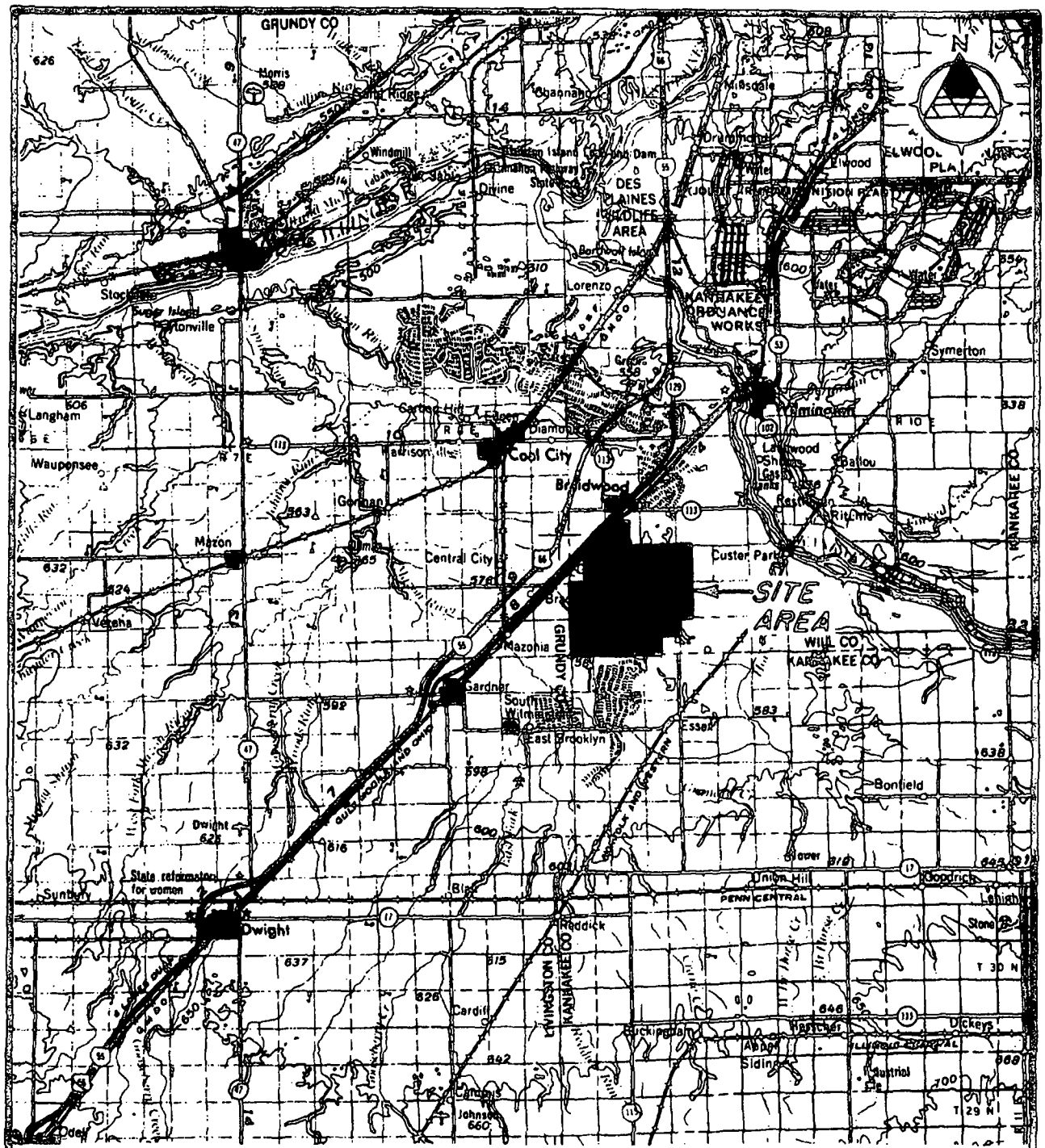

REFERENCE:

MODIFIED FROM: UNITED STATES GEOLOGICAL SURVEY, AURORA, ILLINOIS 1:250,000 MAP, DATED 1958.

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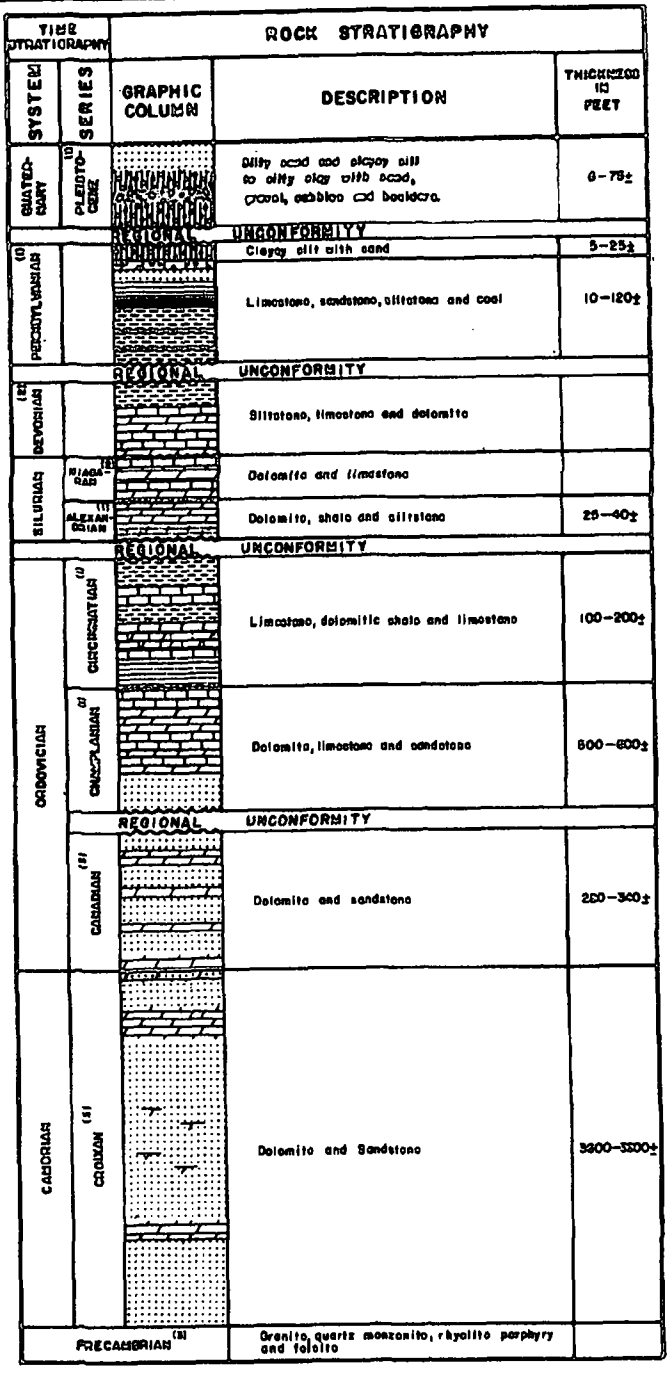
FIGURE 2.5-1

SITE AREA MAP



NOTES:

(1) STRATA PENETRATED IN SITE BORINGS.

(2) STRATA NOT PRESENT BENEATH THE SITE.

(3) STRATA PRESENT BENEATH THE SITE BUT NOT PENETRATED IN SITE BORINGS.

REFERENCE:

BUSCHBACH, T.C., 1964, CAMBRIAN AND ORDOVICIAN STRATA OF NORTHEASTERN ILLINOIS: ILLINOIS STATE GEOLOGICAL SURVEY, REPORT OF INVESTIGATIONS 218.

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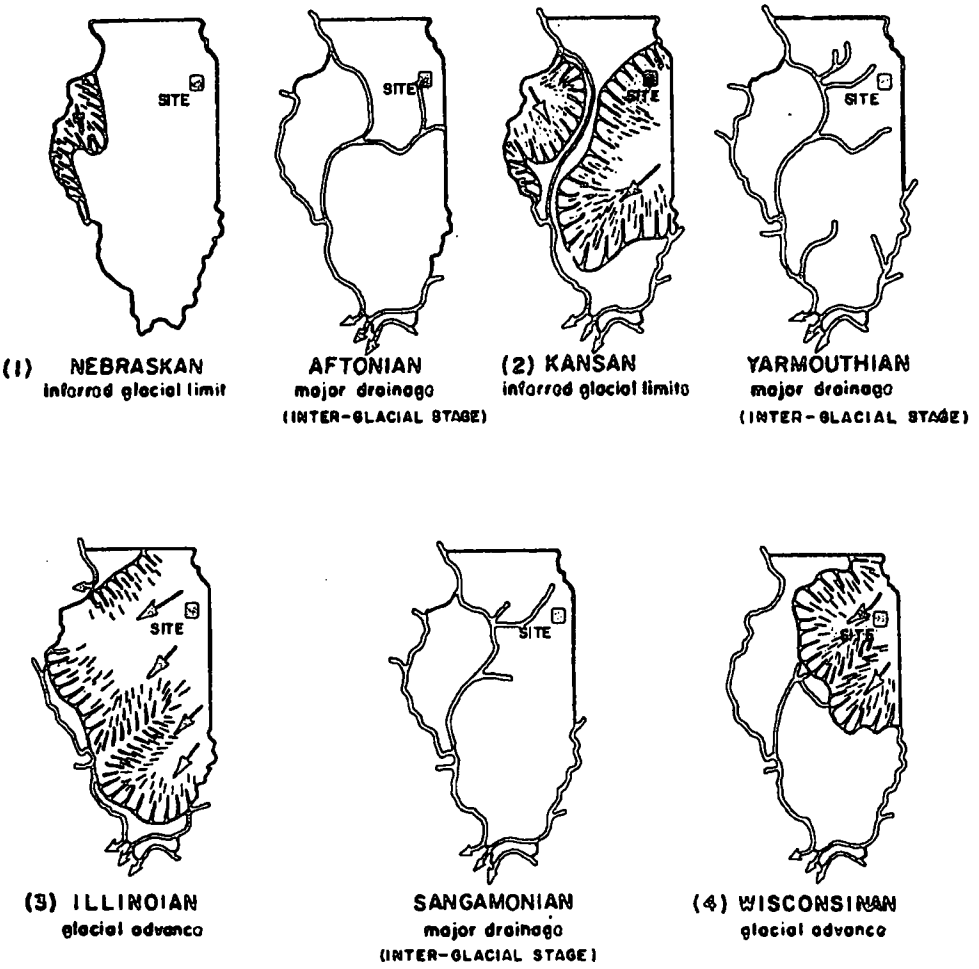
FIGURE 2.5-2

REGIONAL STRATIGRAPHIC COLUMN



LEGEND:

ICE FRONT

DIRECTION OF MOVEMENT

MAJOR DRAINAGE ROUTES

REFERENCE:

MODIFIED FROM WILLMAN AND FRYE, 1970, PLEISTOCENE STRATIGRAPHY OF ILLINOIS, ILLINOIS STATE GEOLOGICAL SURVEY, BULLETIN 94

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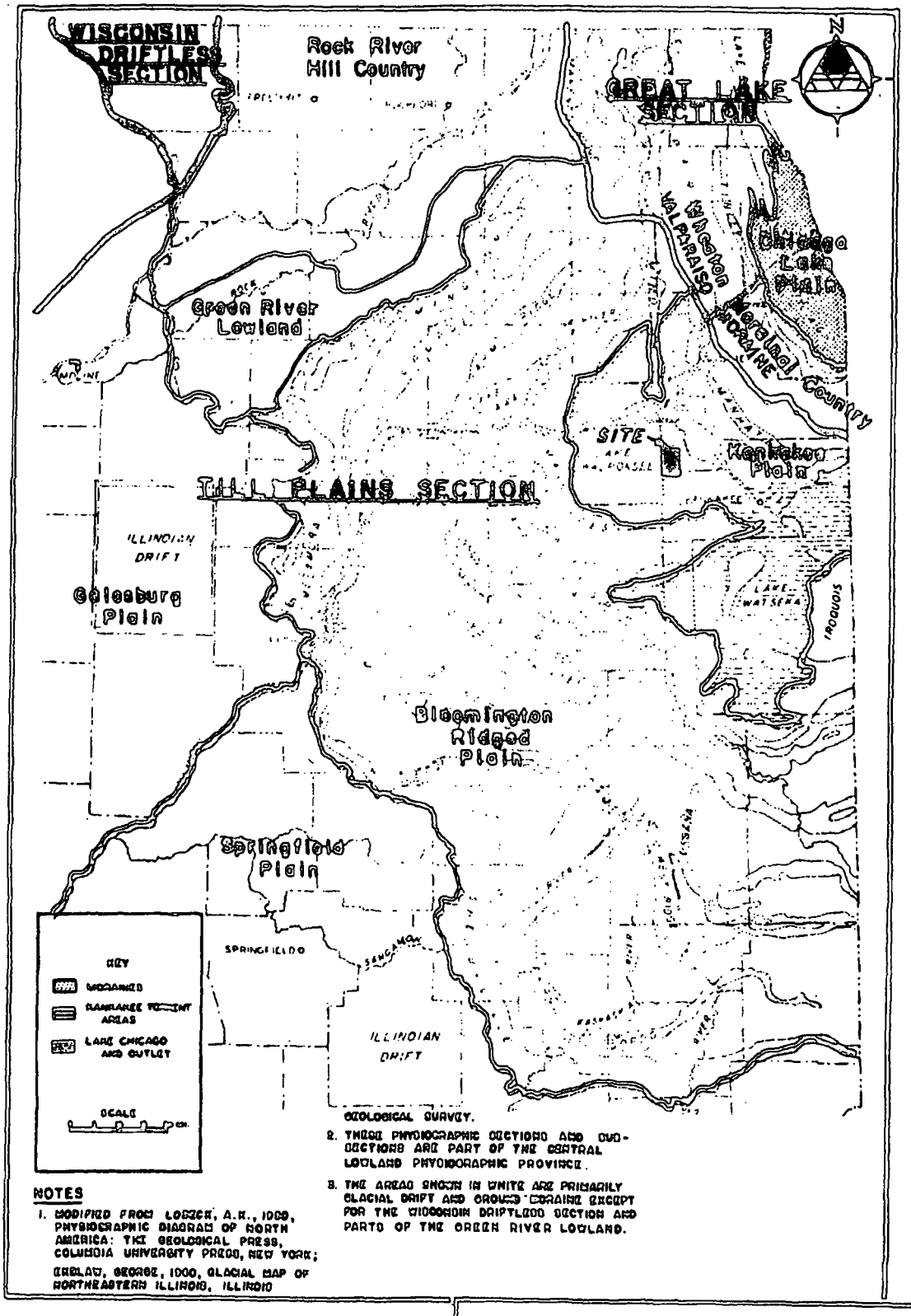
FIGURE 2.5-3

REGIONAL GLACIATION



NOTES

1. MODIFIED FROM LOBECK, A.K., 1939, PHYSIOGRAPHIC DIAGRAM OF NORTH AMERICA: THE GEOLOGICAL PRESS, COLUMBIA UNIVERSITY PRESS, NEW YORK; ERDMAN, GEORGE, 1900, GLACIAL MAP OF NORTHEASTERN ILLINOIS, ILLINOIS GEOLOGICAL SURVEY.
2. THESE PHYSIOGRAPHIC SECTIONS AND SUB-SECTIONS ARE PART OF THE CENTRAL LOWLAND PHYSIOGRAPHIC PROVINCE.
3. THE AREAS SHOWN IN WHITE ARE PRIMARILY GLACIAL DRIFT AND GROUND MORAINE EXCEPT FOR THE WISCONSIN DRIFTLESS SECTION AND PARTS OF THE GREEN RIVER LOWLAND.

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FIGURE 2.5-4

REGIONAL PHYSIOGRAPHIC MAP

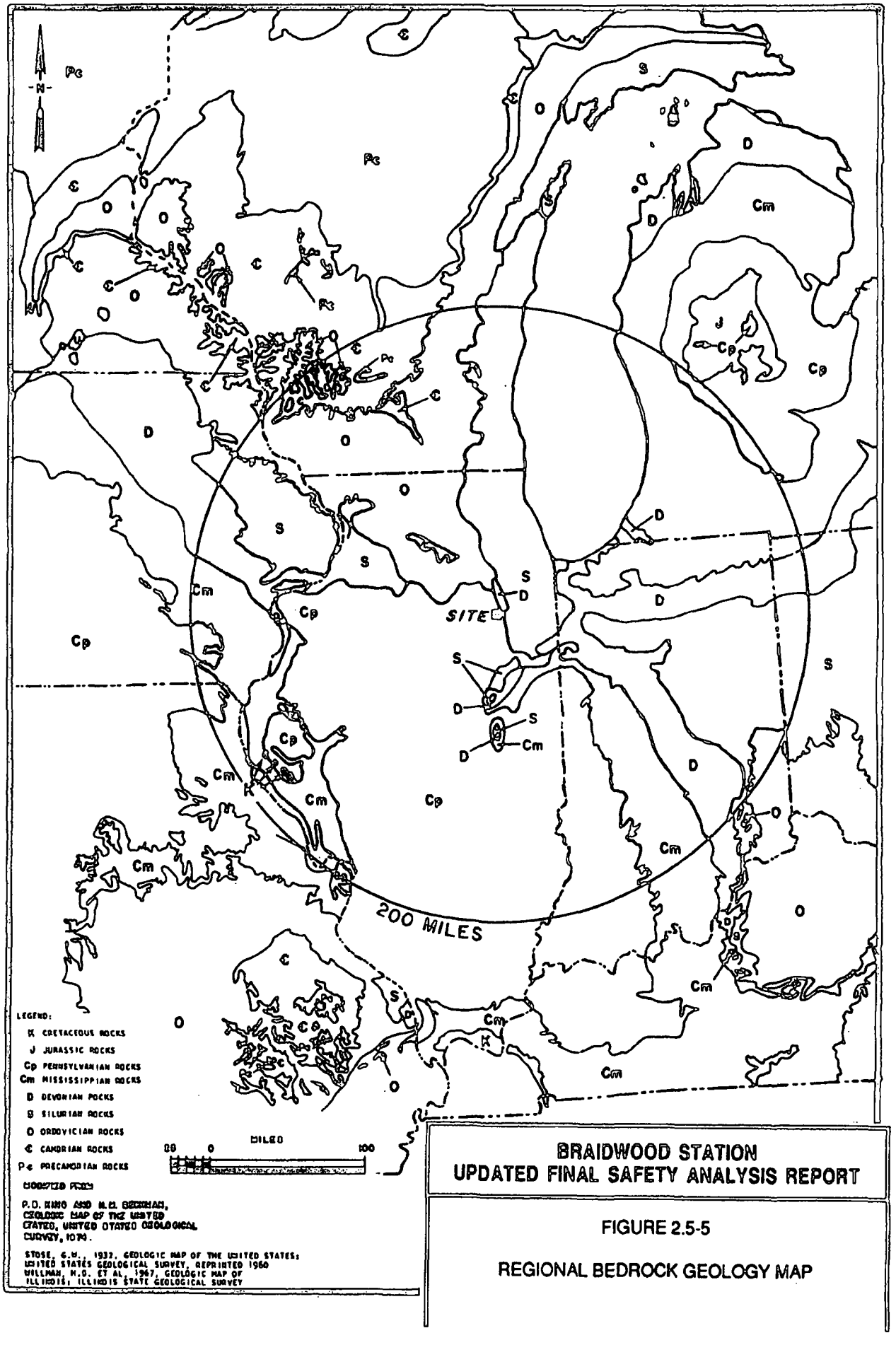

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FIGURE 2.5-5

REGIONAL BEDROCK GEOLOGY MAP

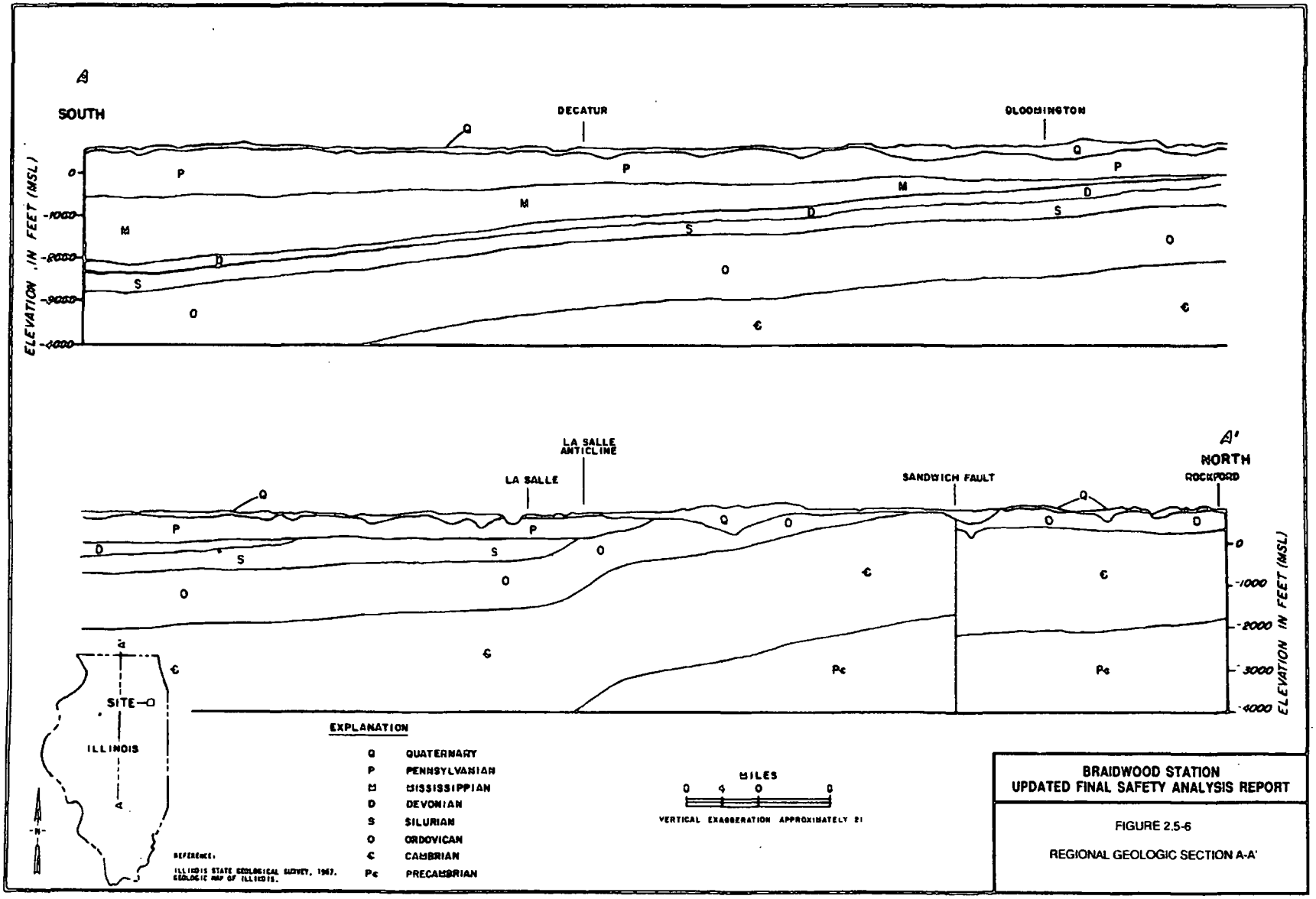

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FIGURE 2.5-6

REGIONAL GEOLOGIC SECTION A-A'

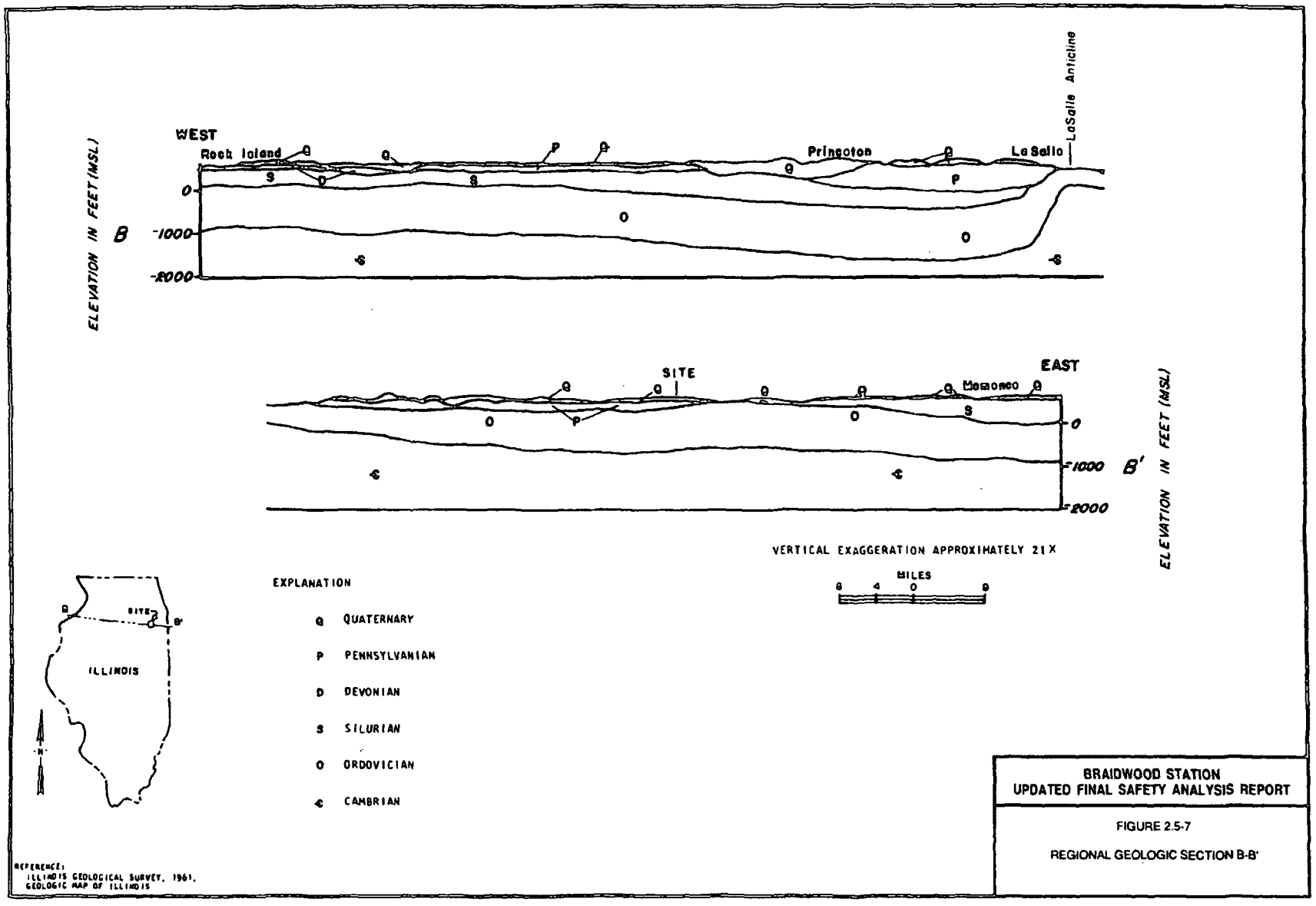

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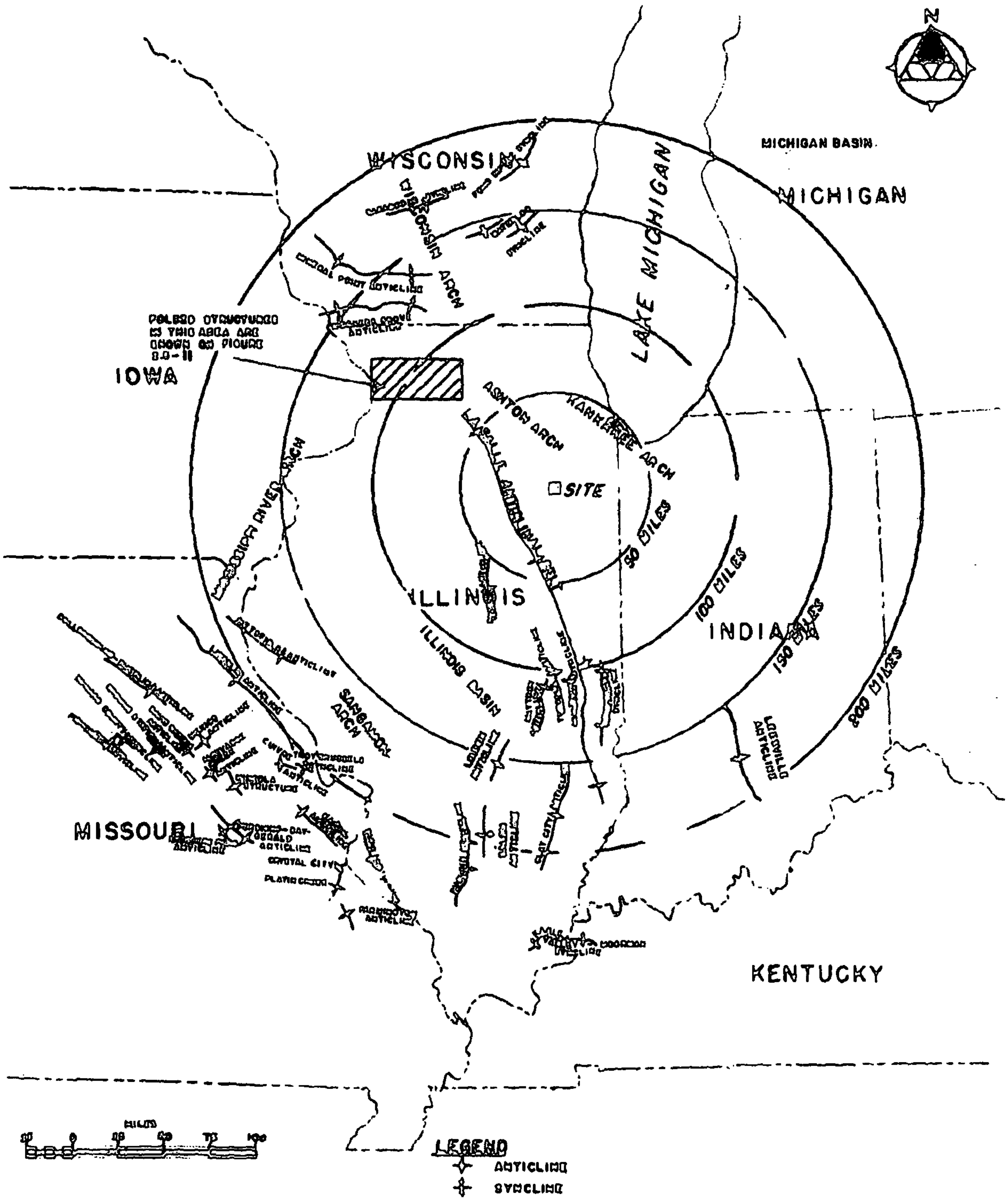
FIGURE 2.5-7

REGIONAL GEOLOGIC SECTION B-B'



NOTES

COMPLIED FROM:

A. UNITED STATES GEOLOGICAL SURVEY AND THE AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, 1962, TECTONIC MAP OF THE UNITED STATES.

B. THWAITES, F.T., 1957, BURIED PRE-CAMBRIAN OF WISCONSIN, UNIVERSITY OF WISCONSIN AND WISCONSIN GEOLOGICAL SURVEY.

C. ILLINOIS GEOLOGICAL SURVEY, 1967, GEOLOGIC MAP OF ILLINOIS

D. CLEGG, K.E., 1965. SUBSURFACE GEOLOGY AND COAL RESOURCES OF THE PENNSYLVANIAN SYSTEM IN CLARK AND EDGAR COUNTIES, ILLINOIS; ILLINOIS STATE GEOLOGICAL SURVEY CIRCULAR 380.

E. MCCRACKEN, M.H., 1971, STRUCTURAL FEATURES OF MISSOURI; MISSOURI GEOLOGICAL SURVEY, REPORT OF INVESTIGATIONS NUMBER 49

F. MCGINNIS, L.D., AND BRADBURY, V.C., 1964, AEROMAGNETIC STUDY OF THE HARDIN COUNTY AREA, ILLINOIS; ILLINOIS STATE GEOLOGICAL SURVEY CIRCULAR 363.

G. Kolata, D.R. and Buschbach, T.C., Plum River Fault Zone of [illegible]; Illinois State Geological [illegible] 491.

H. [illegible]

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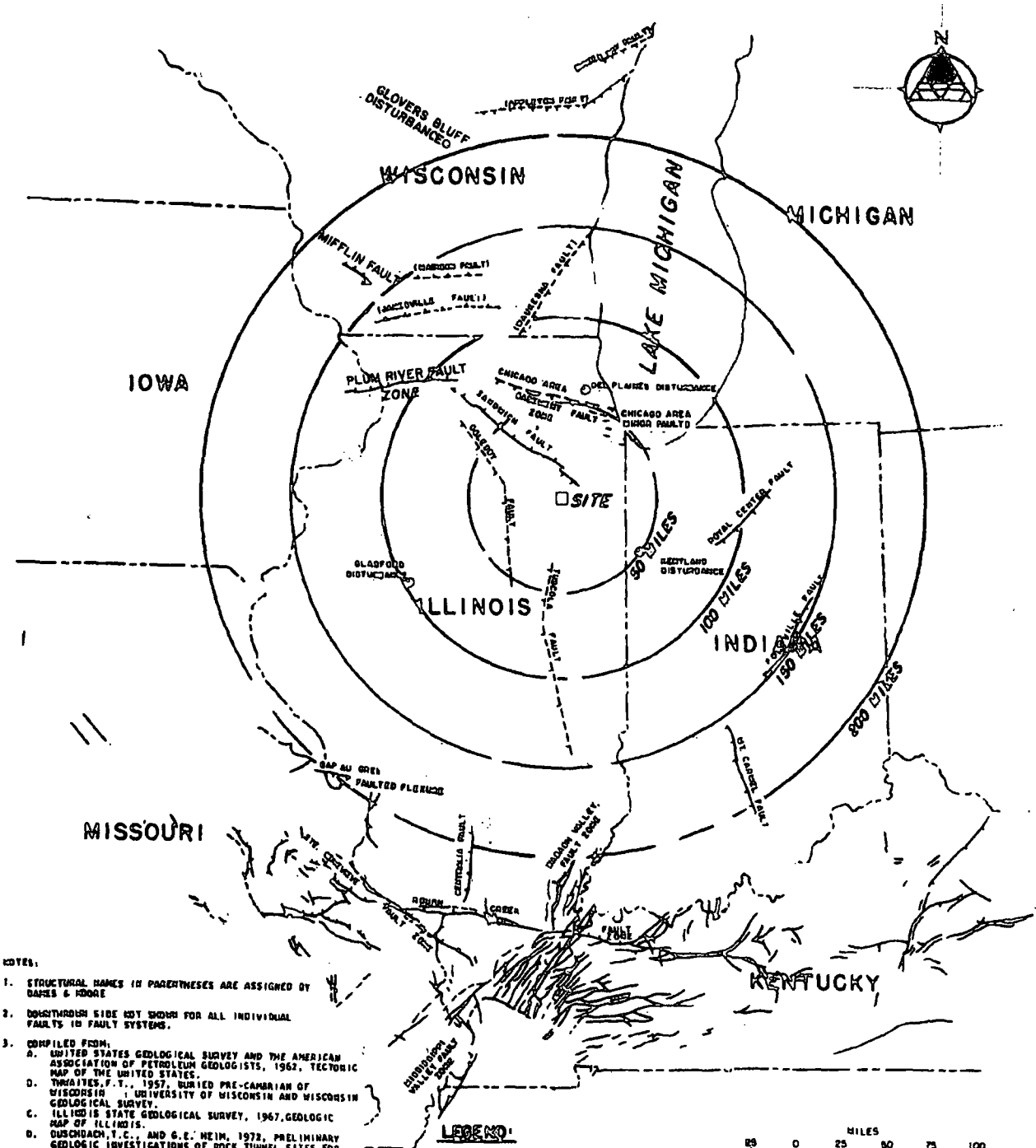
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-8

MAJOR FOLDS



NOTES:

1. STRUCTURAL NAMES IN PARENTHESES ARE ASSIGNED BY DAVIES & MOORE
2. DOWNTHROWN SIDE NOT SHOWN FOR ALL INDIVIDUAL FAULTS IN FAULT SYSTEMS.
3. COMPILED FROM:
   A. UNITED STATES GEOLOGICAL SURVEY AND THE AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, 1962, TECTONIC MAP OF THE UNITED STATES.
   B. TWAITES, F.T., 1957, BURIED PRE-CAMBRIAN OF WISCONSIN : UNIVERSITY OF WISCONSIN AND WISCONSIN GEOLOGICAL SURVEY.
   C. ILLINOIS STATE GEOLOGICAL SURVEY, 1967, GEOLOGIC MAP OF ILLINOIS.
   D. DUSCHBACH, T.C., AND G.E. HEIM, 1972, PRELIMINARY GEOLOGIC INVESTIGATIONS OF ROCK TUNNEL SITES FOR FLOOD AND POLLUTION CONTROL IN THE GREATER CHICAGO AREA: ILLINOIS GEOLOGICAL SURVEY, ENVIRONMENTAL GEOLOGY NOTES NO. 52, p.26.
   E. GREEN, D.A., 1957, TRENTON STRUCTURE IN OHIO, INDIANA AND NORTHERN ILLINOIS: BULLETIN AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, v.41, NO.4, p.29.
   F. BACKGROUND MATERIALS AND PROCEEDINGS OF SYMPOSIUM ON FUTURE PETROLEUM POTENTIAL OF N.P.C. REGION 9; ILLINOIS STATE GEOLOGICAL SURVEY, ILLINOIS PETROLEUM 95 AND 96.
   G. HEYL, A.V., ET.AL., 1965, REGIONAL STRUCTURE OF THE SOUTHEAST MISSOURI AND ILLINOIS-KENTUCKY MINERAL DISTRICTS, UNITED STATES GEOLOGICAL SURVEY BULLETIN 1202-D.
   H. C.E. Cohen, Wisconsin Geological and Natural History Survey, Madison, Wisconsin, Written Communication 1978.
   I. C.E. Dutton and R.E. Bradley, "Lithologic, Geophysical and Mineral Commodity Maps of Precambrian rocks in Wisconsin", Map I-931, Miscellaneous Geological Investigations, Plate 8, U.S. Geological Survey (1970)
   J. D.R. Kolata and T.C. Duschbach, Plum River Fault Zone of Northwestern Illinois, Illinois State Geological Survey, Cir. 401 (1976).
   K. L. D. McGinnis, CRUSTAL TECTONICS AND PRECAMBRIAN BASEMENT IN NORTHEASTERN ILLINOIS, ILLINOIS STATE GEOLOGICAL SURVEY, REPORT OF INVESTIGATIONS 210.
4. [illegible] summarized in Table 2.5-8

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FIGURE 2.5-9

MAJOR FAULTS

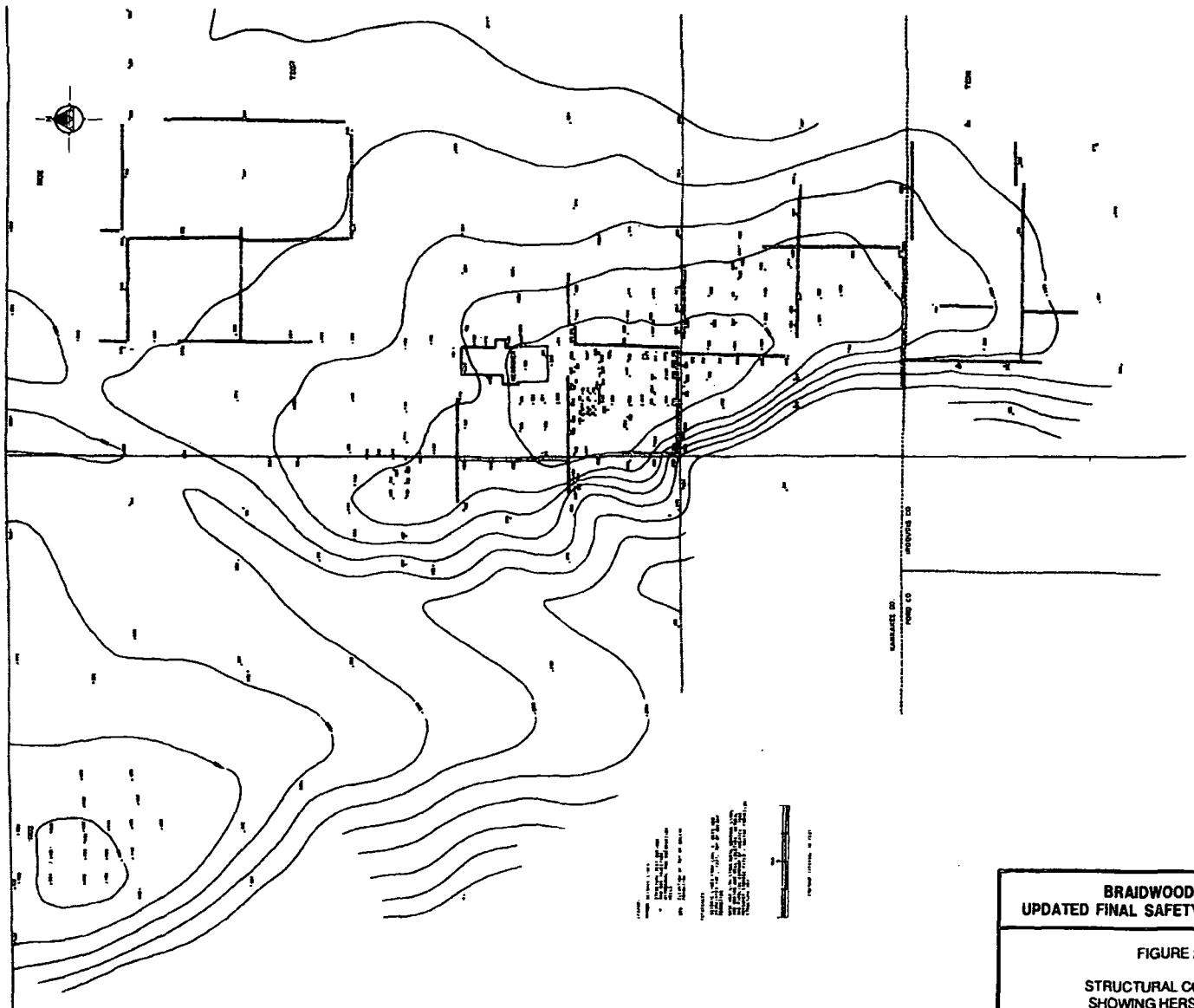

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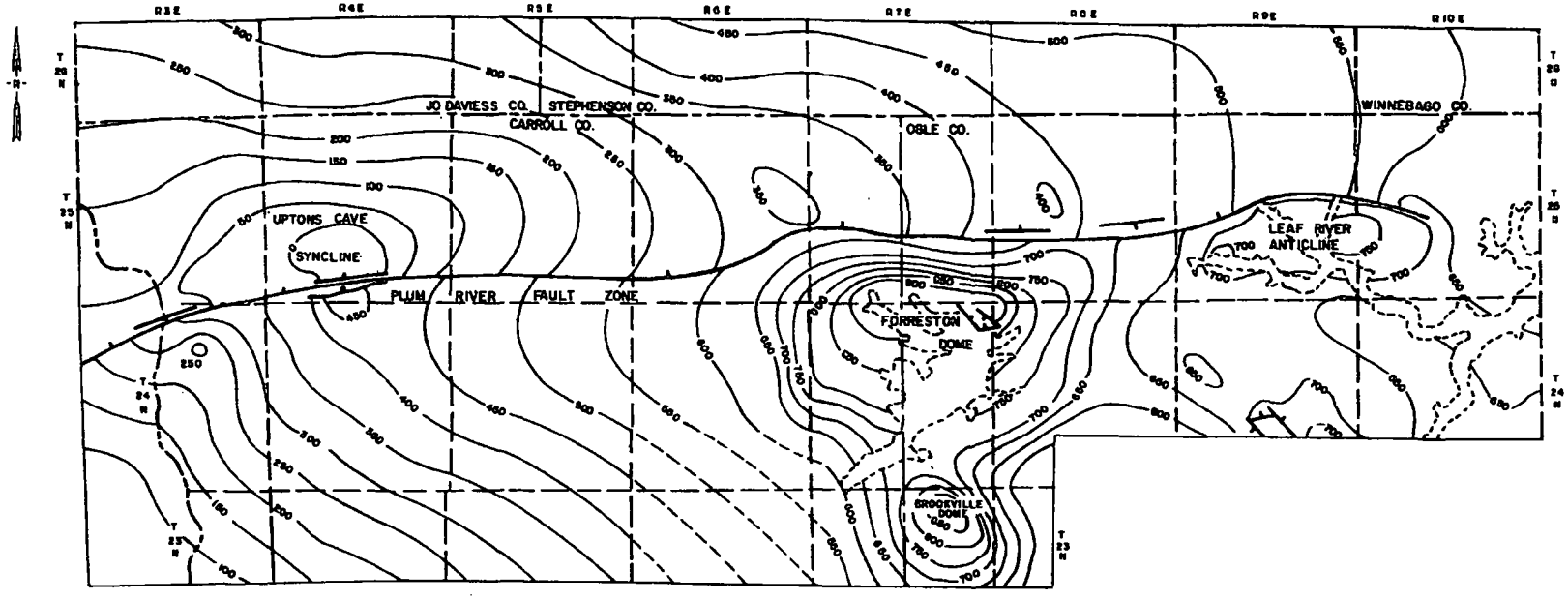
FIGURE 2.5-10

STRUCTURAL CONTOUR MAP
SHOWING HERSCHER DOME



LEGEND

- —100— Structure contours on top of Glenwood Formation
- --100-- Structure contours on top of Glenwood Formation, inferred
- ------- Top of Glenwood Formation eroded
- ——— State Line
- ——— Township Lines
- ——— County Lines
- ——— Trace of Fault
  - Downthrust Side

NOTE

1. Modified from Kolata D.R. and Buschbach T.C., Plum River Fault Zone of Northwestern Illinois, Illinois State Geological Survey Circular 491, 1976.

0 1 2 3 4 5
Scale in Miles

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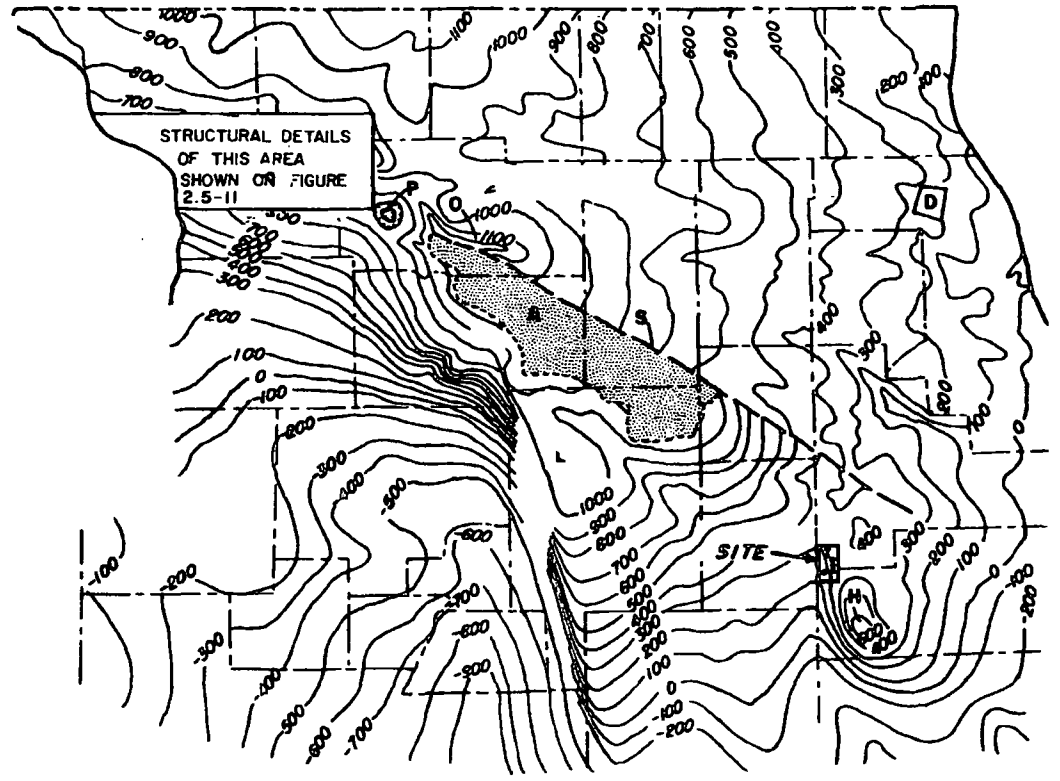
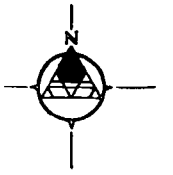
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-11

PLUM RIVER FAULT ZONE





KEY

- PRE-ST. PETER BEDROCK
- A ASHTON ARCH
- D
- H
- L LA SALLE ANTICLINE
- O
- P
- S
- ○ BORING LOCATION

SCALE IN MILES

10 0 10 20

NOTE:

1. ELEVATIONS ARE BASED ON U.S.G.S. DATUM.
2. SEE FIGURE 2.5-30 FOR ENLARGED VIEW OF STRUCTURAL CONTOURS AND BORINGS IN SITE AREA.

REFERENCE:

TEMPLETON, J.S., AND H.B. WILLIAM, 1952, CENTRAL ILLINOIS-GUIDEBOOK FOR THE 16TH ANNUAL FIELD CONFERENCE OF THE TRI-STATE GEOLOGICAL SOCIETY: ILLINOIS GEOLOGICAL SURVEY, GUIDEBOOK SERIES 2, 47 p.

