SLIGHTLY CLAYEY SANDY SILT		788.0	N = 50 + (Refusal)
			783.0	N = 50 + (Refusal)
11.7	SOFT MED GY GRAN GN	75%		
13.8	MOD DK LI TO MED GY GRAN GN		778.0	
14.4	SOFT DK GY BK BI HO GN	NX		
15.6	MOD HD LI TO MED GY GRAN GN	78%		
			773.0	
21.8	MOD HD DK GY BK BI HO GN			
23.0	MOD HD LI GY GRAN GN	89%	768.0	
		BX		69° Joint at 28.0 Feet Vertical Joint at 29.5 Ft.
			763.0	
31.9	VERY SOFT BK BK BI HO GN			
32.4	HD LI GY GRAN GN			
34.5	SOFT MED GY GRAN GN		758.0	
34.7	HD LI GY GRAN GN			
35.0	HD DK GY BK BI HO GN	95%		
36.2	HD LI GY GRAN GN			
37.3	HD MED GY BI HO GN			
38.0	HD LI GY GRAN GN		754.2	
38.8				

LI	Light	HD	Hard
DK	Dark	BI	Biotite
GY	Gray	HO	Hornblende
BK	Black	GRAN	Granite
MOD	Moderately	GN	Gneiss
MED	Medium		

11.0 feet of 2" plastic pipe  
left in hole

Not to scale

WATER TABLE

**Figure 2-93. Core Boring Record, Boring Log NA-13**

[illegible]

\*1 OF BI HQ GN AND GRAN GN

Not to scale

### WATER TARIFF

Figure 2-94. Core Boring Record, Boring Log NA-14

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV. 793.0	REMARKS
0				Bag Sample 0.0 - 5'
	STIFF YELLOW BROWN MICACEOUS SLIGHTLY CLAYEY SANDY SILT		788.0	N = 9 Bag Sample 5 - 10' Undisturbed Sample 5.0 - 6.0 feet
9.0	FIRM LIGHT GRAY MICACEOUS SILTY SAND		783.0	Undisturbed Sample 10.0-11.0 feet N = 19 Bag Sample 10-15 feet
13.0			778.0	N = 9 Bag Sample 15-20'
17.5	STIFF YELLOW BROWN MICACEOUS SLIGHTLY CLAYEY SANDY SILT			Undisturbed Sample 15.0-16.0 feet
	FIRM VERY DENSE MICACEOUS GRAY BROWN SANDY SILT		773.0	N = 13 Bag Sample 20-25' Undisturbed Sample 20.0-21.0 Feet
			768.0	N = 47 Bag Sample 25-30' Undisturbed Sample 25.0-26.0 feet
			763.0	N = 67 Undisturbed Sample 30.0-26.0 Feet
			758.0	Undisturbed Sample 33.5 - 34.5 feet Refusal
40.0			753.0	Refusal

LI	Light	HD	Hard
DK	Dark	BI	Biotite
GY	Gray	HO	Hornblende
BK	Black	GRAN	Granite
MOD	Moderately	GN	Gneiss
MED	Medium		

End of Boring

WATER TABLE



Figure 2-95. Core Boring Record, Boring Log NA-14

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
40.0			753.0	
41.0	FIRM-VERY DENSE GRAY BROWN SANDY	*1		
	MOD HD LI TO MED GY GRAN GN	75	NX	
44.7		87		
44.8	MOD HD DK GY BK BI HO GN		748.0	
	HD LI GY GRAN GN			
			743.0	
51.5	HD LI GY WHITE QUARTZ PEGMATITE	BX		
54.5		100	738.0	72° Joint at 53.0 Feet
	HD LI GY GRAN GN			
56.7				
57.8	HD DK GY BK BI HO GN			
58.1	HD LI GY GRAN GN			
58.4	HD DK GY BK BI HO GN			
59.0	HD LI GY GRAN GN			
59.5	HD DK GY BK BI HO GN	100	733.0	
61.9	HD LI GY GRAN GN			
62.1	HD DK GY BK BI HO GN			
63.4	HD LI GY GRAN GN			
63.8	HD DK GY BK BI HO GN		729.2	
	CORING TERMINATED		728.0	