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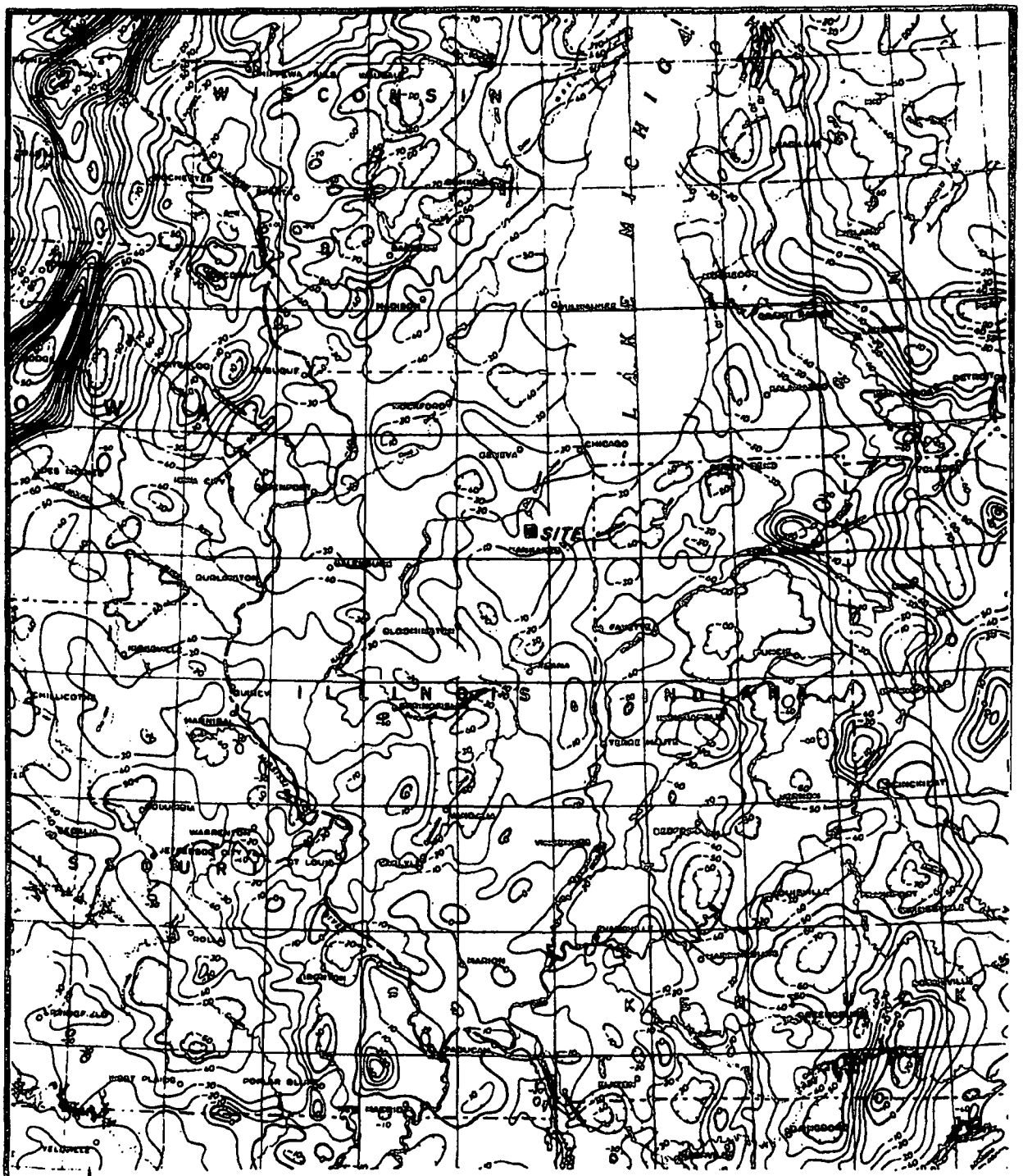
FIGURE 2.5-12

REGIONAL STRUCTURE CONTOURS ON TOP OF THE GALENA GROUP



LEGEND:

-60- BOUGUER GRAVITY CONTOUR (CONTOUR INTERVAL 10 MILLIGALS)

REFERENCE:

BASE MAP FROM: WOOLARD, G.P. AND JOESTING, H.R., 1964, BOUGUER GRAVITY ANOMALY MAP OF THE UNITED STATES: AMERICAN GEOPHYSICAL UNION AND UNITED STATES GEOLOGICAL SURVEY.

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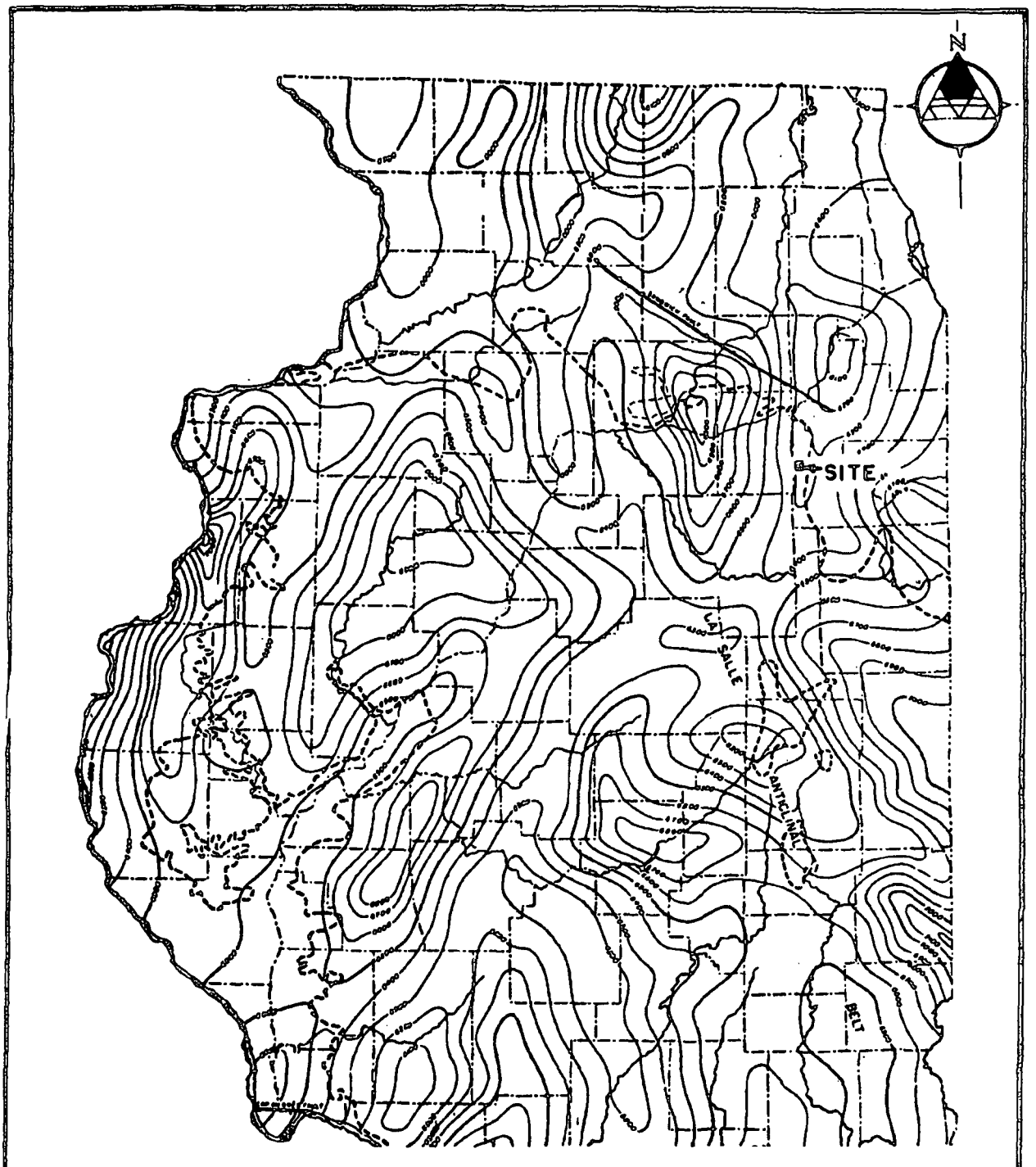
FIGURE 2.5-13

BOUGUER GRAVITY ANOMALY MAP



KEY

Magnetic contour lines, interval 100 gammas

Faults, hachures indicate downthrown side

Boundary of the Pennsylvanian rocks

SCALE

0 5 10 20 30 40 Miles

REFERENCE:

MODIFIED FROM: McGINNIS, L.D., & P.C. HEIGOLD, 1961, REGIONAL MAPS OF VERTICAL MAGNETIC INTENSITY IN ILLINOIS: ILLINOIS GEOLOGICAL SURVEY, CIRCULAR 324, 12 p.

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FIGURE 2.5-14

REGIONAL AEROMAGNETIC MAP

FEET
2000 0 2000
APPROXIMATE SCALE

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FIGURE 2.5-15

AIR PHOTO OF PLANT SITE

REFERENCE:

FROM AIR PHOTO AMF-3B
BY PARK AERIAL SURVEYS, INC.
DATED: 12-22-71

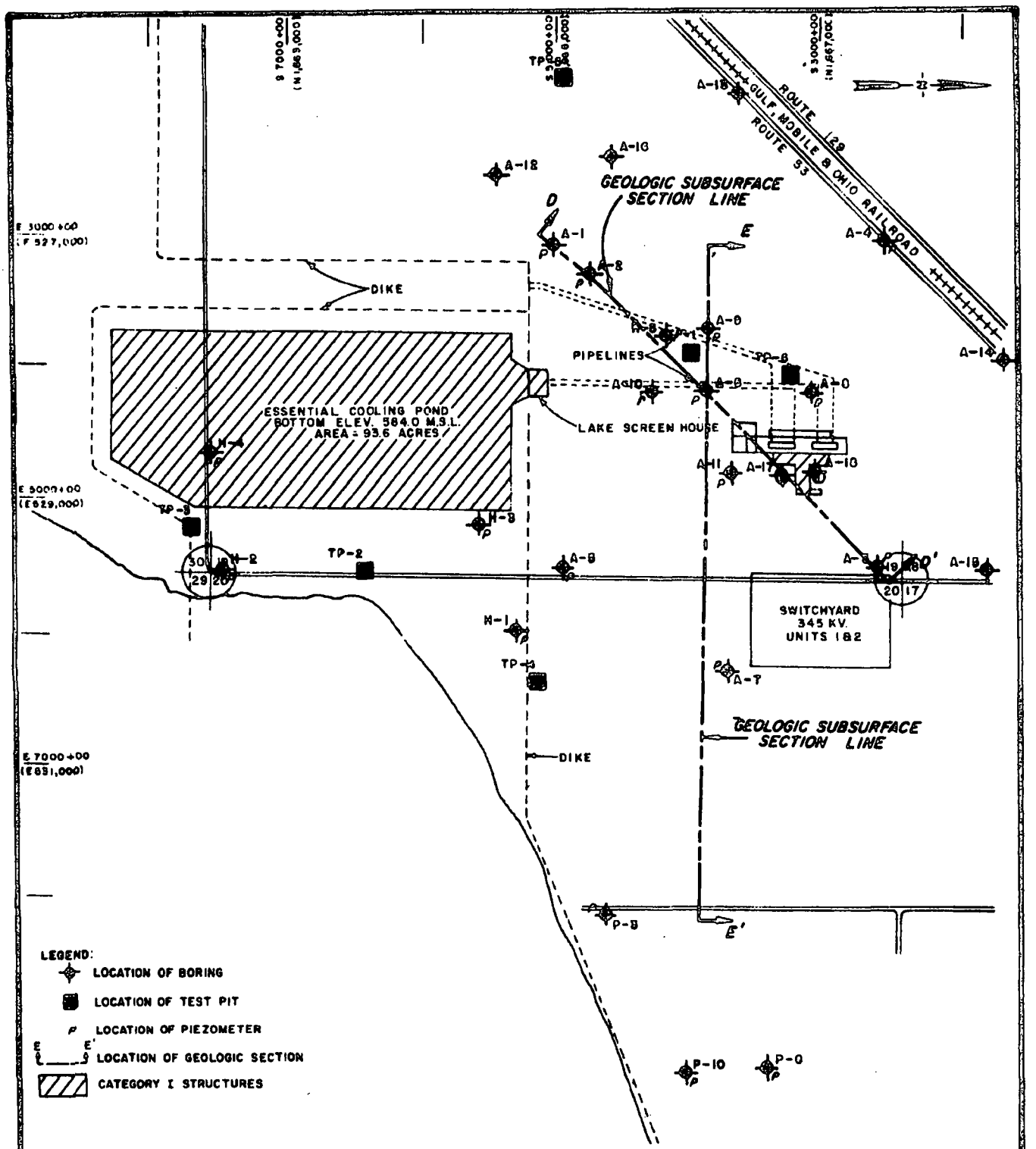

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FIGURE 2.5-16

PLOT PLAN
(SHEET 1 OF 5)

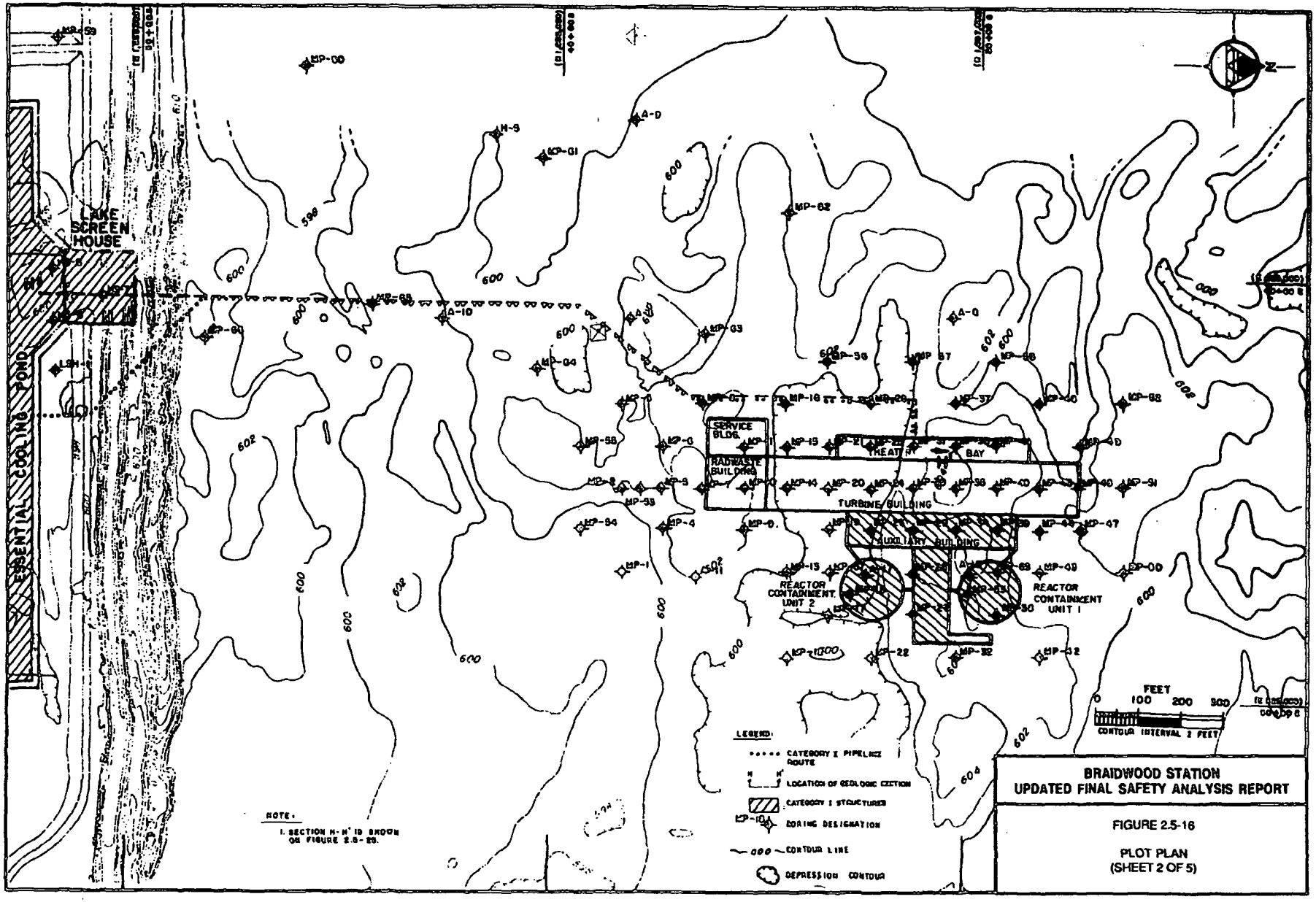

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FIGURE 2.5-16

PLOT PLAN
(SHEET 2 OF 5)

REVISION 15
DECEMBER 2014

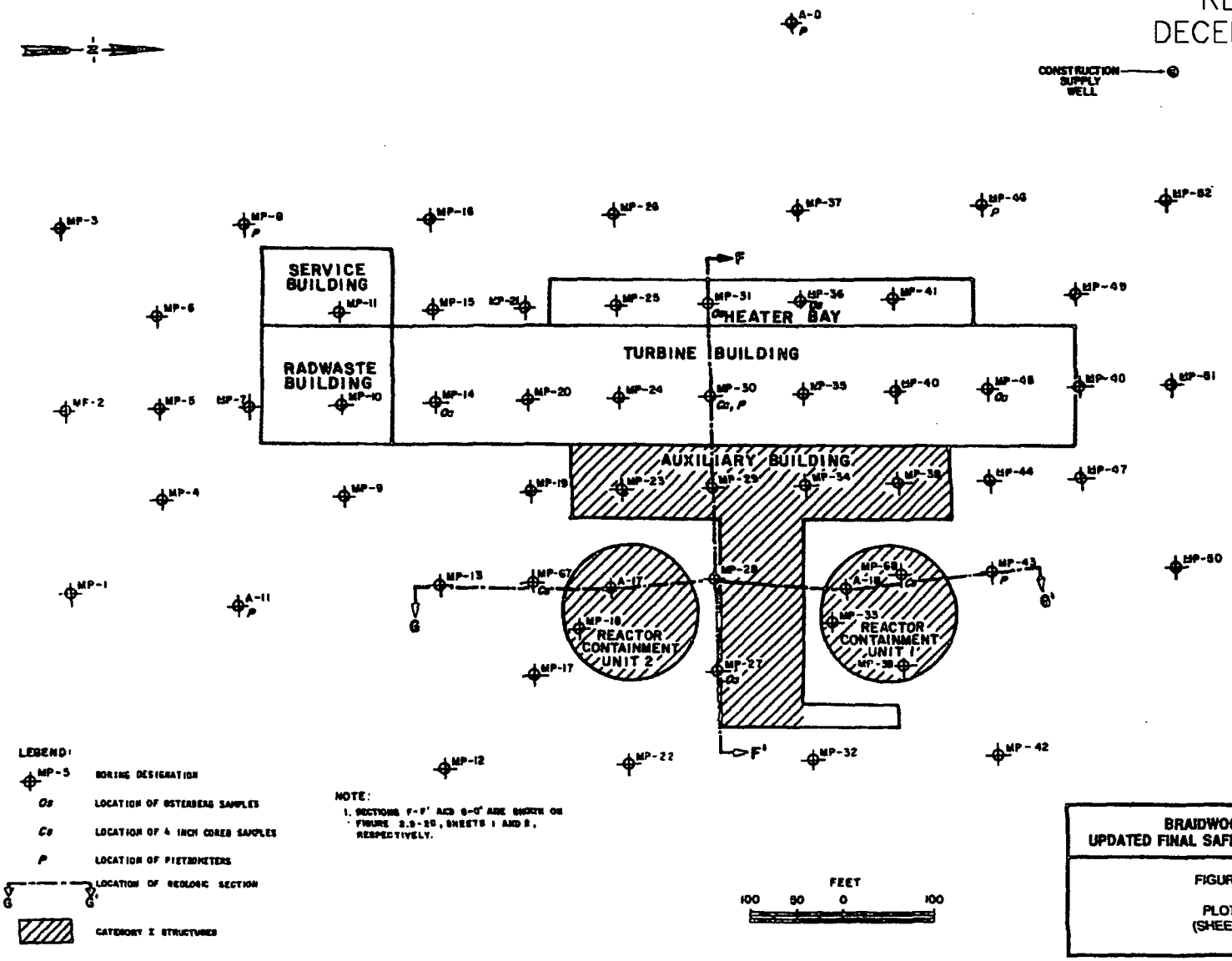

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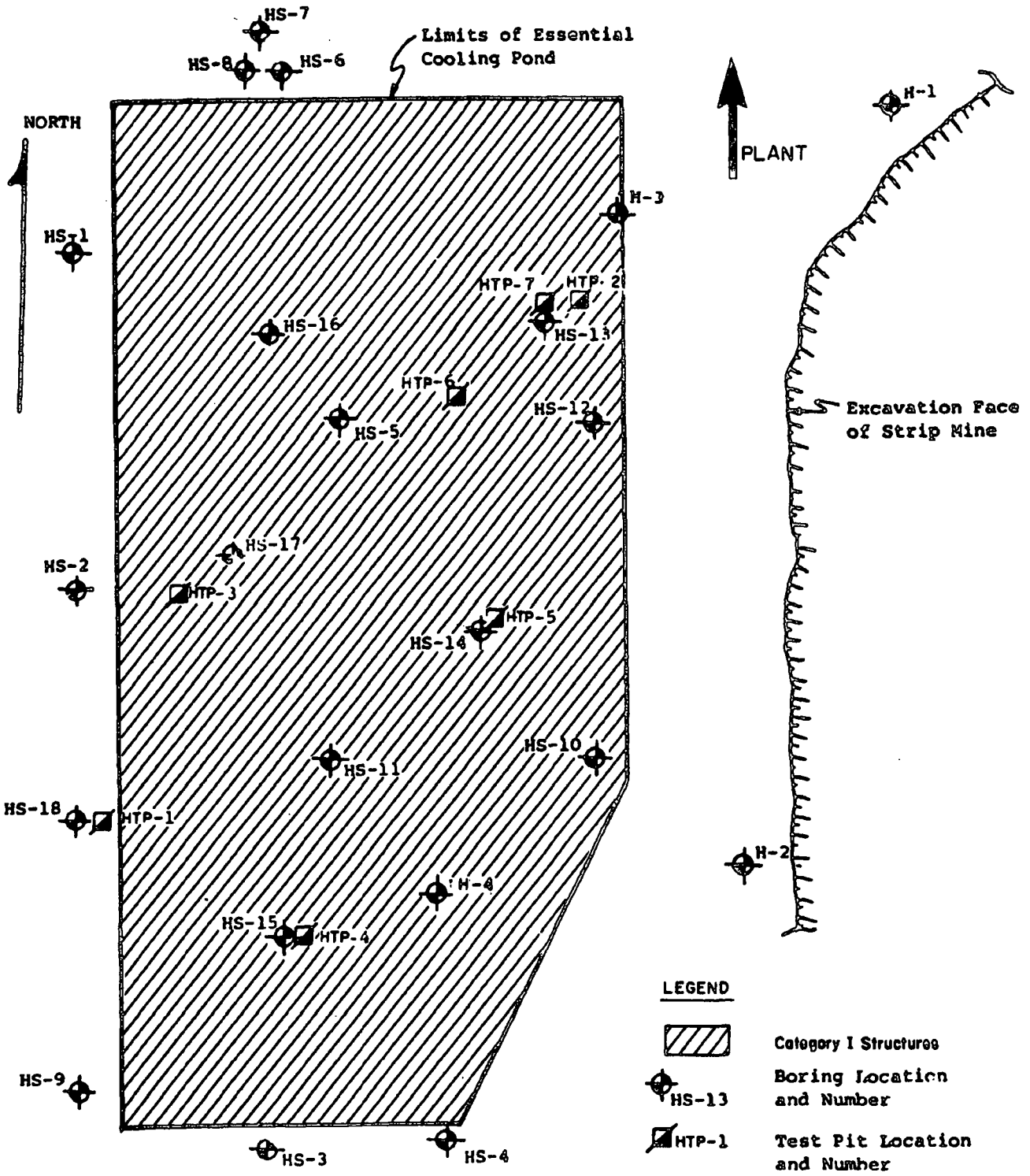
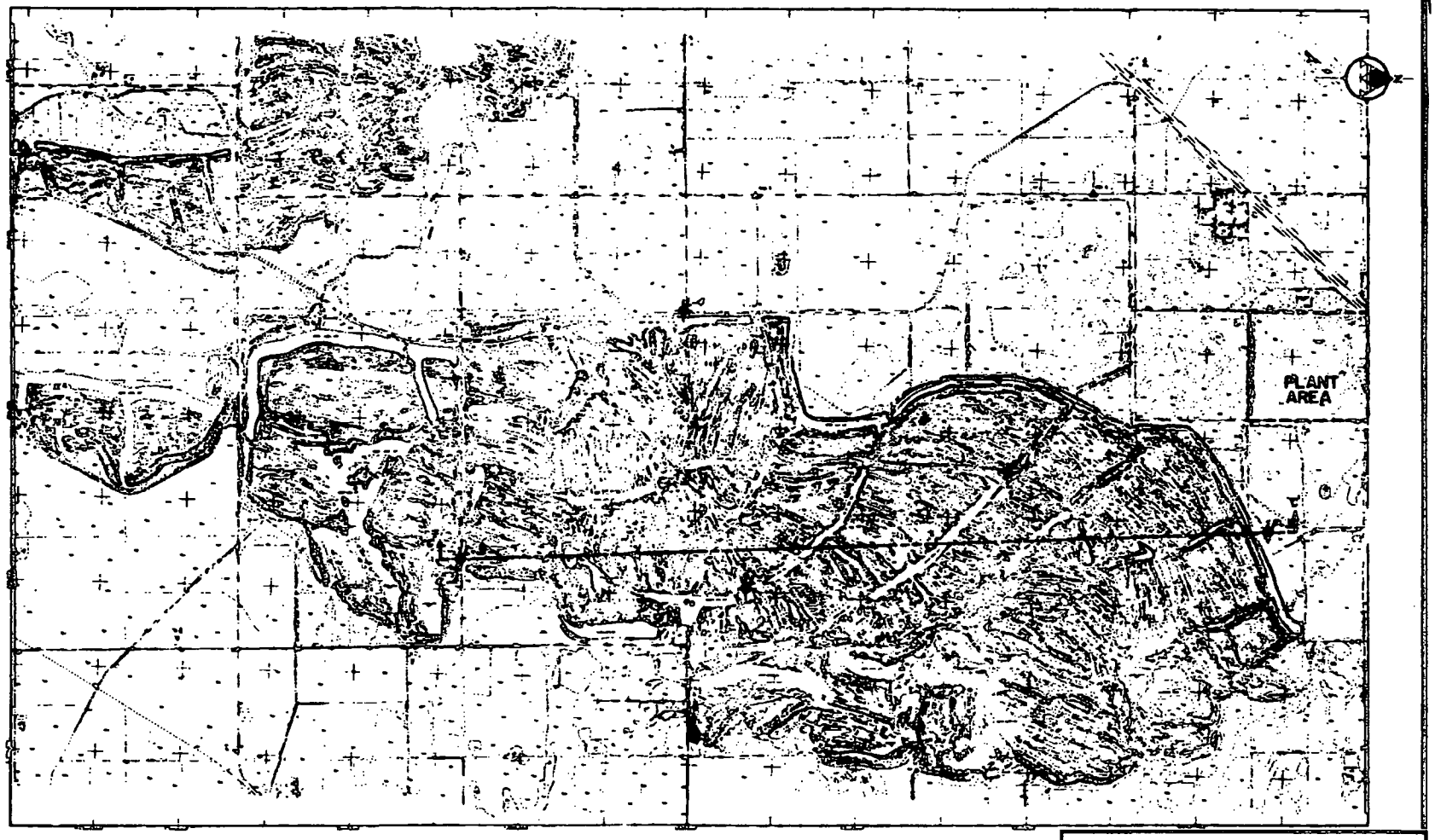
FIGURE 2.5-16 PLOT PLAN (SHEET 3 OF 5)



BRAIDWOOD STATION UPDATED FINAL SAFETY ANALYSIS REPORT
FIGURE 2.5-16 PLOT PLAN (SHEET 4 OF 5)



LEGEND :

NOTE :

1. SECTION C-C' IS SHOWN ON FIGURE 2.5-22.

CONTOUR INTERVAL 20 FEET

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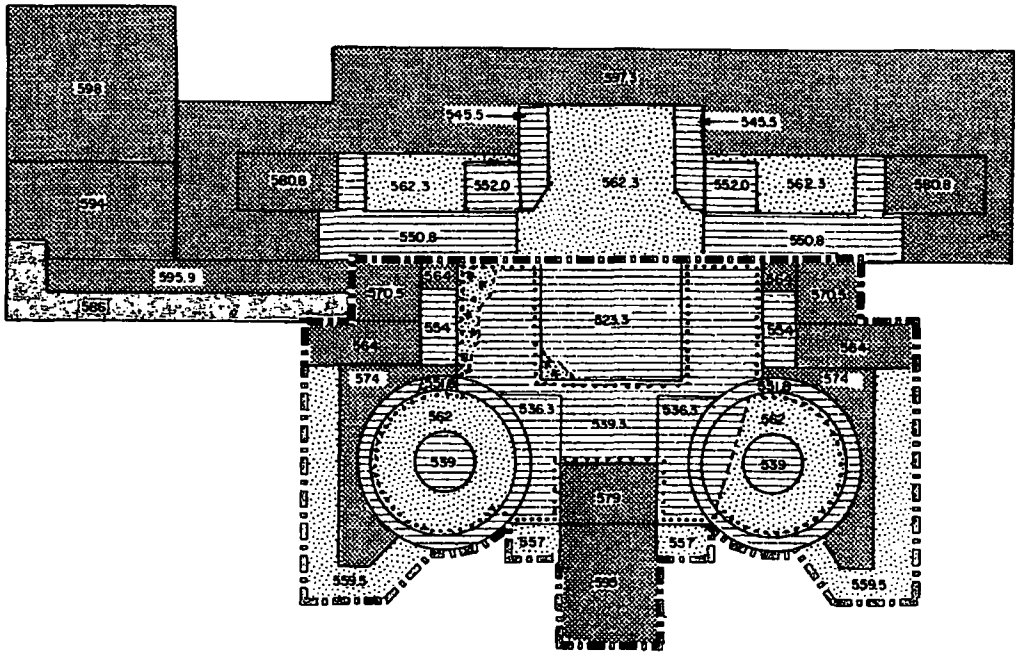
FIGURE 2.5-16

PLOT PLAN
(SHEET 5 OF 5)



LEGEND

- BOUNDARY OF CATEGORY I STRUCTURE
- BOUNDARY OF PORTION OF EXCAVATION FLOOR THAT WAS COVERED WITH MUD MATS AT TIME OF EXCAVATION MAPPING (GEOLOGY INFERRED FROM WALLS)

QUATERNARY

- COMPACTED FILL
- WEDRON FORMATION GLACIAL TILL

PENNSYLVANIAN — KEWANEE GROUP

- CARBONDALE FORMATION FRANCIS CREEK SHALE MEMBER
- CHANNEL SANDSTONE DEPOSITS
- SILTSTONE
- SANDSTONE COAL AND CONGLOMERATE

50 0 100 FEET

NOTES:

1. ELEVATIONS REFER TO U.S.G.S. DATUM.
2. NUMBERS WITHIN THE EXCAVATION BOUNDARIES REFER TO ELEVATION OF THE BOTTOM OF THE EXCAVATION
3. DETAILED EXCAVATION LIMITS SHOWN ON FIGURE 2.5-72.
4. DETAILED BACKFILL LIMITS SHOWN ON FIGURE 2.5-73.

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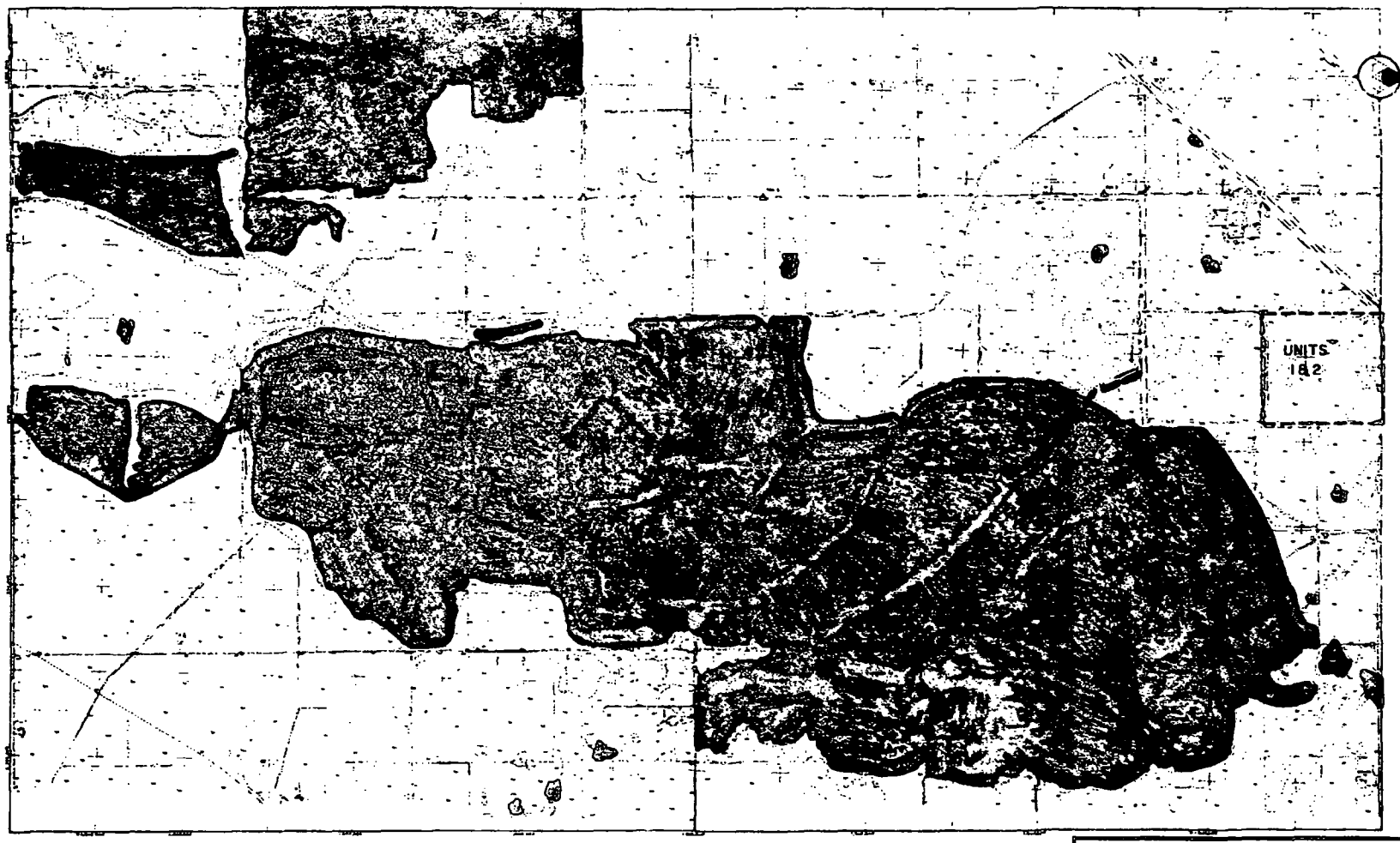
FIGURE 2.5-17

PLANT FOUNDATIONS AND SUBGRADE MATERIAL FOR MAJOR STRUCTURES



LEGEND:

INDICATES REGIONS OF 2 - 100% SLOPE IN STRIP MINED AREAS

INDICATES REGIONS OF 0 - 2% NATURAL SLOPE

NOTE:

THE ENTIRE AREA IS A FORMER GLACIAL LAKE PLAIN

REFERENCE:

FROM PHOTO GRAMMETRIC MAPPING BY AIRMAPS INC., DATED: 6-15-72

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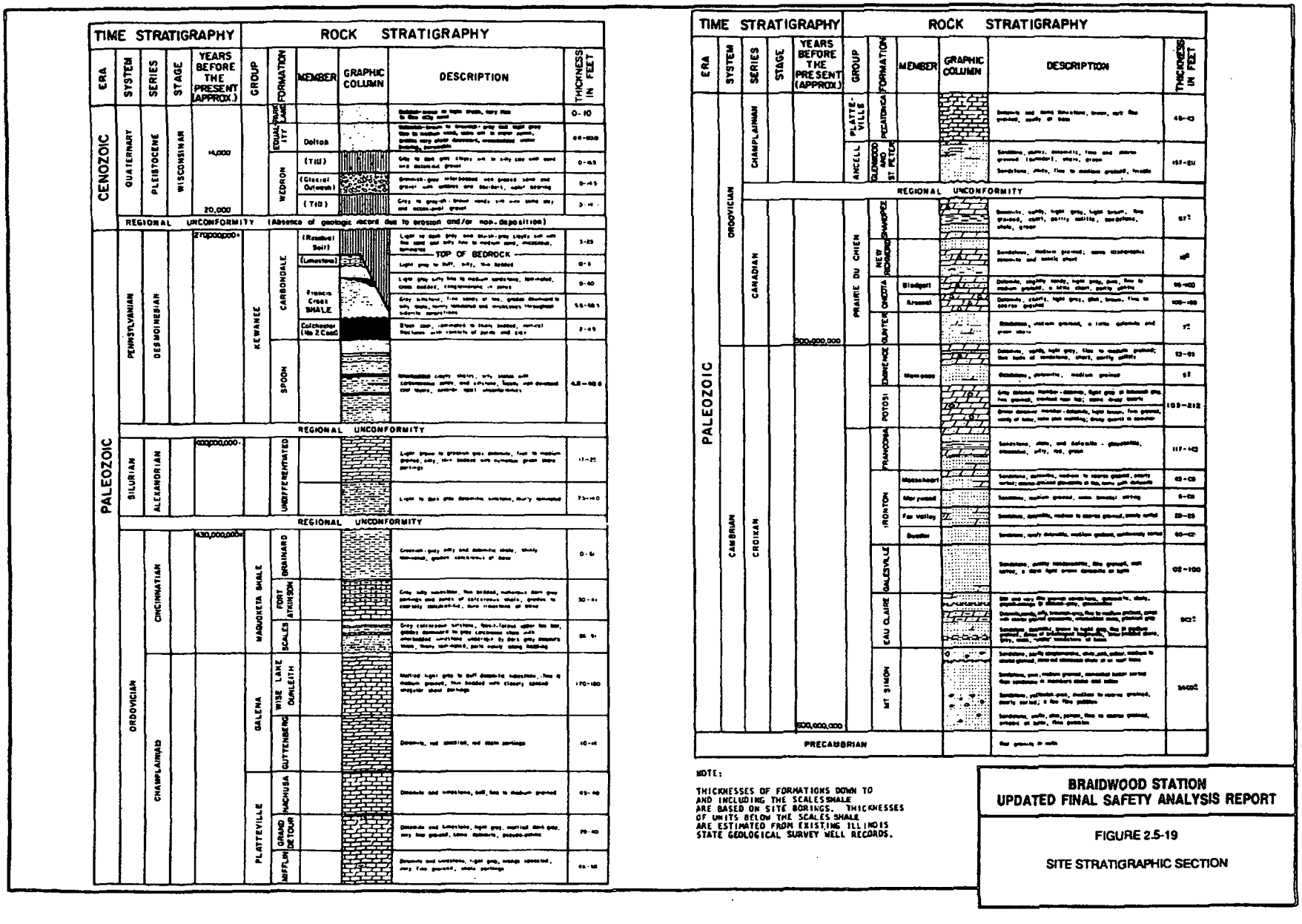
FIGURE 2.5-18

PHYSIOGRAPHIC MAP—SITE AREA



NOTE:

THICKNESSES OF FORMATIONS DOWN TO AND INCLUDING THE SCALES SHALE ARE BASED ON SITE BORINGS. THICKNESSES OF UNITS BELOW THE SCALES SHALE ARE ESTIMATED FROM EXISTING ILLINOIS STATE GEOLOGICAL SURVEY WELL RECORDS.

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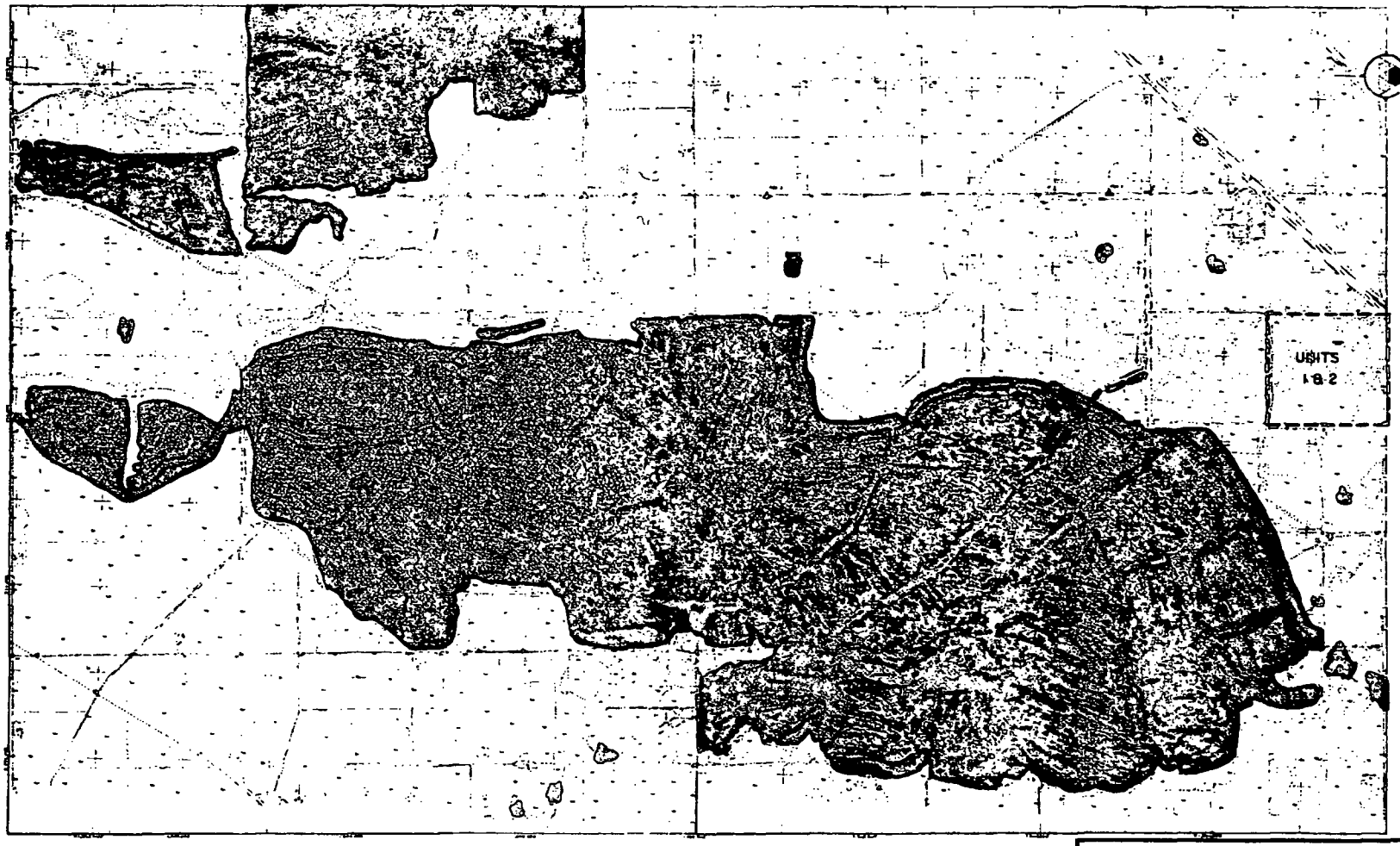
FIGURE 2.5-19

SITE STRATIGRAPHIC SECTION



LEGEND

INDICATES STRIP MINE DEBRIS

INDICATES LOCAL EXTENT OF PARKLAND SAND AND EQUALITY FORMATION

CONTOUR INTERVAL 10 FEET

REFERENCE:

FROM PHOTO GRAMETRIC METHODS BY AIRMAPS INC., DATED: 8-18-73

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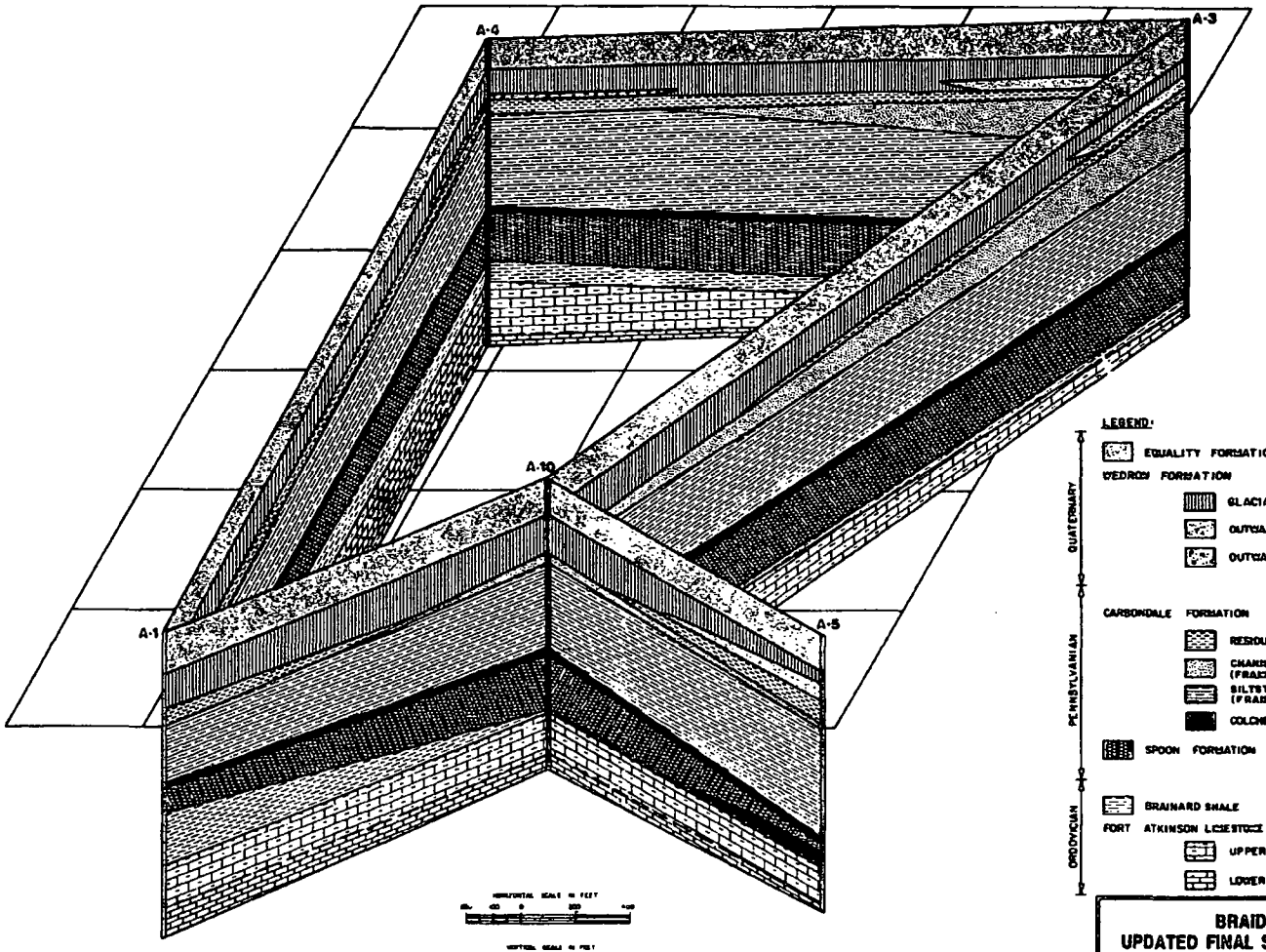
FIGURE 2.5-20

SURFICIAL GEOLOGIC MAP—SITE AREA



NOTE

1. FOR DETAILED DESCRIPTIONS OF THE VARIOUS UNITS PLEASE REFER TO THE GENERALIZED STRATIGRAPHIC COLUMN AND THE SITE AREA GEOLOGY AND TO THE TEXT UNDER SITE GEOLOGY.
2. PARKLAND SAND IS NOT DIFFERENTIATED FROM THE EQUALITY FORMATION IN THIS FIGURE.
3. LOCATION OF BORINGS ARE SHOWN ON FIGURE 2.5-16, SHEET 1.

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FIGURE 2.5-21

FENCE DIAGRAM OF SITE AREA

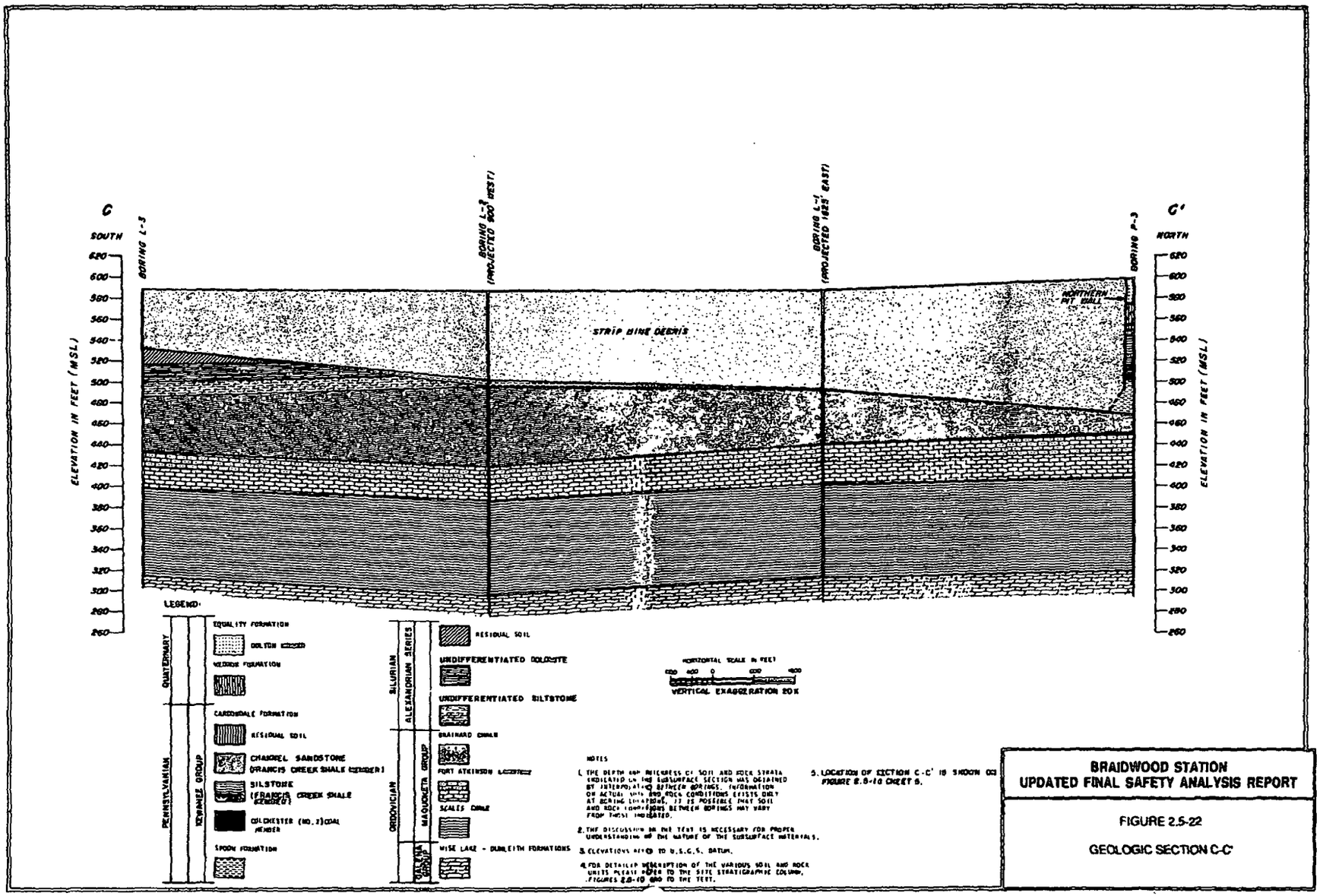

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FIGURE 2.5-22

GEOLOGIC SECTION C-C'

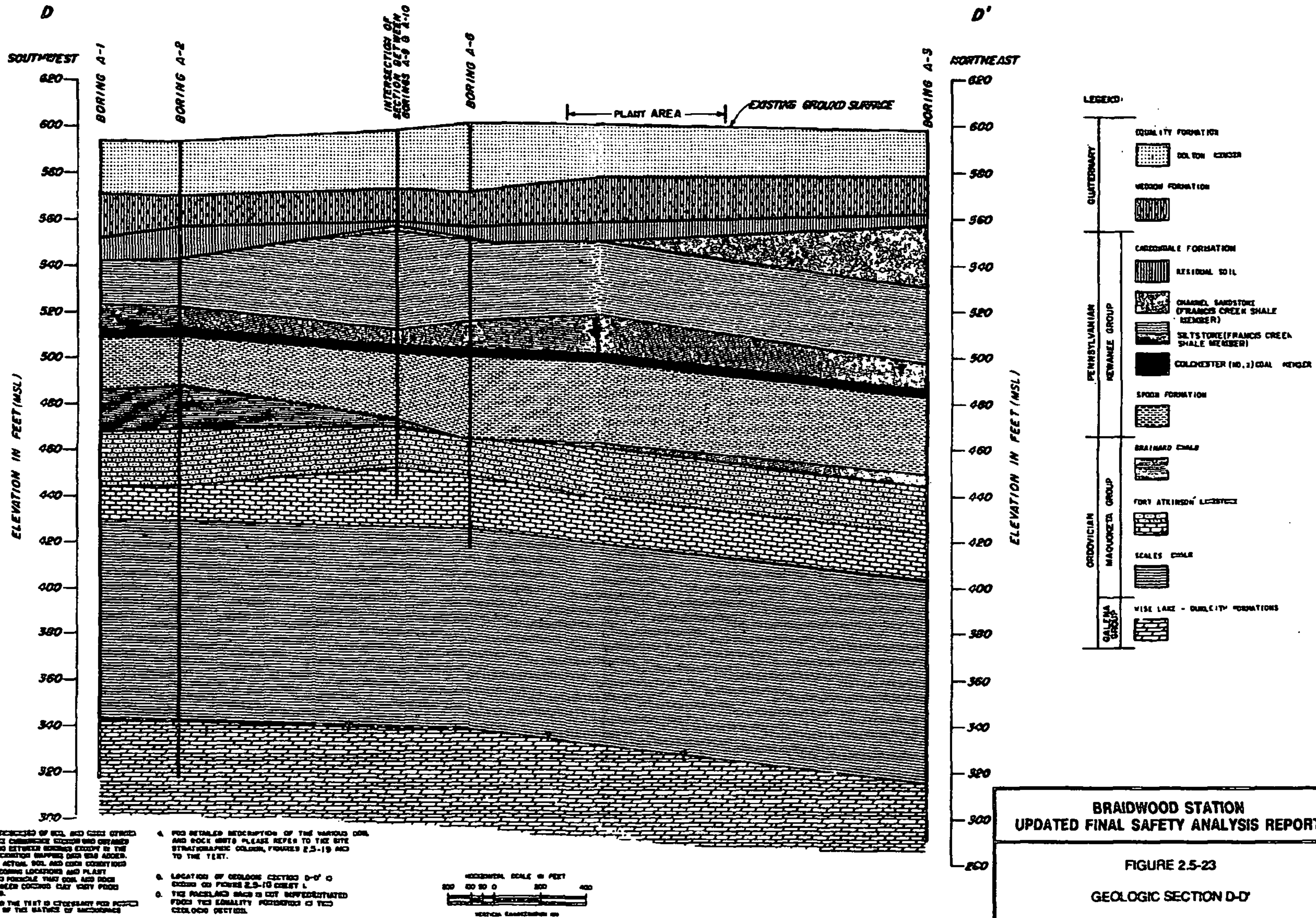

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FIGURE 2.5-23

GEOLOGIC SECTION D-D'

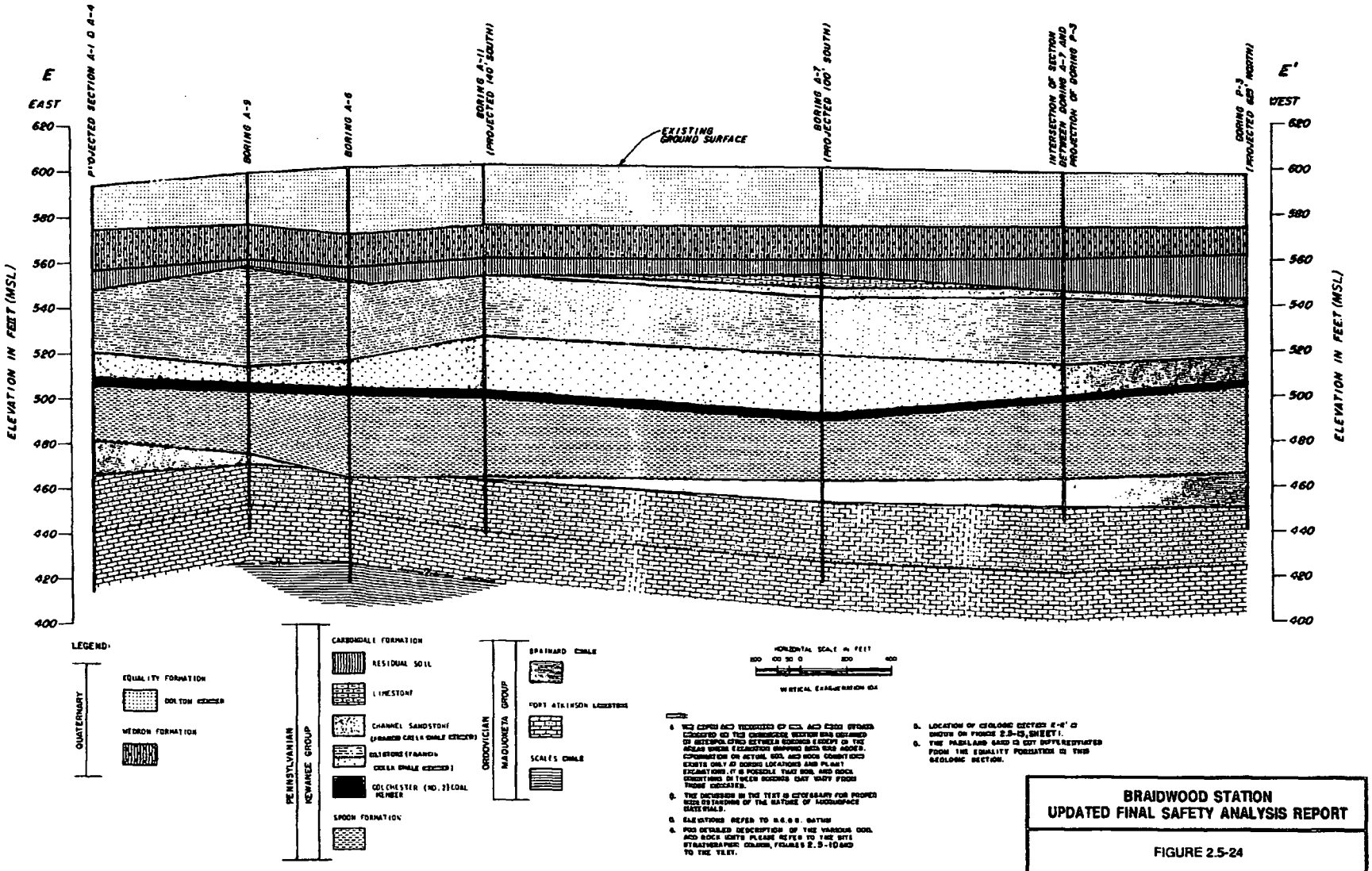

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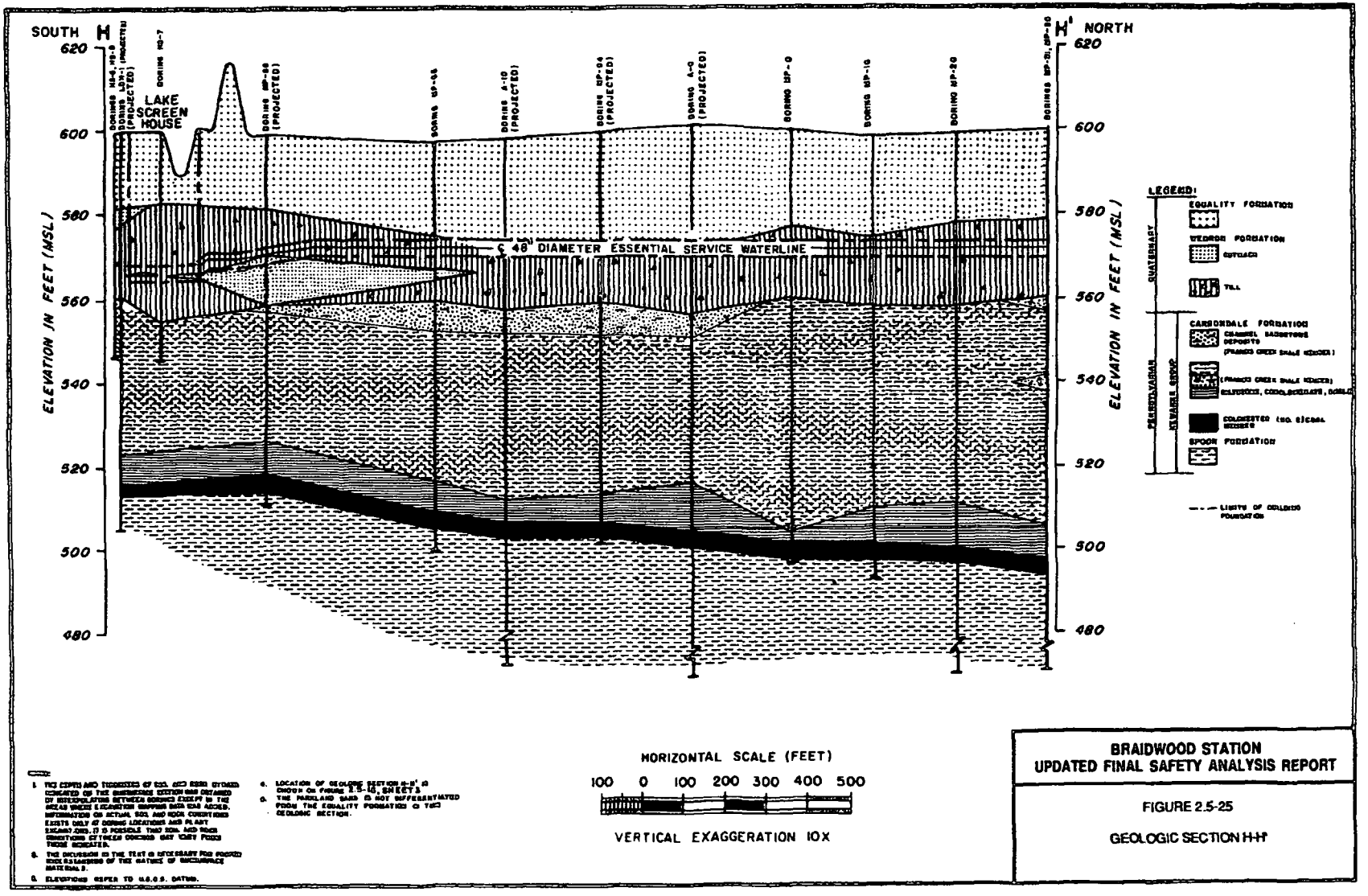
FIGURE 2.5-24

GEOLOGIC SECTION E-E'



1. THE DEPTH AND THICKNESS OF SOIL AND ROCK STRATA INDICATED ON THIS GEOLOGIC SECTION WAS OBTAINED BY INTERPOLATIONS BETWEEN BORINGS EXCEPT IN THE AREAS WHERE EXCAVATION EXPOSED BACK WALL FACES. INFORMATION ON ACTUAL SOIL AND ROCK CONDITIONS EXISTS ONLY AT BORING LOCATIONS AND PLANT EXCAVATIONS. IT IS POSSIBLE THAT SOIL AND ROCK CONDITIONS BETWEEN BORINGS MAY VARY FROM THOSE INDICATED.
2. THE EXCAVATION IN THE TEXT IS NECESSARY FOR PROPER EVALUATION OF THE NATURE OF ENCOUNTERED MATERIALS.
3. ELEVATIONS REFER TO U.S.G.S. DATUM.
4. LOCATION OF GEOLOGIC SECTION H-H' IS SHOWN ON FIGURE 2.5-16, SHEET 3.
5. THE MARKLAND SAND IS NOT DIFFERENTIATED FROM THE EQUALITY FORMATION IN THIS GEOLOGIC SECTION.

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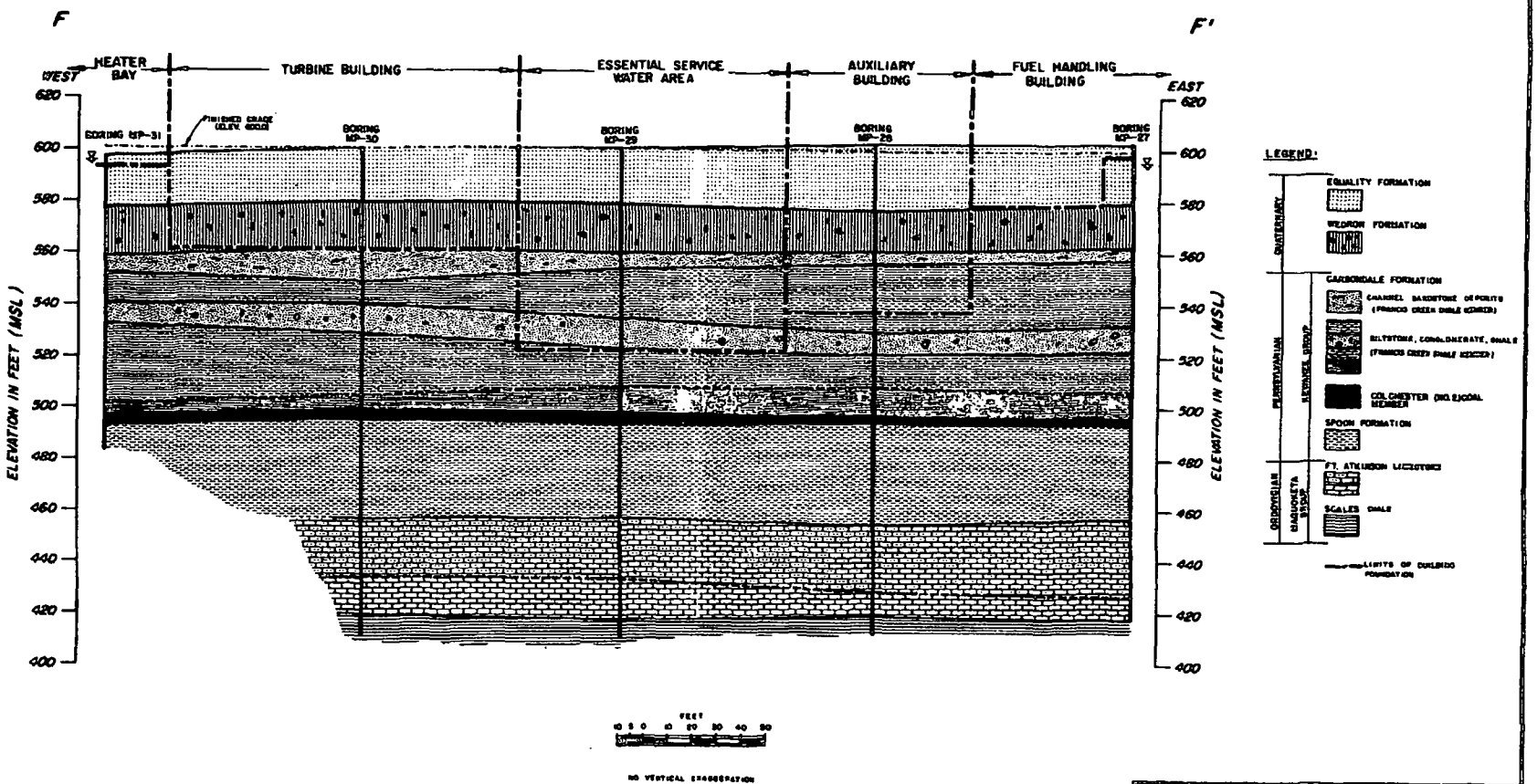
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-25

GEOLOGIC SECTION H-H'



1. [illegible]
2. [illegible]
3. ELEVATIONS REFER TO U.S.G.S. DATUM.
4. ▽ INDICATES GROUND WATER LEVEL.
5. LOCATION OF GEOLOGIC SECTION F-F' IS SHOWN ON FIGURE 2.5-10 SHEET 3.
6. THE PALOS LAND BAND IS NOT DIFFERENTIATED FROM THE EQUALITY FORMATION IN THIS GEOLOGIC SECTION.

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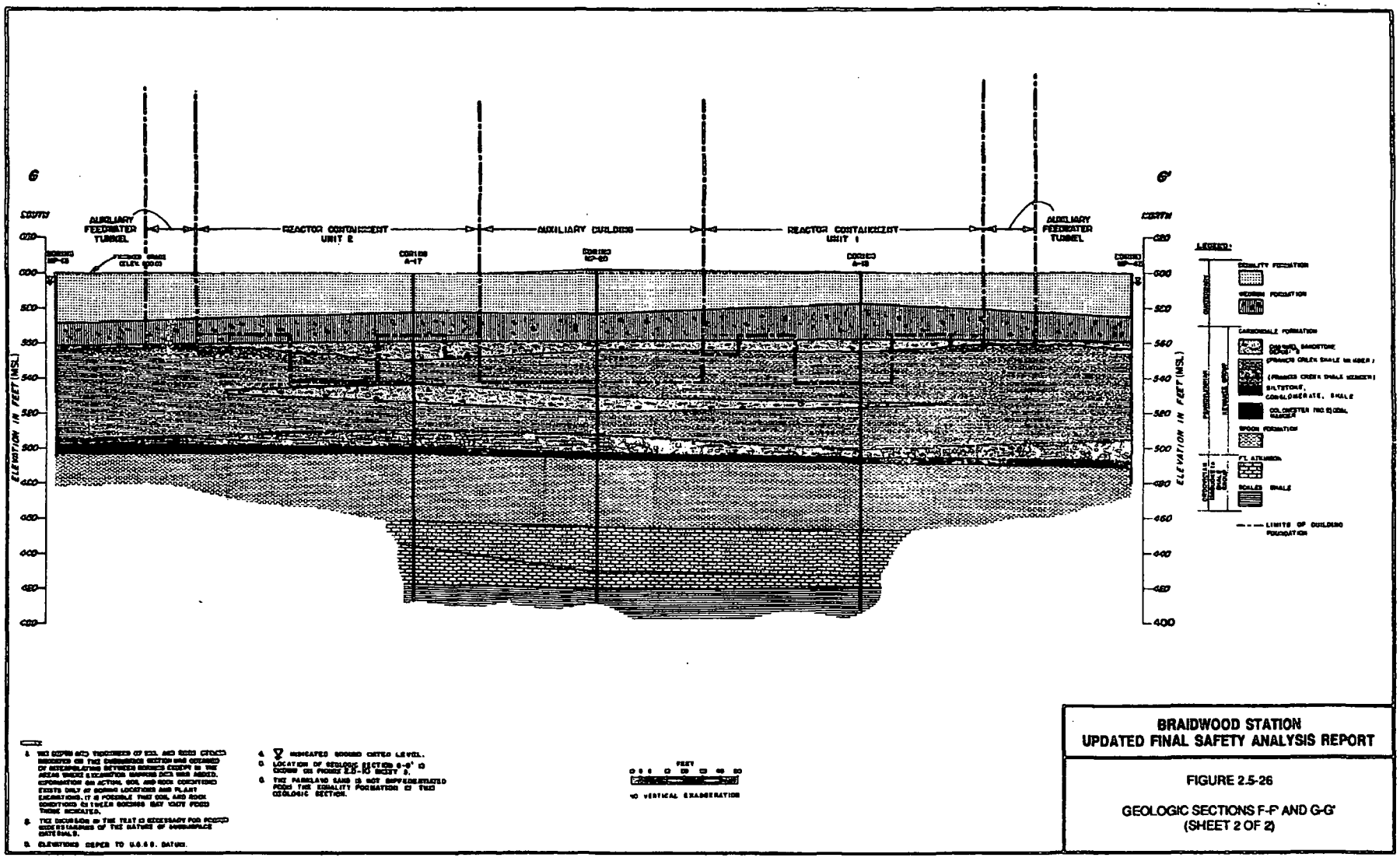
FIGURE 2.5-26

GEOLOGIC SECTIONS F-F' AND G-G'
(SHEET 1 OF 2)



1. THE DEPTH AND THICKNESS OF COAL AND ROCK STRATA INDICATED ON THIS CROSS-SECTION WERE OBTAINED BY INTERPOLATION BETWEEN BORINGS SHOWN IN THE AREAS WHERE EXCAVATION MAPPING DATA WAS ADDED. INFORMATION ON ACTUAL COAL AND ROCK CONDITIONS EXISTS ONLY AT BORING LOCATIONS AND PLANT EXCAVATIONS. IT IS POSSIBLE THAT COAL AND ROCK CONDITIONS BETWEEN BORINGS MAY VARY FROM THOSE INDICATED.
2. THE EXCAVATION OF THE TEST IS NECESSARY FOR PROPER ENGINEERING OF THE NATURE OF SUBSURFACE MATERIALS.
3. ELEVATIONS REFER TO U.S.G.S. DATUM.
4. ▽ INDICATES GROUND WATER LEVEL.
5. LOCATION OF GEOLOGIC SECTION B-B' IS SHOWN ON FIGURE 2.5-10 SHEET 2.
6. THE PARSIFAL SAND IS NOT DIFFERENTIATED FROM THE EQUALITY FORMATION IN THIS GEOLOGIC SECTION.

FEET
0 5 10 20 30 40 50
10 VERTICAL EXAGGERATION

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FIGURE 2.5-26

GEOLOGIC SECTIONS F-F' AND G-G'
(SHEET 2 OF 2)

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS — MORE THAN 50 % OF MATERIAL IS LARGER THAN NO 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS — MORE THAN 50 % OF COARSE FRACTION RETAINED ON NO 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS — MORE THAN 50% OF COARSE FRACTION PASSING NO 4 SIEVE	CLEAN SAND (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS — MORE THAN 50 % OF MATERIAL IS SMALLER THAN NO 200 SIEVE SIZE	SILTS AND CLAYS — LIQUID LIMIT LESS THAN 50			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS — LIQUID LIMIT GREATER THAN 50			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, MUCK, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

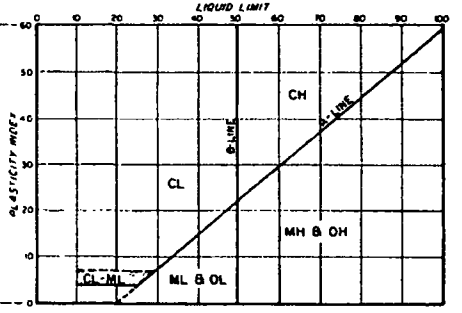
FOR LABORATORY CLASSIFICATION OF FINE-GRAINED SOILS

GRADATION CHART

MATERIAL SIZE	PARTICLE SIZE			
	LOWER LIMIT		UPPER LIMIT	
	MILLIMETERS	SIEVE SIZE	MILLIMETERS	SIEVE SIZE
SAND				
FINE	0.074	#200	0.42	#40
MEDIUM	0.42	#40	2.00	#10
COARSE	2.00	#10	4.76	#4
GRAVEL				
FINE	4.76	#4	19.1	3/4"
COARSE	19.1	3/4"	76.2	3"
COBBLES	76.2	3"	304.8	12"
BOULDERS	304.8	12"	914.4	36"

U.S. STANDARD - CLEAR SQUARE OPENINGS

PLASTICITY CHART



NOTES.

1. DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE CLASSIFICATIONS.
2. WHEN SHOWN ON THE BORING LOGS, THE FOLLOWING TERMS ARE USED TO DESCRIBE THE CONSISTENCY OF COHESIVE SOILS AND THE RELATIVE COMPACTNESS OF COHESIONLESS SOILS

COHESIVE SOILS	(APPROXIMATE SHEARING STRENGTH IN KSF)
VERY SOFT	LESS THAN .25
SOFT	0.25 TO 0.5
MEDIUM STIFF	0.5 TO 1.0
STIFF	1.0 TO 2.0
VERY STIFF	2.0 TO 4.0
HARD	GREATER THAN 4.0

COHESIONLESS SOILS	
VERY LOOSE	THESE ARE USUALLY
LOOSE	BASED ON AN EXAMINA-
MEDIUM DENSE	TION OF SOIL SAMPLES,
DENSE	PENETRATION RESIST-
VERY DENSE	ANCE, AND SOIL DENSITY
	DATA.

SAMPLES

- ○ INDICATES UNDISTURBED SAMPLE
- ⊡ INDICATES DISTURBED SAMPLE
- ⊟ INDICATES SAMPLING ATTEMPT WITH NO RECOVERY
- ⌊ INDICATES LENGTH OF CORING RUN

NOTE
DEFINITIONS OF ANY ADDITIONAL DATA REGARDING SAMPLES ARE ENTERED ON THE FIRST LOG ON WHICH THE DATA APPEAR

UNIFIED SOIL CLASSIFICATION SYSTEM

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-27

UNIFIED SOIL CLASSIFICATION SYSTEM

GENERAL NOTES FOR LOG OF BORINGS

KEY TO TEST DATA:

SHEAR STRENGTH DEFINED AS ONE-HALF THE PEAK AXIAL COMPRESSIVE STRESS IN PSF DETERMINED BY UNCONFINED COMPRESSION TESTS AND UNCONSOLIDATED-UNDRAINED TRIAXIAL TESTS.

90% PERCENT RECOVERED INDICATES TOTAL AMOUNT OF CORE RECOVERED FOR EACH RUN, EXPRESSED AS A PERCENTAGE OF THE TOTAL LENGTH OF THE CORE RUN.

RQD ROCK QUALITY DESIGNATION
A MODIFIED CORE RECOVERY PERCENTAGE IN WHICH ALL THE PIECES OF SOUND CORE 4 INCHES OR LONGER ARE COUNTED AS RECOVERY. THE MODIFIED SUM OF CORE RECOVERED IS THE EXPRESSED AS A PERCENTAGE OF THE TOTAL LENGTH OF THE CORE RUN.

WATER LOSS (LUGEONS) TERMINOLOGY:		SYMBOLS FOR OTHER TESTS:	
LESS THAN .9 LUGEONS		TX/DY	DYNAMIC TRIAXIAL COMPRESSION TEST
.9 TO 3 LUGEONS		RES	RESONANT COLUMN TEST
3 TO 6 LUGEONS		DS	DIRECT SHEAR TEST
6 TO 10 LUGEONS		C	CONSOLIDATION TEST
10 TO 25 LUGEONS		SA	SIEVE ANALYSIS
GREATER THAN 25 LUGEONS		UC/R	UNCONFINED COMPRESSION TEST ON ROCK

KEY TO SAMPLES:

13 INDICATES THE NUMBER OF BLOWS REQUIRED TO DRIVE A STANDARD PENETRATION TEST SAMPLER.

13@ INDICATES DEPTH OF STANDARD PENETRATION TEST (2" O.D. SPLIT SPOON SAMPLER)

13 INDICATES THE NUMBER OF BLOWS REQUIRED TO DRIVE A DAMES & MOORE TYPE U SAMPLER.

13@ INDICATES DEPTH OF SAMPLE OBTAINED WITH DAMES & MOORE TYPE U SAMPLER (3.25" O.D. 2.42" I.D. SPLIT SPOON SAMPLER)

P INDICATES SAMPLER PUSHED TO OBTAIN SAMPLE

D INDICATES DEPTH OF SAMPLING ATTEMPT WITH NO RECOVERY

@ INDICATES DISTURBED SAMPLE

NOTES:

ELEVATIONS REFER TO U.S.G.S. DATUM (MEAN SEA LEVEL)

THE PARKLAND SAND IS NOT DIFFERENTIATED FROM THE EQUALITY FORMATION IN THE BORING LOGS.

5% VUGS INDICATES THE ESTIMATED RATIO OF VUGGED CORE SURFACE AREA TO TOTAL CORE SURFACE AREA. BOTH OPEN AND FILLED VUGS ARE INCLUDED IN THE VUGGED CATEGORY.

BEDDING TERMINOLOGY:

THINLY LAMINATED	-	LESS THAN 1/4 INCH
LAMINATED	-	1/4 TO 2 INCHES
THIN BEDDED	-	2 TO 6 INCHES
MEDIUM BEDDED	-	6 TO 12 INCHES
MASSIVE BEDDED	-	GREATER THAN 12 INCHES

THE DISCUSSION IN THE TEXT IS NECESSARY FOR PROPER UNDERSTANDING OF THE NATURE OF THE SUBSURFACE MATERIALS.

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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-28

GENERAL NOTES FOR LOG OF BORINGS

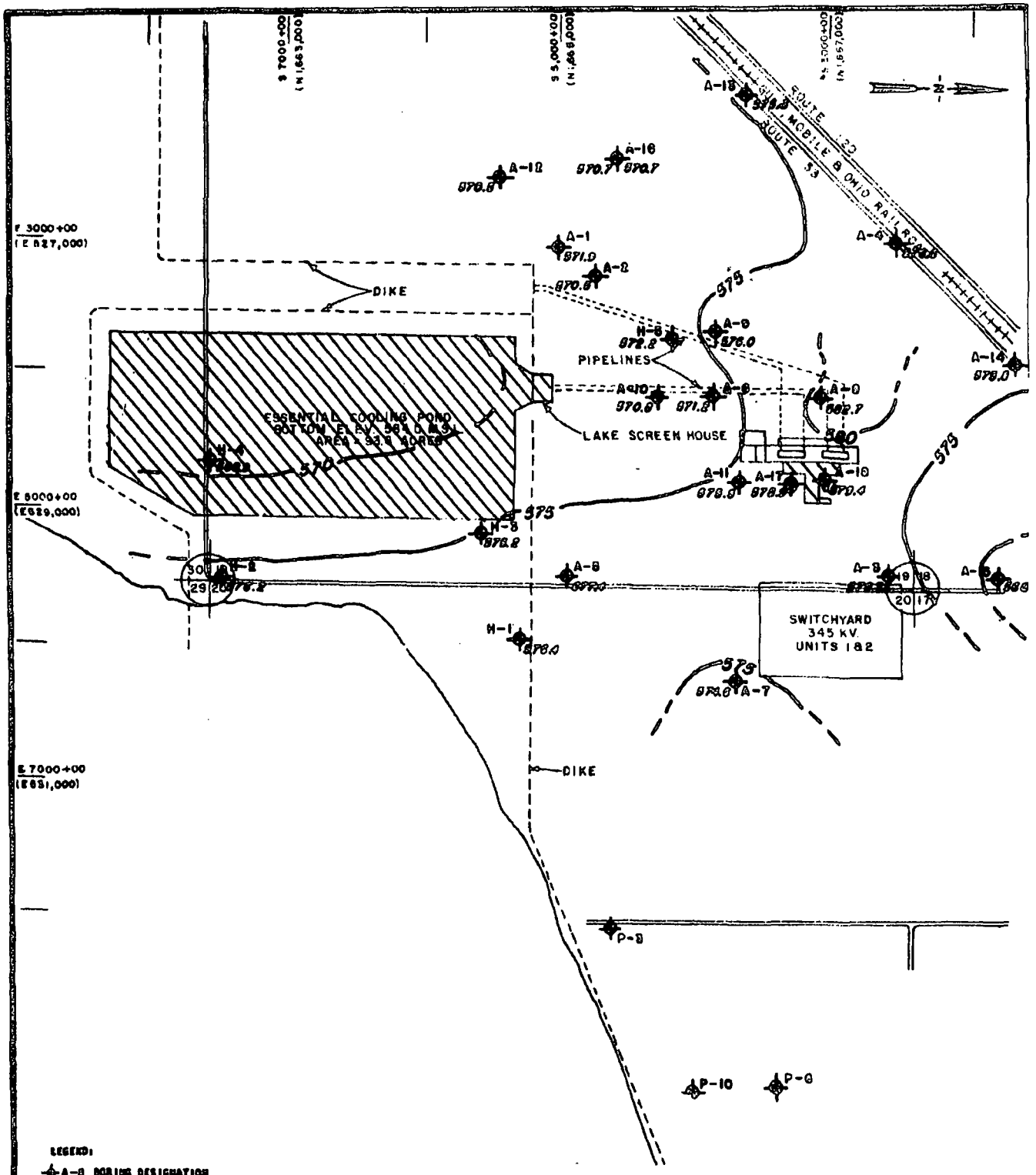

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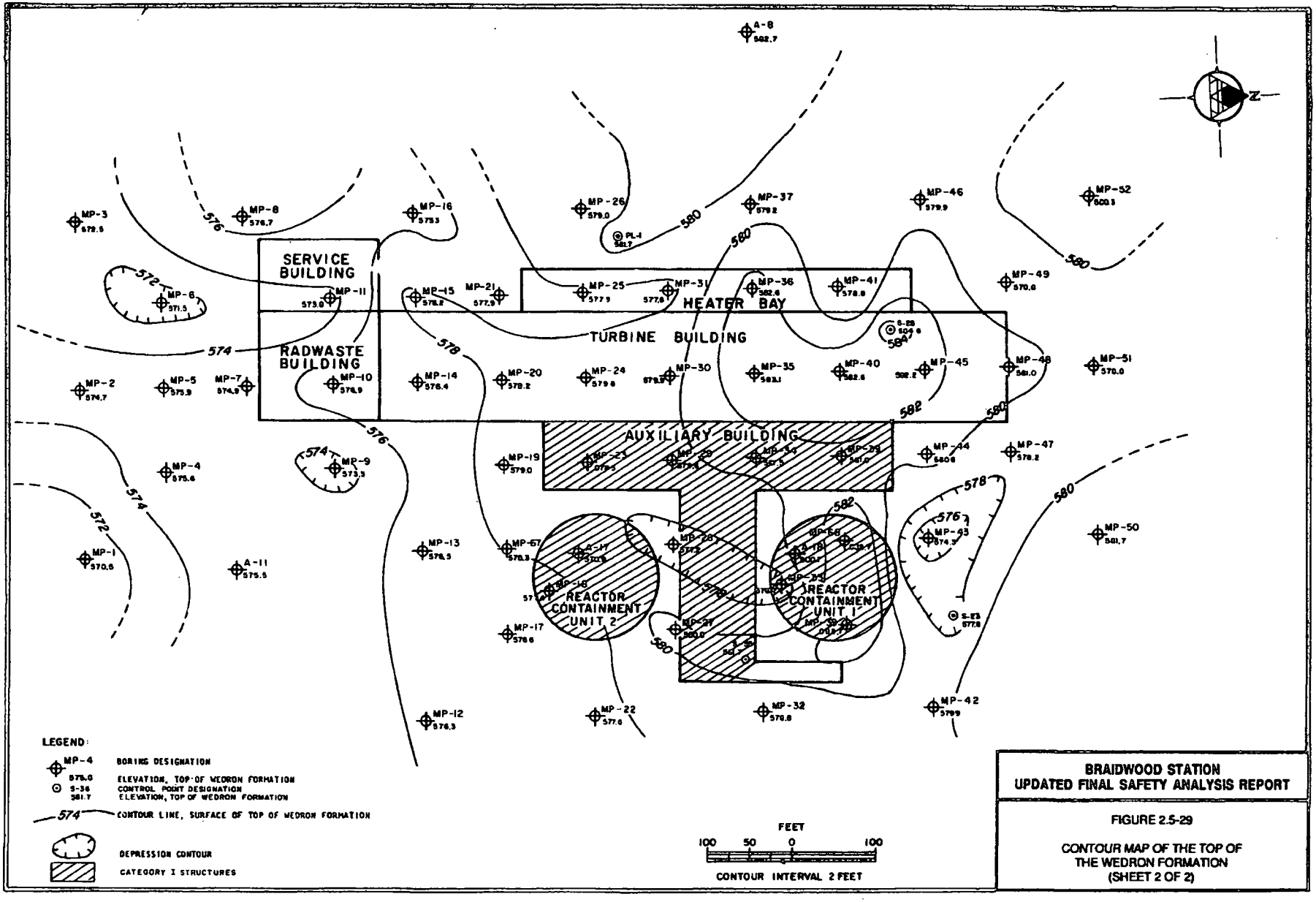
FIGURE 2.5-29

CONTOUR MAP OF THE TOP OF THE WEDRON FORMATION
(SHEET 1 OF 2)



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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-29

CONTOUR MAP OF THE TOP OF THE WEDRON FORMATION (SHEET 2 OF 2)

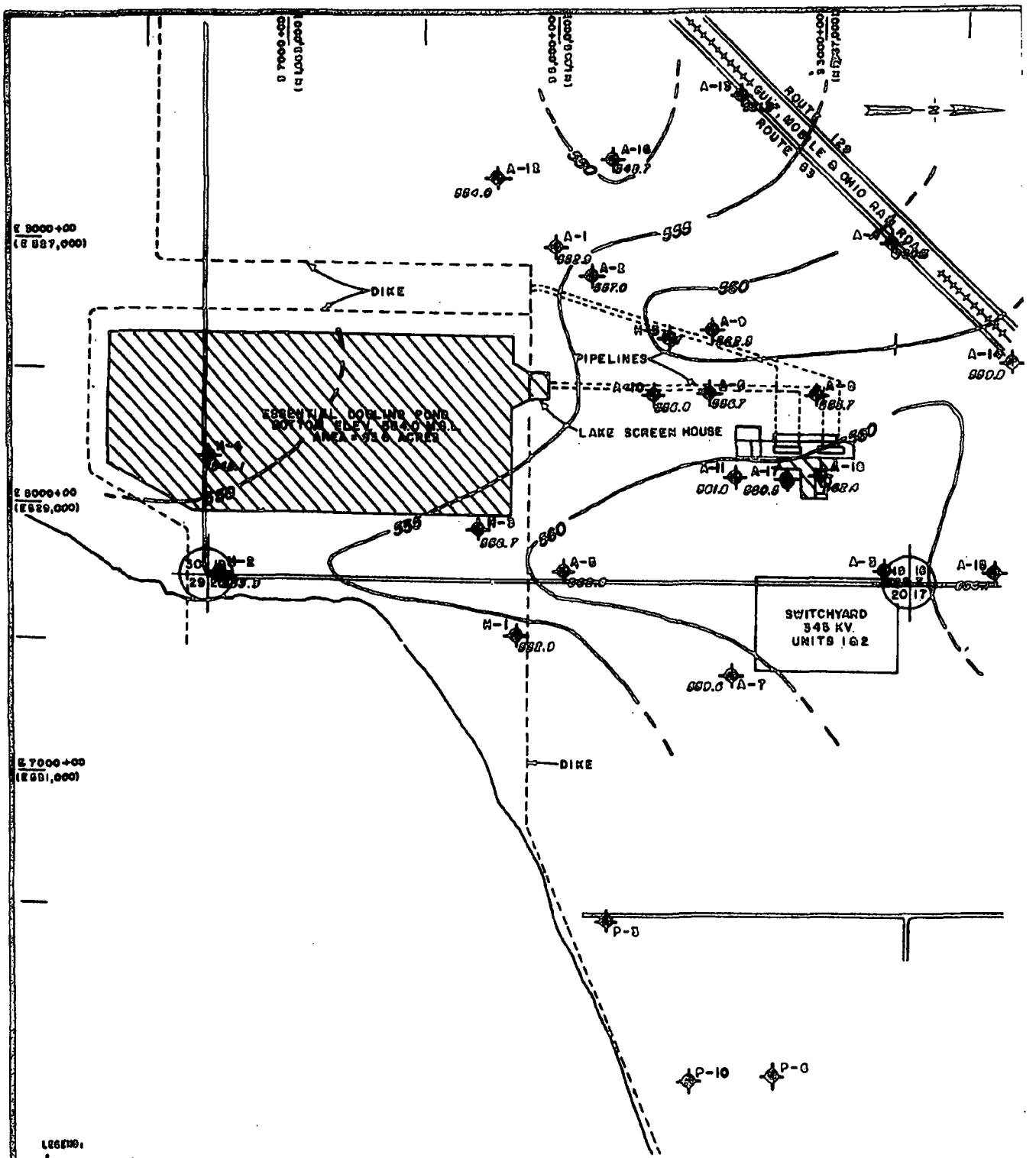

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FIGURE 2.5-30

CONTOUR MAP OF THE TOP
OF THE PENNSYLVANIAN DEPOSITS

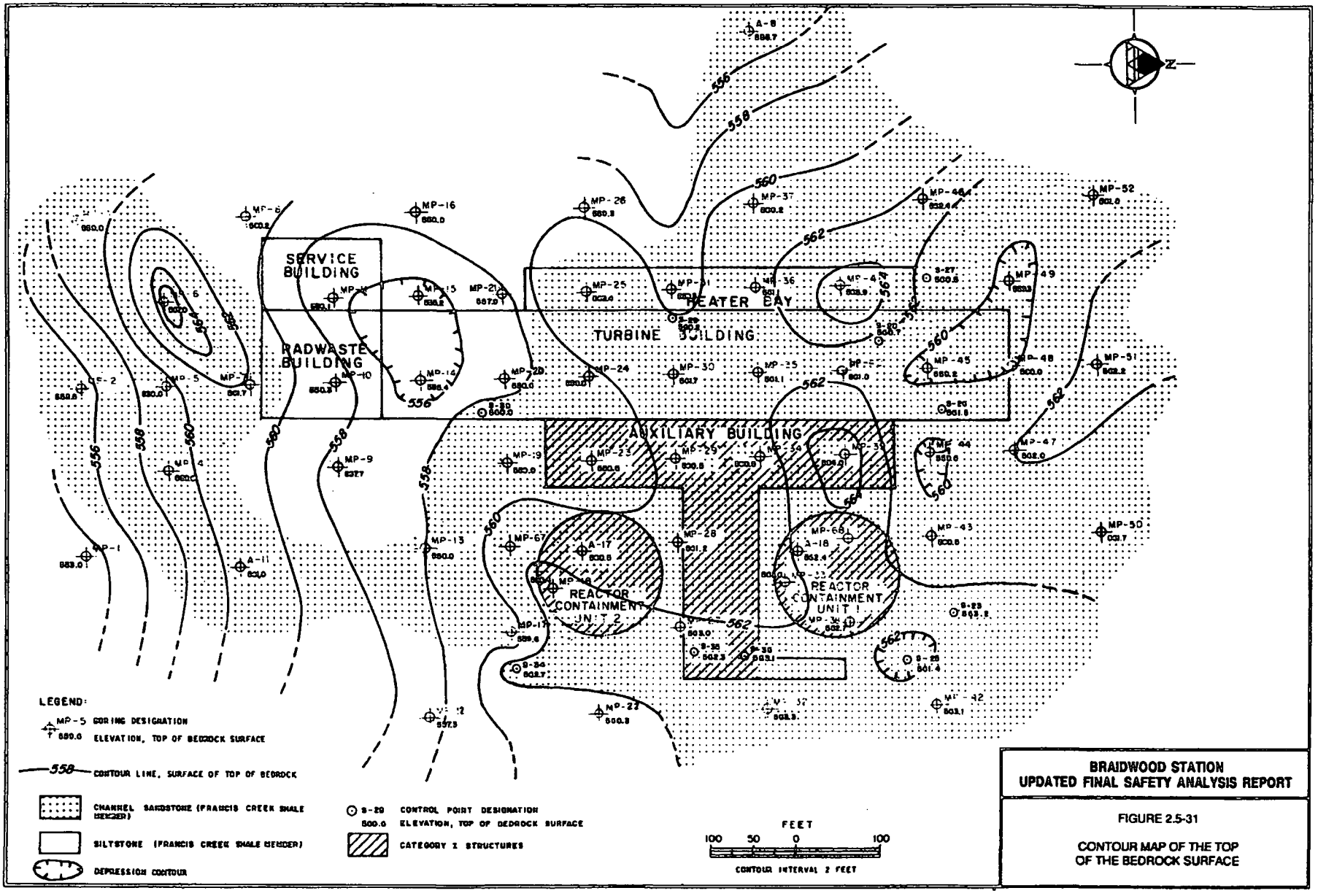

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FIGURE 2.5-31

CONTOUR MAP OF THE TOP OF THE BEDROCK SURFACE

DEPTH TO TOP OF UNIT	SYSTEM	GROUP	FORMATION	LITHOLOGY	ELEVATION AT TOP OF UNIT
0	QUATERNARY			LACUSTRINE SANDS AND GLACIAL TILLS	977
45	PENNSYLVANIAN		CARBONDALE-SPOON	SILTSTONE, SHALE, COAL, AND SANDSTONE	932
145	ORDOVICIAN	MAQUOKETA SHALE	FORT ATKINSON	LIMESTONE AND DOLOMITE, WHITE, LIGHT GRAY, BROWN, PINK, FINE- TO COARSE- GRAINED, INTERBEDDED SHALE	832
185			SCALES	SHALE, DOLOMITIC, SILTY, BROWN, GRAY; "DEPAUPERATE" FOSSIL ZONES NEAR BASE AND TOP	792
272		GALENA	WISE LAKE-DUNLEITH	DOLOMITE AND SOME LIMESTONE, BUFF TO LIGHT GRAY, ORANGE SPECKLED AT TOP, BLACK SPECKLED AT BASE, FINE- TO MEDIUM- GRAINED	705
			GUTTENBERG	DOLOMITE, RED SPECKLED, RED SHALE PARTINGS	
460		PLATTEVILLE	MACHUSA	DOLOMITE AND LIMESTONE, BUFF, FINE- TO MEDIUM- GRAINED	117
515			GRAND DETOUR	LIMESTONE AND DOLOMITE, LIGHT GRAY, MOTTLED DARK GRAY, VERY FINE- GRAINED; SOME DOLOMITE, PSEUDO-OOLITIC	62
565			MIFFLIN	LIMESTONE AND DOLOMITE, LIGHT GRAY, ORANGE SPECKLED, VERY FINE- GRAINED, SHALE PARTINGS	12
595			PECATONICA	DOLOMITE AND LIMESTONE, BROWN, VERY FINE- TO FINE- GRAINED, SANDY AT BASE	-18
640		ANCELL	GLENWOOD-ST. PETER	SANDY DOLOMITE AND DOLOMITIC SANDSTONE, FINE- TO MEDIUM- GRAINED, GREEN SHALE PARTINGS AT TOP SANDSTONE, WHITE, FINE- TO MEDIUM- GRAINED, FRIABLE	-63
860		PRAIRIE DU CHIEN	SHAKOPEE	DOLOMITE, SANDY, LIGHT GRAY, LIGHT BROWN, FINE- GRAINED; CHERT, PARTLY OOLITIC	-283
960			NEW RICHMOND	SANDSTONE, MEDIUM-GRAINED; SOME LITHOGRAPHIC DOLOMITE & OOLITIC CHERT	-383
995			ONEOTA-GUNTER	DOLOMITE, SANDY AT TOP, CHERTY AT BASE, LIGHT GRAY, PINK, FINE- TO COARSE- GRAINED SANDSTONE, MEDIUM- GRAINED, A LITTLE DOLOMITE AND GREEN SHALE	-418
1190	CAMBRIAN		EMINENCE	DOLOMITE, SANDY, LIGHT GRAY, FINE- TO MEDIUM- GRAINED, THIN BEDS OF SANDSTONE; CHERT, PARTLY OOLITIC; DOLOMITIC SANDSTONE AT BASE	-613
1280			POTOSI	DOLOMITE, LIGHT GRAY TO LIGHT BROWN, FINE- GRAINED, SOME DRUSY QUARTZ; SANDY AT BASE	-703
1405			FRANCONIA	SANDSTONE, SHALE, AND DOLOMITE, GLAUCONITIC, MICACEOUS, SILTY, RED, GREEN	-828
1548			IRONTON	SANDSTONE, DOLOMITIC, MEDIUM- TO COARSE- GRAINED	-971

NOTE:

STRATIGRAPHIC INTERPRETATION UPDATED BY THE ILLINOIS STATE GEOLOGICAL SURVEY ON THE BASIS OF ELECTRIC LOG, SAMPLE STUDY, AND DRILLER'S LOG (BUSCHBACH, ORAL COMMUNICATION, JUNE 1, 1973).