\*1 SILT

Not to scale

End of Boring  
WATER TABLE

Figure 2-96. Core Boring Record, Boring Log NA-15

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
0	TOPSOIL		766.1	
0.3	VERY STIFF BROWN CLAYEY MICACEOUS FINE TO MEDIUM SANDY SILT			N = 22
			761.1	
7.0	STIFF BROWN FINE TO MEDIUM SANDY MICACEOUS SILT			N = 9"
			756.1	
12.0	FIRM TO HARD BROWN GRAY MICACEOUS FINE TO MEDIUM SANDY SILT			N = 6"
			751.1	
				N = 7"
			746.1	
				N = 40/3"
			741.1	
27.0	VERY STIFF BROWN GRAY WHITE MICACEOUS FINE TO COARSE SANDY SILT			N = 19
			736.1	
32.0	VERY DENSE BROWN GRAY WHITE MICACEOUS SILTY FINE TO COARSE SAND			N = 20/0"
			731.1	
				N = 40/3"
40.0			726.1	

LI Light      HD Hard  
 DK Dark      BI Biotite  
 GY Gray      HO Hornblende  
 BK Black      GRAN Granite  
 MOD Moderately      CN Gneiss  
 MED Medium

36.0 Feet of 2" plastic pipe left in hole

WATER TABLE

Figure 2-97. Core Boring Record, Boring Log NA-15

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
40.0	VERY DENSE BROWN GRAY WHITE MICACEOUS SILTY FINE TO COARSE SAND		726.1	
			721.1	N = Refusal
49.5	MOD HD LI GY GRAN GN		716.1	
50.8	MOD HD DK GY BI HO GN			50° Joint at 50.4 Feet
51.0	MOD HD LI GY GRAN GN			
51.6	MOD HD DK GY BI HO GN	100		
55.6	HD LI GY GRAN GN		711.1	
57.2	MOD HD DK GY BI HO GN	100 NX		
57.6	HD LI GY GRAN GN			
58.9	MOD HD DK GY BI HO GN			
59.2	HD LI GY GRAN GN			
59.6	HD DK GY BI HO GN		706.1	
60.0	HD LI GY GRAN GN			
61.1	MOD HD DK GY BK BI HO GN	100		
61.4	HD LI GY GRAN GN			
62.2	HD DK GY BI HO GN		701.1	
62.5	HD LI GY GRAN GN			
67.3	MOD HD DK GY BI HO GN			
67.5	HD LI GY GRAN GN	100		
67.6	MOD HD DK GY BI HO GN			
67.8	HD LI GY GRAN GN		696.6	
69.5	CORING TERMINATED		696.1	

Not to scale

Page 2 of 2

WATER TABLE

Figure 2-98. Core Boring Record, Boring Log NA-16

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
0			767.9	Bag Sample 0 - 25'
	STIFF RED BROWN MICACEOUS CLAYEY SANDY SILT		762.9	Undisturbed Sample 3.5-4.5 Feet N = 11
7.5	STIFF YELLOW BROWN MICACEOUS SANDY SILT		757.9	N = 8 Undisturbed Sample 13.5-14.5 Feet
			752.9	N = 12
			747.9	N = 9 Undisturbed Sample 23.5-24.5 Feet
22.0	FIRM GRAY BROWN SILTY MICACEOUS SAND WITH SOME QUARTZ FRAGMENTS		742.9	N = 16
			737.9	N = 24 Undisturbed Sample 33.5 - 34.5 Feet.
31.5	VERY STIFF BROWN SLIGHTLY SANDY MICACEOUS SILT		732.9	N = 17
				N=23
40.0			727.9	
				85.0 Feet of 2" Plastic pipe left in hole
LI	Light	HD	Hard	
DK	Dark	BI	Biotite	
GY	Gray	HO	Hornblende	
BK	Black	GRAN	Granite	
MOD	Moderately	GN	Gneiss	
MED	Medium			