REFERENCES:

COMPILED FROM A LOG OF CITY OF BRAIDWOOD, ILLINOIS, DEEP WELL NO. 1, DRILLED IN 1937, SECTION 8-32N-9E, WILL COUNTY.

SAMPLE STUDY BY J. POTSCH (1937).

DESCRIPTIONS OF LITHOLOGIES BASED ON:

COMPOSITE STRATIGRAPHIC LOG FOR NORTHEASTERN ILLINOIS, BUSCHBACH, T.C. AND WILLMAN, H.S. (1968)

CAMBRIAN AND ORDOVICIAN STRATA OF NORTHEASTERN ILLINOIS, BUSCHBACH, T.C. (1964).

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FIGURE 2.5-32

GEOLOGIC LOG OF CITY OF BRAIDWOOD
DEEP WELL NUMBER 1

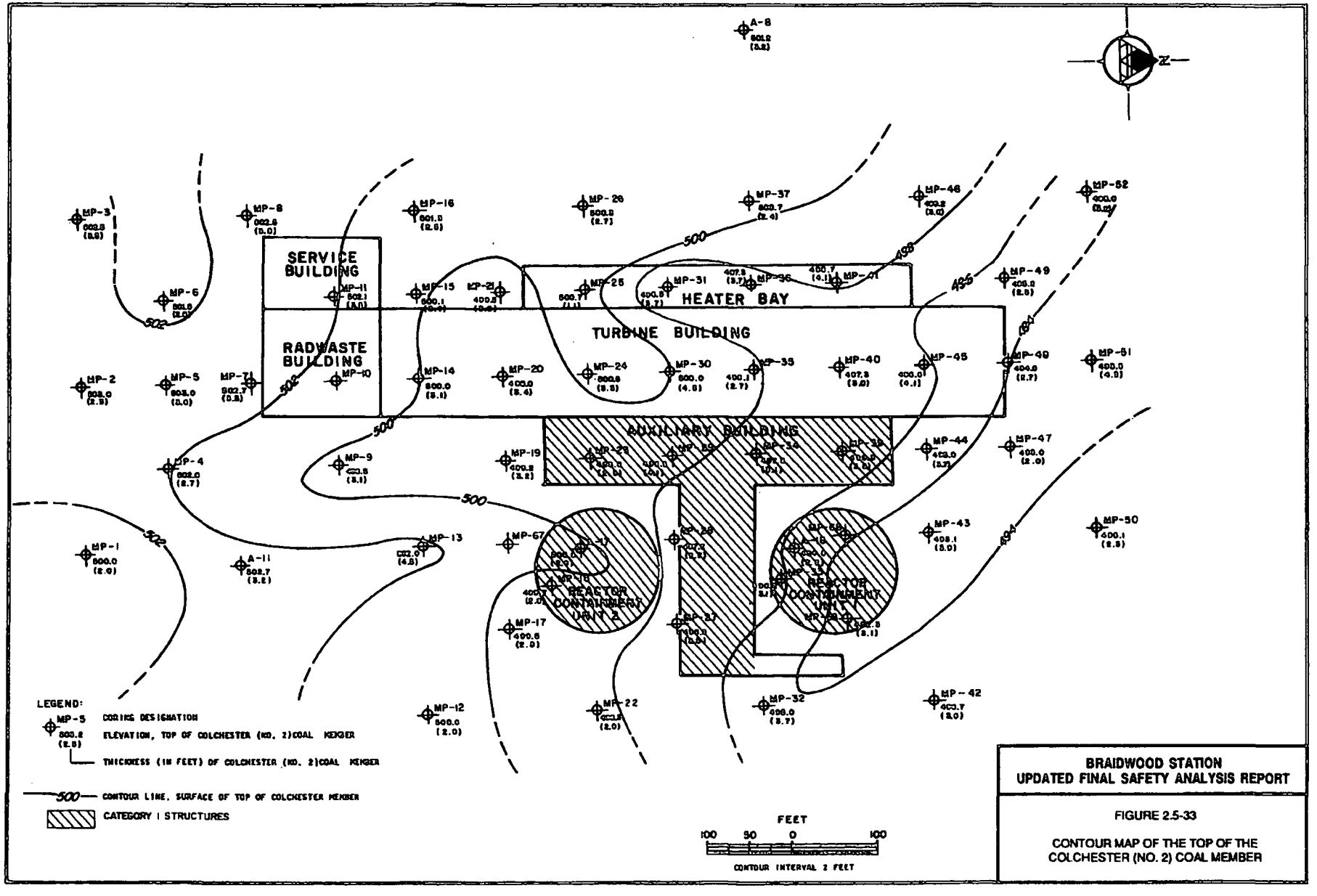

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FIGURE 2.5-33

CONTOUR MAP OF THE TOP OF THE COLCHESTER (NO. 2) COAL MEMBER

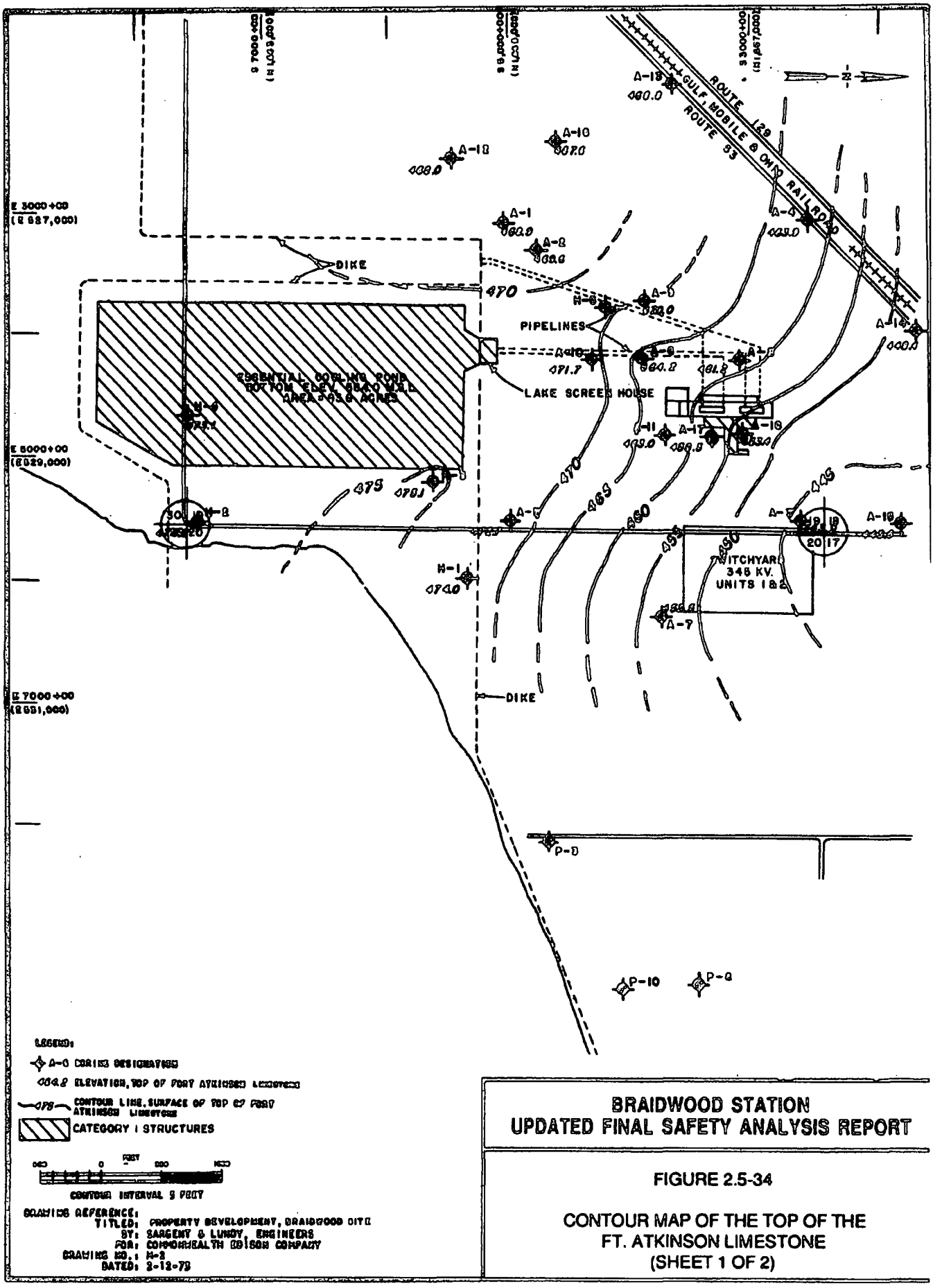

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FIGURE 2.5-34

CONTOUR MAP OF THE TOP OF THE
FT. ATKINSON LIMESTONE
(SHEET 1 OF 2)

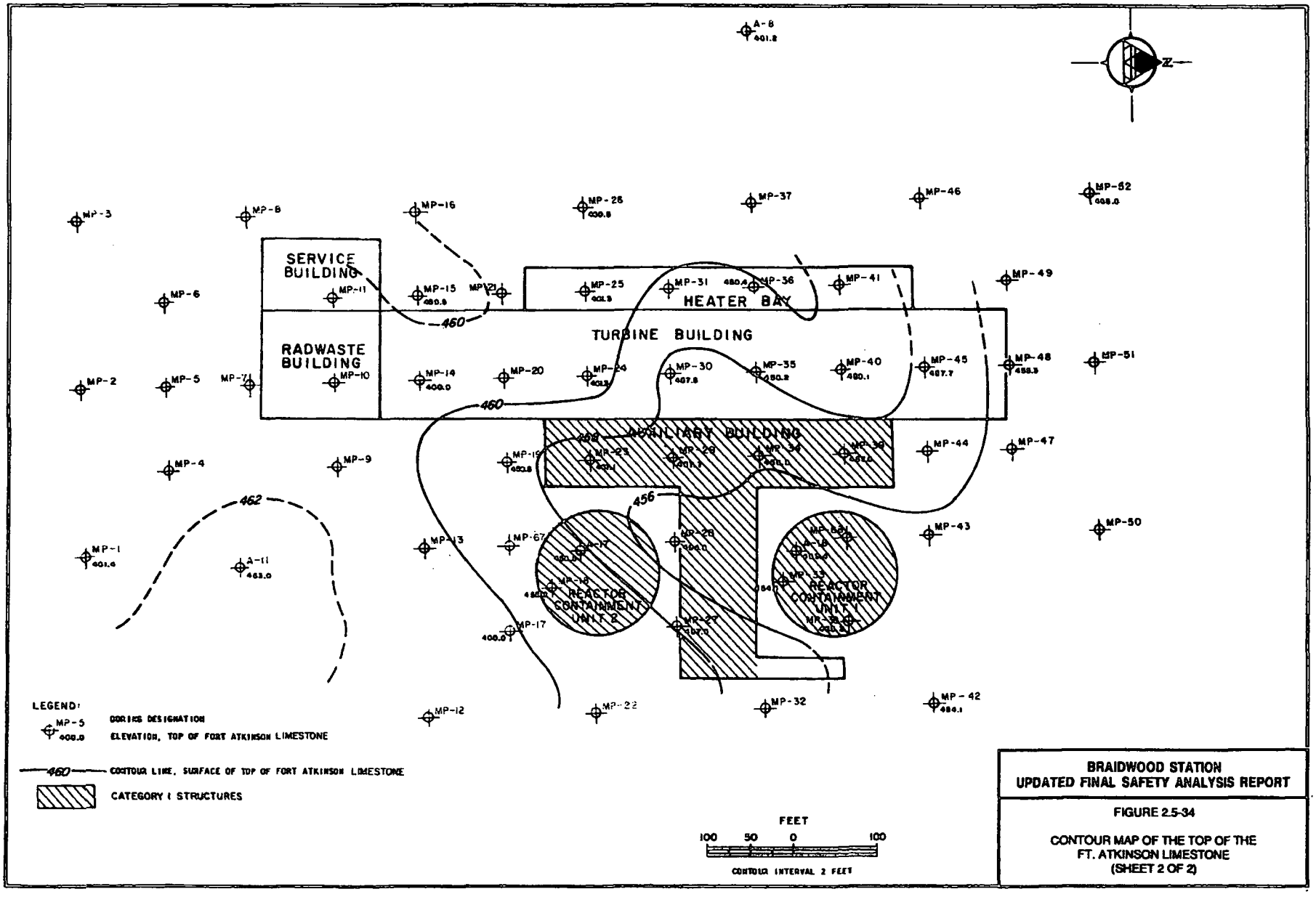

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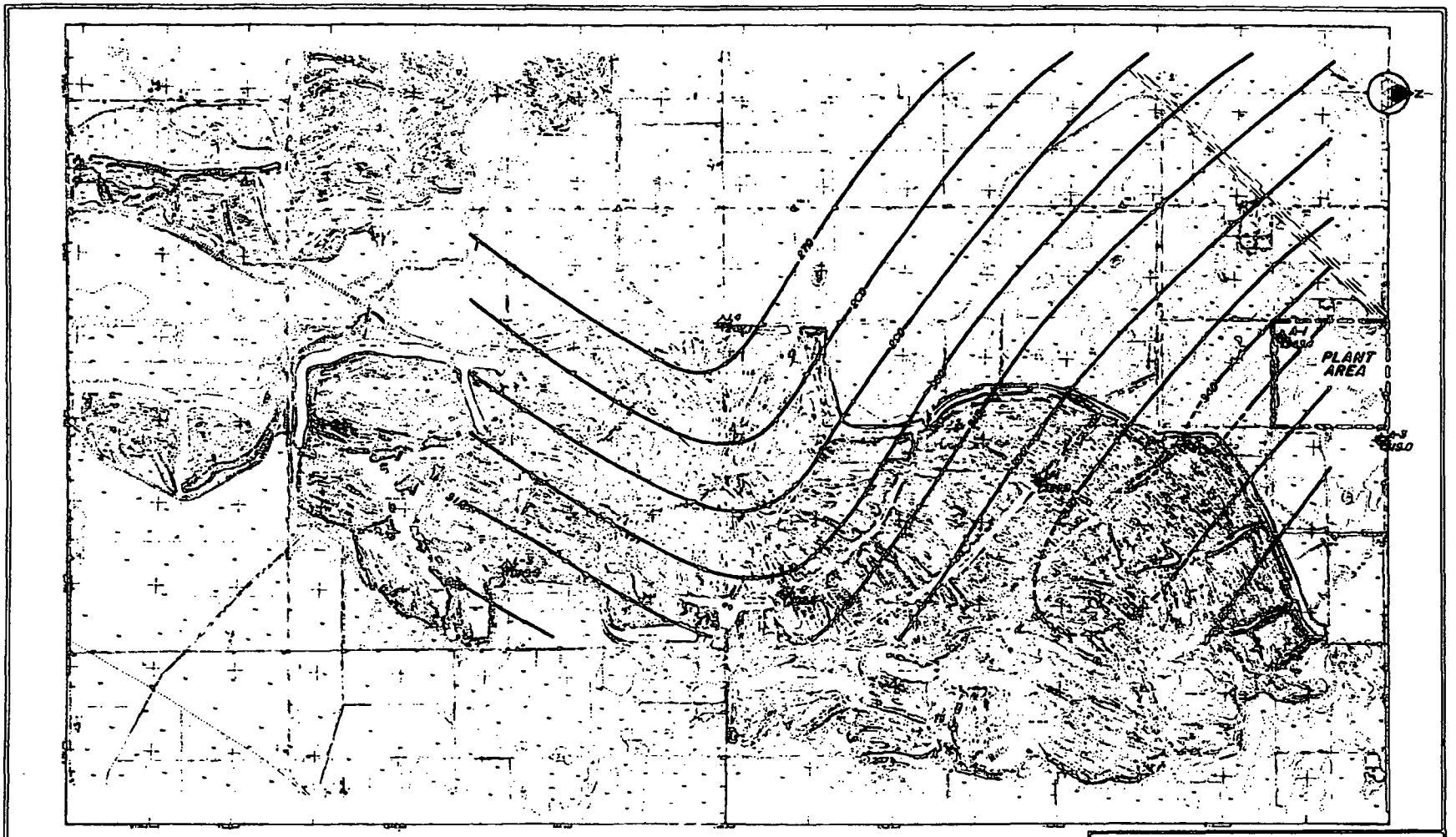
FIGURE 2.5-34

CONTOUR MAP OF THE TOP OF THE FT. ATKINSON LIMESTONE (SHEET 2 OF 2)



LEGEND:

- BORING DESIGNATION
- ELEVATION, TOP OF GALENA GROUP
- 300 — CONTOUR LINE, SURFACE OF TOP OF GALENA GROUP

REFERENCE:

FROM PHOTO GRAMMETRIC METHODS BY AIRMAPS INC., DATED: 8-18-72

CONTOUR INTERVAL 10 FEET

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FIGURE 2.5-35

STRUCTURE CONTOUR MAP OF THE TOP OF THE GALENA GROUP

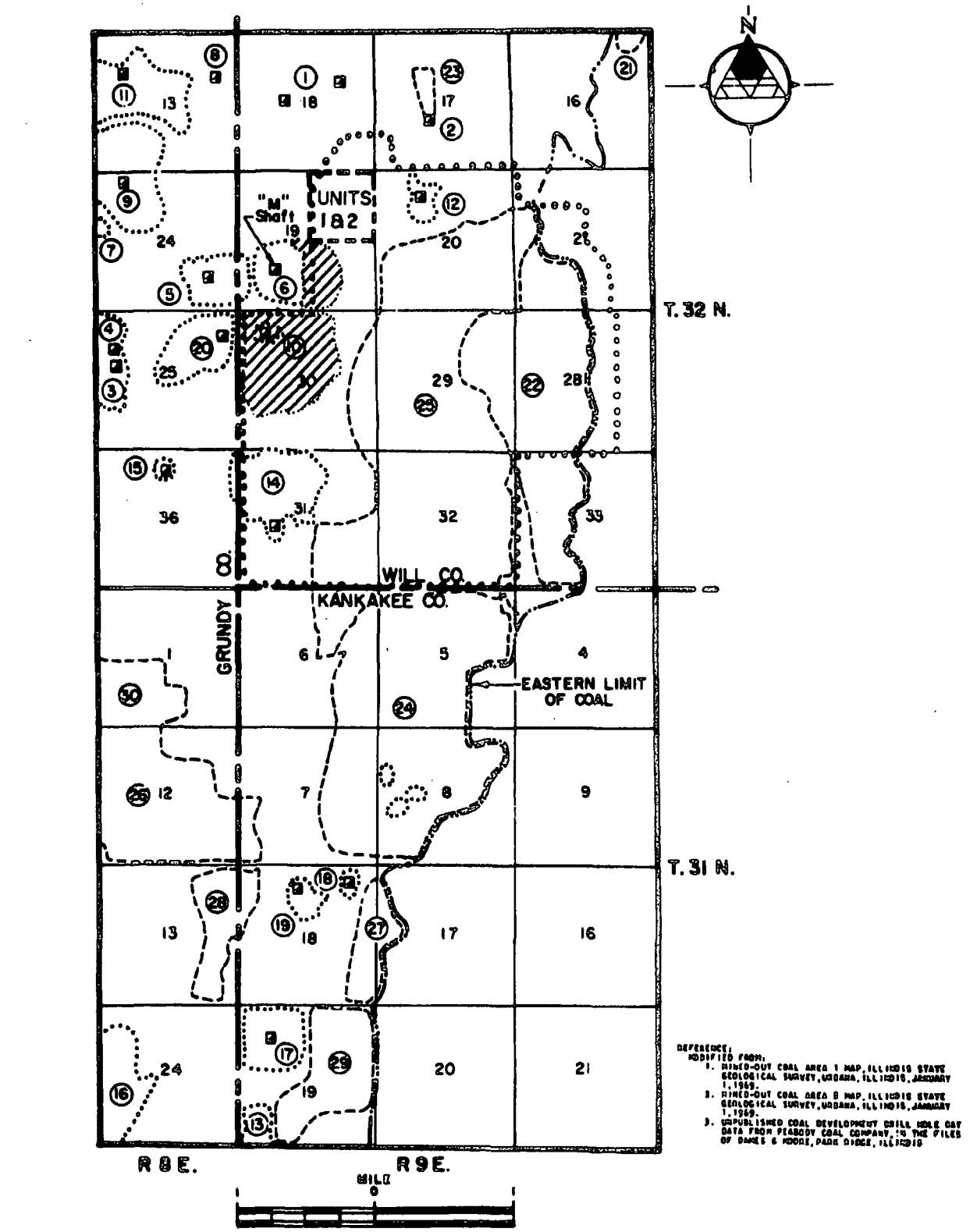

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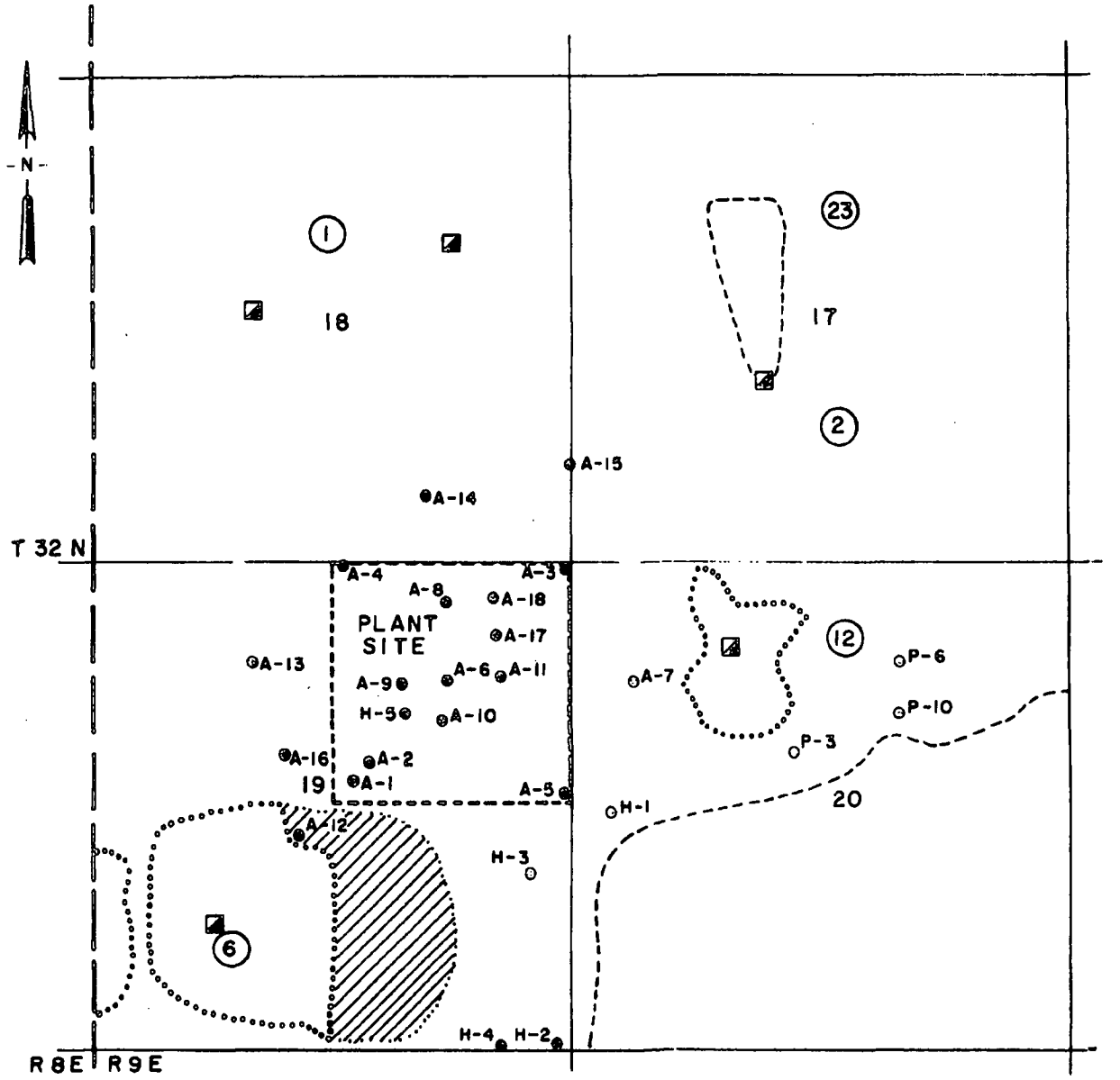
FIGURE 2.5-36

MAP SHOWING KNOWN COAL MINES IN VICINITY OF SITE



LEGEND

- MINE SHAFT LOCATION
- UNDERGROUND MINING LIMIT BASED ON ILLINOIS GEOLOGICAL SURVEY MINED-OUT COAL MAPS AND PEABODY COAL COMPANY COAL DEVELOPMENT DRILL HOLES
- STRIP MINE BOUNDARY
- (6) MINE MULCER
- PEABODY COAL COMPANY DEVELOPMENT DRILL HOLE DATA INDICATE THAT UNDERGROUND COAL MINING HAS NOT OCCURED WITHIN THIS PORTION OF LIMITS INDICATED BY ILLINOIS STATE GEOLOGICAL SURVEY MINED-OUT COAL AREA 8 MAP.

REFERENCE

MODIFIED FROM:

1. MINED-OUT COAL AREA 1 MAP, ILLINOIS STATE GEOLOGICAL SURVEY URBANA, ILLINOIS, JANUARY 1, 1969.
2. MINED-OUT COAL AREA 6 MAP, ILLINOIS STATE GEOLOGICAL SURVEY URBANA, ILLINOIS, JANUARY 1, 1969.
3. UNPUBLISHED COAL DEVELOPMENT DRILL HOLE DATA FROM PEABODY COAL COMPANY, IN THE FILES OF DAMES AND MOORE, PARK RIDGE, ILLINOIS. (COAL DEVELOPMENT DRILL HOLES ARE SPACED ON APPROXIMATELY 300 FOOT CENTERS IN SECTION 20 AND THE EASTERN ONE-HALF OF SECTION 19).

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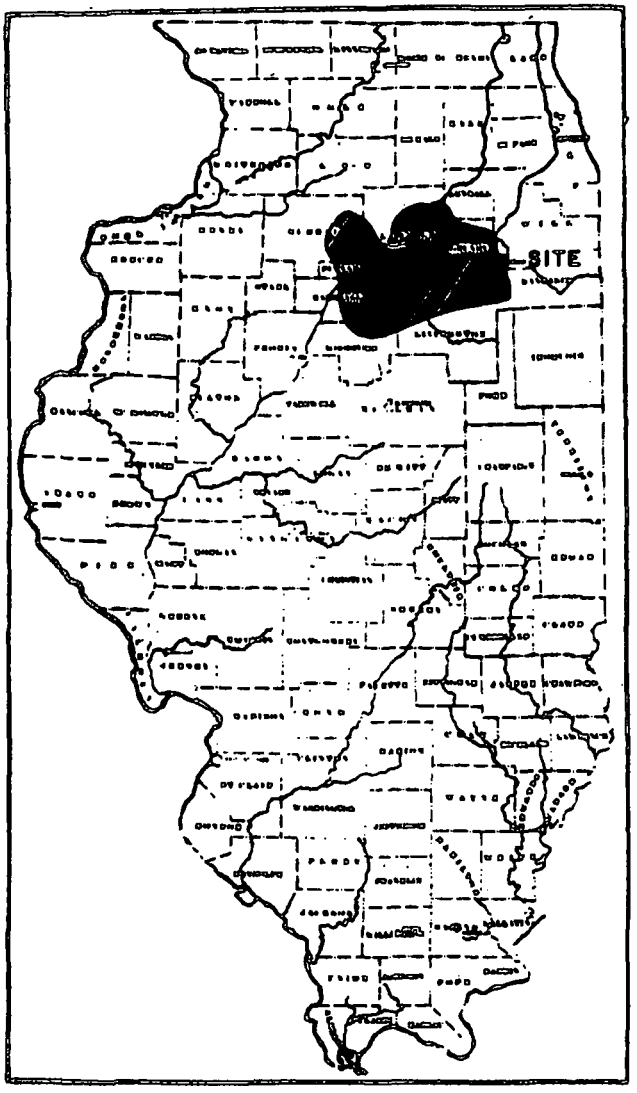
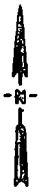
FIGURE 2.5-36a

KNOWN COAL MINES IN PLANT AREA





0 20 40

SCALE IN MILES

LEGEND:

LONGWALL COAL MINING DISTRICT

REFERENCE:

FROM MAP DRAWN BY F.H. KAY. IN ILLINOIS COAL MINING INVESTIGATIONS BULLETIN 8, JULY, 1914

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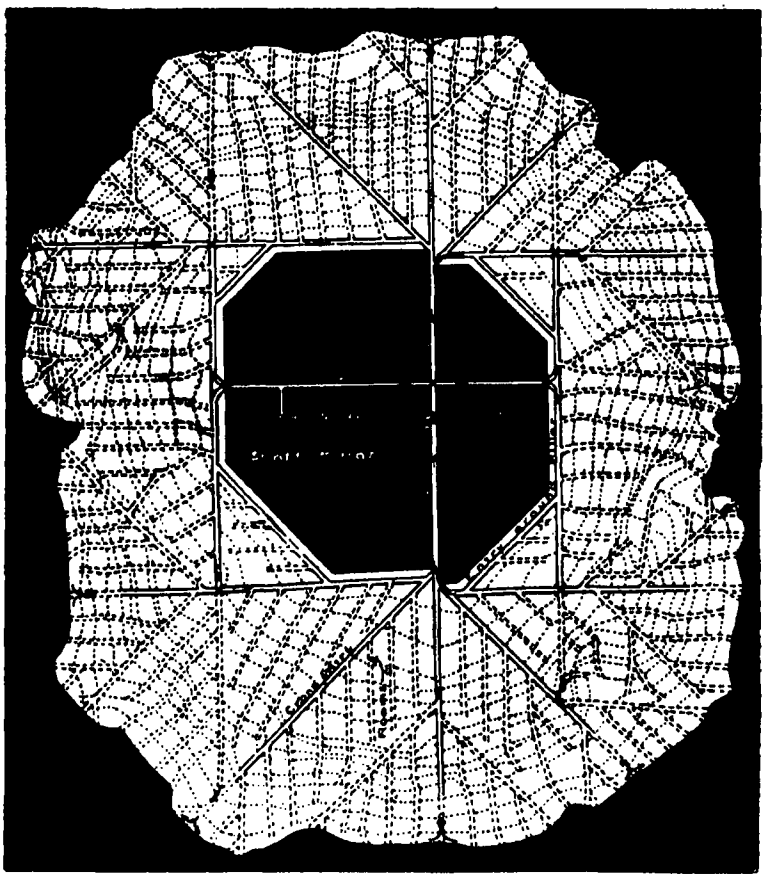
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-37

MAP SHOWING THE LONGWALL COAL MINING DISTRICT



REFERENCE:
FROM ILLINOIS COAL MINING INVESTIGATIONS
BULLETIN 6, JULY, 1914

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FIGURE 2.5-38

SCHEMATIC PLAN OF A TYPICAL
LONGWALL COAL MINE

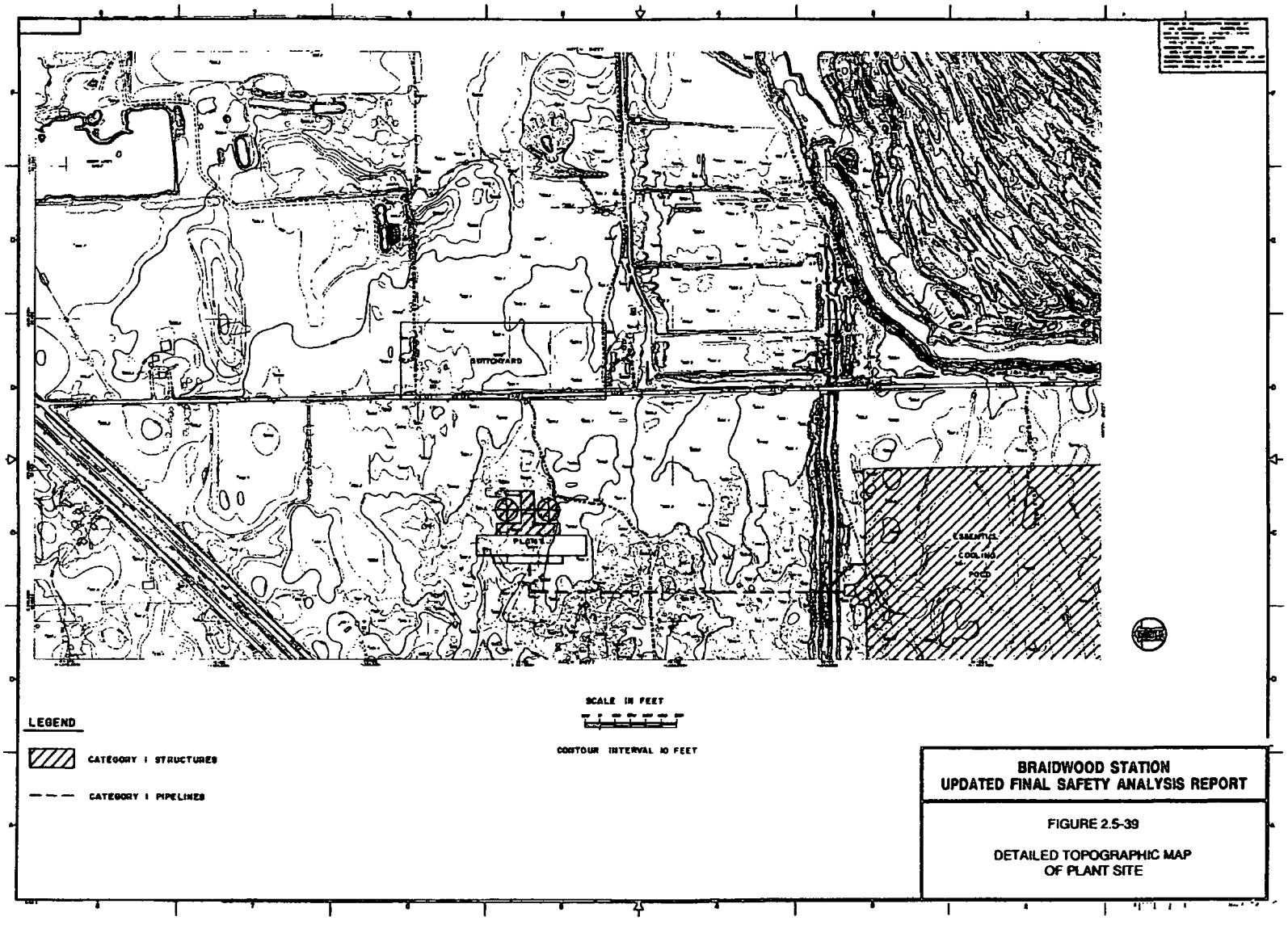

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FIGURE 2.5-39

DETAILED TOPOGRAPHIC MAP
OF PLANT SITE

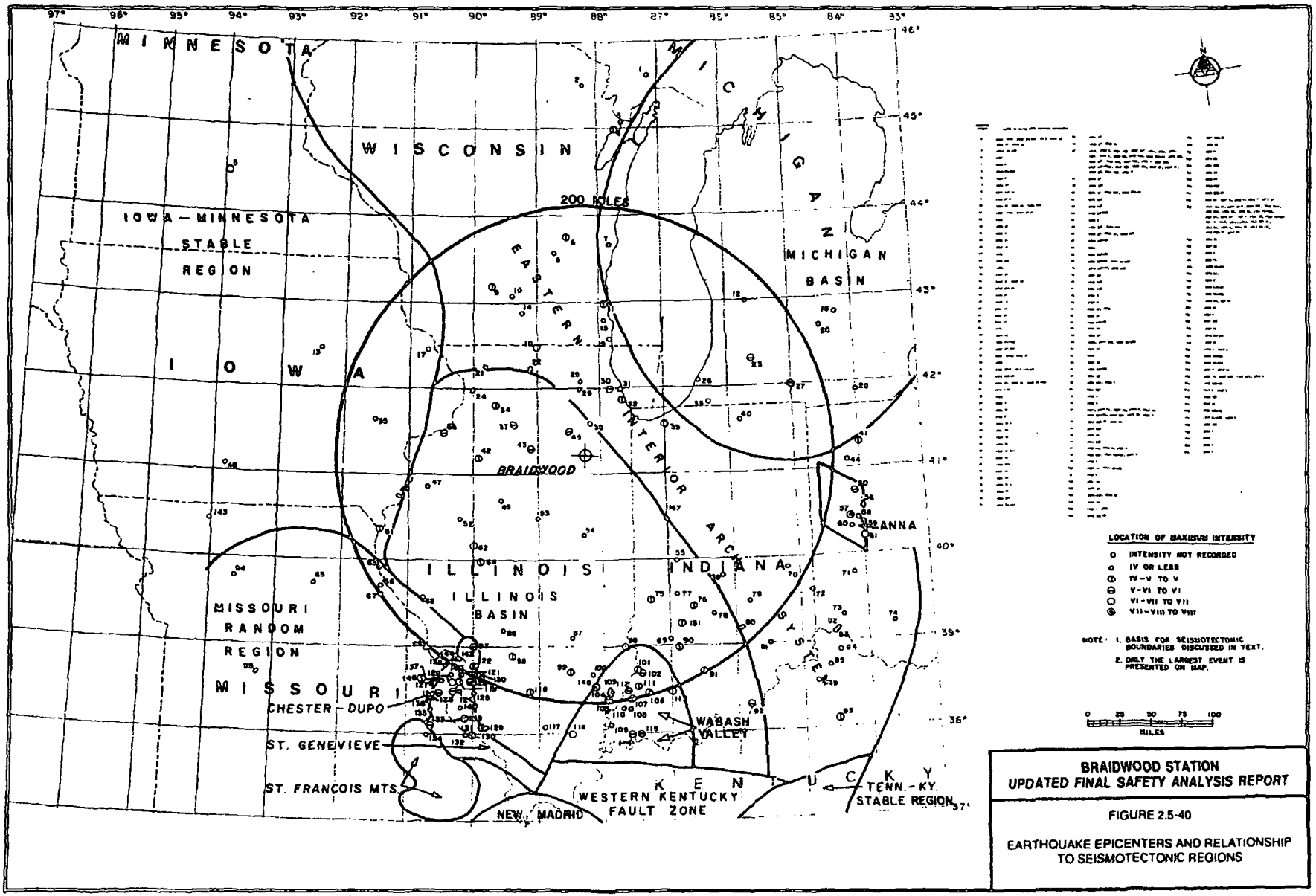

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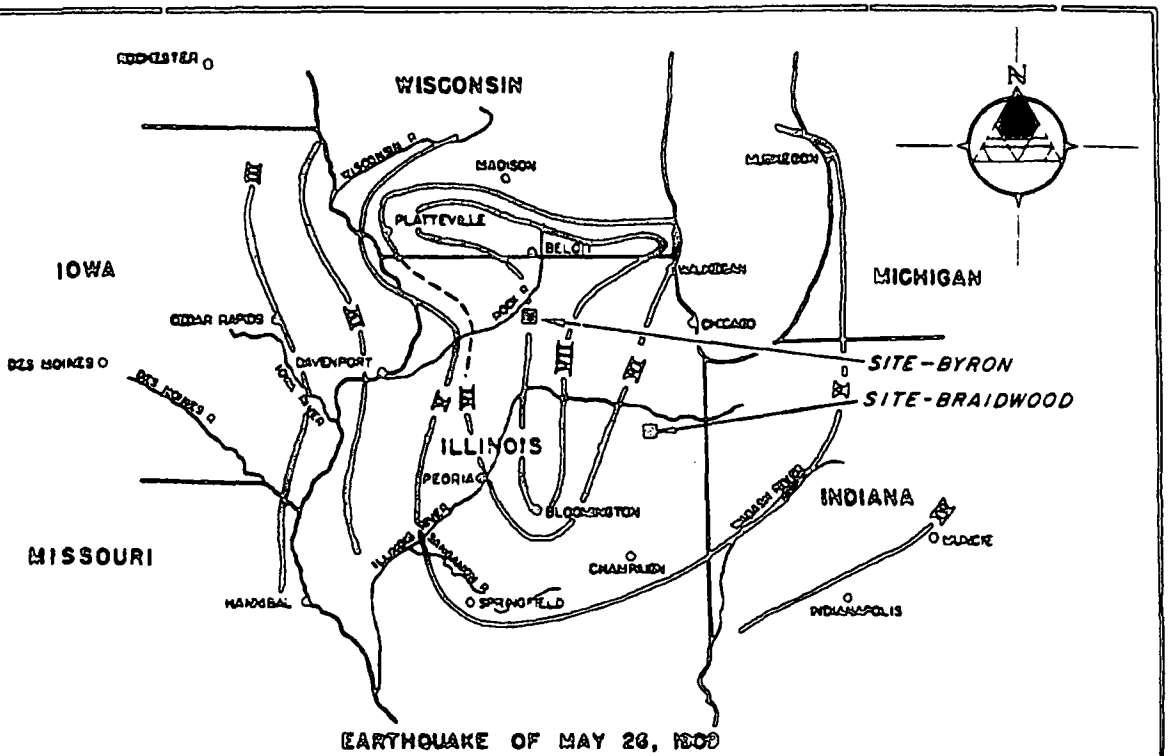
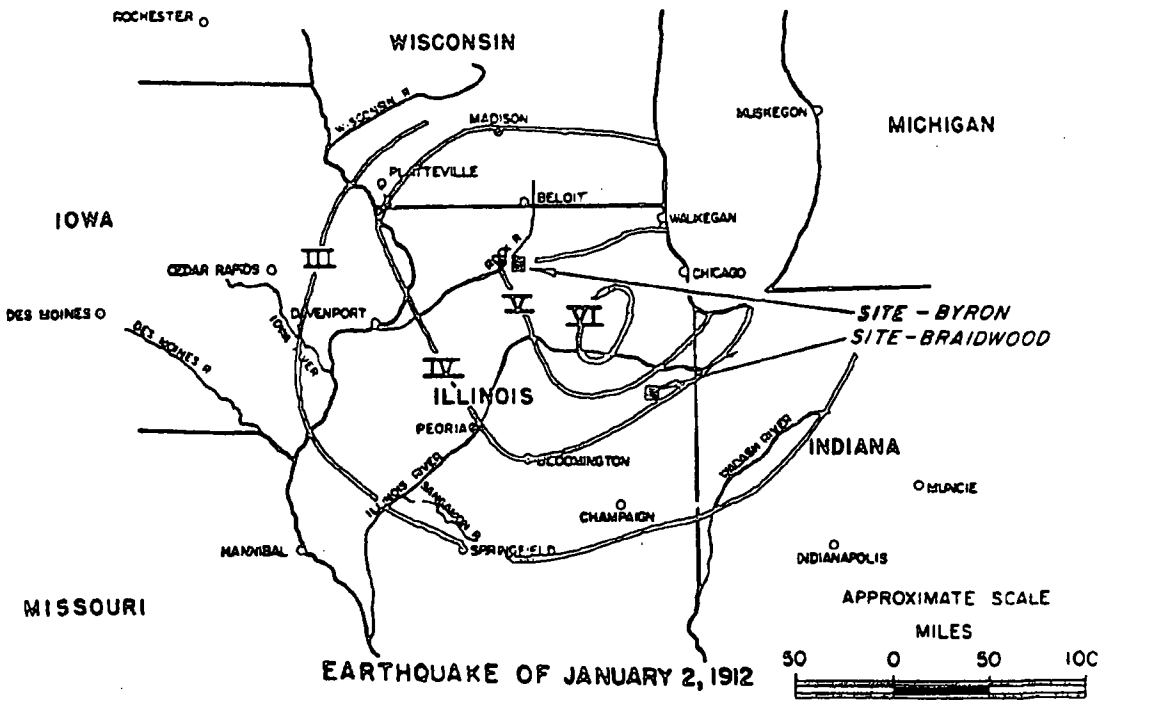
FIGURE 2.5-40

EARTHQUAKE EPICENTERS AND RELATIONSHIP TO SEISMOTECTONIC REGIONS



EARTHQUAKE OF MAY 26, 1909



EARTHQUAKE OF JANUARY 2, 1912

REFERENCE:

UDDEN, J.A., 1910. OBSERVATIONS ON THE EARTHQUAKE IN THE UPPER MISSISSIPPI VALLEY, MAY 26, 1909: ILLINOIS ACADEMY OF SCIENCE TRANSACTIONS, P. 132-143.

UDDEN, A.D., 1912. ON THE EARTHQUAKE OF JANUARY 2, 1912, IN THE UPPER MISSISSIPPI VALLEY: ILLINOIS ACADEMY OF SCIENCE TRANSACTIONS, V. 5, P. 111-115.

NOTE:

ROSSI-FOREL INTENSITIES. SEE MODIFIED MERCALLI SCALE FOR DEFINITION OF ROSSI-FOREL INTENSITIES.

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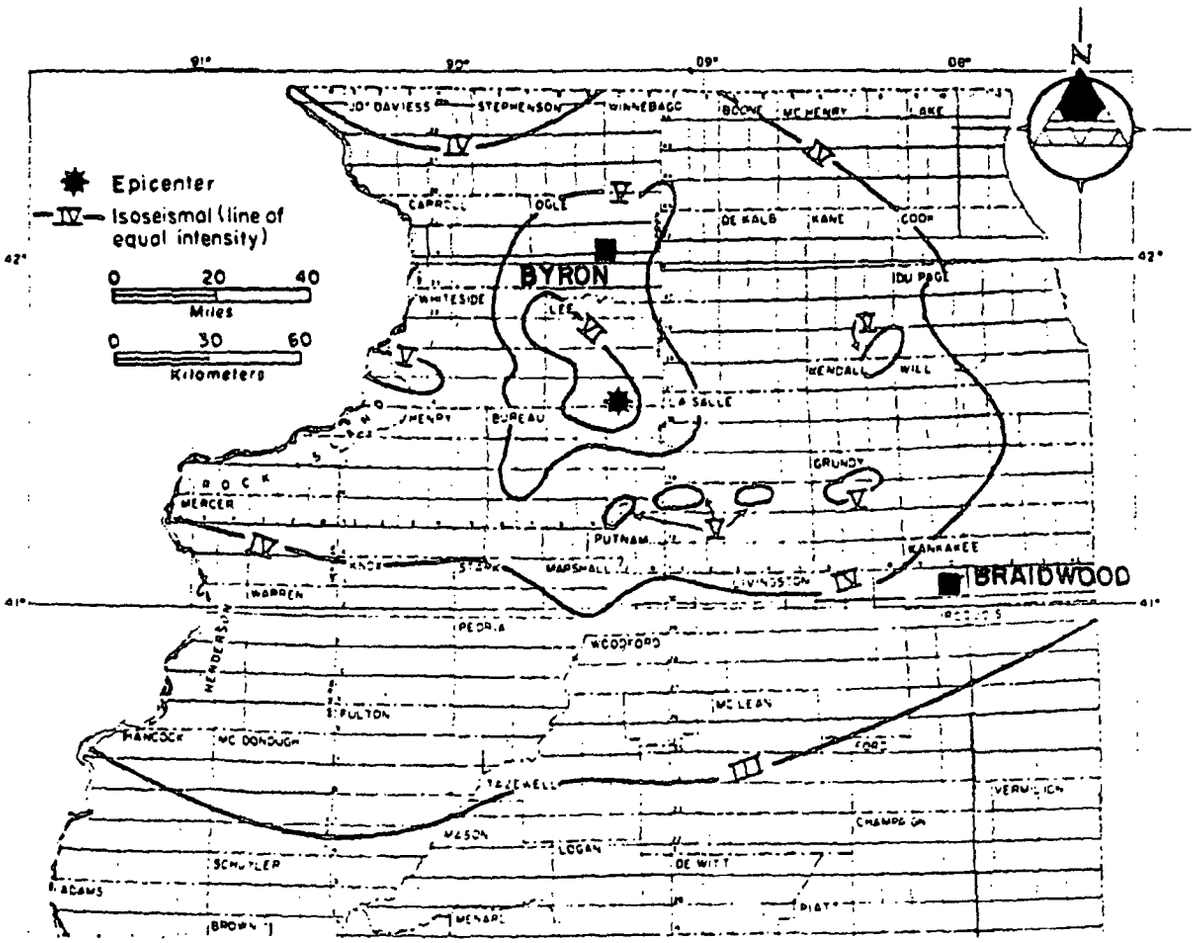
FIGURE 2.5-41

ISOSEISMAL MAPS FOR EARTHQUAKES OF MAY 26, 1909 AND JANUARY 2, 1912



NOTES:

1. INTENSITIES REFER TO THE 1931 MODIFIED MERCALLI SCALE.
2. ISOSEISMAL LINES INDICATE THE APPROXIMATE OUTER BOUNDARY OF THE REGION OF SPECIFIED INTENSITY.

REFERENCE:

HEIGOLD, PAUL C., 1972, NOTES ON THE EARTHQUAKE OF SEPTEMBER 15, 1972, IN NORTHERN ILLINOIS; ILLINOIS GEOL. SURVEY ENVIRON. GEOL. NOTE, NO. 59, 15p.

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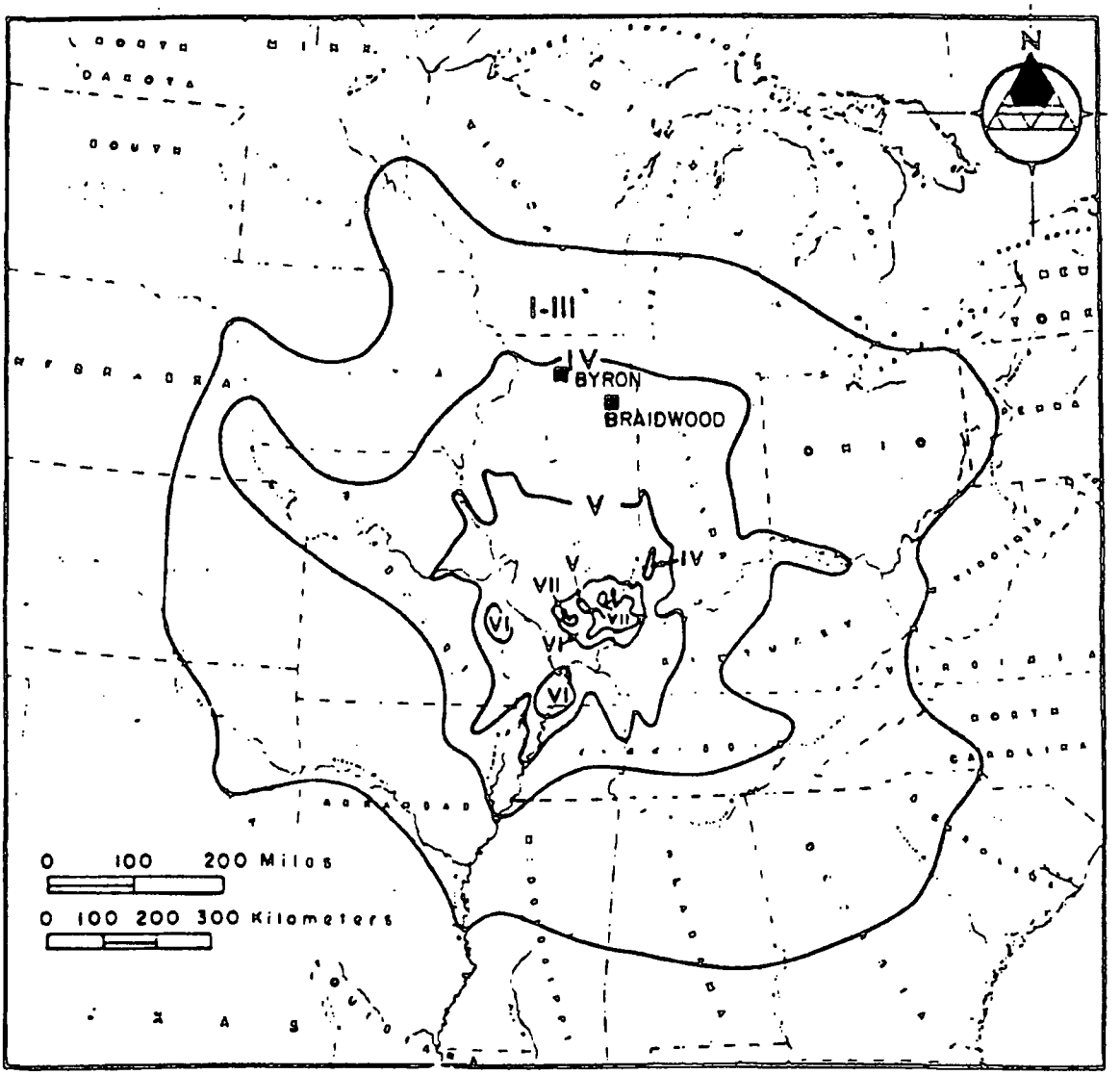
FIGURE 2.5-42

ISOSEISMAL MAP FOR EARTHQUAKE OF SEPTEMBER 15, 1972



NOTES:

1. INTENSITIES REFER TO THE 1931 MODIFIED MERCALLI SCALE.
2. ISOSEISMAL LINES INDICATE THE APPROXIMATE OUTER BOUNDARY OF THE REGION OF SPECIFIED INTENSITY.

REFERENCE:

GORDON, D.W., T.J. BENNETT, R.B. HERRMANN, AND A.M. ROGERS, 1970, THE SOUTH-CENTRAL ILLINOIS EARTHQUAKE OF NOVEMBER 9, 1968; MACROSEISMIC STUDIES; SEIS. SOC. AMERICA BULL. V. 60, NO. 3, P. 953-971.

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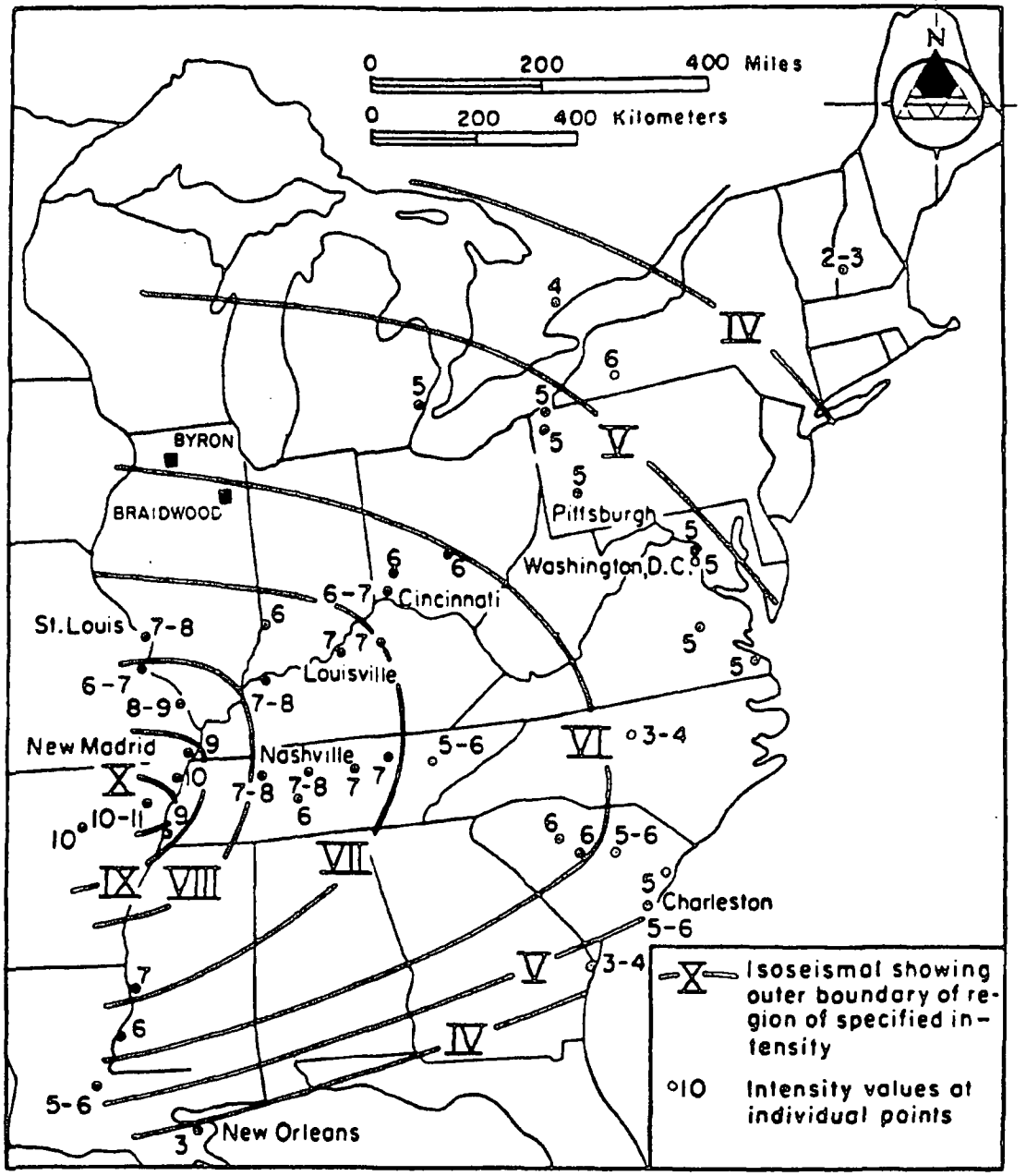
FIGURE 2.5-43

ISOSEISMAL MAP FOR EARTHQUAKE OF NOVEMBER 9, 1968



NOTES:

1. INTENSITIES REFER TO THE 1931 MODIFIED MERCALLI SCALE.
2. ISOSEISMAL LINES INDICATE THE APPROXIMATE OUTER BOUNDARY OF THE REGION OF SPECIFIED INTENSITY.

REFERENCE:

NUTTLI, O.W., 1973, THE MISSISSIPPI VALLEY EARTHQUAKE OF 1811 AND 1812, INTENSITIES, GROUNDMOTION, AND MAGNITUDES; SEISMOLOGICAL SOCIETY OF AMERICA, BULL. 63, NO. 1 P. 227-248.

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FIGURE 2.5-44

ISOSEISMAL MAP FOR NEW MADRID EARTHQUAKE OF DECEMBER 16, 1811

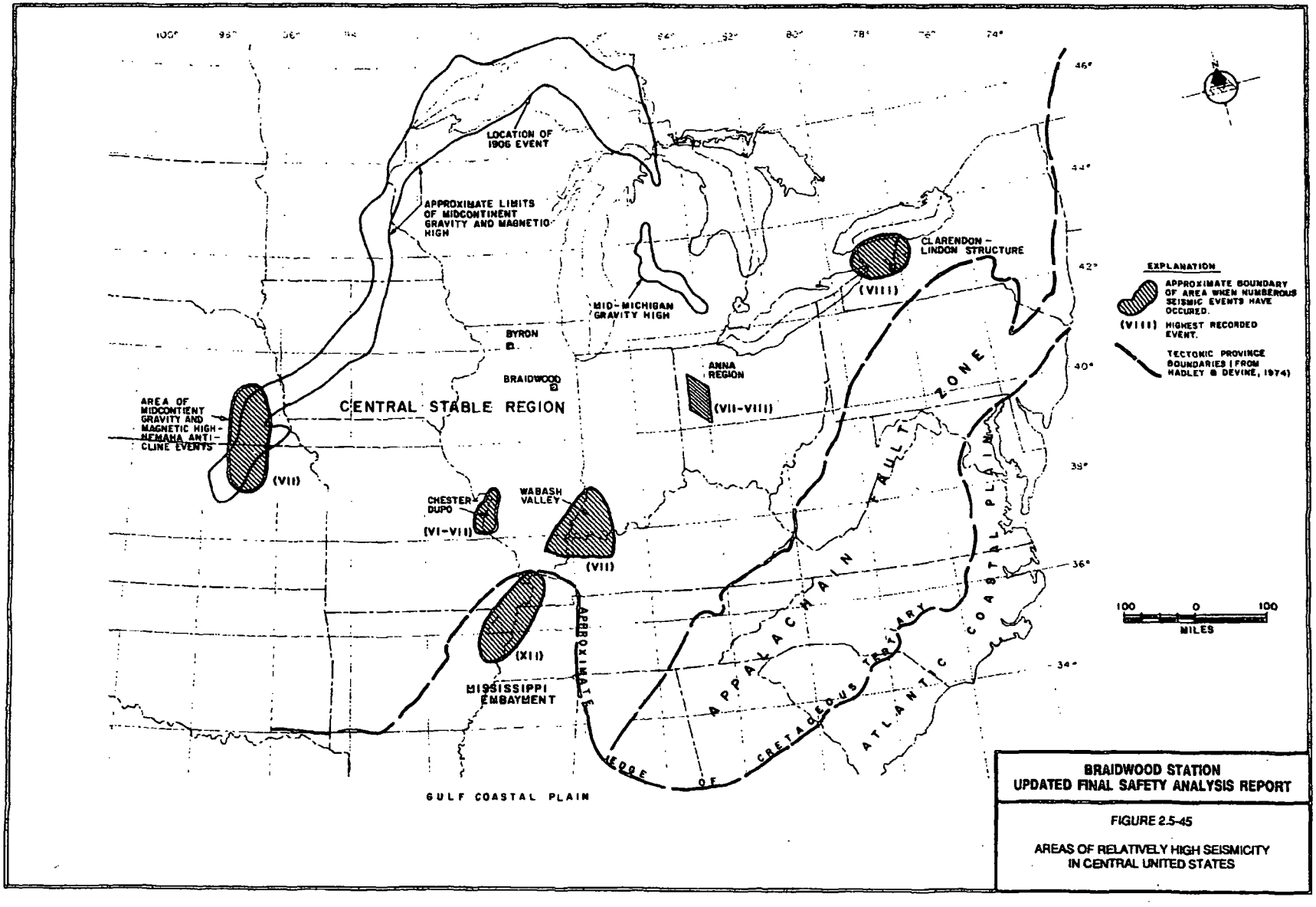

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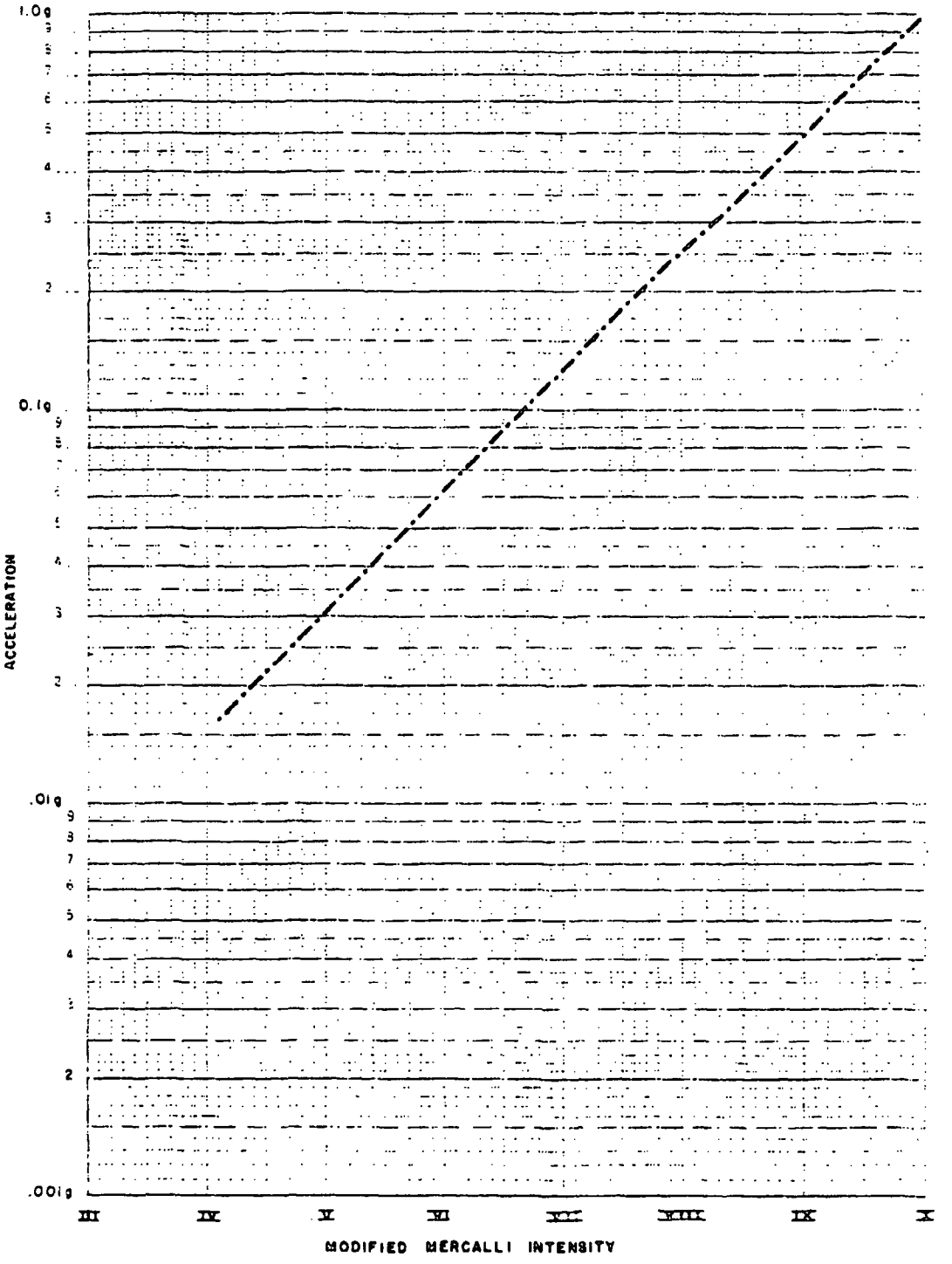
FIGURE 2.5-45

AREAS OF RELATIVELY HIGH SEISMICITY IN CENTRAL UNITED STATES



REFERENCE: TRIFUNAC, M.D., AND BRADY, A.G., 1975, ON THE CORRELATION OF SEISMIC INTENSITY SCALES WITH THE PEAKS OF RECORDED STRONG GROUND MOTION: SEISMOL. SOC. AMERICA BULL., VOL. 65, NO. 1, pp. 139-162.

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FIGURE 2.5-46

CORRELATION OF EARTHQUAKE INTENSITY AND ACCELERATION

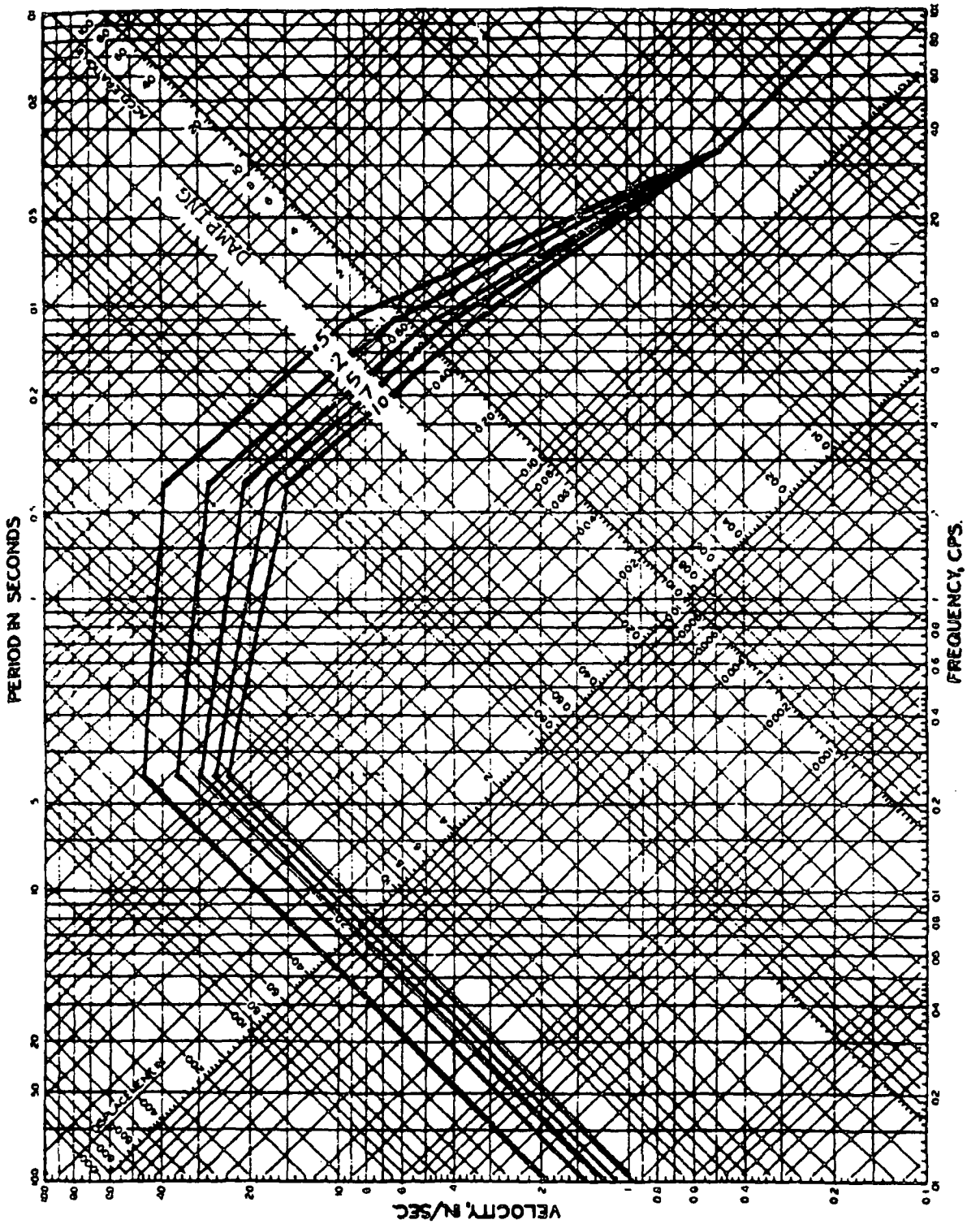

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FIGURE 2.5-47

HORIZONTAL RESPONSE SPECTRA
SAFE SHUTDOWN EARTHQUAKE (.26g)

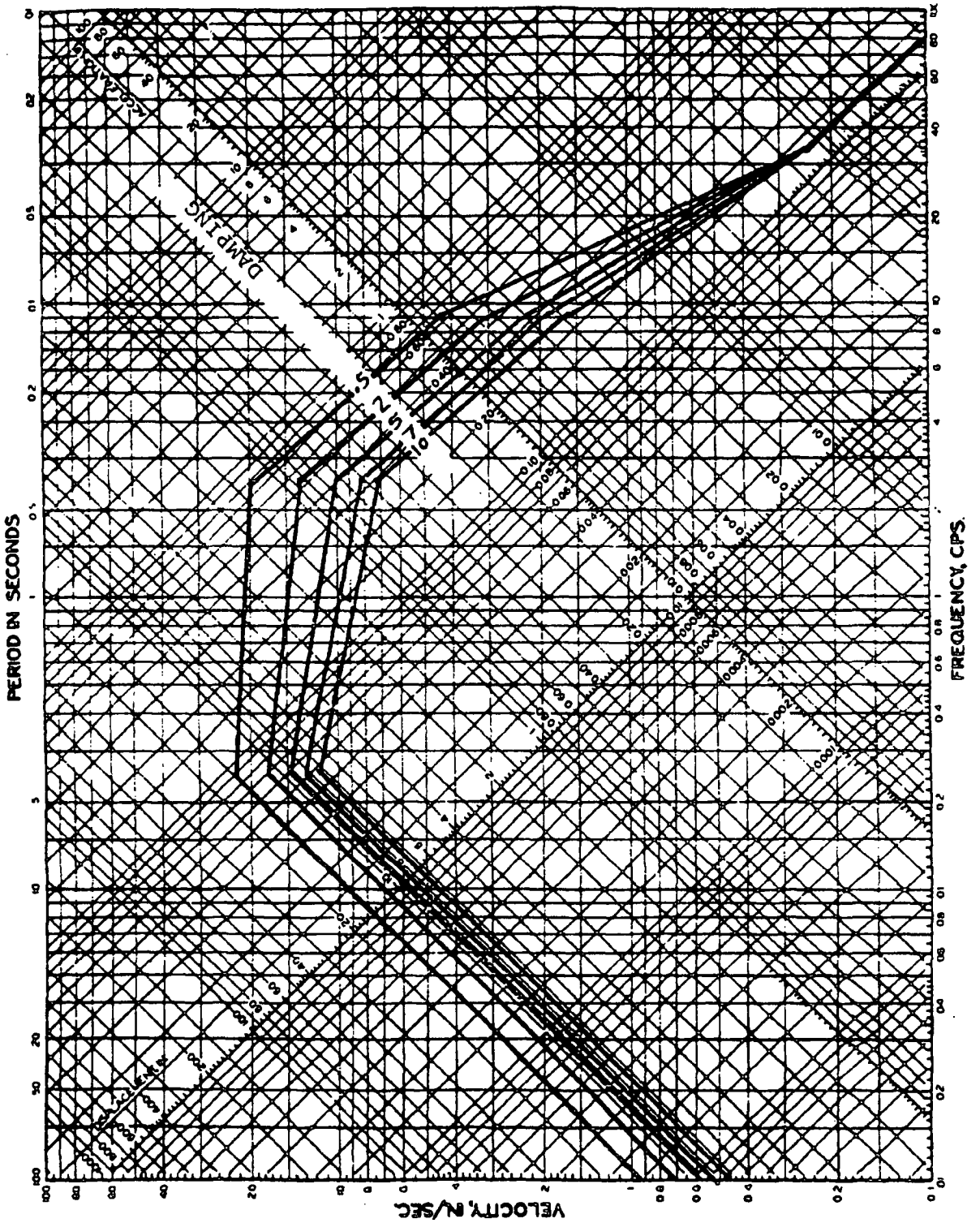

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FIGURE 2.5-48

HORIZONTAL RESPONSE SPECTRA
OPERATING BASIS EARTHQUAKE (.13g)

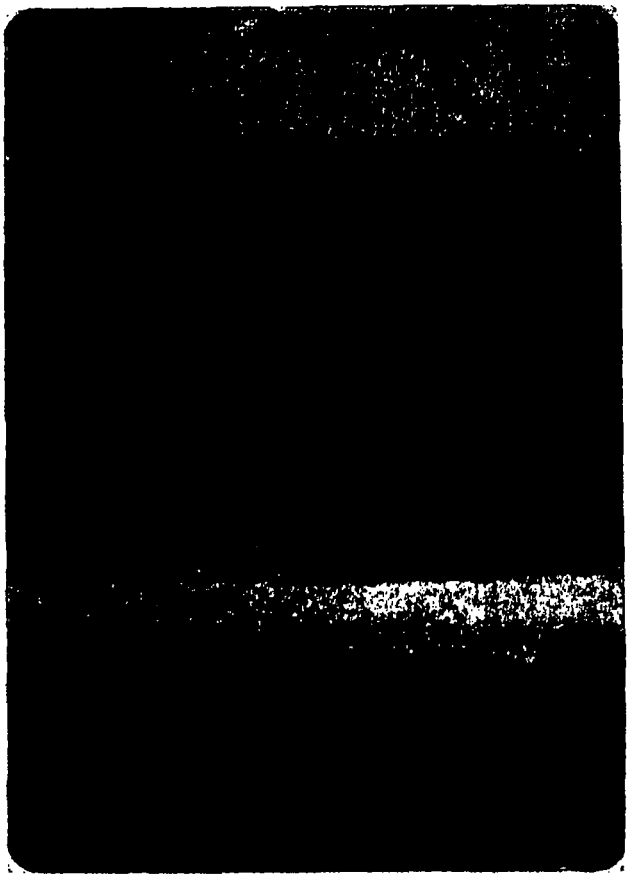


PHOTO-138 (SECTION 23) - SOIL SECTION IN BRAIDWOOD EXCAVATION SHOWING PARKLAND SAND, EQUALITY FORMATION, AND WEDRON FORMATION. CONTROL POINT S-23 IS IN THE TRENCH AND ABOUT LEVEL WITH GEOLOGIST'S HAND.

View is to the north. Photo scale is 5 feet long with 6-inch divisions.

NOTES:

1. SECTION 23 IS PRESENTED ON FIGURE 2.5-50 .
2. LOCATION OF SECTION 23 IS SHOWN ON FIGURE 2.5-55 .

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

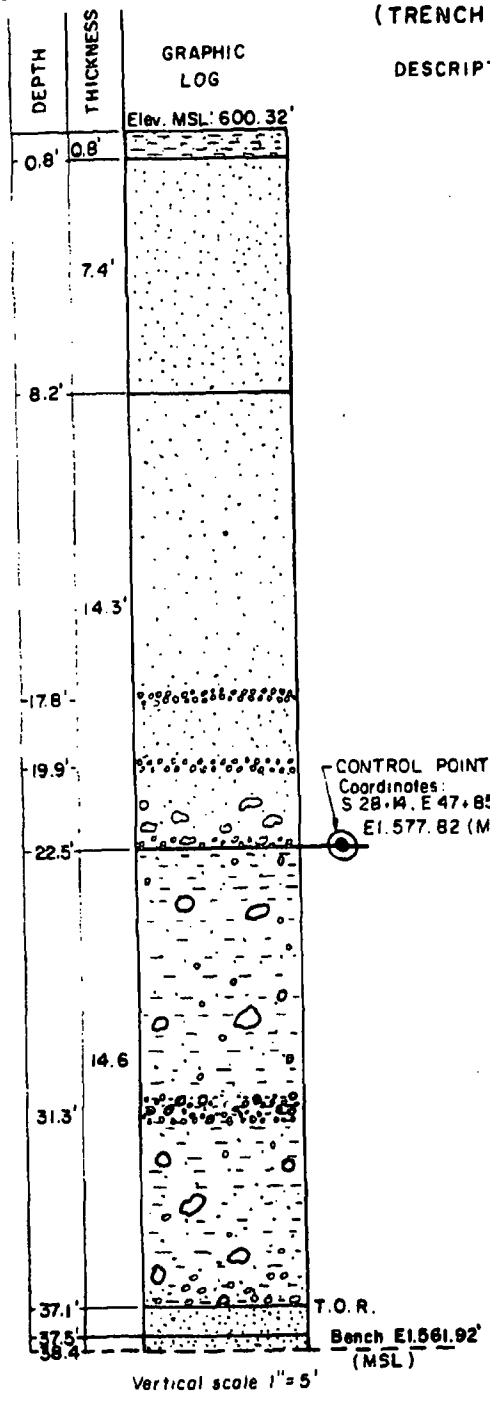
FIGURE 2.5-49

PHOTOGRAPH OF SECTION 23

SECTION 23

SHOWN IN PHOTO 138, UNIT 1, AREA-NORTH WALL OF EXCAVATION

(TRENCH IN SOIL)



DESCRIPTION

TOPSOIL - black, sandy clay w/organics

PARKLAND SAND - orange-brown to brown, very fine to fine, silty sand; mottled, no visible bedding

EQUALITY FORMATION - brown to gray-brown, slightly silty, fine to medium sand; some scattered x-bedding and ripple marks, widely scattered layers of clayey sand, two 4-6" layers of fine to course gravel near bottom, bottom 1-1.5' has rip-up clasts of Wedron till, bottom 1-2" is a lag gravel consisting of course sand and fine gravel, many water seeps at base of formation

WEDRON FORMATION - red-brown to gray silty, slightly sandy and gravelly, stiff, moist to wet clay; scattered pockets of very silty clay, mostly gray in color below 24.0', scattered cobbles and boulders,

outwash layer at about 30', about one foot thick, gray, silty, sandy, gravelly clay scattered cobbles and boulders, pockets of medium course sand

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER

CHANNEL SANDSTONE - gray, weathered, friable, fine to medium sandstone, weathered to about 38' w/clasts of unweathered sandstone; below 38', fairly well cemented

NOTES:
1. PHOTO OF SECTION 23 IS PRESENTED ON FIGURE 2.5-49 .
2. LOCATION OF SECTION 23 IS SHOWN ON FIGURE 2.5-55 .

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-50

SECTION 23

PHOTOS 111-113 (SECTION 12) - UPPER PORTION OF ROCK SECTION IN BRAIDWOOD EXCAVATION SHOWING CHANNEL SANDSTONE AND SILTSTONE OF THE FRANCIS CREEK SHALE MEMBER OF THE CARBONDALE FORMATION. CONTROL POINT S-12 IS ABOVE THE BACKPACKS, ABOUT 2/3 OF THE WAY UP THE WALL IN PHOTO 112.

View is to the east. Photo scale is 5 feet long with 6-inch divisions.

NOTES:
1. SECTION 12 IS PRESENTED ON FIGURE 2.5-52 .
2. LOCATION OF SECTION 12 IS SHOWN ON FIGURE 2.5-55 .

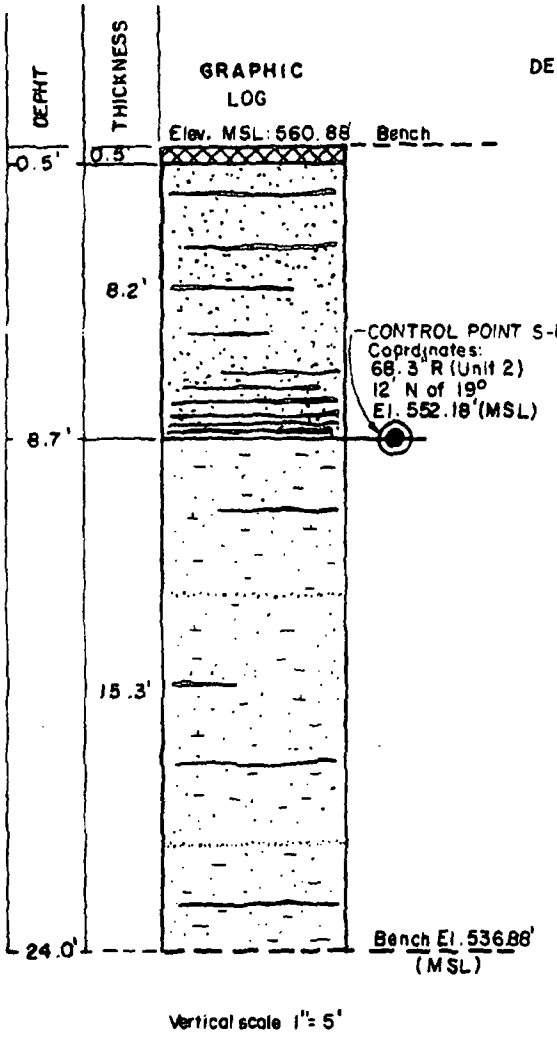
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-51

PHOTOGRAPH OF SECTION 12

SECTION 12

SHOWN IN PHOTO 112 ,UNIT 2 , WESTERN PORTION OF REACTOR PERIMETER WALL
(TENDON TUNNEL)



MUD MAT

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER

CHANNEL SANDSTONE - gray, fine to medium grained, micaceous, friable, thin to medium bedded sandstone; thickly bedded sandstone; thickly bedded in places and fairly well cemented, cross-bedded in places, scattered joints, scattered thin coal seams and stringers becoming abundant in bottom 1-2'.

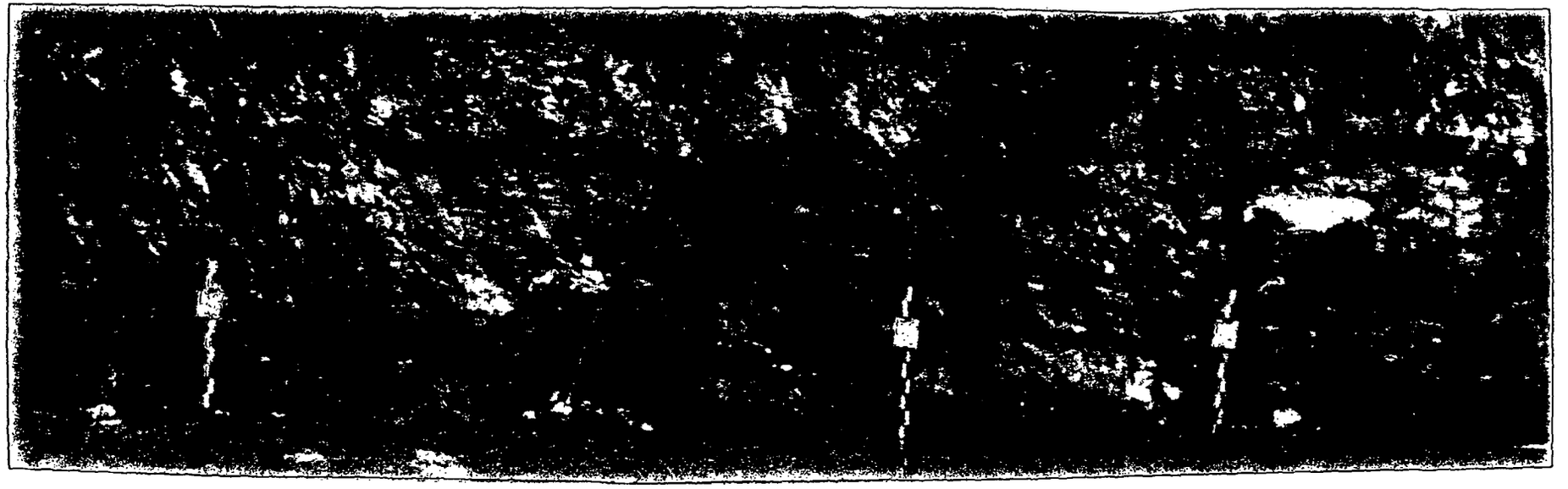
SILTSTONE - gray to light gray, slightly sandy to sandy, micaceous, finely laminated, shaley, blocky siltstone; calcareous in places, scattered thin coal seams and thin seams of fine sandstone, scattered joints

NOTES:
1. PHOTOS OF SECTION 12 IS PRESENTED ON FIGURE 2.5-51.
2. LOCATION OF SECTION 12 IS SHOWN ON FIGURE 2.5-55.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-52

SECTION 12



PHOTOS 101-103 (SECTION 11) - LOWER PORTION OF ROCK SECTION IN BRAIDWOOD EXCAVATION SHOWING SILTSTONE, SANDSTONE, AND COAL BEDS OF THE FRANCIS CREEK SHALE MEMBER. CONTROL POINTS S-11 IS TO THE RIGHT OF THE SCALE IN PHOTO 101.

View is to the east. Photo scale is 5 feet long with 6-inch divisions.

NOTES:
1. SECTION 11 IS PRESENTED ON FIGURE 2.5-54 .
2. LOCATION OF SECTION 11 IS SHOWN ON FIGURE 2.5-55 .

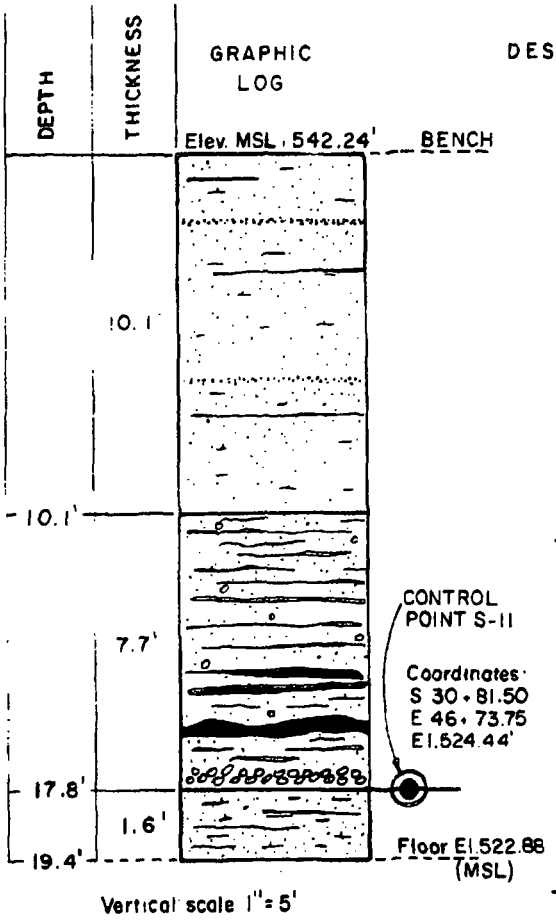
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-53

PHOTOGRAPH OF SECTION 11

SECTION 11

SHOWN IN PHOTO 101 , AUXILIARY BUILDING - EAST WALL



CARBONDALE FORMATION

FRANCIS CREEK SHALE MEMBER - gray to light gray, slightly sandy to sandy, micaceous, thinly laminated, shaley, blocky siltstone; calcareous in places, scattered thin coal seams varying from hairline to ½" in thickness, scattered fine sand lenses with occasional cross-bedding, scattered joints

- gray, silty to slightly silty, micaceous, thin to medium bedded, sometimes calcareous, fine to medium grained sandstone interbedded with lenses and seams of black, thinly bedded coal varying from hairline to ½" in thickness; scattered siderite pebbles; ½" basal conglomerate bed of siderite pebbles in matrix of gray, medium to coarse grained, well-cemented sandstone

- gray, slightly sandy, shaley, thinly laminated siltstone; scattered thin coal seams

NOTES:
1. PHOTOS OF SECTION 11 ARE PRESENTED ON FIGURE 2.5-53
2. LOCATION OF SECTION 11 IS SHOWN ON FIGURE 2.5-55

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-54

SECTION 11

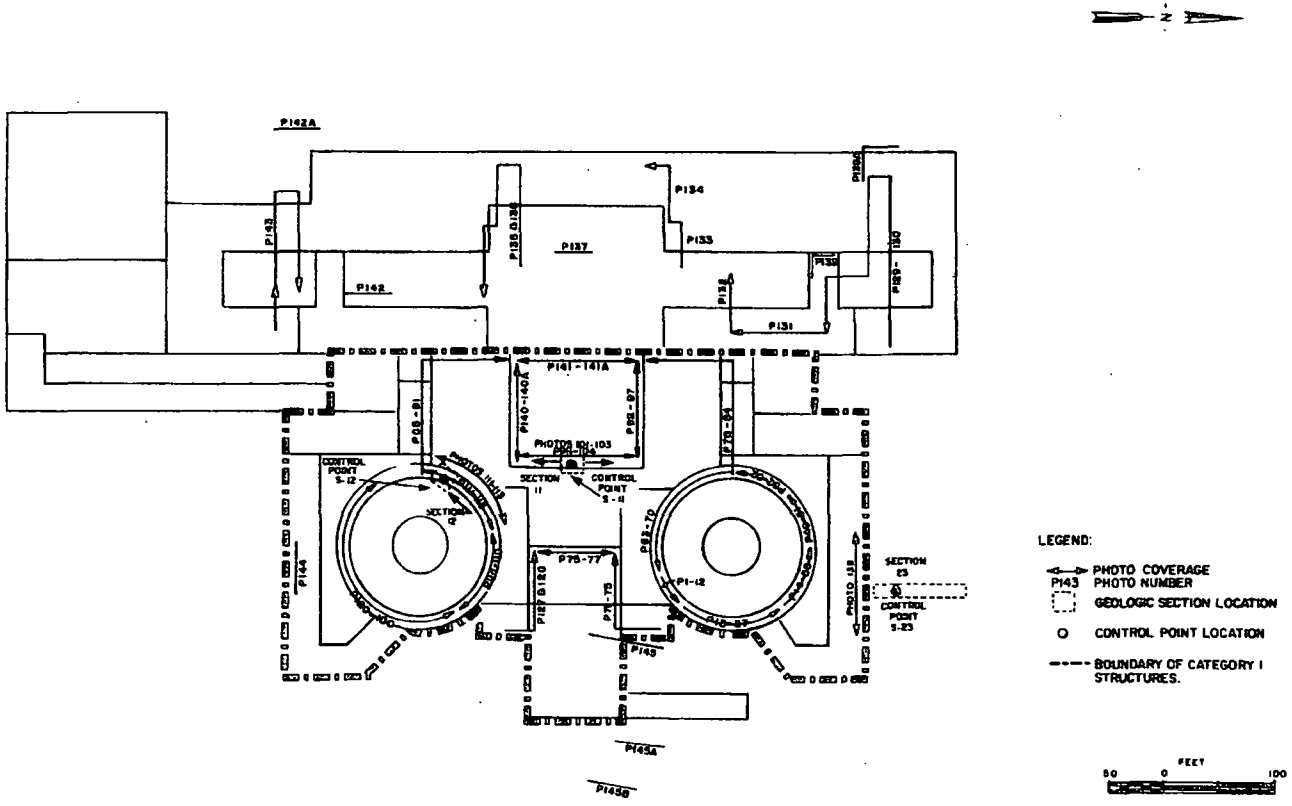


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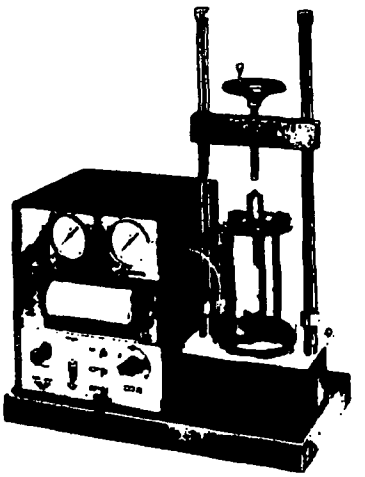
FIGURE 2.5-55

EXCAVATION MAPPING PHOTOGRAPH LOCATION MAP

METHODS OF PERFORMING UNCONFINED COMPRESSION AND TRIAXIAL COMPRESSION TESTS

THE SHEARING STRENGTHS OF SOILS ARE DETERMINED FROM THE RESULTS OF UNCONFINED COMPRESSION AND TRIAXIAL COMPRESSION TESTS. IN TRIAXIAL COMPRESSION TESTS THE TEST METHOD AND THE MAGNITUDE OF THE CONFINING PRESSURE ARE CHOSEN TO SIMULATE ANTICIPATED FIELD CONDITIONS.

UNCONFINED COMPRESSION AND TRIAXIAL COMPRESSION TESTS ARE PERFORMED ON UNDISTURBED OR REMOLDED SAMPLES OF SOIL APPROXIMATELY SIX INCHES IN LENGTH AND TWO AND ONE-HALF INCHES IN DIAMETER. THE TESTS ARE RUN EITHER STRAIN-CONTROLLED OR STRESS-CONTROLLED. IN A STRAIN-CONTROLLED TEST THE SAMPLE IS SUBJECTED TO A CONSTANT RATE OF DEFLECTION AND THE RESULTING STRESSES ARE RECORDED. IN A STRESS-CONTROLLED TEST THE SAMPLE IS SUBJECTED TO EQUAL INCREMENTS OF LOAD WITH EACH INCREMENT BEING MAINTAINED UNTIL AN EQUILIBRIUM CONDITION WITH RESPECT TO STRAIN IS ACHIEVED.



TRIAXIAL COMPRESSION TEST UNIT

YIELD, PEAK, OR ULTIMATE STRESSES ARE DETERMINED FROM THE STRESS-STRAIN PLOT FOR EACH SAMPLE AND THE PRINCIPAL STRESSES ARE EVALUATED. THE PRINCIPAL STRESSES ARE PLOTTED ON A MOHR'S CIRCLE DIAGRAM TO DETERMINE THE SHEARING STRENGTH OF THE SOIL TYPE BEING TESTED.

UNCONFINED COMPRESSION TESTS CAN BE PERFORMED ONLY ON SAMPLES WITH SUFFICIENT COHESION SO THAT THE SOIL WILL STAND AS AN UNSUPPORTED CYLINDER. THESE TESTS MAY BE RUN AT NATURAL MOISTURE CONTENT OR ON ARTIFICIALLY SATURATED SOILS.

IN A TRIAXIAL COMPRESSION TEST THE SAMPLE IS ENCASED IN A RUBBER MEMBRANE, PLACED IN A TEST CHAMBER, AND SUBJECTED TO A CONFINING PRESSURE THROUGHOUT THE DURATION OF THE TEST. NORMALLY, THIS CONFINING PRESSURE IS MAINTAINED AT A CONSTANT LEVEL, ALTHOUGH FOR SPECIAL TESTS IT MAY BE VARIED IN RELATION TO THE MEASURED STRESSES. TRIAXIAL COMPRESSION TESTS MAY BE RUN ON SOILS AT FIELD MOISTURE CONTENT OR ON ARTIFICIALLY SATURATED SAMPLES. THE TESTS ARE PERFORMED IN ONE OF THE FOLLOWING WAYS:

UNCONSOLIDATED-UNDRAINED: THE CONFINING PRESSURE IS IMPOSED ON THE SAMPLE AT THE START OF THE TEST. NO DRAINAGE IS PERMITTED AND THE STRESSES WHICH ARE MEASURED REPRESENT THE SUM OF THE INTERGRANULAR STRESSES AND PORE WATER PRESSURES.

CONSOLIDATED-UNDRAINED: THE SAMPLE IS ALLOWED TO CONSOLIDATE FULLY UNDER THE APPLIED CONFINING PRESSURE PRIOR TO THE START OF THE TEST. THE VOLUME CHANGE IS DETERMINED BY MEASURING THE WATER AND/OR AIR EXPELLED DURING CONSOLIDATION. NO DRAINAGE IS PERMITTED DURING THE TEST AND THE STRESSES WHICH ARE MEASURED ARE THE SAME AS FOR THE UNCONSOLIDATED-UNDRAINED TEST.

DRAINED: THE INTERGRANULAR STRESSES IN A SAMPLE MAY BE MEASURED BY PERFORMING A DRAINED, OR SLOW, TEST. IN THIS TEST THE SAMPLE IS FULLY SATURATED AND CONSOLIDATED PRIOR TO THE START OF THE TEST. DURING THE TEST, DRAINAGE IS PERMITTED AND THE TEST IS PERFORMED AT A SLOW ENOUGH RATE TO PREVENT THE BUILDUP OF PORE WATER PRESSURES. THE RESULTING STRESSES WHICH ARE MEASURED REPRESENT ONLY THE INTERGRANULAR STRESSES. THESE TESTS ARE USUALLY PERFORMED ON SAMPLES OF GENERALLY NON-COHESIVE SOILS, ALTHOUGH THE TEST PROCEDURE IS APPLICABLE TO COHESIVE SOILS IF A SUFFICIENTLY SLOW TEST RATE IS USED.