Figure 2-99. Core Boring Record, Boring Log NA-16

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
40.0	VERY DENSE GRAY BROWN WHITE MICACEOUS SILTY SAND WITH SOME QUARTZ FRAGMENTS		727.9	
			722.9	N=50/4"
			717.9	
			712.9	
			707.9	
			702.9	
69.0	MOD HD LIGHT TO MED GY GRAN GN	100	697.9	85° Joint at 72.7 Feet
74.9	MOD HD DK GY BK BI HO GN	NX	692.9	71° Joint at 76.0 Feet
75.4	MOD HD MED GY GRAN GN			77° Joint at 77.0 Feet
75.6	MOD HD DK GY BK BI HO GN	100		
76.5	MOD HD MED GY GRAN GN			
77.7	SOFT DK GY BK BI HO GN			
78.0	MOD HD LI GY GRAN GN		687.9	
78.2				

WATER TABLE

Figure 2-100. Core Boring Record, Boring Log NA-16

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
78.2			687.9	
79.1	MOD HD DK GY BK BI HO GN	100		
79.6	MOD HD MED GY GRAN GN			
79.7	SOFT DK GY BK BI HO GN			
80.0	MOD HD LI GY GRAN GN		682.9	
80.2	SOFT DK BY BK BI HO GN			
81.3	MOD HD LI GY GRAN GN	100		
82.1	MOD HD MED TO DK GY BI HO GN	NX		
84.0	MOD HD LI GY GRAN GN			
84.5	HD LI GY GRAN GN			
84.7	MOD HD DK GY BK BI HO GN			
86.0	HD LI GY GRAN GN			
86.3	SOFT DK GY BK BI HO GN	100		
87.3	HD LI GY GRAN GN			
89.0	MOD HD LI TO DK GY ALTERNATE	*1	678.9	
	CORING TERMINATED		672.9	

\*1 LAYERS OF BI HO GN AND GRAN GN

Not to scale

 WATER TABLE

Figure 2-101. Core Boring Record, Boring Log NA-17

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV. 816.0	REMARKS
0	FIRM BROWN CLAYEY SILTY MICACEOUS SAND		811.0	N = 15 Undisturbed Sample 4.0 - 5.0 Feet
			806.0	N = 11
12.0				
	STIFF TO VERY STIFF BROWN GRAY SANDY MICACEOUS SILT		801.0	N = 12
			796.0	N = 13
			791.0	N = 18
28.0				
	DENSE TO VERY DENSE GRAY WHITE SILTY MICACEOUS SAND WITH SOME QUARTZ FRAGMENTS		786.0	N = 19
			781.0	N = 23
40.0			776.0	N = 28

LI	Light	HD	Hard	58.0 Feet of 2" plastic pipe left in hole
DK	Dark	BI	Biotite	
GY	Gray	HO	Hornblende	
BK	Black	GRAN	Granite	
MOD	Moderately	GN	Gneiss	
MED	Medium			

End of Boring  
WATER TABLE

Figure 2-102. Core Boring Record, Boring Log NA-17

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
40.0			776.0	
	DENSE TO VERY DENSE GRAY WHITE MICACEOUS SILTY SAND WITH SOME QUARTZ FRAGMENTS		771.0	N = 43
			766.0	N = 106
			761.0	
55.7				
56.6	SOFT MED GY BROWN GRAN GN			
	HD LI GY GRAN GN	56	756.0	
			751.0	
66.7				
66.8	MOD HD DK GY BK BI HO GN			
	HD LI GY GRAN GN	86	746.0	
74.3				
74.7	MOD HD DK GY BK BI HO GN		741.0	
	HD LI GY GRAN GN			
78.1		96		
79.0	MOD HD DK GY BK BI HO GN			
79.8	MOD HD LI TO MED GY GRAN GN		736.2	

Not to scale

WATER TABLE



[illegible]

(31 DEC 2000)