AN ALTERNATE MEANS OF OBTAINING THE DATA RESULTING FROM THE DRAINED TEST IS TO PERFORM AN UNDRAINED TEST IN WHICH SPECIAL EQUIPMENT IS USED TO MEASURE THE PORE WATER PRESSURES. THE DIFFERENCES BETWEEN THE TOTAL STRESSES AND THE PORE WATER PRESSURES MEASURED ARE THE INTERGRANULAR STRESSES.

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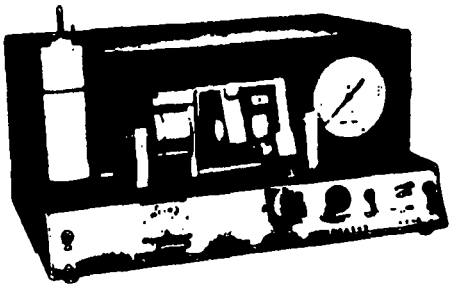
FIGURE 2.5-56

STRENGTH TESTS, METHODS
(SHEET 1 OF 2)

METHOD OF PERFORMING DIRECT SHEAR AND FRICTION TESTS

DIRECT SHEAR TESTS ARE PERFORMED TO DETERMINE THE SHEARING STRENGTHS OF SOILS. FRICTION TESTS ARE PERFORMED TO DETERMINE THE FRICTIONAL RESISTANCES BETWEEN SOILS AND VARIOUS OTHER MATERIALS SUCH AS WOOD, STEEL, OR CONCRETE. THE TESTS ARE PERFORMED IN THE LABORATORY TO SIMULATE ANTICIPATED FIELD CONDITIONS.



DIRECT SHEAR TESTING & RECORDING APPARATUS

EACH SAMPLE IS TESTED WITHIN THREE BRASS RINGS, TWO AND ONE-HALF INCHES IN DIAMETER AND ONE INCH IN LENGTH. UNDISTURBED SAMPLES OF IN-PLACE SOILS ARE TESTED IN RINGS TAKEN FROM THE SAMPLING DEVICE IN WHICH THE SAMPLES WERE OBTAINED. LOOSE SAMPLES OF SOILS TO BE USED IN CONSTRUCTING EARTH FILLS ARE COMPACTED IN RINGS TO PREDETERMINED CONDITIONS AND TESTED.

DIRECT SHEAR TESTS

A THREE-INCH LENGTH OF THE SAMPLE IS TESTED IN DIRECT DOUBLE SHEAR. A CONSTANT PRESSURE, APPROPRIATE TO THE CONDITIONS OF THE PROBLEM FOR WHICH THE TEST IS BEING PERFORMED, IS APPLIED NORMAL TO THE ENDS OF THE SAMPLE THROUGH POROUS STONES. A SHEARING FAILURE OF THE SAMPLE IS CAUSED BY MOVING THE CENTER RING IN A DIRECTION PERPENDICULAR TO THE AXIS OF THE SAMPLE. TRANSVERSE MOVEMENT OF THE OUTER RINGS IS PREVENTED.

THE SHEARING FAILURE MAY BE ACCOMPLISHED BY APPLYING TO THE CENTER RING EITHER A CONSTANT RATE OF LOAD, A CONSTANT RATE OF DEFLECTION, OR INCREMENTS OF LOAD OR DEFLECTION. IN EACH CASE, THE SHEARING LOAD AND THE DEFLECTIONS IN BOTH THE AXIAL AND TRANSVERSE DIRECTIONS ARE RECORDED AND PLOTTED. THE SHEARING STRENGTH OF THE SOIL IS DETERMINED FROM THE RESULTING LOAD-DEFLECTION CURVES.

FRICTION TESTS

IN ORDER TO DETERMINE THE FRICTIONAL RESISTANCE BETWEEN SOIL AND THE SURFACES OF VARIOUS MATERIALS, THE CENTER RING OF SOIL IN THE DIRECT SHEAR TEST IS REPLACED BY A DISK OF THE MATERIAL TO BE TESTED. THE TEST IS THEN PERFORMED IN THE SAME MANNER AS THE DIRECT SHEAR TEST BY FORCING THE DISK OF MATERIAL FROM THE SOIL SURFACES.

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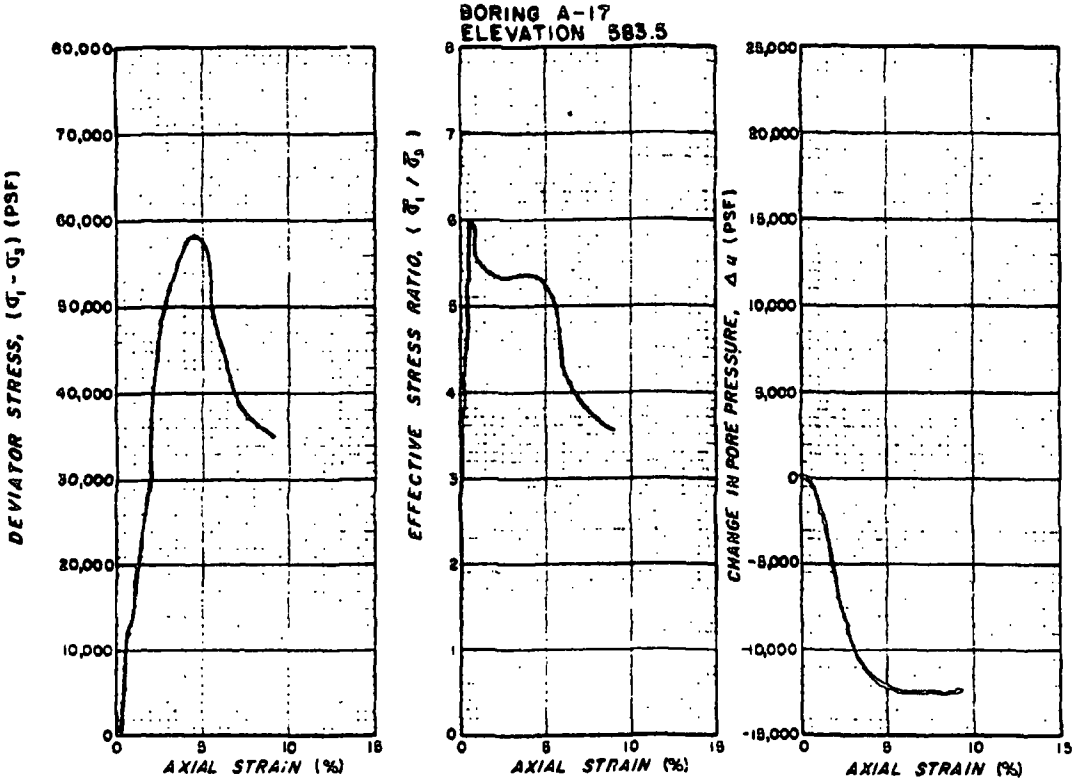
FIGURE 2.5-56

STRENGTH TESTS, METHODS
(SHEET 2 OF 2)



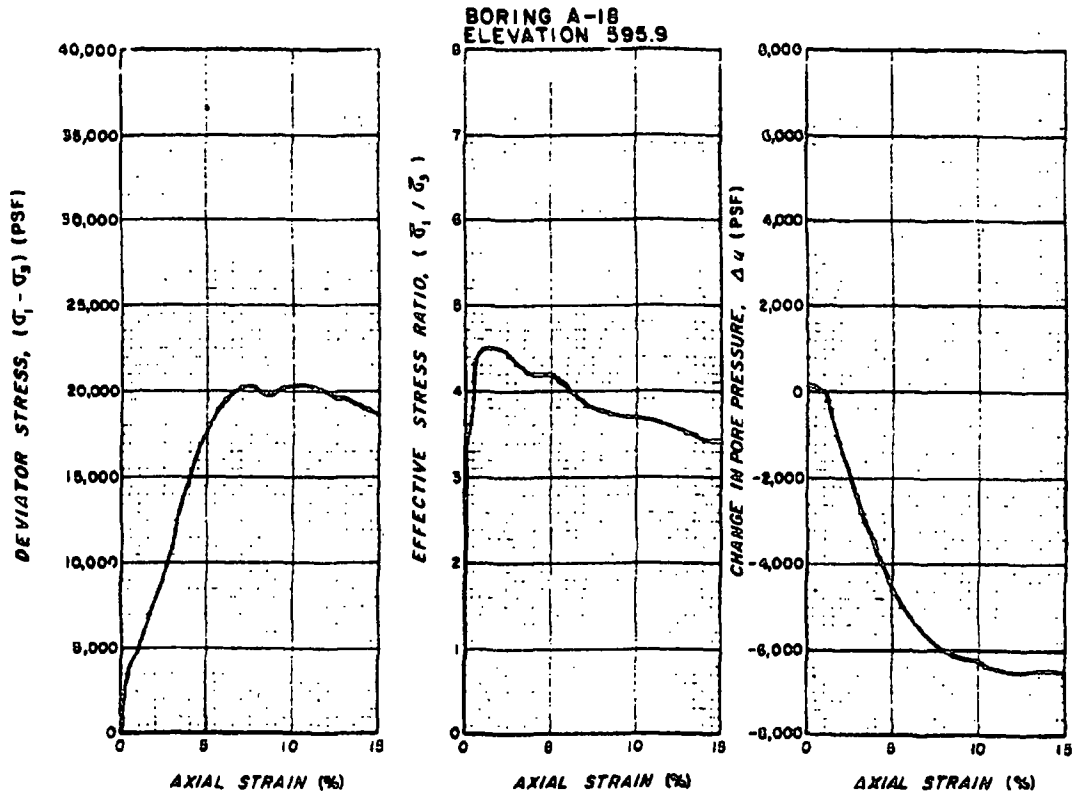


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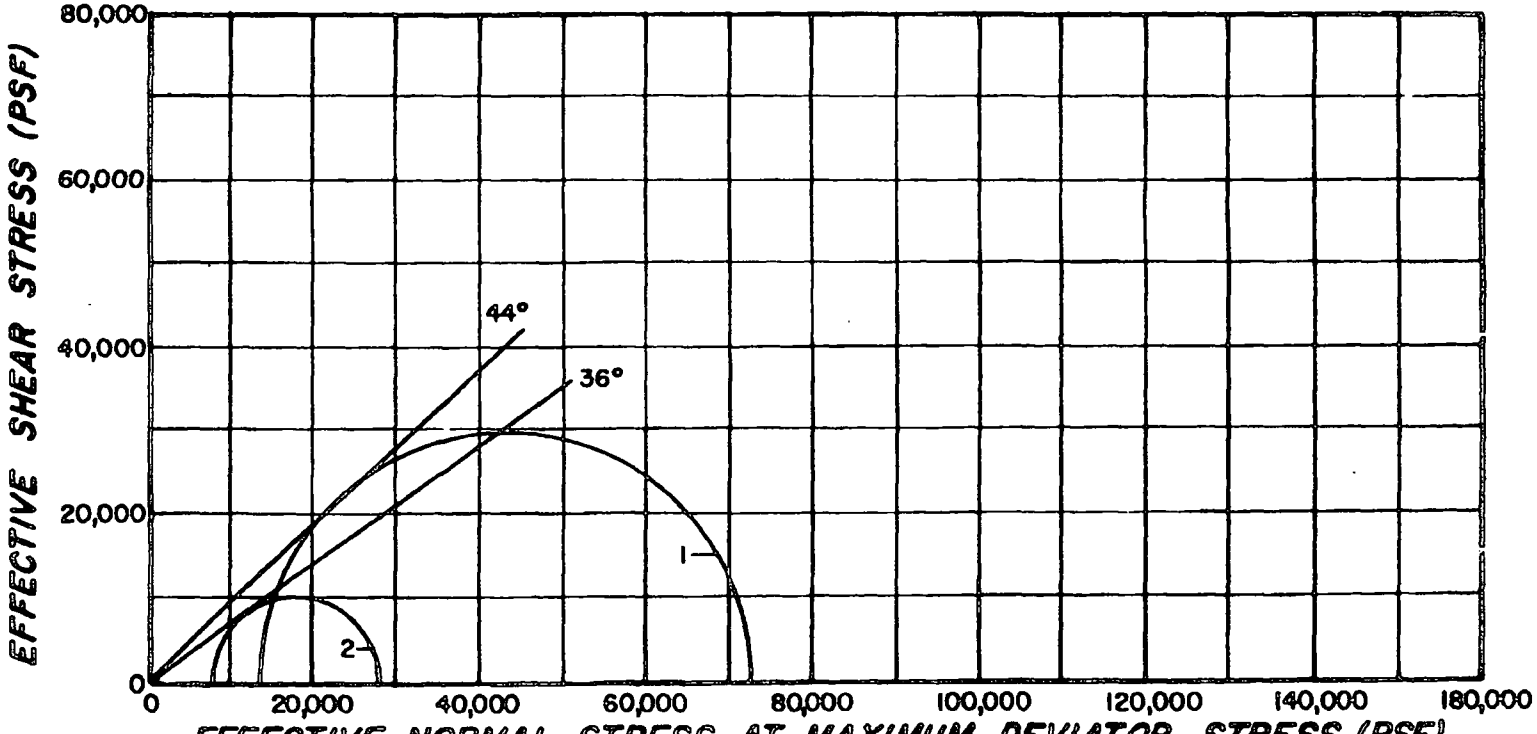
FIGURE 2.5-57

TRIAXIAL TESTS, RESULTS
(SHEET 1 OF 2)

SOIL TYPE - GRAY FINE SAND WITH TRACES OF COARSE SAND AND SILT

SAMPLES TESTED:			FIELD CONDITIONS:	
KEY	BORING	ELEVATION (FEET)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)
1	A-17	583.5	19.4	106.7
2	A-18	595.9	20.2	99.8



TRIAXIAL TEST DATA—MOHR CIRCLES

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UPDATED FINAL SAFETY ANALYSIS REPORT

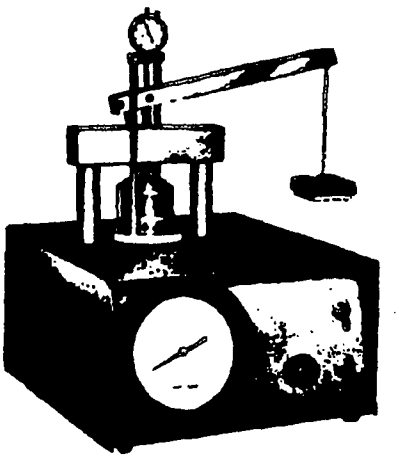
FIGURE 2.5-57

TRIAXIAL TESTS, RESULTS
(SHEET 2 OF 2)

METHOD OF PERFORMING CONSOLIDATION TESTS

CONSOLIDATION TESTS ARE PERFORMED TO EVALUATE THE VOLUME CHANGES OF SOILS SUBJECTED TO INCREASED LOADS. TIME-CONSOLIDATION AND PRESSURE-CONSOLIDATION CURVES MAY BE PLOTTED FROM THE DATA OBTAINED IN THE TESTS. ENGINEERING ANALYSES BASED ON THESE CURVES PERMIT ESTIMATES TO BE MADE OF THE PROBABLE MAGNITUDE AND RATE OF SETTLEMENT OF THE TESTED SOILS UNDER APPLIED LOADS.

EACH SAMPLE IS TESTED WITHIN BRASS RINGS TWO AND ONE-HALF INCHES IN DIAMETER AND ONE INCH IN LENGTH. UNDISTURBED SAMPLES OF IN-PLACE SOILS ARE TESTED IN RINGS TAKEN FROM THE SAMPLING DEVICE IN WHICH THE SAMPLES WERE OBTAINED. LOOSE SAMPLES OF SOILS TO BE USED IN CONSTRUCTING EARTH FILLS ARE COMPACTED IN RINGS TO PREDETERMINED CONDITIONS AND TESTED.



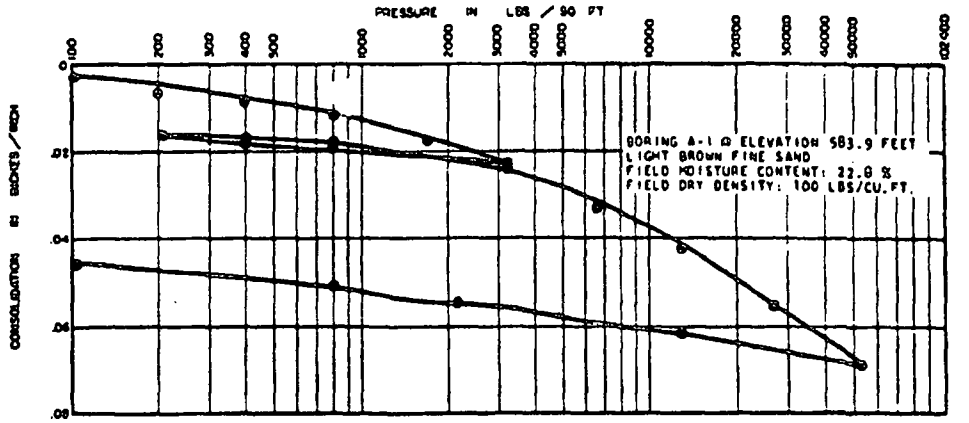
DEAD LOAD-PNEUMATIC CONSOLIDOMETER

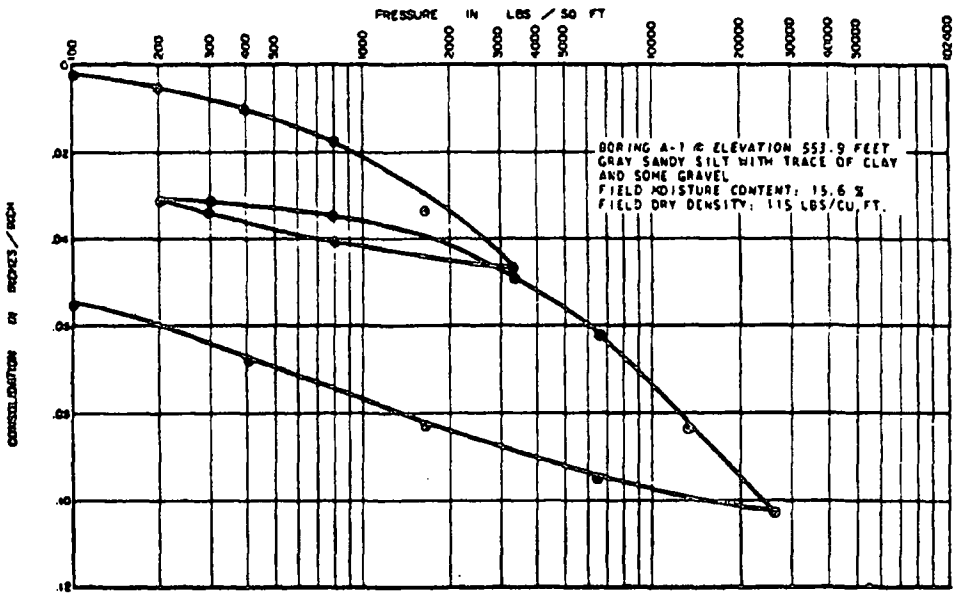
IN TESTING, THE SAMPLE IS RIGIDLY CONFINED LATERALLY BY THE BRASS RING. AXIAL LOADS ARE TRANSMITTED TO THE ENDS OF THE SAMPLE BY POROUS DISKS. THE DISKS ALLOW DRAINAGE OF THE LOADED SAMPLE. THE AXIAL COMPRESSION OR EXPANSION OF THE SAMPLE IS MEASURED BY A MICROMETER DIAL INDICATOR AT APPROPRIATE TIME INTERVALS AFTER EACH LOAD INCREMENT IS APPLIED. EACH LOAD IS ORDINARILY TWICE THE PRECEDING LOAD. THE INCREMENTS ARE SELECTED TO OBTAIN CONSOLIDATION DATA REPRESENTING THE FIELD LOADING CONDITIONS FOR WHICH THE TEST IS BEING PERFORMED. EACH LOAD INCREMENT IS ALLOWED TO ACT OVER AN INTERVAL OF TIME DEPENDENT ON THE TYPE AND EXTENT OF THE SOIL IN THE FIELD.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-58

CONSOLIDATION TESTS, METHOD

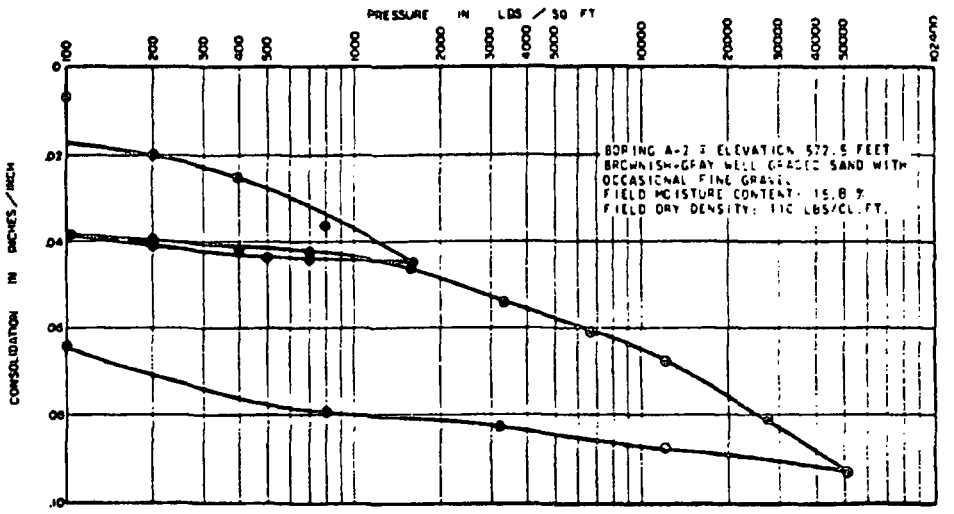


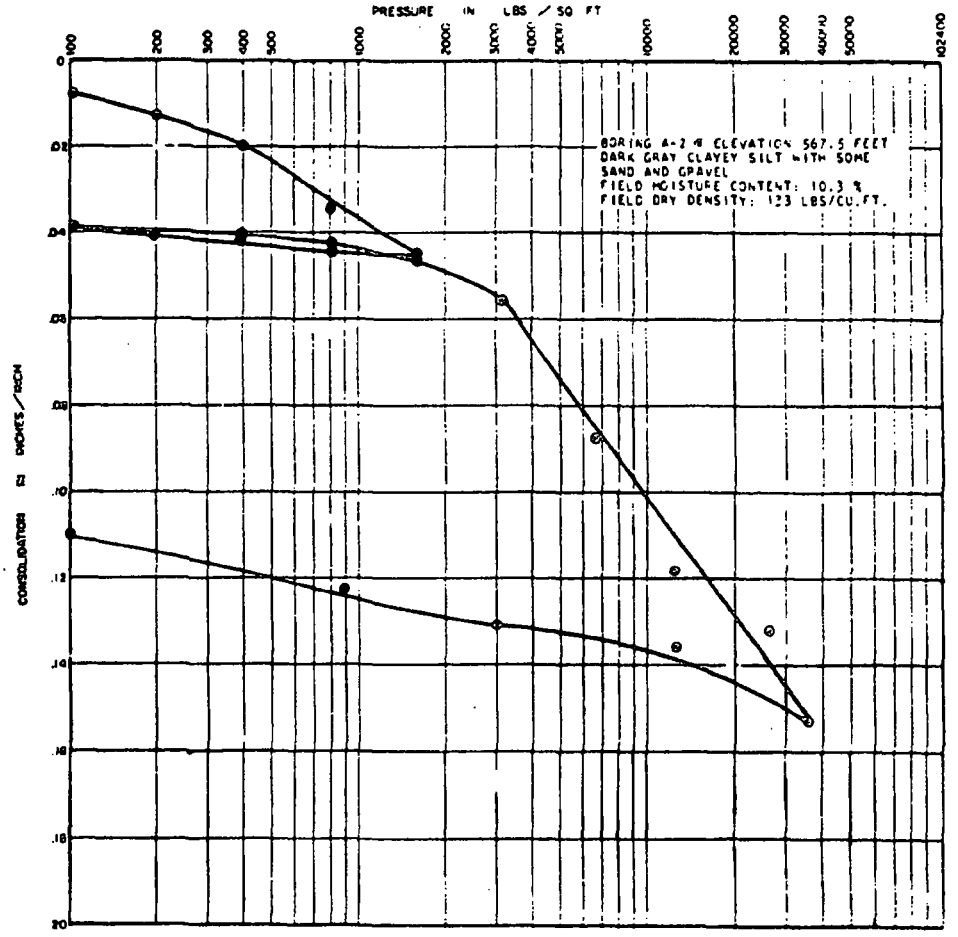


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-59

CONSOLIDATION TESTS, RESULTS
(SHEET 1 OF 8)

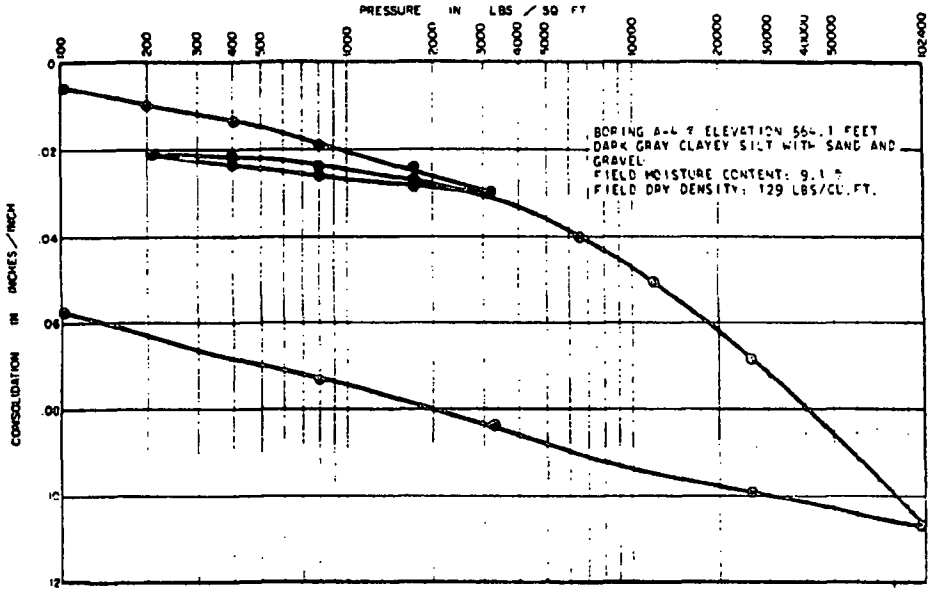




BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-59

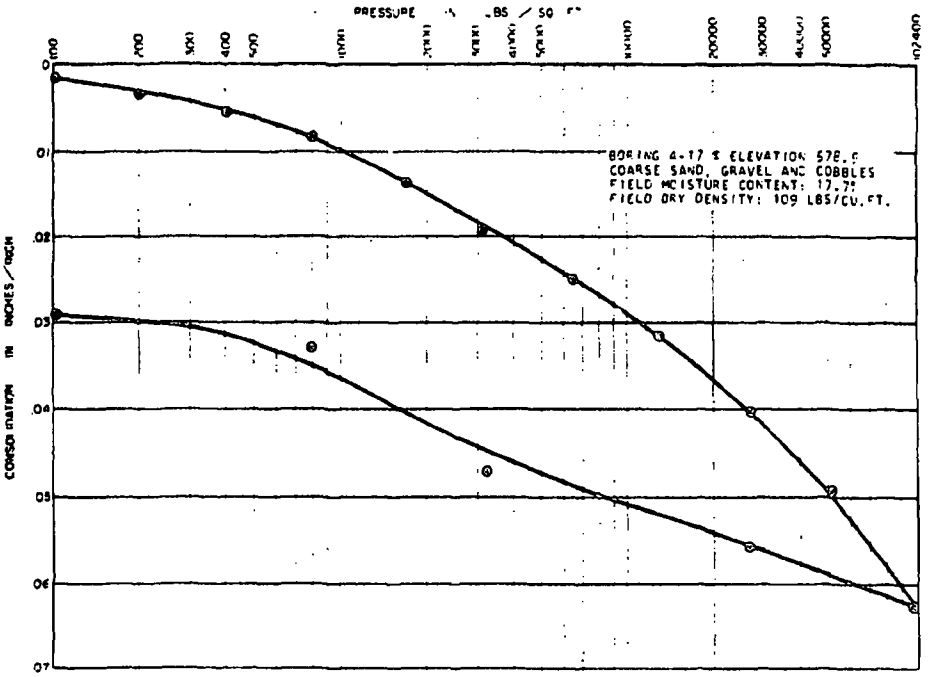
CONSOLIDATION TESTS, RESULTS
(SHEET 2 OF 8)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-59

CONSOLIDATION TESTS, RESULTS
(SHEET 3 OF 8)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-59

CONSOLIDATION TESTS, RESULTS
(SHEET 4 OF 8)

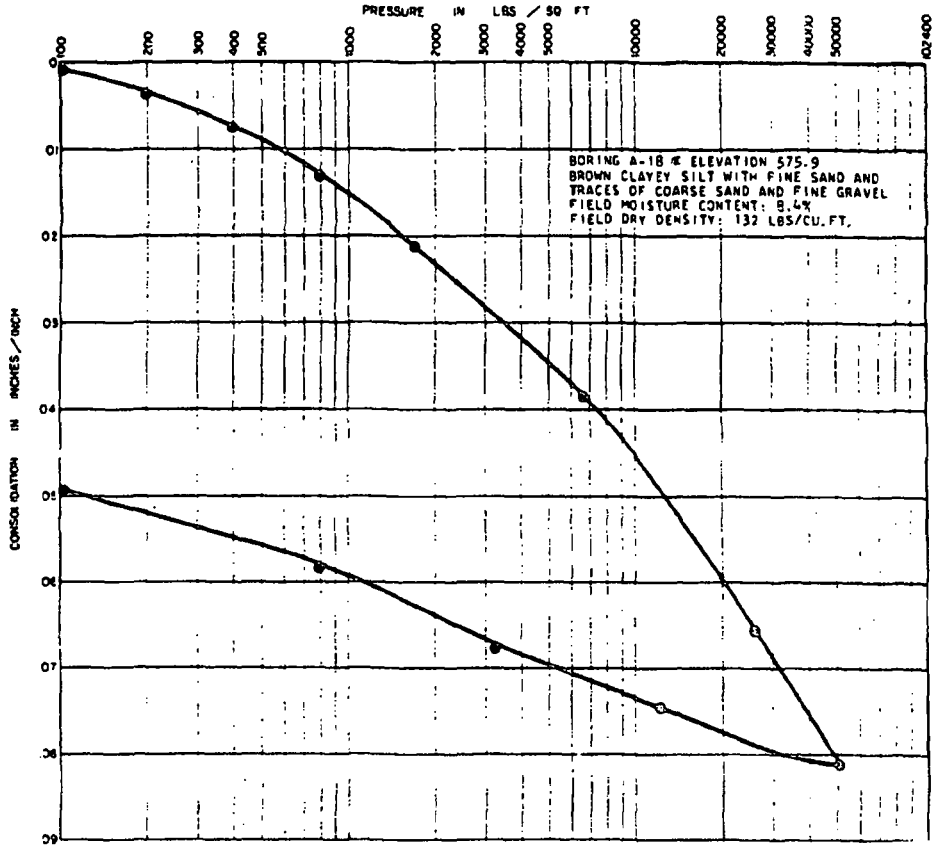


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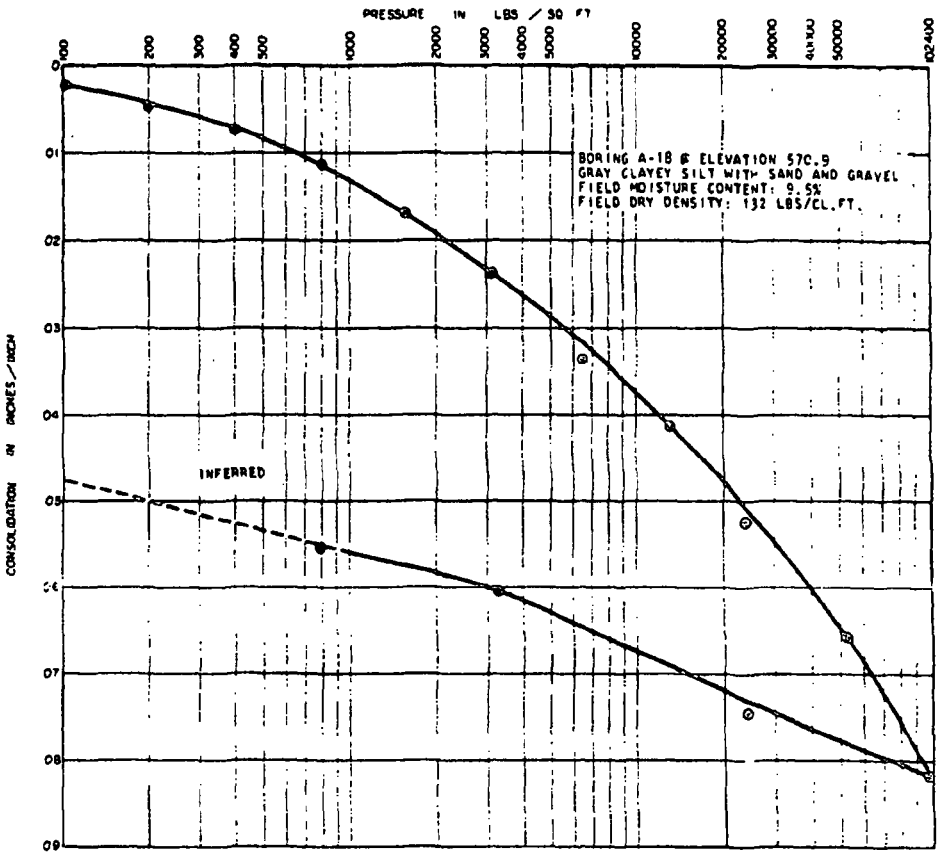
FIGURE 2.5-59

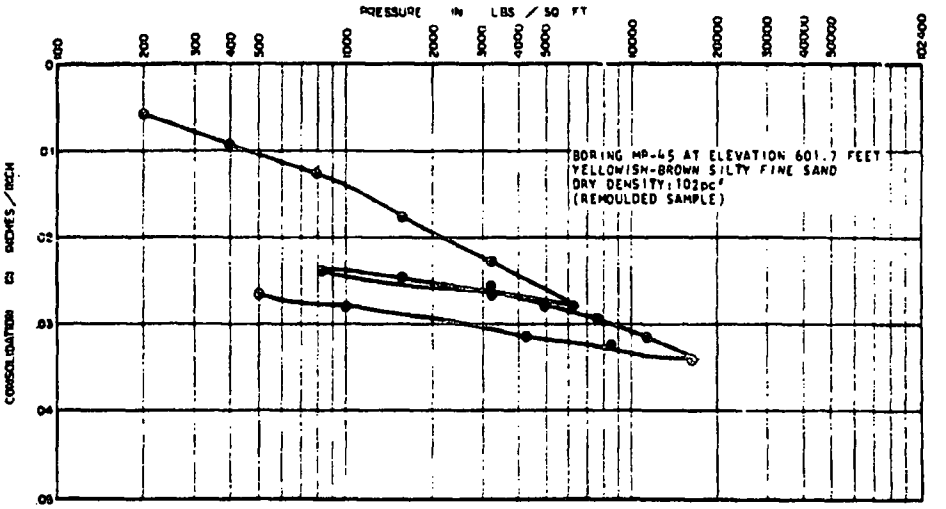
CONSOLIDATION TESTS, RESULTS
(SHEET 5 OF 8)

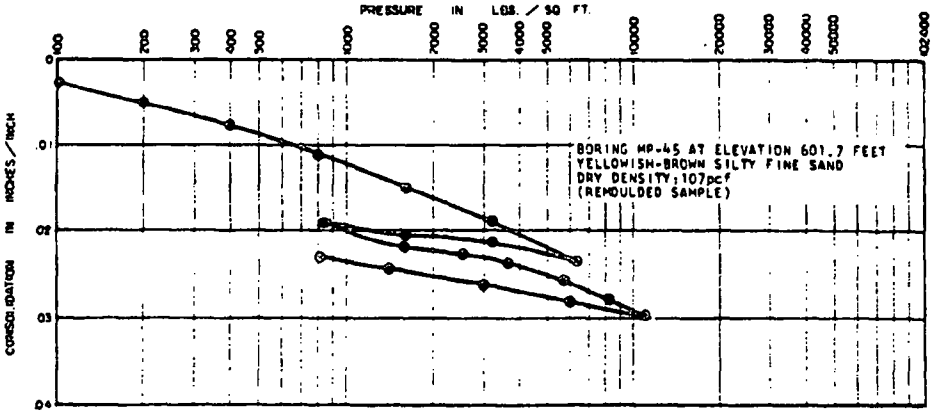


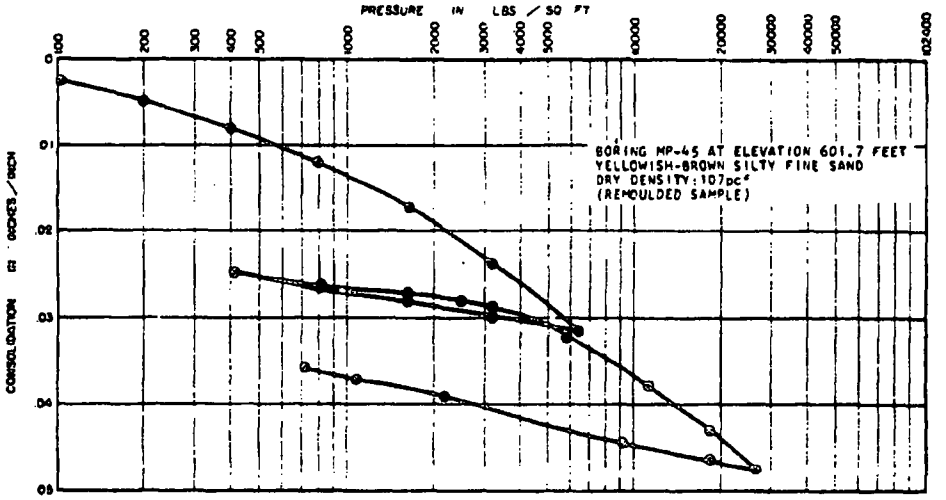
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-59

CONSOLIDATION TESTS, RESULTS
(SHEET 6 OF 8)



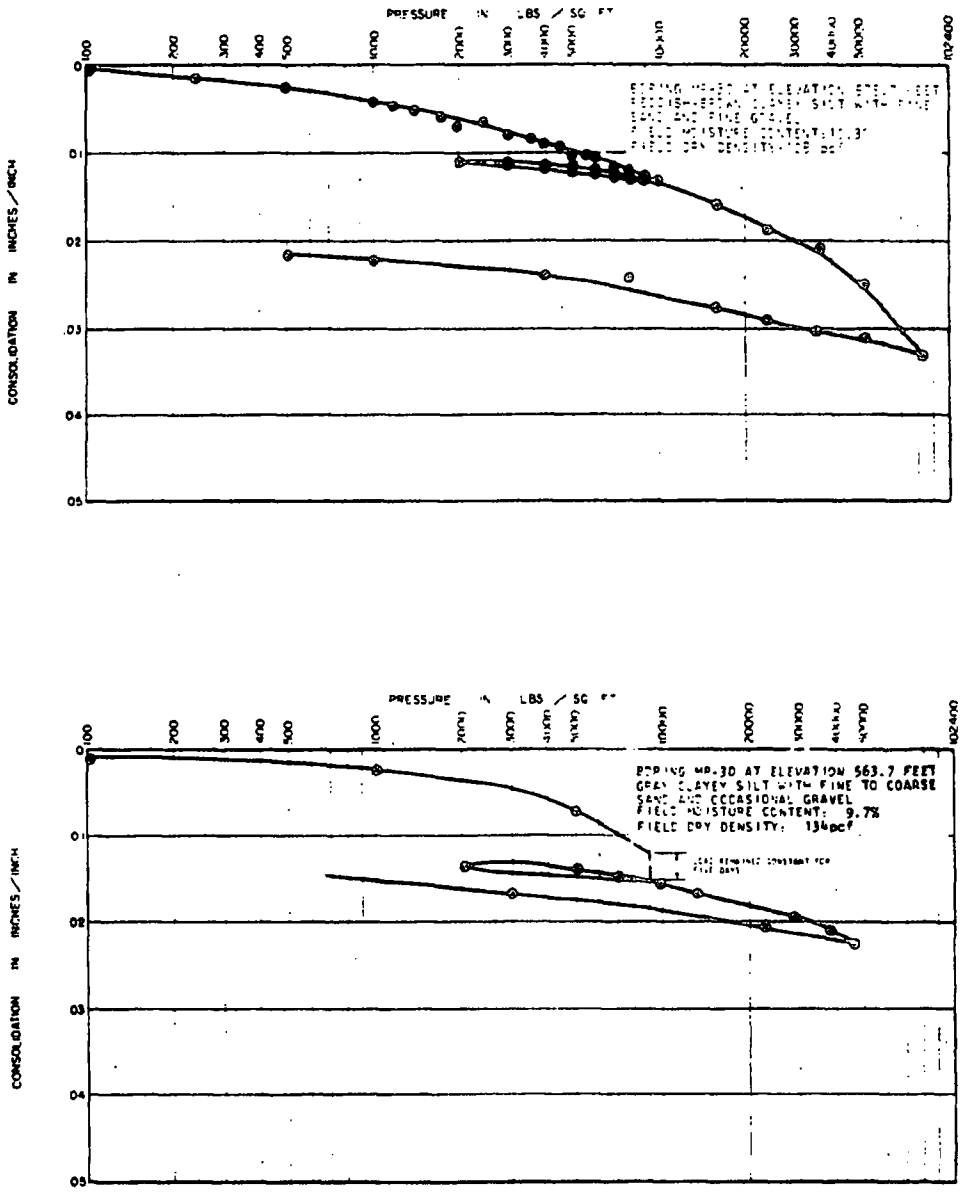




BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-59

CONSOLIDATION TESTS, RESULTS
(SHEET 7 OF 8)



* TEST CONDUCTED ON 4 INCH DIAMETER CORED SAMPLE.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

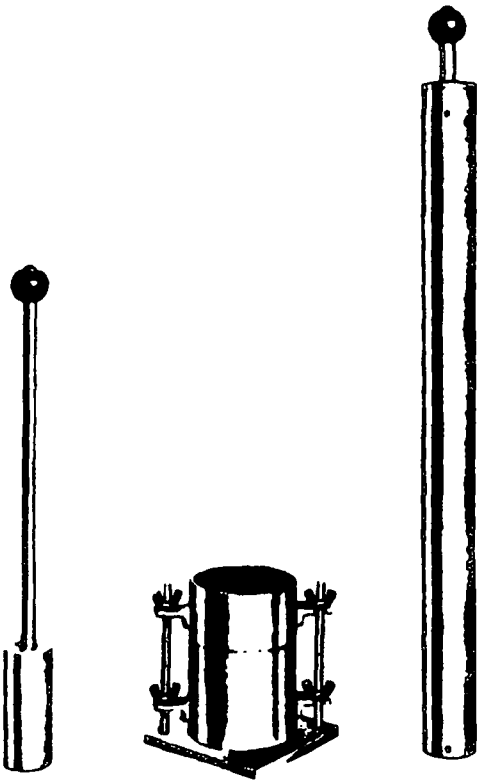
FIGURE 2.5-59

CONSOLIDATION TESTS, RESULTS
(SHEET 8 OF 8)

METHOD OF PERFORMING COMPACTION TESTS
(STANDARD AND MODIFIED A.A.S.H.O. METHODS)

IT HAS BEEN ESTABLISHED THAT WHEN COMPACTING EFFORT IS HELD CONSTANT, THE DENSITY OF A ROLLED EARTH FILL INCREASES WITH ADDED MOISTURE UNTIL A MAXIMUM DRY DENSITY IS OBTAINED AT A MOISTURE CONTENT TERMED THE "OPTIMUM MOISTURE CONTENT," AFTER WHICH THE DRY DENSITY DECREASES. THE COMPACTION CURVE SHOWING THE RELATIONSHIP BETWEEN DENSITY AND MOISTURE CONTENT FOR A SPECIFIC COMPACTING EFFORT IS DETERMINED BY EXPERIMENTAL METHODS. TWO COMMONLY USED METHODS ARE DESCRIBED IN THE FOLLOWING PARAGRAPHS.

FOR THE "STANDARD A.A.S.H.O." (A.S.T.M. D698-58T & A.A.S.H.O. T99-57) METHOD OF COMPACTION A PORTION OF THE SOIL SAMPLE PASSING THE NO. 4 SIEVE IS COMPACTED AT A SPECIFIC MOISTURE CONTENT IN THREE EQUAL LAYERS IN A STANDARD COMPACTION CYLINDER HAVING A VOLUME OF 1/30 CUBIC FOOT, USING TWENTY-FIVE 12-INCH BLOWS OF A STANDARD 5-1/2 POUND RAMMER TO COMPACT EACH LAYER.



SOME APPARATUS FOR PERFORMING COMPACTION TESTS
Shows, from left to right, 5-1/2 pound rammer (sleeve controlling 12" height of drop removed), 1/30 cubic-foot cylinder with removable collar and base plate, and 10 pound rammer within sleeve.

IN THE "MODIFIED A.A.S.H.O." (A.S.T.M. D-1557-58T & A.A.S.H.O. T 180-57) METHOD OF COMPACTION A PORTION OF THE SOIL SAMPLE PASSING THE NO. 4 SIEVE IS COMPACTED AT A SPECIFIC MOISTURE CONTENT IN FIVE EQUAL LAYERS IN A STANDARD COMPACTION CYLINDER HAVING A VOLUME OF 1/30 CUBIC FOOT, USING TWENTY-FIVE 18-INCH BLOWS OF A 10-POUND RAMMER TO COMPACT EACH LAYER. SEVERAL VARIATIONS OF THESE COMPACTION TESTING METHODS ARE OFTEN USED AND THESE ARE DESCRIBED IN A.A.S.H.O. & A.S.T.M. SPECIFICATIONS.

FOR BOTH METHODS, THE WET DENSITY OF THE COMPACTED SAMPLE IS DETERMINED BY WEIGHING THE KNOWN VOLUME OF SOIL; THE MOISTURE CONTENT, BY MEASURING THE LOSS OF WEIGHT OF A PORTION OF THE SAMPLE WHEN OVEN DRIED; AND THE DRY DENSITY, BY COMPUTING IT FROM THE WET DENSITY AND MOISTURE CONTENT. A SERIES OF SUCH COMPACTIONS IS PERFORMED AT INCREASING MOISTURE CONTENTS UNTIL A SUFFICIENT NUMBER OF POINTS DEFINING THE MOISTURE-DENSITY RELATIONSHIP HAVE BEEN OBTAINED TO PERMIT THE PLOTTING OF THE COMPACTION CURVE. THE MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT FOR THE PARTICULAR COMPACTING EFFORT ARE DETERMINED FROM THE COMPACTION CURVE.

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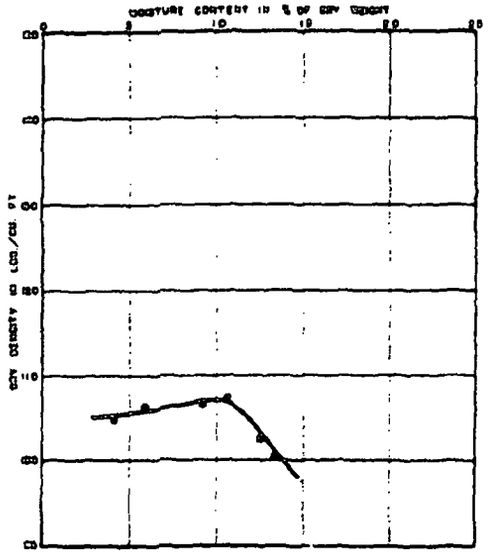
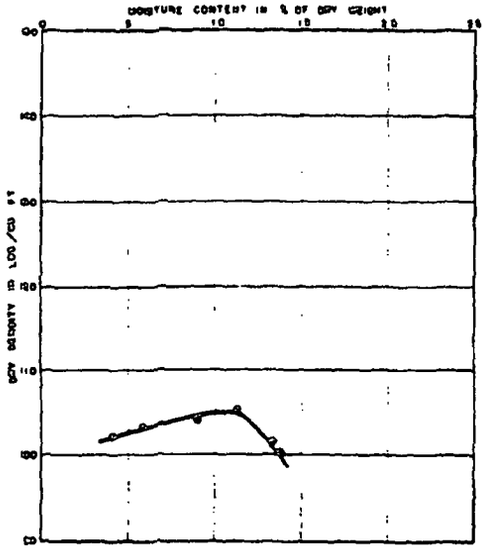
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-60

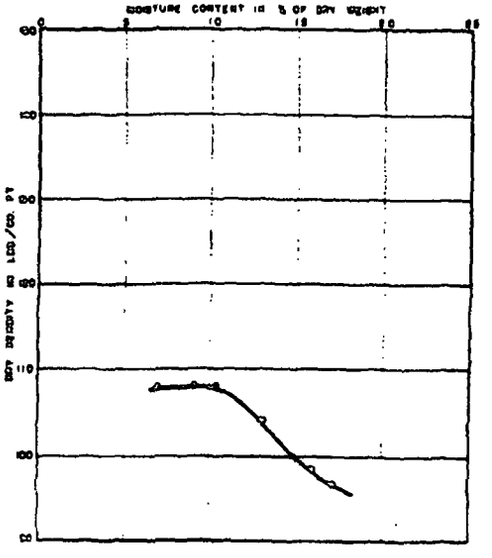
COMPACTION TEST, METHODS



MIXED SAMPLE FROM BORINGS MP-14
AND MP-31 (ELEVATION 598 TO 581 FEET)
YELLOWISH-BROWN SILTY FINE SAND
OPTIMUM MOISTURE CONTENT: 10.5%
MAXIMUM DRY DENSITY: 107 LBS/CU.FT.