Figure 2-104. Core Boring Record, Boring Log NA-18

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
0			745.6	
0.3	TOPSOIL AND GRASS			Bag Sample 0 - 8.0 Feet
				Undisturbed Sample 3.5 - 4.5 Feet
	VERY STIFF RED BROWN SILTY MICACEOUS CLAY		740.6	N = 18
				Undisturbed Sample 8.5-9.5 Feet
8.0				Bag Sample 8.0 -25.0 Feet
	STIFF TO VERY STIFF BROWN GRAY WHITE MICACEOUS SANDY SILT		735.6	N = 9
				Undisturbed Sample 13.5-14.5 Feet
			730.6	N = 9
				Undisturbed Sample 18.5 -19.5 Feet
			725.6	N = 11
				N = 14
			720.6	
				N = 21
			715.6	
				N = 25
			710.6	
36.0				N = 25
	VERY STIFF TO HARD GRAY BROWN BLACK MICACEOUS SANDY SILT			
40.0			705.6	

LI	Light	HD	Hard
DK	Dark	BI	Biotite
GY	Gray	HO	Hornblende
BK	Black	GRAN	Granite
MOD	Moderately	GN	Gneiss
MED	Medium		

WATER TABLE

Figure 2-105. Core Boring Record, Boring Log NA-18

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
40.0	VERY STIFF TO HARD GRAY BROWN BLACK MICACEOUS SANDY SILT		705.6	
			700.6	N = 36
			695.6	N = 31
			690.6	N = 26
			685.6	N = 25
			680.5	N = 34
67.0	HARD YELLOW BROWN VERY MICACEOUS SANDY SILT		675.6	N = 41
			670.6	N = 29
80.0			665.6	

WATER TABLE

Figure 2-106. Core Boring Record, Boring Log NA-18

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
80.0	VERY SOFT ROCK (NO RECOVERY)	0	665.6	
84.0	SOFT MED GY AND BR GRAN GN	60 BX	660.6	74° Joint at 86.0 Feet
			655.6	
90.0	HAWTHORNE BIT - VERY DENSE GY SILTY SAND		650.6	
			645.6	
104.0	QUARTZ VEIN		640.6	
104.5	VERY SOFT GY GRAN GN			
108.0	MOD HD MED GY AND BR GRAN GN	66 BX	635.6	
			630.6	
115.7	MOD HD DK GY BK BI HO GN			75° Joint at 115.7 Feet
115.9	MOD HD LI TO MED GY GRAN GN			
116.1	SOFT DK GY BK BI HO GN			
118.0	MOD HD LI TO MED GY GRAN GN	80	625.6	
120.0				

WATER TABLE

[illegible]

### WATER TABLE

Figure 2-108. Core Boring Record, Boring Log NA-19

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
0			785.3	
	VERY STIFF RED BROWN MICACEOUS SLIGHTLY SANDY CLAYEY SILT			N = 15 Bag Sample 5.0 - 10.0 Feet
			780.3	N = 20
				N = 23
			775.3	N = 18
				Undisturbed Sample 8.5- 10.0 Feet
				Bag Sample 10.0 -20.0 Feet
			770.3	N = 17
18.0				
	STIFF YELLOW BROWN MICACEOUS SLIGHTLY SANDY SILTY CLAY		765.3	N = 13
22.0				
	VERY STIFF YELLOW BROWN SLIGHTLY SANDY MICACEOUS SILT		760.3	N = 23
			755.3	N = 25
			750.3	N = 29
38.0				
	HARD YELLOW BROWN PINK MICACEOUS SANDY SILT		745.3	N = 35
40.0				

LI	Light	HD	Hard
DK	Dark	BI	Biotite
GY	Gray	HO	Hornblende
EK	BLACK	GRAN	Granite
MOD	Moderately	GN	Gneiss
MED	Medium		

— WATER TABLE

Figure 2-109. Core Boring Record, Boring Log NA-19

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
40.0			745.3	
41.5	HARD YELLOW BROWN FINE MICACEOUS SANDY SILT			
	HARD GRAY BROWN MICACEOUS SANDY SILT		740.3	N = 39
			735.3	N = 45
			730.3	N = 44
			725.3	N = 42
			720.3	N = 44
67.5			715.3	N = 41
	DENSE YELLOW BROWN AND GRAY MICACEOUS SILTY SAND WITH SOME QUARTZ FRAGMENTS		710.3	N = 35
80.0			705.3	N = 36

WATER TABLE

Figure 2-110. Core Boring Record, Boring Log NA-19

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
80.0			705.3	
	DENSE YELLOW BROWN AND GRAY MICACEOUS SILTY SAND WITH SOME QUARTZ FRAGMENTS		700.3	N = 40
			695.3	
			690.3	
			685.3	
101.0	DENSE SILTY SAND WITH THIN LAYERS OF QUARTZ		680.3	
105.3	DENSE YELLOW BROWN AND GRAY SILTY SAND WITH SOME QUARTZ FRAGMENTS		675.3	
110.0	HR LI GY GRAN GN			
112.3	MOD HD MED GY BK BI HO GN			
112.8	HD LI GY GRAN GN		670.3	50° Joint at 112.0 Feet
115.5	MOD HD DK GY BK BI HO GN	100 BX		
118.3	LD LI GY GRAN GN			
120.0			665.3	

WATER TABLE



[illegible]

~~THE~~ WATER TOWER

Figure 2-112. Core Boring Record, Boring Log NA-20

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
0			742.6	
0.3	TOPSOIL AND GRASS			Bag Sample 0 - 4.0 Feet
	STIFF BROWN MICACEOUS SANDY SILT			Undisturbed Sample 3.5 -4.5 feet
			737.6	N = 8
				Bag Sample 4.0 -25.0 Feet
7.0	FIRM TO VERY STIFF BROWN GRAY WHITE MICACEOUS SANDY SILT			N = 6 Undisturbed Sample 8.5-9.5 Feet
			732.6	
				N = 12 Undisturbed Sample 13.5-14.5 Feet
			727.6	
				Undisturbed Sample 18.5-19.5 Feet
			722.6	N = 13
				Undisturbed Sample 23.5-24.5 Feet
			717.6	N = 15
				N = 17
			717.6	
				N = 16
			707.6	
37.0	DENSE BROWN GRAY WHITE MICACEOUS SILTY FINE TO MEDIUM SAND			N = 31
40.0			702.6	
LI	Light	HD	Hard	36.0 Feet of 2" Plastic Pipe left in hole
DK	Dark	BI	Biotite	
GY	Gray	HO	Hornblende	
BK	Black	GRAN	Granite	
MOD	Moderately	GN	Gneiss	
MED	Medium			

WATER TABLE

Figure 2-113. Core Boring Record, Boring Log NA-20

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
40.0			702.6	
41.0	DENSE BROWN GRAY WHITE HARD BROWN GRAY VERY MICACEOUS SANDY SILT	*1		
			697.6	N = 70
			692.6	N = 40/3" (refusal)
			687.6	N = Refusal
			682.6	N = Refusal
			677.6	N = Refusal
			672.6	N = Refusal
			667.6	N = Refusal
77.0	MOD HD LI TO MED GY GRAN GN			
79.6		100 NX		1/2 inch shear displacement
80.0	MOD HD DK GY BK BI HQ GN		662.6	

\*1 MICACEOUS SILTY FINE TO MEDIUM SAND

WATER TABLE

Figure 2-114. Core Boring Record, Boring Log NA-20

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV.	REMARKS
80.0	MOD HD LI TO MED GY GRAN GN	100	662.6	82° Joint at 80.0 Feet
83.7				85° Joint at 82.3 Feet
83.9	MOD HD DK GY BK BI HO GN	100	657.6	
	MOD HD LI GY AND BR GRAN GN			
88.6				
88.8	MOD HD DK GY BK BI HO GN			
89.4	MOD HD LI TO MED GY & BR GRAN GN	100	652.6	
90.1	MOD HD DK GY BK BI HO GN			
92.0	MOD HD LI TO MED GY GRAN GN			
92.2	SOFT DK GY BR BI HO GN			
	MOD HD LI GY GRAN GN	100	647.6	
97.0				
97.5	MOD HD DK GY BK BI HO GN			74° Joint at 97.0 Feet
99.8	MOD HD LI GY GRAN GN			
100.3	MOD HD DK GY BK BI HO GN	100	642.6	
	MOD HD LI GY GRAN GN	NX		
104.6				
105.7	MOD HD LI TO MED GY BI HO GN		637.6	
106.1	MOD HD LI GY GRAN GN			73° Joint at 104.7 feet
106.9	MOD HD DK GY BK BI HO GN	95		
	MOD HD LI TO MED GY GRAN GN			
109.6		93		
110.0	SOFT DK GY BK BI HO GN		632.6	
110.2	MOD HD LI GY GRAN GN			
110.4	MOD HD DK GY BK BI HO GN		630.6	
112.0	MOD HD LI GY GRAN GN			
	CORING TERMINATED		627.6	