MIXED SAMPLE FROM BORINGS MP-14
AND MP-31 (ELEVATION 588 TO 581 FEET)
YELLOWISH-BROWN SILTY FINE SAND
OPTIMUM MOISTURE CONTENT: 11.5%
MAXIMUM DRY DENSITY: 105 LBS/CU.FT.

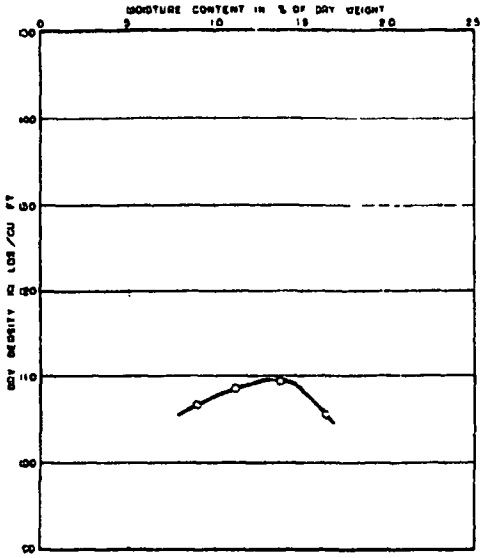


MIXED SAMPLE FROM BORINGS MP-14
AND MP-31 (ELEVATION 598 TO 588 FEET)
YELLOWISH-BROWN SILTY FINE SAND
OPTIMUM MOISTURE CONTENT: 9.5%
MAXIMUM DRY DENSITY: 108 LBS/CU.FT.

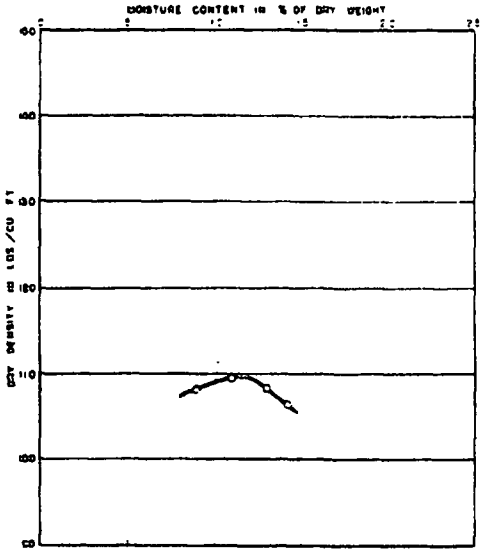
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-61

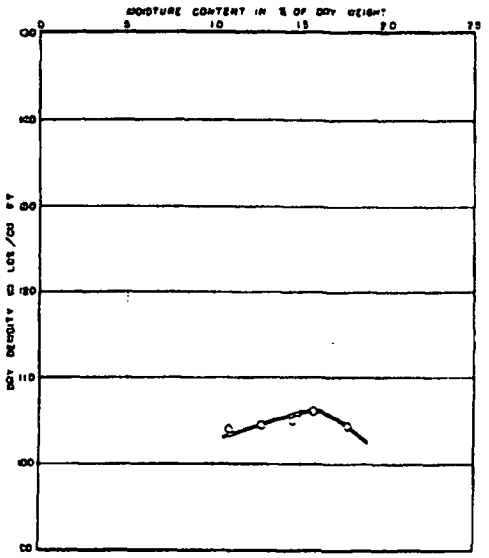
COMPACTION TEST. RESULTS
(SHEET 1 OF 3)



MIXED SAMPLE FROM DITCH BANK
1500 FEET SOUTH OF PLANT
(0-5 FOOT DEPTH)
YELLOWISH-BROWN SILTY FINE SAND
OPTIMUM MOISTURE CONTENT: 14.5%
MAXIMUM DRY DENSITY: 110 LBS/CU.FT.



MIXED SAMPLE FROM DITCH BANK
1500 FEET SOUTH OF PLANT
(5 TO 10 FOOT DEPTH)
YELLOWISH-BROWN FINE SAND
OPTIMUM MOISTURE CONTENT: 14.5%
MAXIMUM DRY DENSITY: 110 LBS/CU.FT.

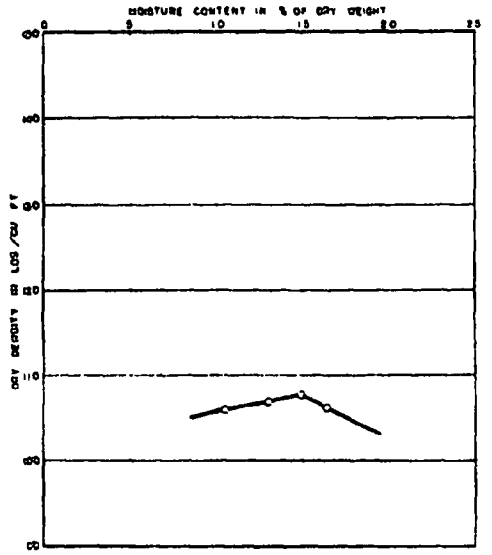


MIXED SAMPLE FROM DITCH BANK
1500 FEET SOUTH OF PLANT
(10 TO 15 FOOT DEPTH)
YELLOWISH-BROWN FINE SAND
OPTIMUM MOISTURE CONTENT: 16.0%
MAXIMUM DRY DENSITY: 107 LBS/CU.FT.

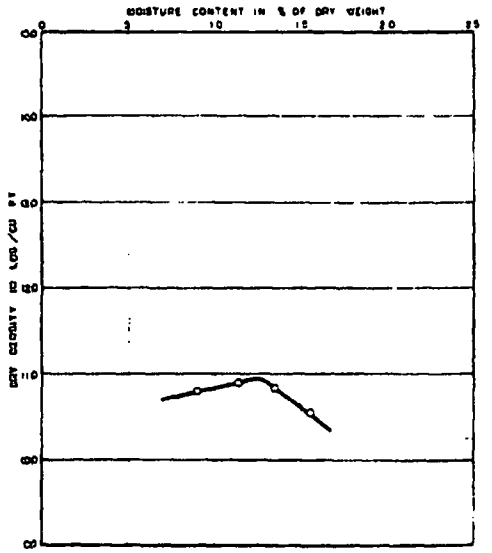
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-61

COMPACTION TEST, RESULTS
(SHEET 2 OF 3)



MIXED SAMPLE FROM DITCH BANK
1500 FEET SOUTH OF PLANT
(C TO 5 FOOT DEPTH)
YELLOWISH-BROWN SILTY FINE SAND
OPTIMUM MOISTURE CONTENT: 14.5%
MAXIMUM DRY DENSITY: 108 LBS./CU.FT.

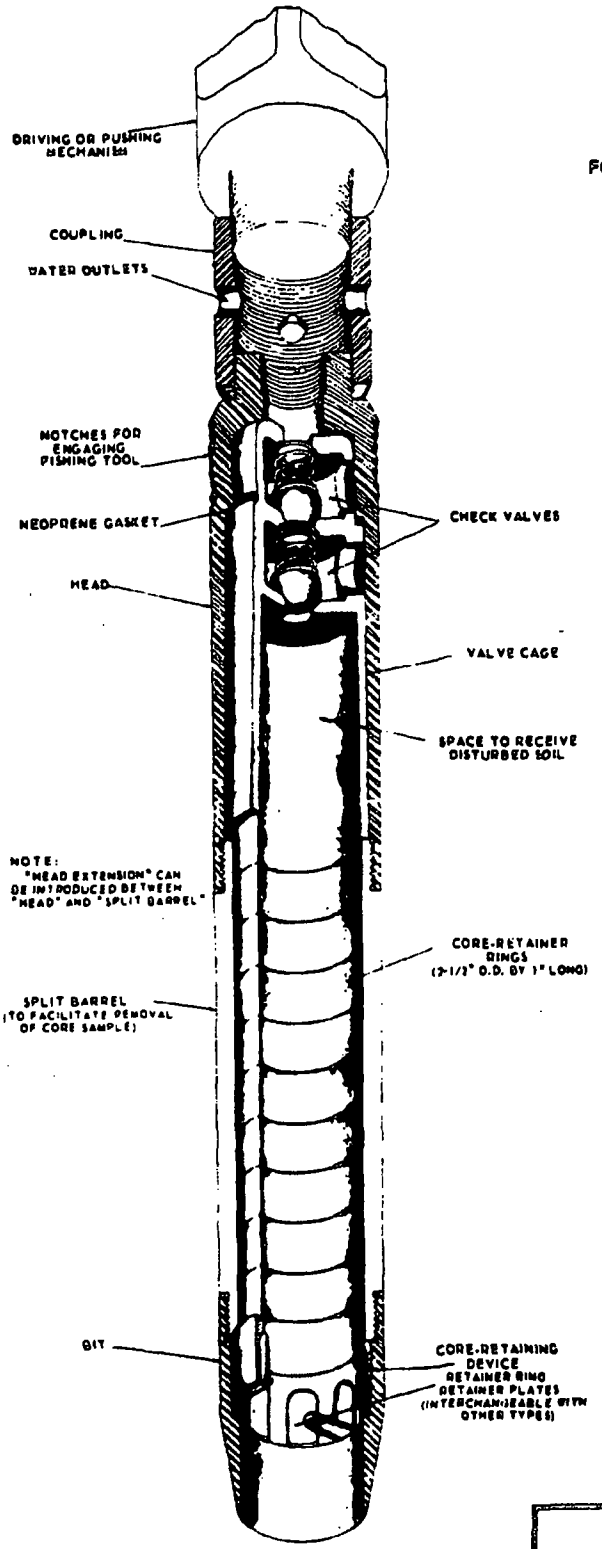


MIXED SAMPLE FROM DITCH BANK
1500FEET SOUTH OF PLANT
(5 TO 10 FOOT DEPTH)
YELLOWISH-BROWN FINE SAND
OPTIMUM MOISTURE CONTENT: 12.5%
MAXIMUM DRY DENSITY: 110 LBS/CU.FT.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-61

COMPACTION TEST, RESULTS
(SHEET 3 OF 3)



SOIL SAMPLER TYPE U

FOR SOILS DIFFICULT TO RETAIN IN SAMPLER
U. S. PATENT NO. 2,318,062

ALTERNATE ATTACHMENTS

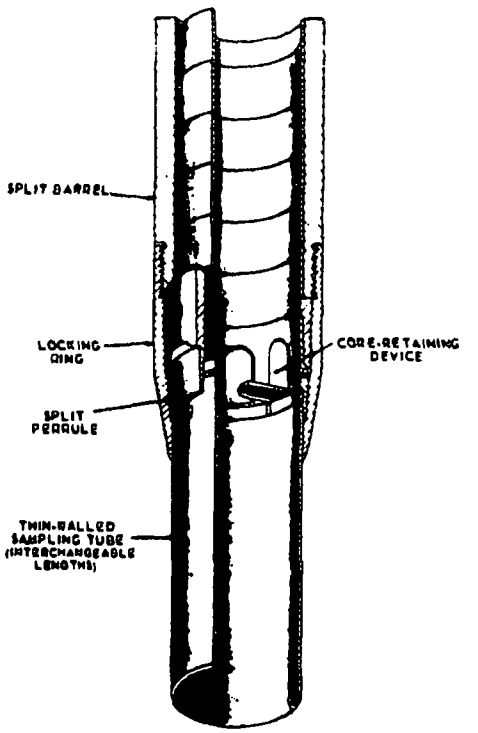


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FIGURE 2.5-62

DAMES AND MOORE U TYPE SAMPLER

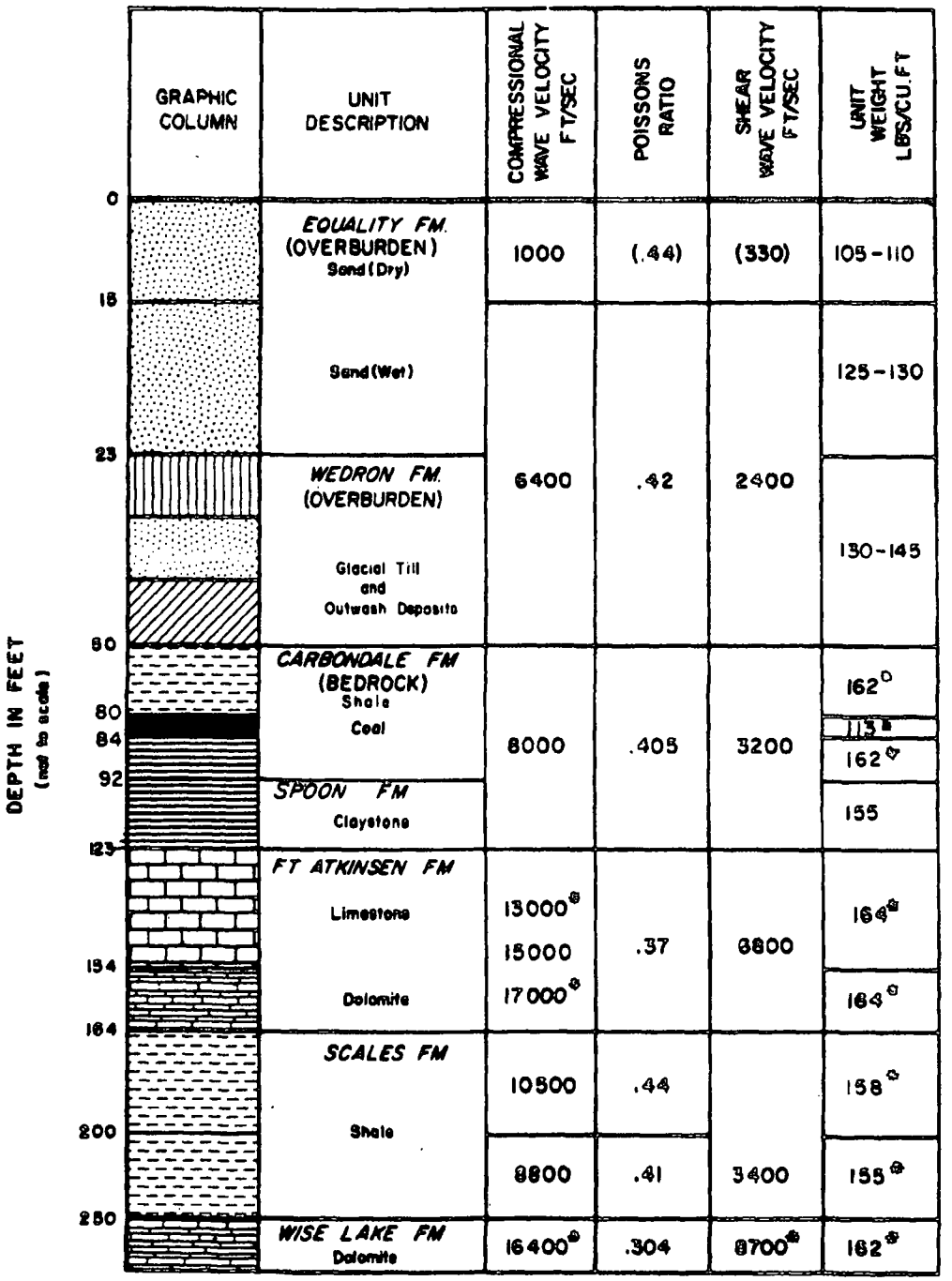

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FIGURE 2.5-63

REPRESENTATIVE GEOLOGIC PROFILE
SHOWING GEOPHYSICAL PROPERTIES

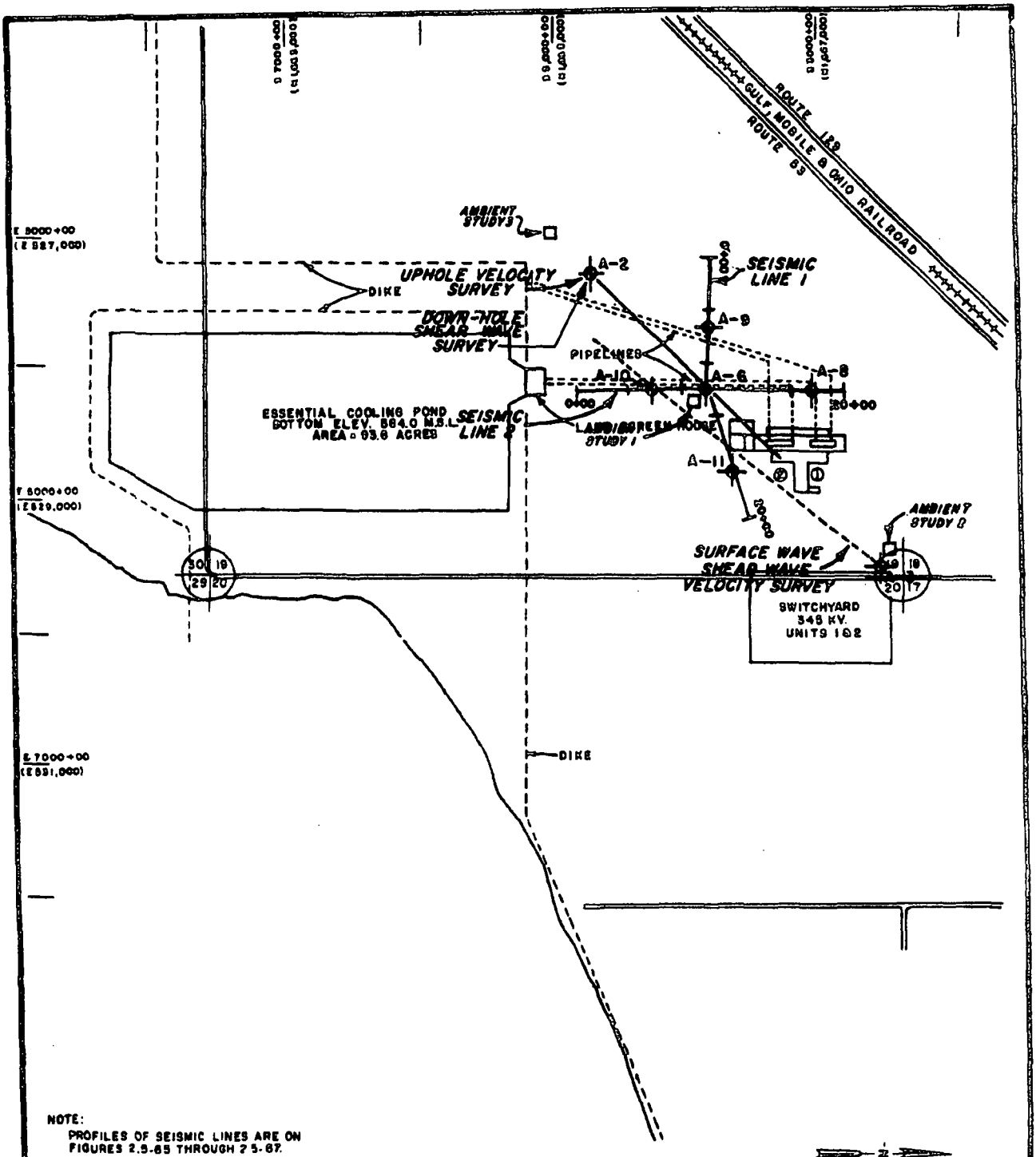

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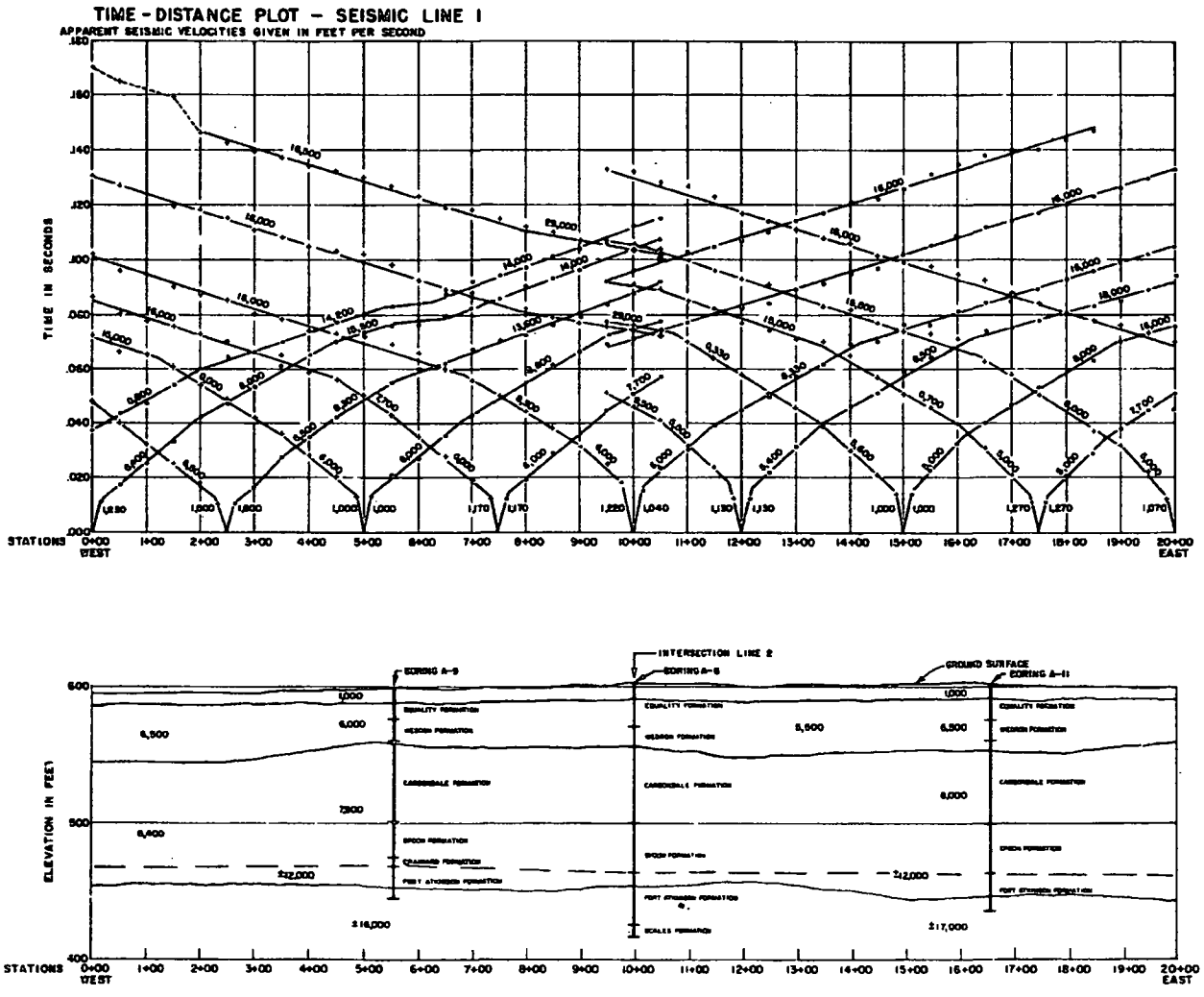
FIGURE 2.5-64

PLOT PLAN OF GEOPHYSICAL EXPLORATIONS



NOTE:

TIME DISTANCE PLOTS REFLECT INFORMATION COLLECTED FROM SHOT POINTS MADE AT SEVERAL LOCATIONS ALONG A SEISMIC LINE. FOR CLARIFICATION, TWO PLOT SYMBOLS HAVE BEEN USED TO INDICATE THE ORIGIN OF THE SHOCK; FROM THE LEFT (.) FROM THE RIGHT (+).

THE SUBSURFACE SECTIONS SHOWN REPRESENT OUR EVALUATION OF THE MOST PROBABLE CONDITIONS BASED UPON INTERPRETATIONS OF PRESENTLY AVAILABLE DATA. SOME VARIATIONS FROM THESE CONDITIONS MUST BE EXPECTED.

TIME MISTIES BETWEEN LINE SEGMENTS ARE DUE TO DIFFERENCES IN SHOT DEPTHS AND OFFSET DISTANCES.

THE 12,000 FEET PER SECOND LAYER IS A HIDDEN LAYER AND HAS BEEN INTERPRETED FROM BIRDWELL 3-D VELOCITY LOGS.

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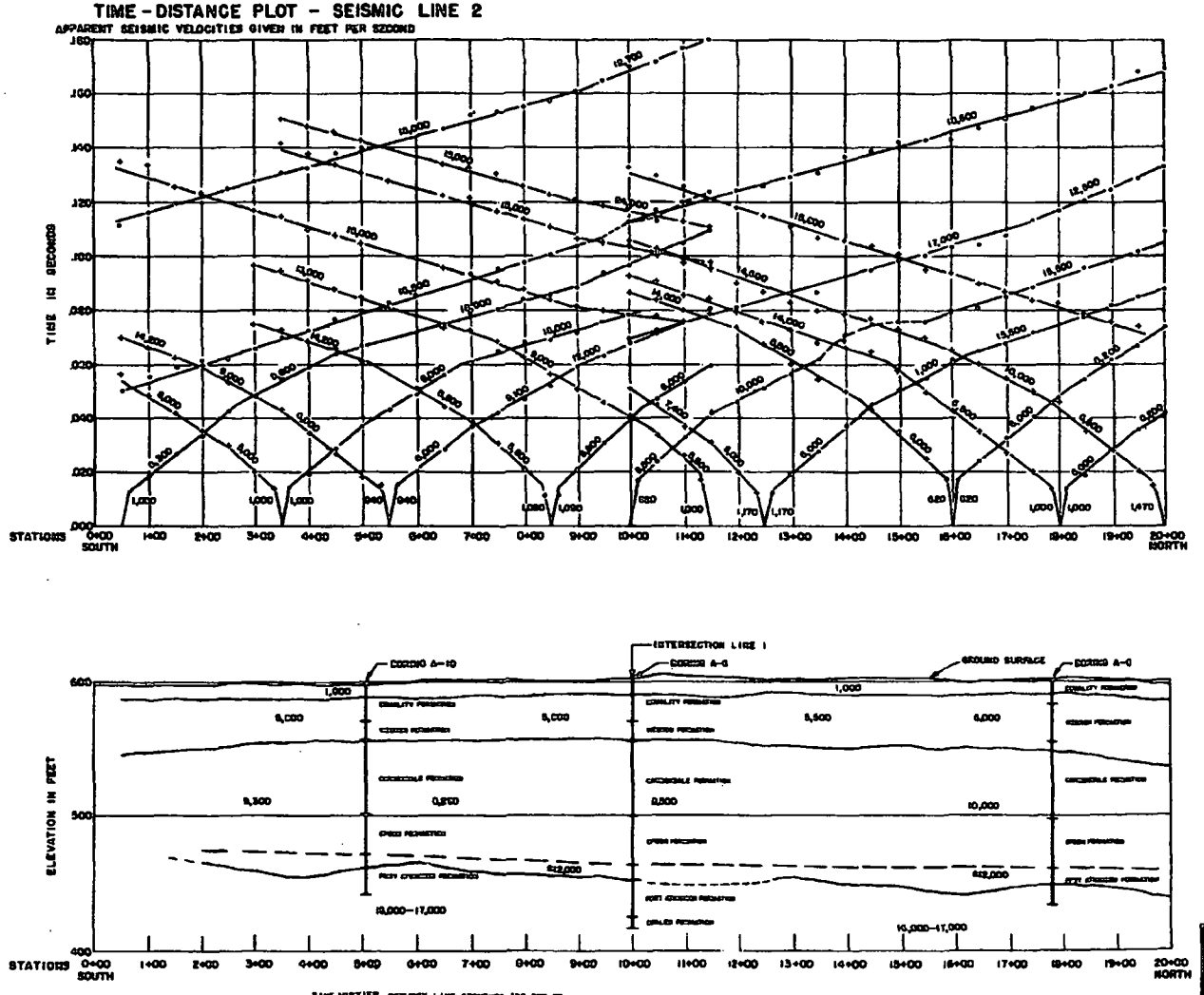
FIGURE 2.5-65

SEISMIC REFRACTION SURVEY
LINE 1



NOTE:

TIME DISTANCE PLOTS REFLECT INFORMATION COLLECTED FROM SHOT POINTS MADE AT SEVERAL LOCATIONS ALONG A SEISMIC LINE. FOR CLARIFICATION, TWO PLOT SYMBOLS HAVE BEEN USED TO INDICATE THE ORIGIN OF THE SHOCK: FROM THE LEFT (.) FROM THE RIGHT (+).

THE SUBSURFACE SECTIONS SHOWN REPRESENT OUR EVALUATION OF THE MOST PROBABLE CONDITIONS BASED UPON INTERPRETATIONS OF PRESENTLY AVAILABLE DATA. SOME VARIATIONS FROM THESE CONDITIONS MUST BE EXPECTED.

TIME MISTIES BETWEEN LINE SEGMENTS ARE DUE TO DIFFERENCES IN SHOT DEPTHS AND OFFSET DISTANCES.

THE 17,000 FEET PER SECOND LAYER IS A HIDDEN LAYER AND WAS SEEN INTERPRETED FROM BIRDSELL 3-D VELOCITY LINES.

FROM STATION 10+00 TO 12+50 A SLIGHT DEPRESSION MAY BE PRESENT IN THE 16-17000 FEET PER SECOND LAYER. THIS EFFECT MAY HOWEVER BE CAUSED BY CHANGE IN CHARACTER OR THICKNESS OF OVERLYING MATERIAL.

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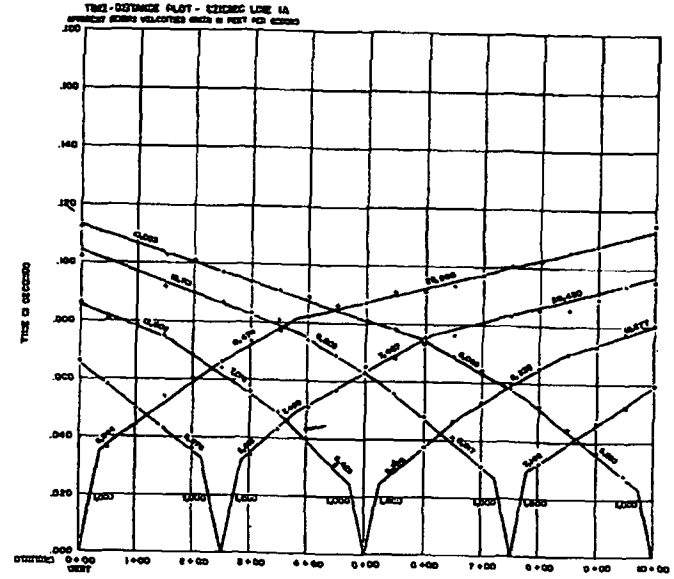
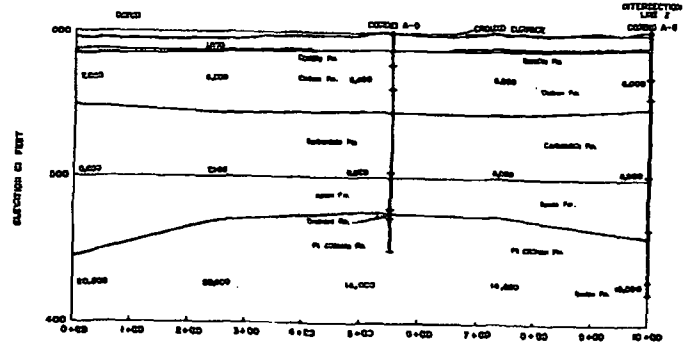
FIGURE 2.5-66

SEISMIC REFRACTION SURVEY
LINE 2





NOTES:
TIME DISTANCE PLOTS SHOW INFORMATION COLLECTED FROM SHOT POINTS MAR. AT LATERAL LOCATIONS ALONG A SEISMIC LINE. FOR CLARIFICATION, RAY PLOT TRACES HAVE BEEN USED TO INDICATE THE ORIGIN OF THE ARRIVAL FROM THE RIGHT (+).

THE SEISMOGRAPH REFRACTION SURVEY PROVIDES FOR EVALUATION OF THE SHOT PROFILE, SUBSURFACE CONDITIONS BASED UPON THE INTERPRETATION OF FIELD-DERIVED SEISMIC DATA. SOME VARIATIONS FROM THESE CONDITIONS MUST BE EXPECTED.

ALL VELOCITIES SHOWN ARE APPARENT UNCORRECTED FOR TOPOGRAPHY.

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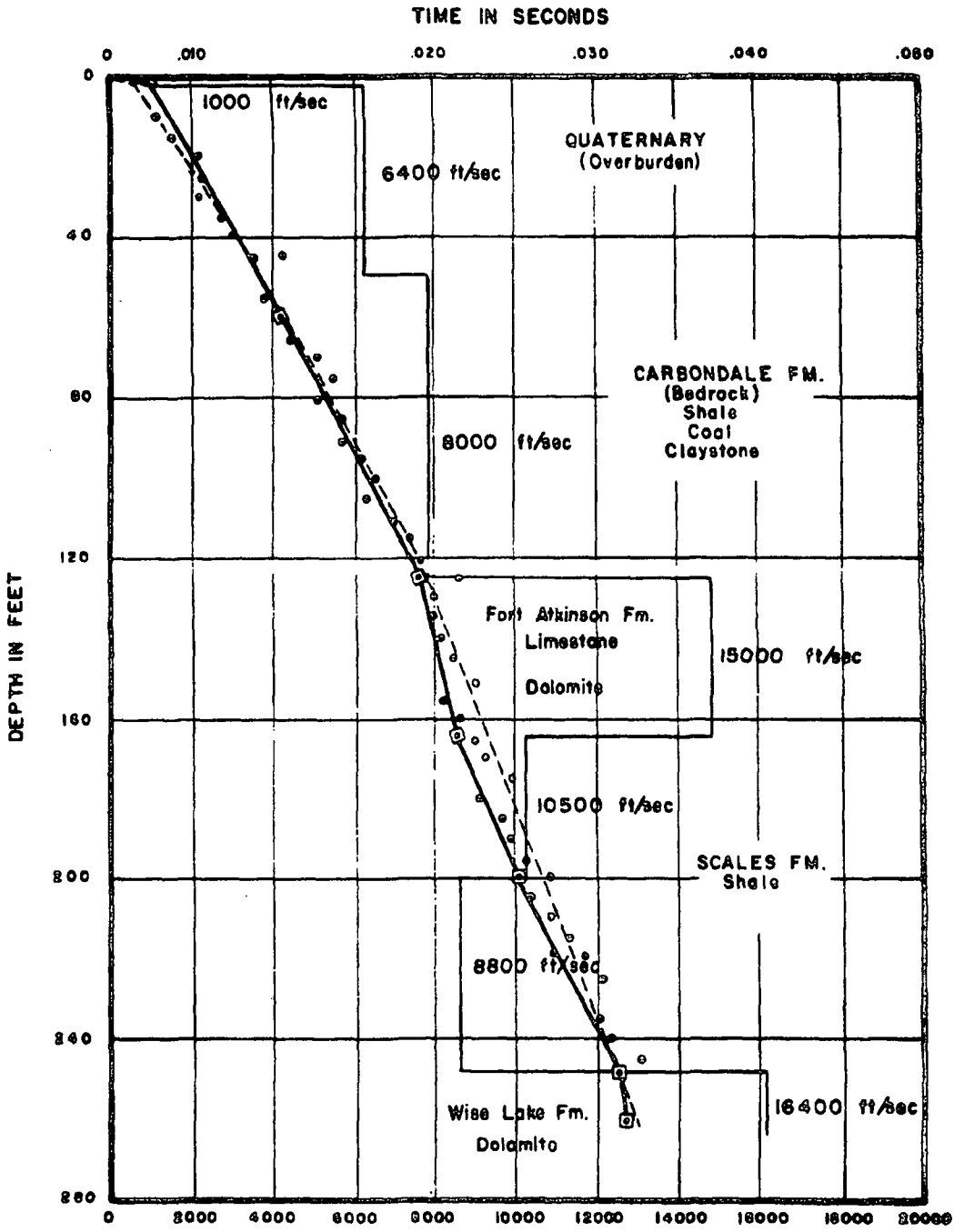
FIGURE 2.5-67

SEISMIC REFRACTION SURVEY
LINE 1A



COMPRESSIONAL WAVE VELOCITY

INTEGRATED UP HOLE SURVEY BORING A-2

e Original travel time data

⊡ Integrated travel time from Birdwell logs

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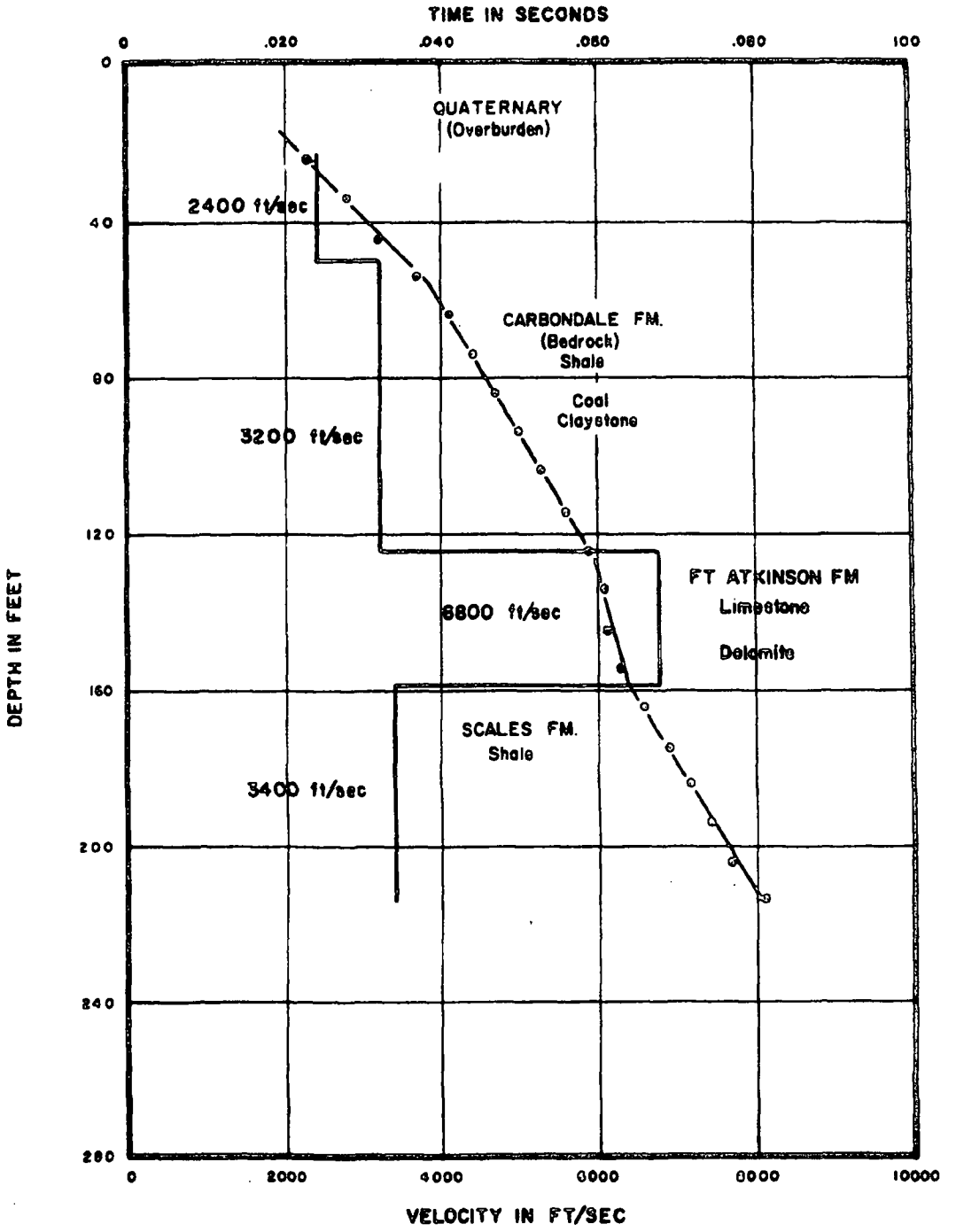
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-68

UPHOLE VELOCITY SURVEY
COMPRESSIONAL WAVE VELOCITY



DOWN HOLE VELOCITY SURVEY

SHEAR WAVE VELOCITY BORING A-2

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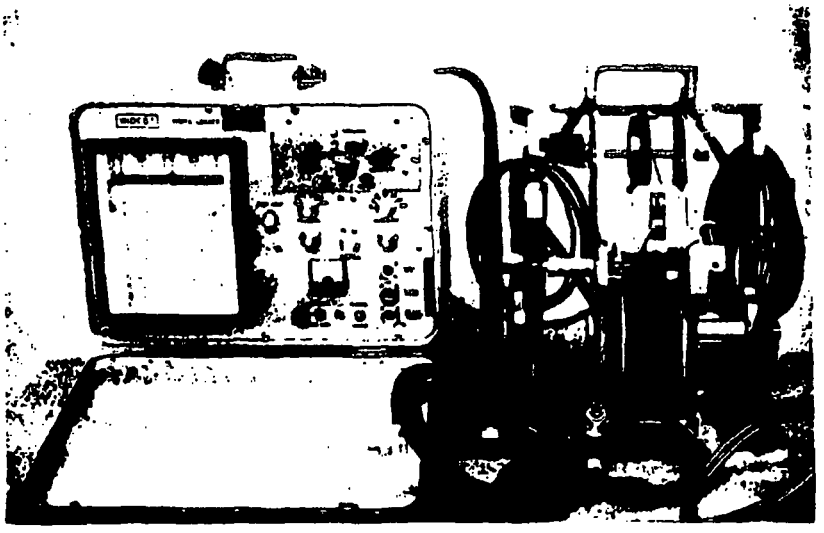
FIGURE 2.5-69 DOWNHOLE VELOCITY SURVEY SHEAR WAVE VELOCITY

THE WIDCO PORTA-LOGGER

THE WIDCO PORTA-LOGGER IS A BOREHOLE GEOPHYSICAL DEVICE WHICH UTILIZES A NUMBER OF WIRELINE PROBES IN CONJUNCTION WITH AN ELECTRONIC MODULE AND RECORDING UNIT. DEPENDING ON THE NATURE OF THE PROBE USED, A GRAPHICAL PRINT-OUT OF GEOPHYSICAL PROPERTIES VERSUS HOLE DEPTH IS PRODUCED. GEOPHYSICAL PROPERTIES MEASURED BY THIS INSTRUMENT INCLUDE ELECTRICAL RESISTANCE, SPONTANEOUS POTENTIAL, GAMMA RADIATION AND TEMPERATURE. IN VARIOUS COMBINATIONS, THESE LOGS CAN BE USED FOR A WIDE VARIETY OF GEOLOGICAL AND ENGINEERING APPLICATIONS WHICH SUPPLEMENT INFORMATION DERIVED FROM THE ROCK AND SOIL SAMPLES NORMALLY RECOVERED FROM BORINGS. TYPICAL APPLICATIONS INCLUDE STRATIGRAPHIC CORRELATION, IDENTIFICATION OF LITHOLOGY AND BED THICKNESSES, DEFINITION OF AQUIFER BOUNDARIES, LIMITED WATER QUALITY DETERMINATION, MINERAL PROSPECTING (PARTICULARLY COAL AND URANIUM) AND IDENTIFICATION OF BOREHOLE TEMPERATURE GRADIENTS.



ELECTRICAL LOGGING SURVEY

SINGLE ELECTRODE RESISTANCE AND SPONTANEOUS POTENTIAL (SP) ARE RECORDED SIMULTANEOUSLY. THE LOGGING PROBE CANNOT BE USED INSIDE OF CASING AND MUST BE IMMERSED IN A CONDUCTIVE FLUID SUCH AS WATER OR DRILLING MUD. THE SINGLE ELECTRODE RESISTANCE IS EXPRESSED IN UNITS OF OHMS, AND IS RECORDED ON THE RIGHT TRACK OF THE RECORDER CHART. SPONTANEOUS POTENTIAL IS EXPRESSED IN UNITS OF MILLIVOLTS, AND IS RECORDED ON THE LEFT TRACK OF THE RECORDER CHART. THE SP LOG IS ESPECIALLY SIGNIFICANT WHEN A SALINITY CONTRAST EXISTS BETWEEN FORMATION WATER AND THE BOREHOLE FLUID.

GAMMA RAY LOGGING SURVEY

THE GAMMA RAY LOG PROVIDES A PROFILE OF NATURALLY OCCURRING RADIATION EMITTED FROM GEOLOGIC FORMATIONS AND EXPRESSED IN TERMS OF COUNTS PER SECOND. THE SOURCE OF THIS RADIOACTIVITY IS PRINCIPALLY DERIVED FROM NATURAL DECAY OF URANIUM, THORIUM, AND A POTASSIUM ISOTOPE OF ATOMIC WEIGHT 40. FORMATIONS SUCH AS CLAY AND SHALE USUALLY CONTAIN A HIGHER PROPORTION OF THESE ELEMENTS THAN DO SANDSTONES AND LIMESTONES, AND THEREFORE SHOW A RELATIVELY HIGHER LEVEL OF GAMMA RADIATION. THE GAMMA RAY LOGGING TOOL MAY BE USED IN HOLES WHICH ARE CASED OR UNCASED, AND IS NOT AFFECTED BY THE PRESENCE OR ABSENCE OF BOREHOLE FLUID.

TEMPERATURE LOGGING SURVEY

THIS LOG PROVIDES A PROFILE OF BOREHOLE TEMPERATURE AND CAN BE USED TO LOCATE SIGNIFICANT POINTS OF FLUID ENTRY. THE THERMOCOUPLE PROBE IS IMMERSED IN WATER OR DRILLING FLUID TO GAIN SATISFACTORY SENSITIVITY.

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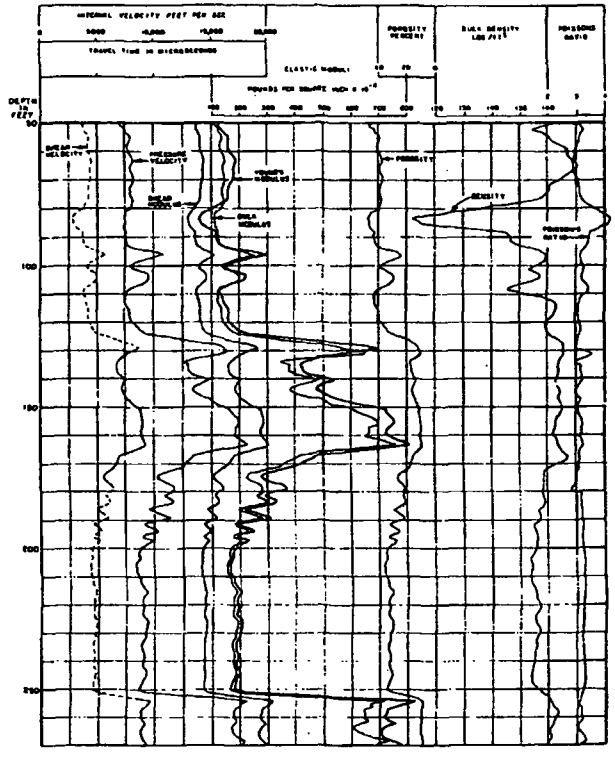
UPDATED FINAL SAFETY ANALYSIS REPORT

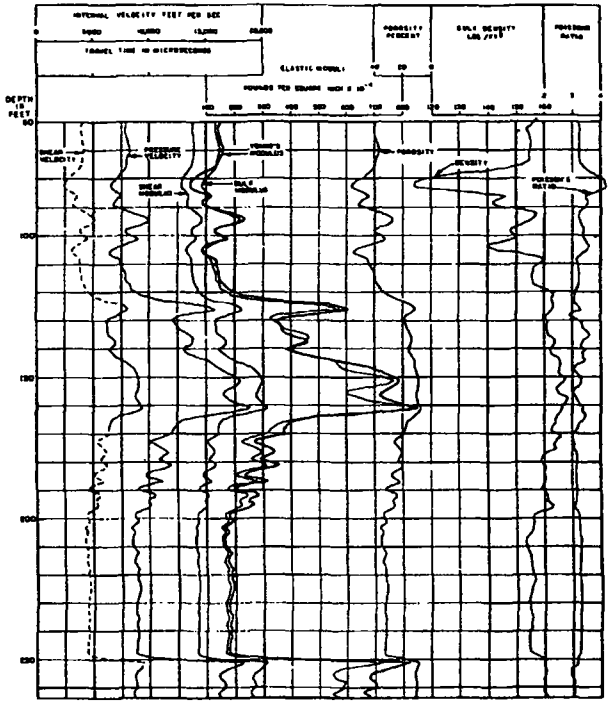
FIGURE 2.5-70

WIDCO PORTA-LOGGER

BORING A-1



BORING A-2



NOTE:

DASHED LINE INDICATES THAT THE SHEAR WAVE VELOCITY IS A CALCULATED VALUE WHICH WAS COMPUTED ON THE BASIS OF P-WAVE VELOCITY AND DENSITY DATA. A SOLID LINE INDICATES A MEASURED VALUE OF S-WAVE VELOCITY.

THE ELASTIC PROPERTIES LOG IS BASED UPON COMPUTER PROCESSED DATA OBTAINED FROM 3-DIMENSIONAL VELOCITY LOG, DENSITY LOG, AND CALIPER LOG SURVEYS, PERFORMED BY BIRDWELL DIVISION OF SEISMOGRAPH SERVICE CORPORATION.