Figure 2-115. Core Boring Record, Boring Log NA-21

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV. 728.9	REMARKS
0	TOPSOIL			
0.4				
	VERY STIFF RED BROWN MICACEOUS FINE SANDY SILTY CLAY		723.9	N = 21 Undisturbed Sample 3.5-4.5 Feet
8.0				
	VERY STIFF BROWN MICACEOUS FINE SANDY SILT		718.9	N = 16 Undisturbed Sample 8.5-9.5 Feet
12.0				
	LOOSE BROWN GRAY MICACEOUS SILT FINE SAND		713.9	Undisturbed Sample 13.5-14.5 Feet N = 4
17.5				
	STIFF BROWN GRAY WHITE MICACEOUS FINE TO MEDIUM SANDY SILT		708.9	Undisturbed Sample 18.5-19.5 Feet N = 10 Undisturbed Sample 23.5-24.5 Feet
21.0				
	VERY STIFF TO HARD MICACEOUS BROWN GRAY WHITE SILTY FINE TO COARSE SAND		703.9	N = 17
			698.9	N = 45
				N = 60
			693.9	
36.0				
	HARD DARK GRAY BLACK AND WHITE FINE SANDY SILT			N = 30/1" (Refusal)
40.0			688.9	

LI	Light	HD	Hard
DK	Dark	BI	Biotite
GY	Gray	HO	Hornblende
BK	Black	GRAN	Granite
MOD	Moderately	GN	Gneiss
MED	Medium		

WATER TABLE

Figure 2-116. Core Boring Record, Boring Log NA-21

DEPTH FT.	DESCRIPTION	CORE BIT % SIZE	ELEV. 688.9	REMARKS
40.0	HARD DARK GRAY BLACK AND WHITE FINE SANDY SILT (DECOMPOSED HORNBLENDE GNEISS)			
			683.9	N = 20/0" (Refusal)
			678.9	N = Refusal
53.5	MOD HD LI TO MED GY GRAN GN		673.9	
55.1	SOFT MED GY GRAN GN			
55.5	VERY SOFT DK GY BK BI HO GN			
56.0	MOD HD LI TO MED GY GRAN GN			Vertical Joint at 57.5 Feet
59.9	VERY SOFT DK GY BK BI HO GN		668.9	
60.2	MOD HD LI TO MED GY GRAN GN	100		
61.7	MOD HD DK GY BI HO GN			
62.1	VERY SOFT DK GY BI HO GN			
62.2	SOFT MED GY GRAN GN	NX		
62.4	SOFT DK GY BI HO GN			
62.7	SOFT MED GY GRAN GN			
63.0	MOD HD LI TO MED GY GRAN GN			
63.5	SOFT DK GY BI HO GN			
63.8	SOFT LI TO MED GY GRAN GN			
64.0	MOD HD DR GY BI HO GN		663.9	
64.2	MOD HD LI TO MED GY GRAN GN			61° Joint at 65.0 Feet
68.8	MOD HD DK GY BK BI HO GN			
70.6	MOD HD LI TO MED GY GRAN GN	100		
71.4	VERY SOFT MED GY GRAN GN		655.4	
71.5	MOD HD LI TO MED GY GRAN GN			
73.5	CORING TERMINATED		658.9	

Not to scale

WATER TABLE

Figure 2-117. Seismic Field Work Location Map

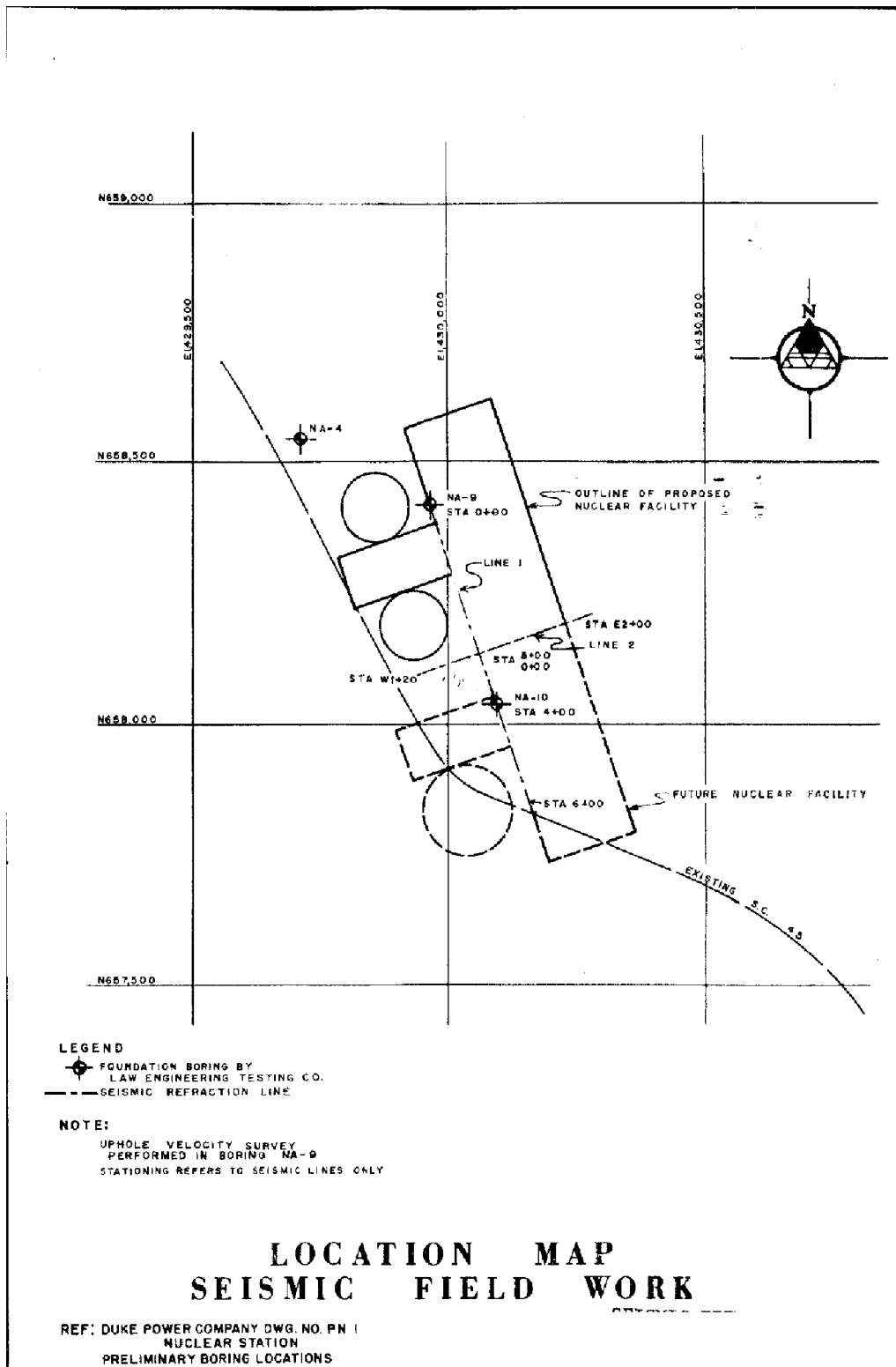


Figure 2-118. Diagrammatic Cross Section through Seismic Lines