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FIGURE 2.5-71

ELASTIC PROPERTIES,
LOGS A-1 AND A-2

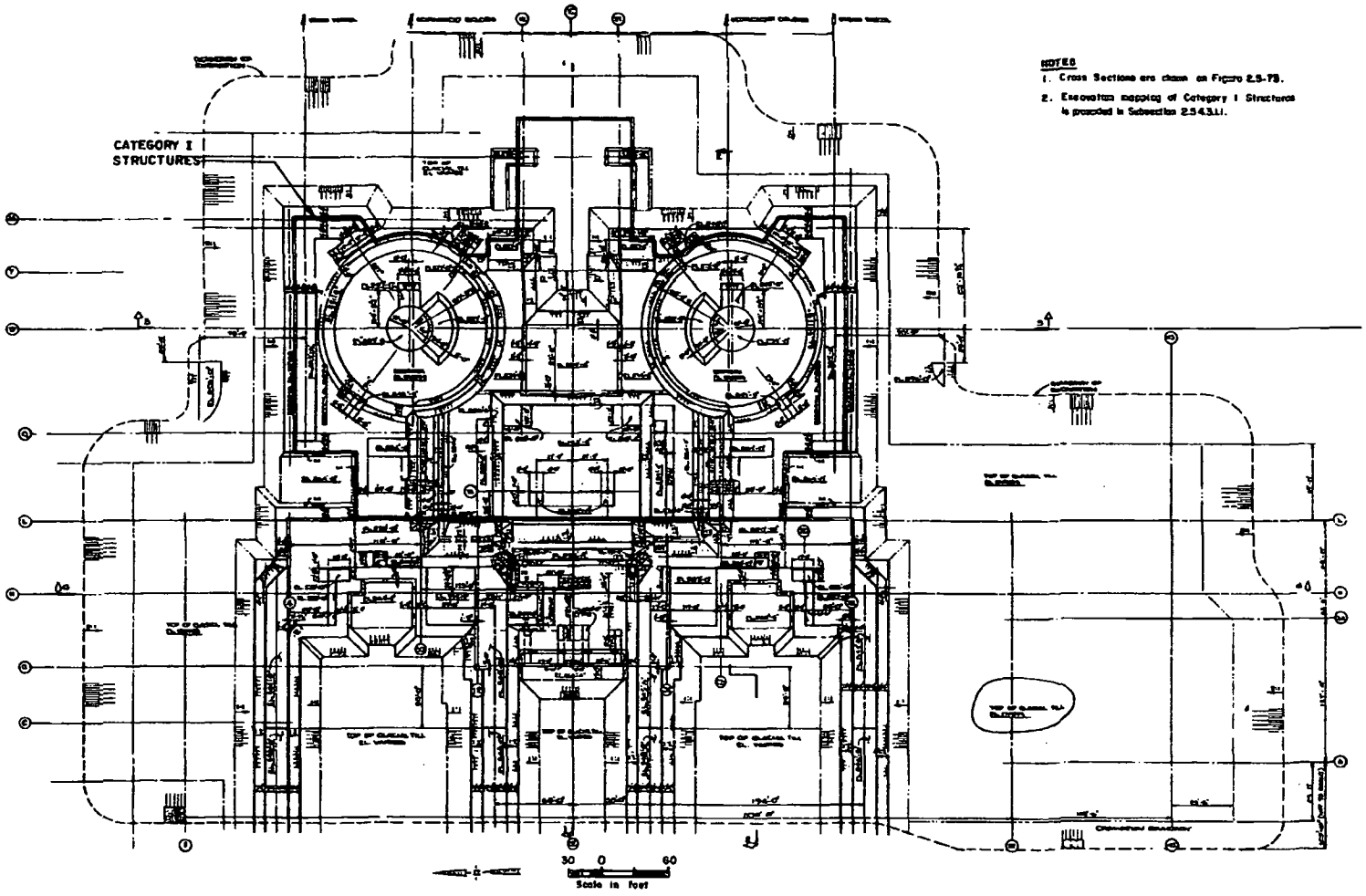

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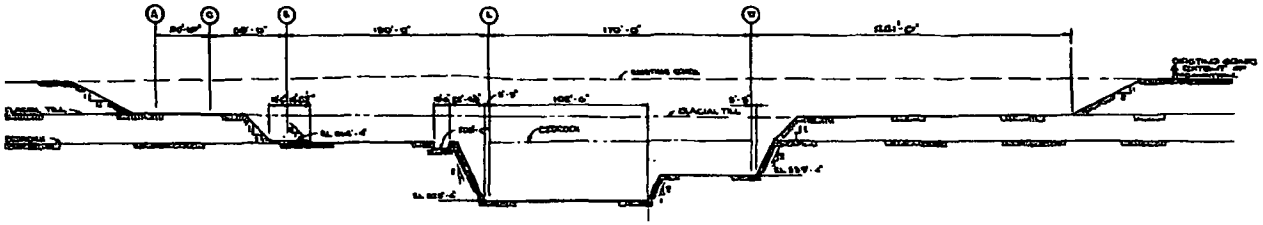
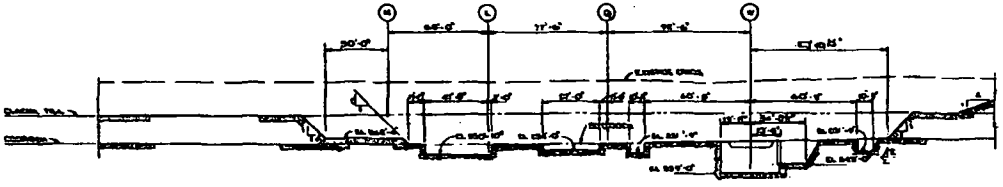
FIGURE 2.5-72

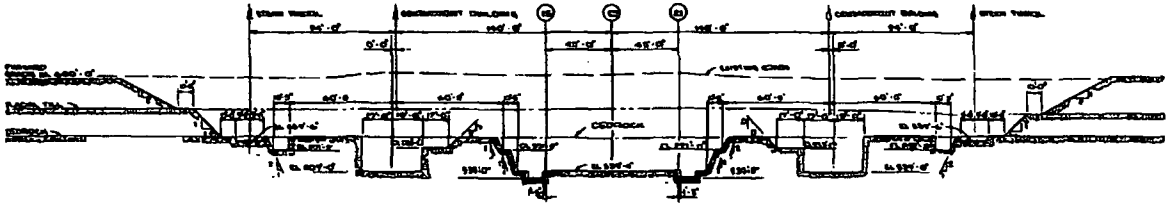
FOUNDATION EXCAVATION PLAN



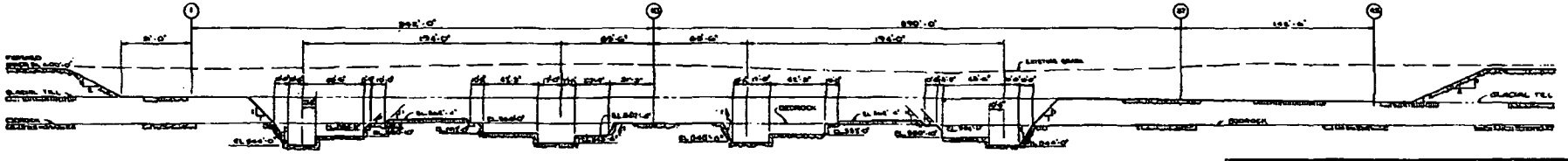
SECTION 1-1



SECTION 2-2



SECTION 3-3



SECTION 4-4

30 0 60

Scale in feet

NOTES

1. Location of sections are shown on Figure 2.5-72.
2. Excavation mapping for Category I Structure is presented in Subsection 2.5.4.3.1.1.

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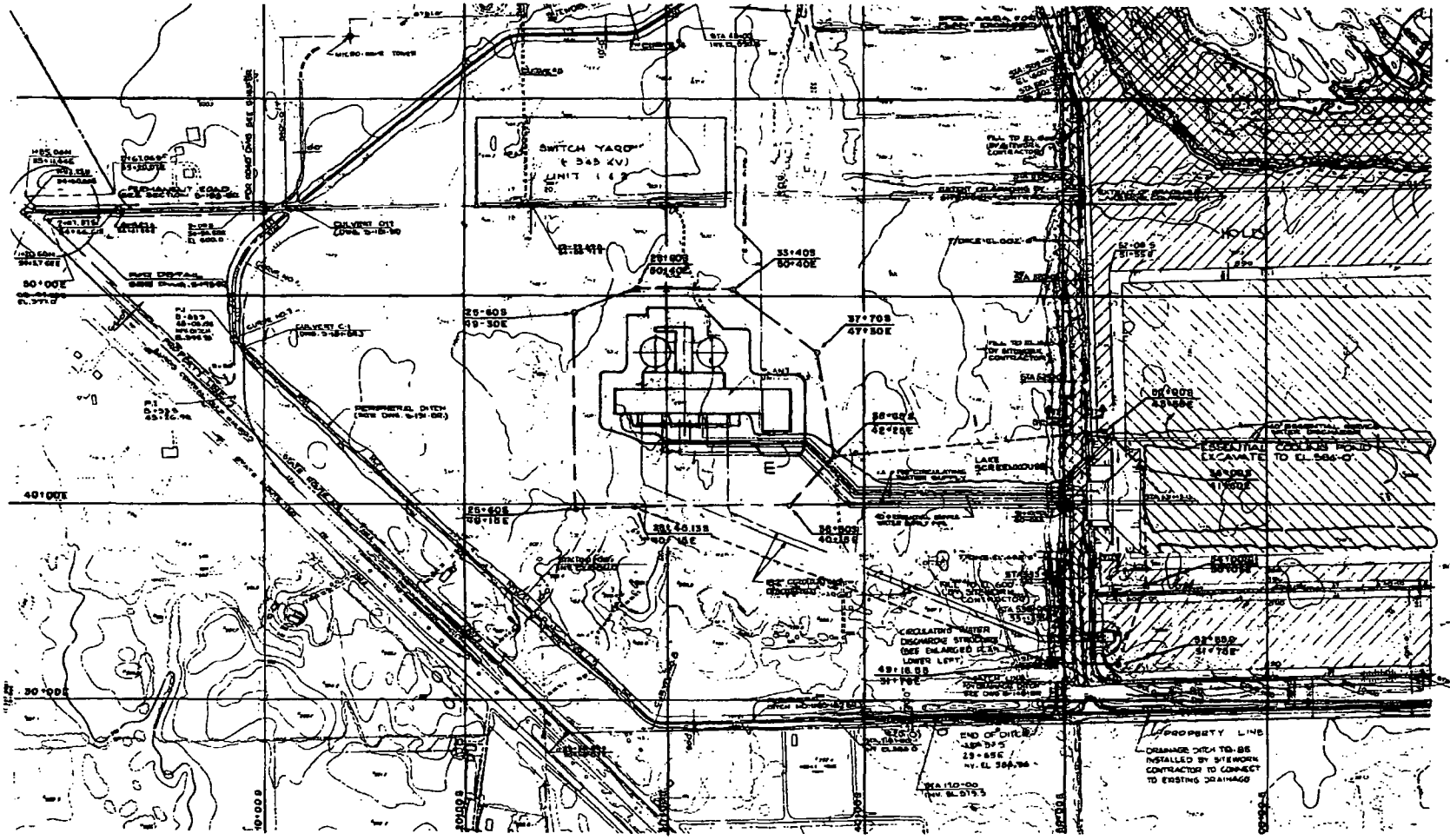
FIGURE 2.5-73

FOUNDATION EXCAVATION SECTIONS



LEGEND:

——— CEMENT-BENTONITE SLURRY TRENCH

– – – – SOIL-BENTONITE SLURRY TRENCH

500 0 500

SCALE IN FEET

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-74

SLURRY TRENCH LOCATION

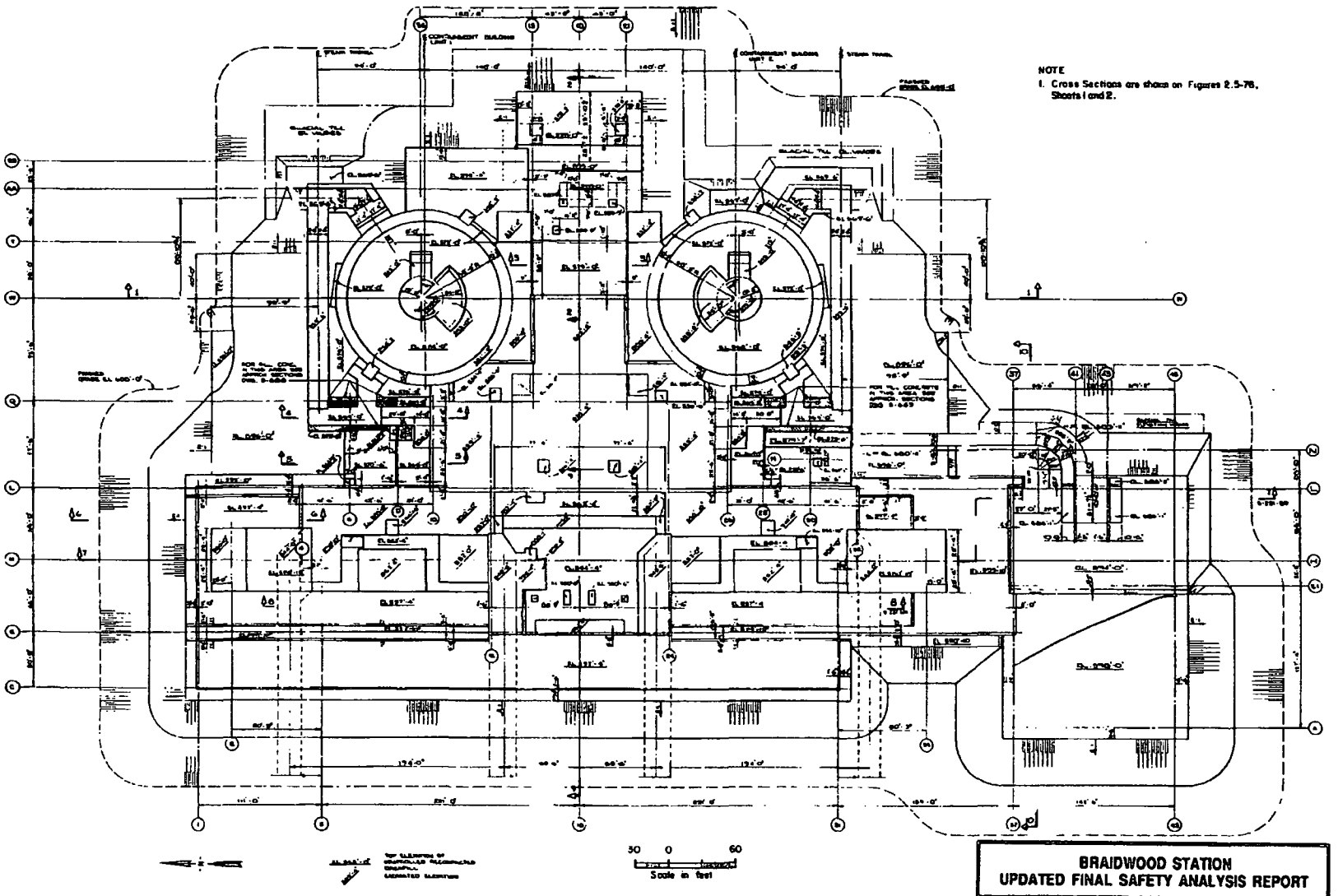


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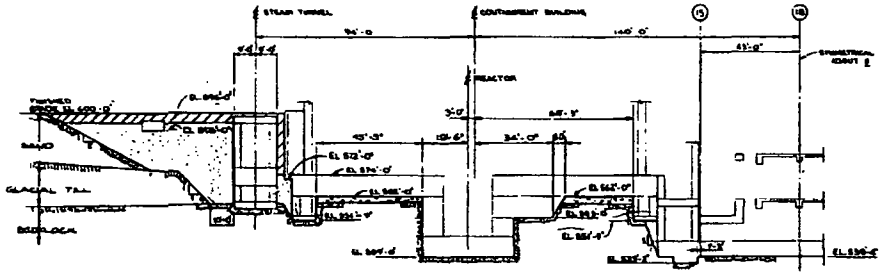
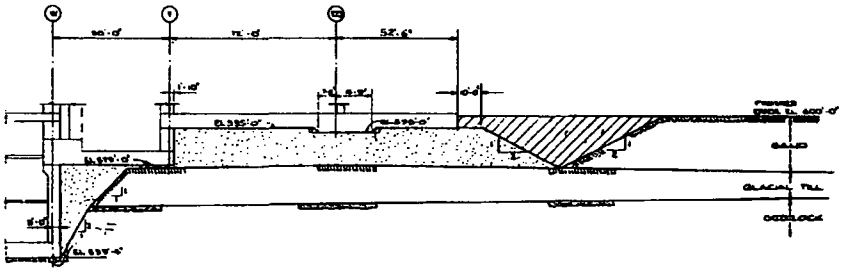
FIGURE 2.5-75

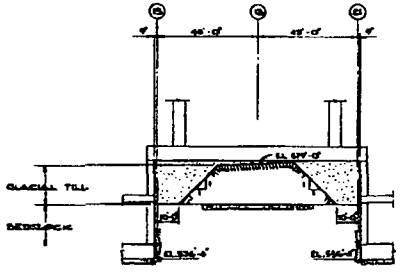
FOUNDATION BACKFILL PLAN



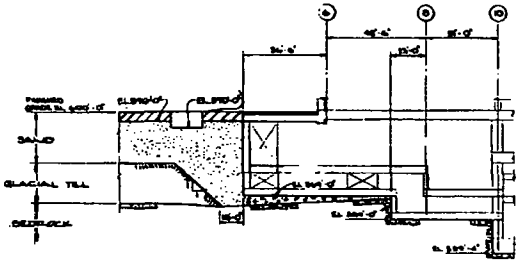
SECTION 1-1



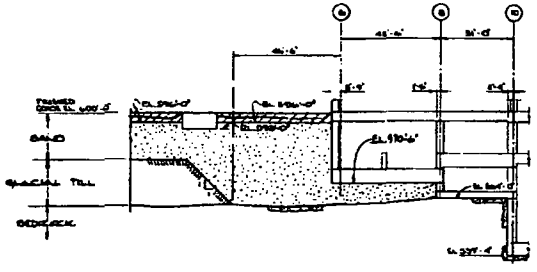
SECTION 2-2



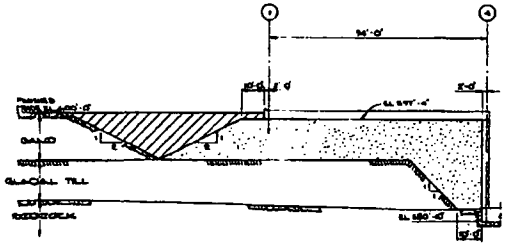
SECTION 3-3



SECTION 4-4



SECTION 5-5



SECTION 6-6

LEGEND

- Concrete (f'c = 2000 PSI)
- Minimum 85% relative density
- Minimum 80% relative density

NOTE

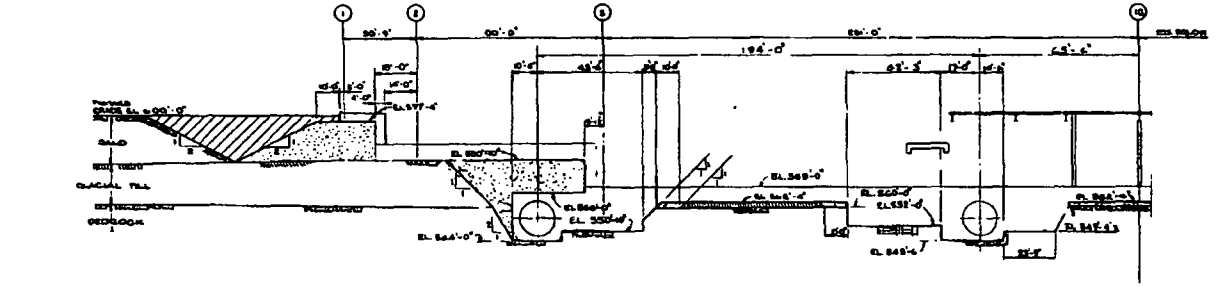
1. Location of sections are shown on Figure 2.5-75
2. Additional sections are shown on Figure 2.5-76, sh. 2.

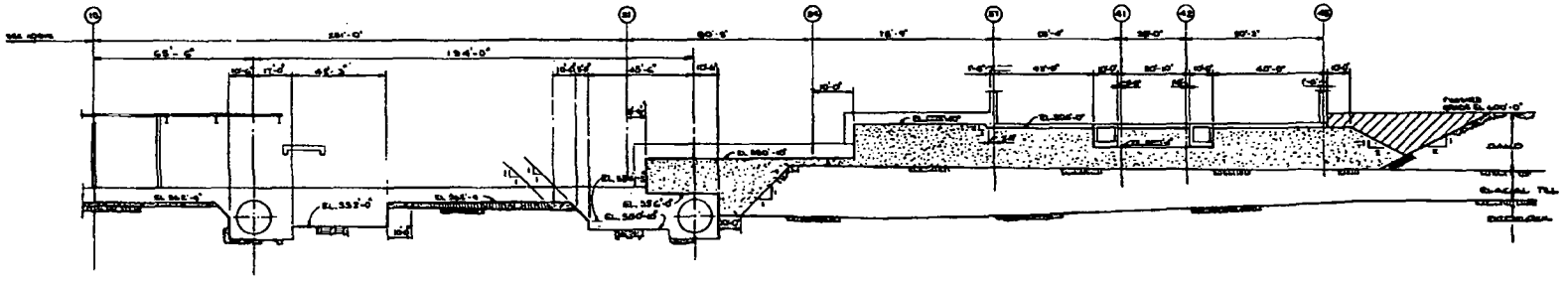
20 0 20 40

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

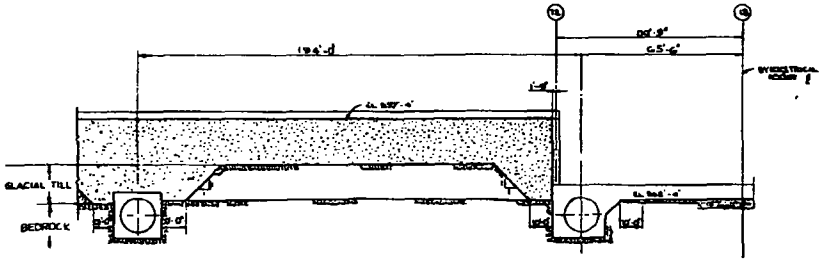
FIGURE 2.5-76

FOUNDATION BACKFILL SECTIONS
(SHEET 1 OF 2)

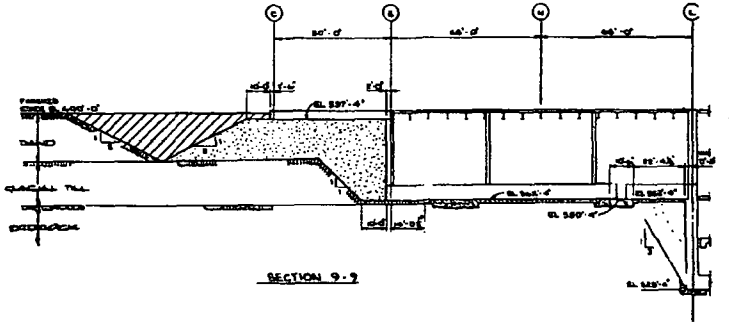




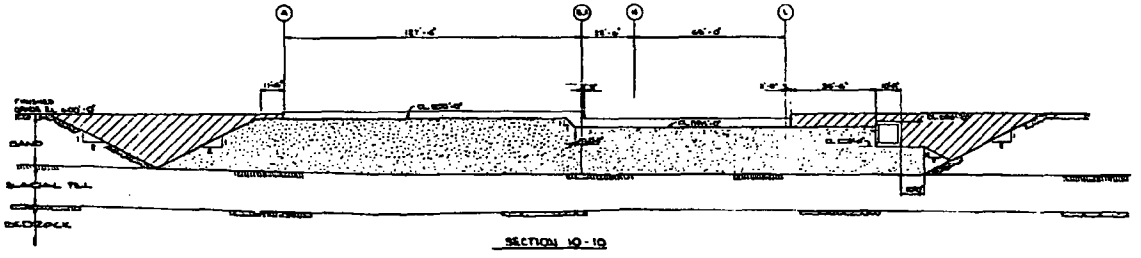
SECTION 7 - 7



SECTION 8 - 8



SECTION 9 - 9



SECTION 10 - 10

LEGEND

Minimum 95% relative density

Minimum 80% relative density

NOTE

1. Location of Sections are shown on Figure 2.5-75.
2. Additional sections are shown on Figure 2.5-75, ch. 1.

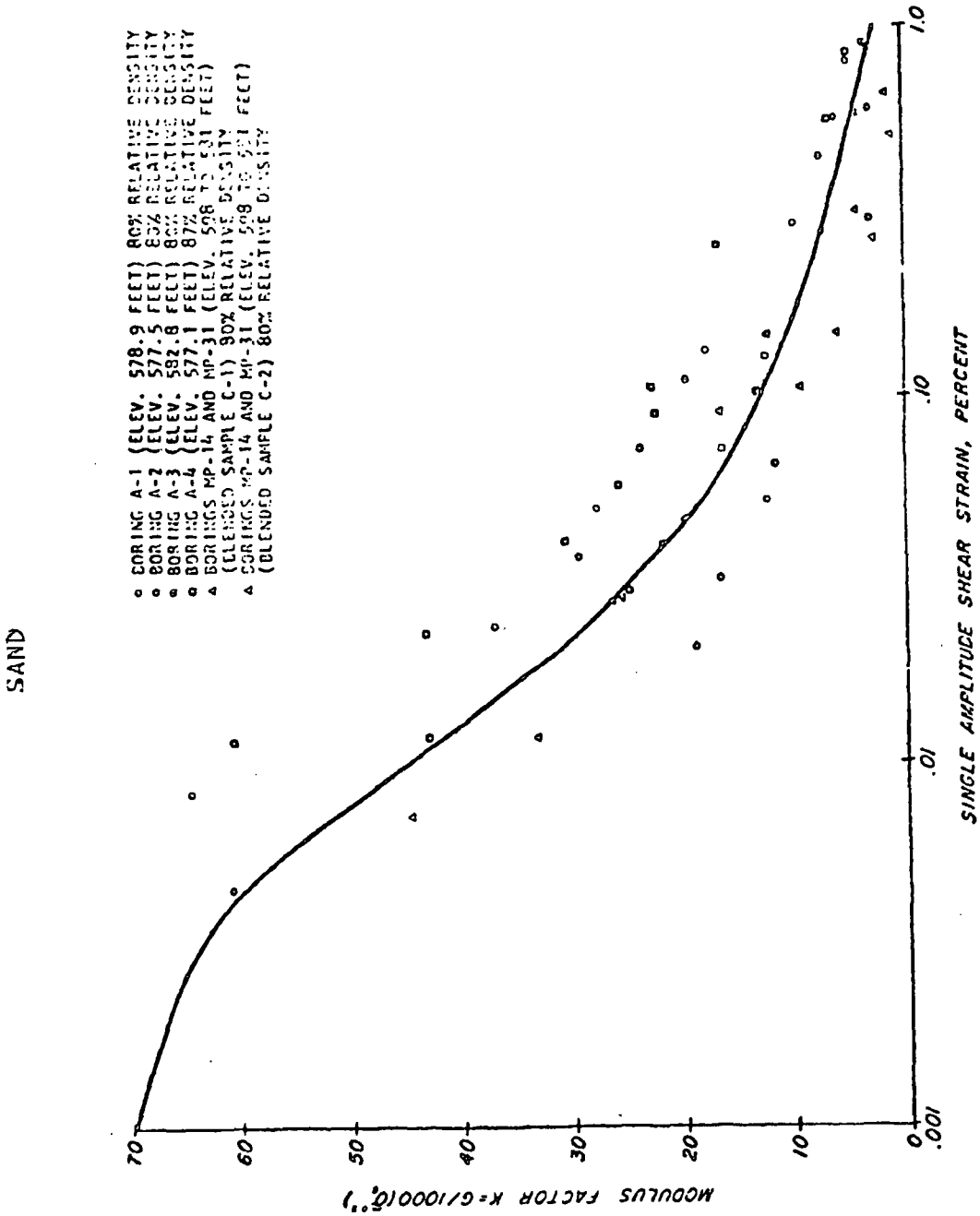
20 0 40

Scale in feet

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-76

FOUNDATION BACKFILL SECTIONS
(SHEET 2 OF 2)

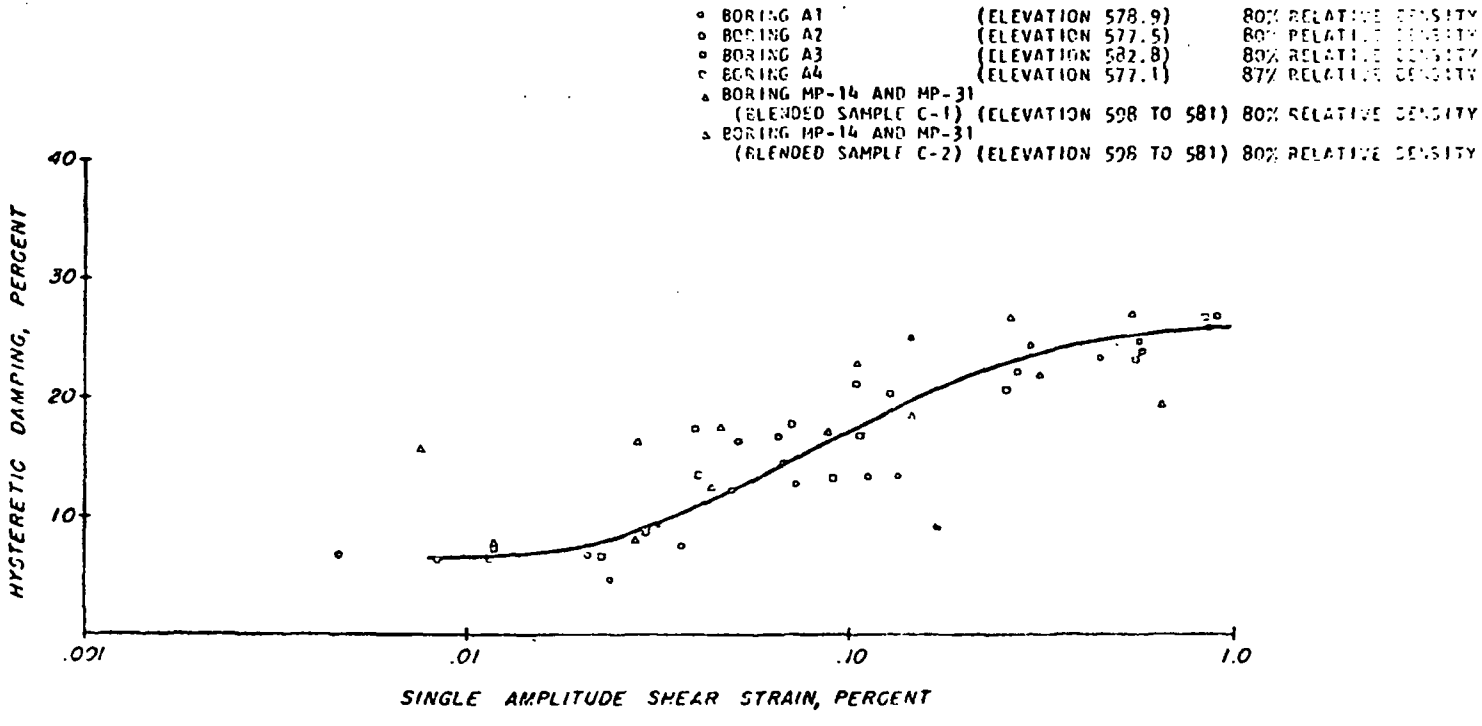


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-77

STRAIN DEPENDENT SHEAR MODULUS
FOR SAND

SAND

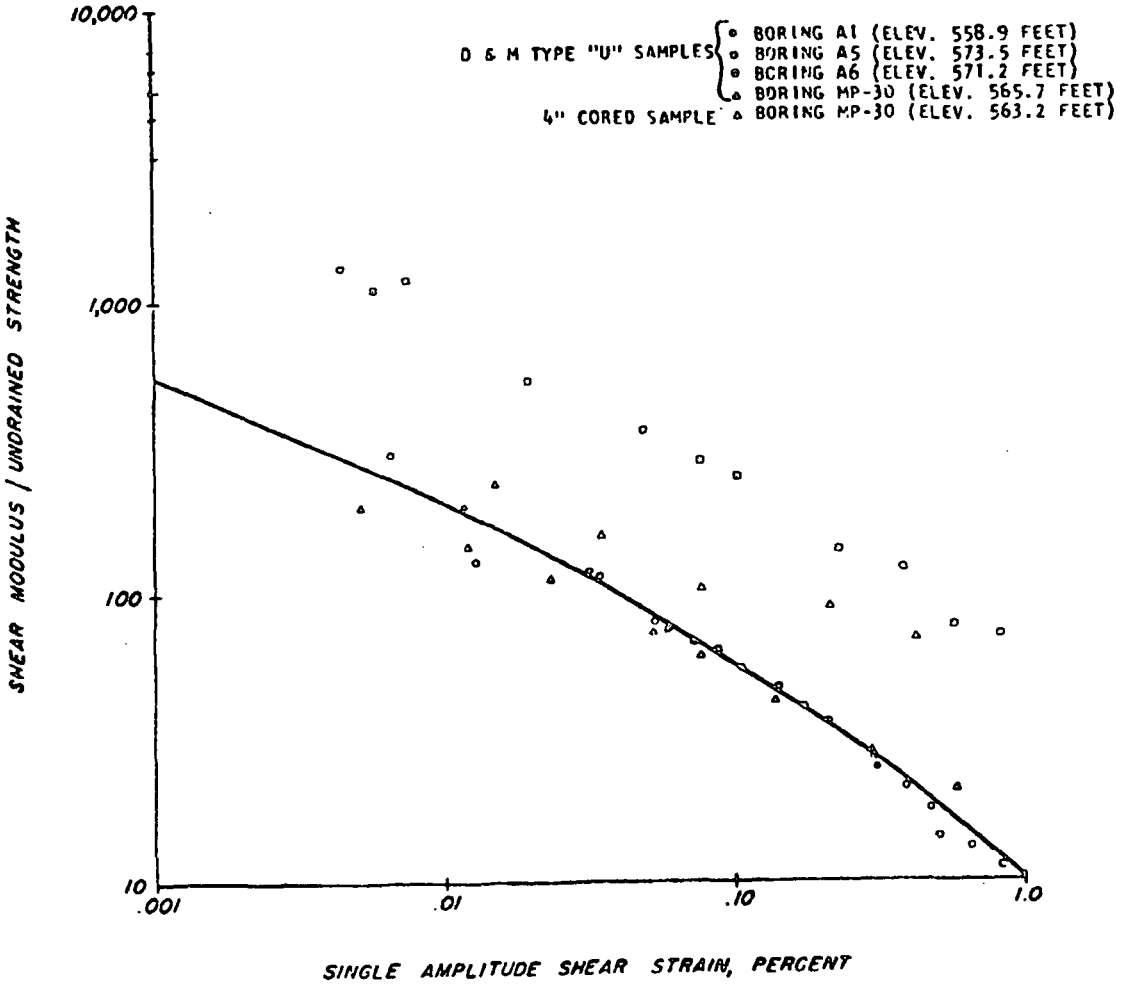


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-78

STRAIN DEPENDENT HYSTERATIC DAMPING FOR SAND

GLACIAL TILE



$Su = 10^4$ psf

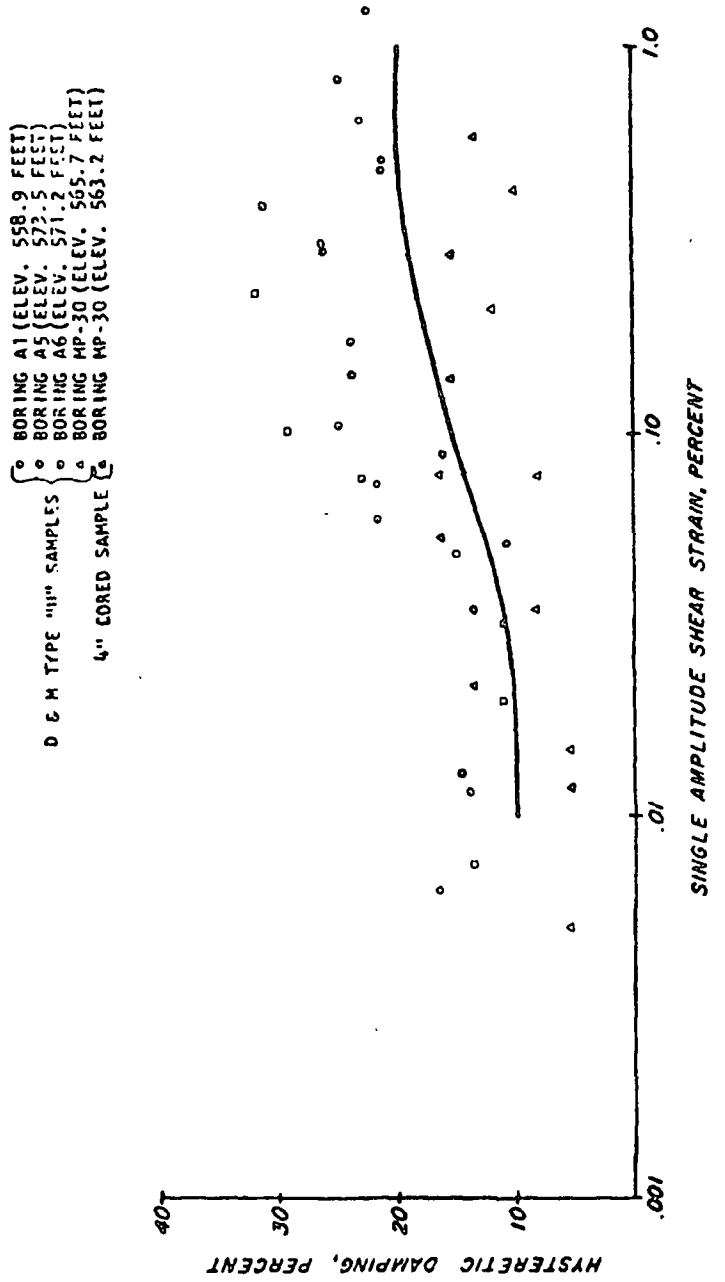
NOTE:
- $Su = 10^4$ psf used as a reasonable estimate for seismic analysis.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-79

STRAIN DEPENDENT SHEAR MODULUS FOR TILL

GLACIAL TILL



BRAIDWOOD STATION
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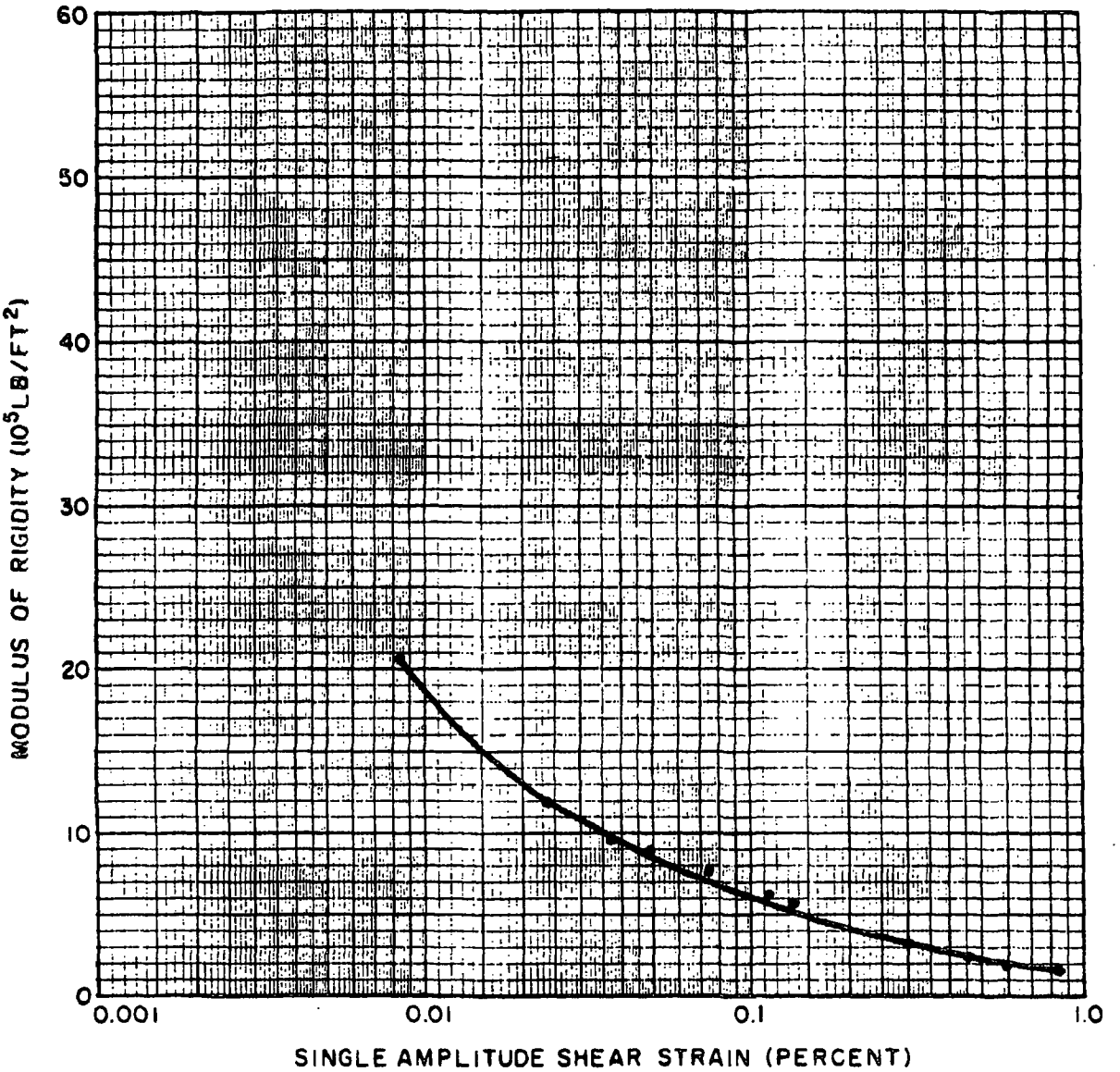
FIGURE 2.5-80

STRAIN DEPENDENT HYSTERATIC DAMPING FOR TILL

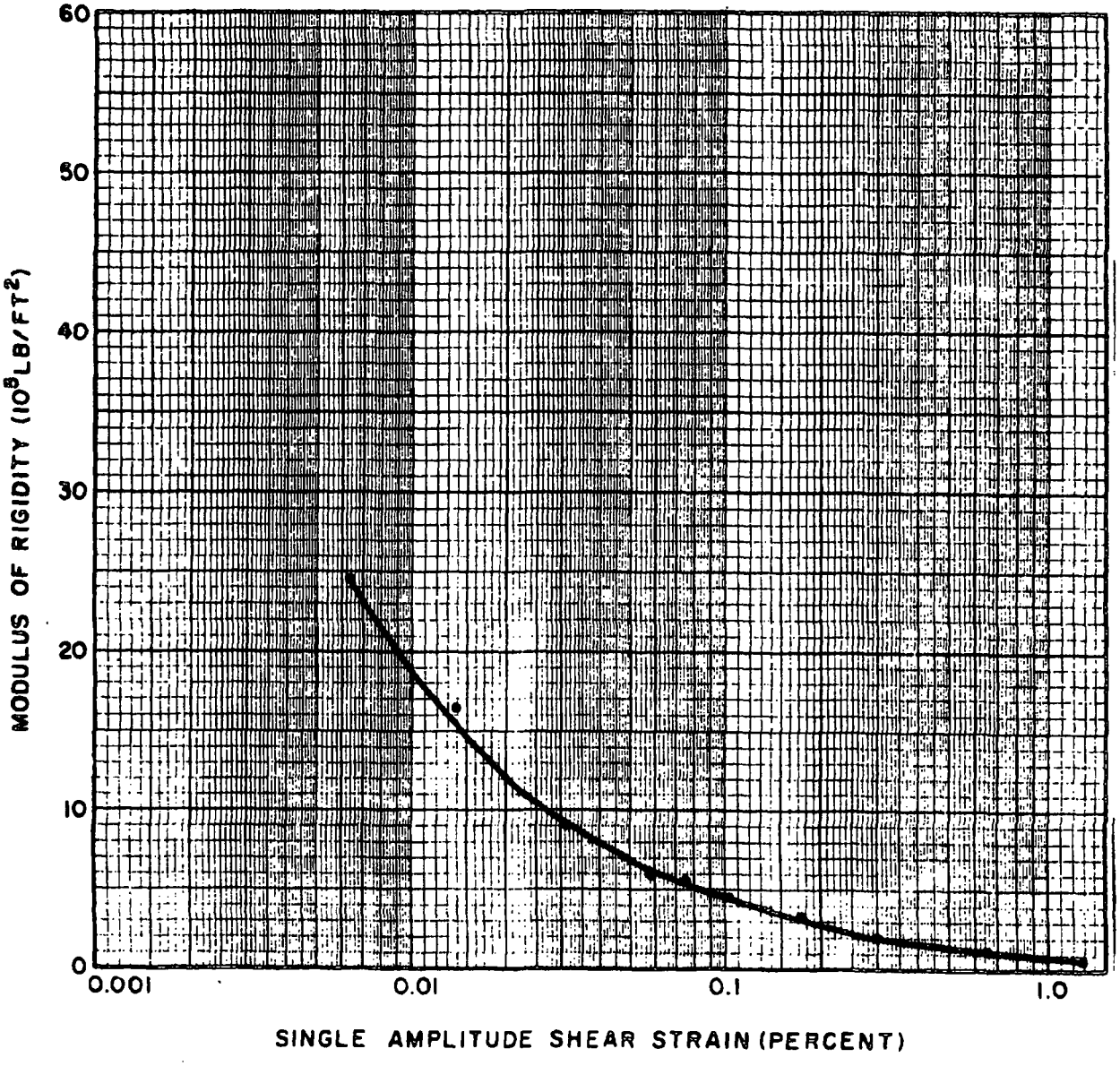


BORING NO. A-1
DEPTH: 15.0 FEET (ELEVATION 578.9)
SOIL TYPE: SP (EQUALITY FORMATION)
MOISTURE CONTENT: 22.3%
DRY DENSITY: 105 LB/FT^3
CONFINING PRESSURE: 1000 LB/FT^2

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-81

DYNAMIC TRIAXIAL TEST RESULTS
(SHEET 1 OF 11)

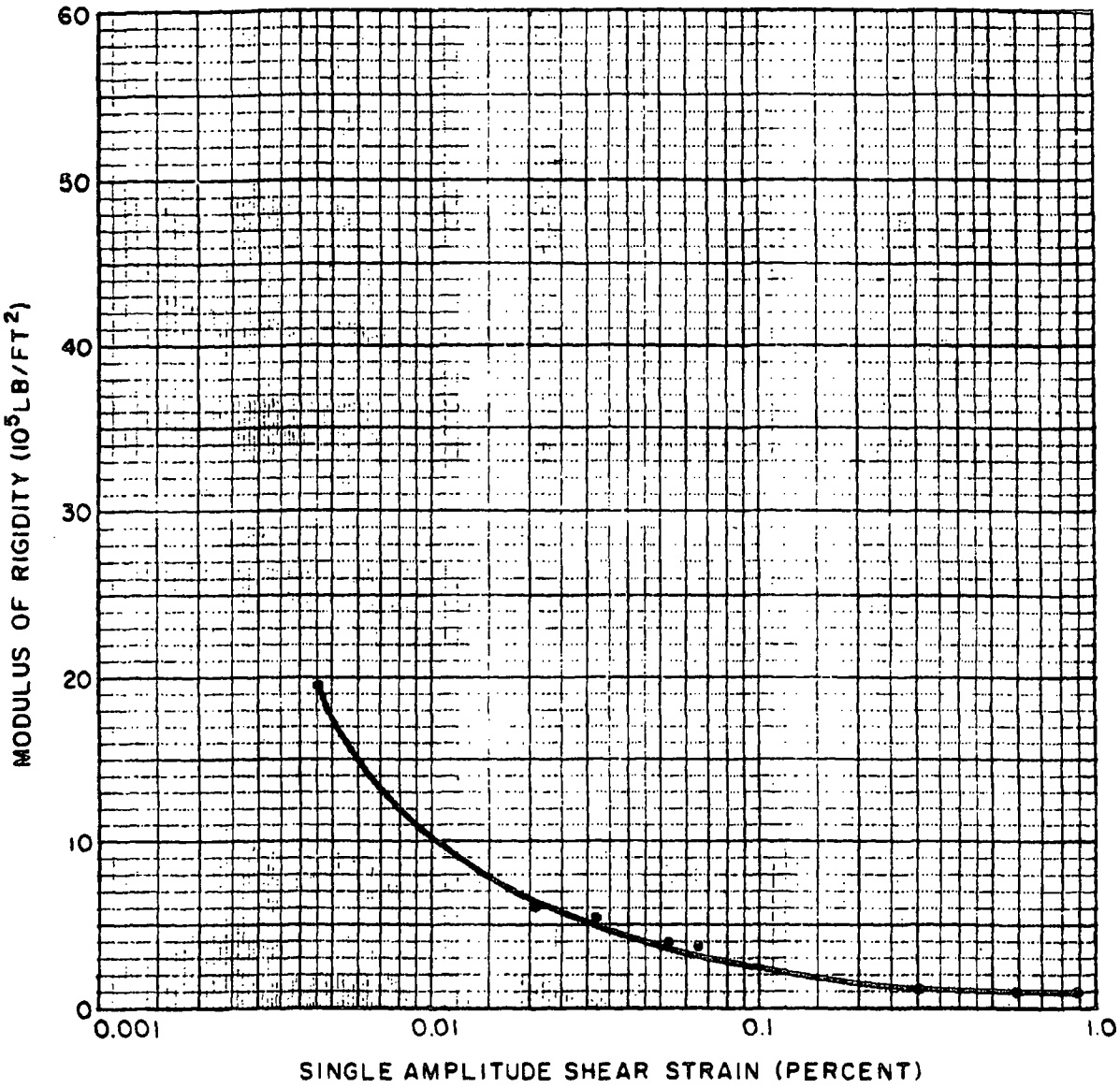


BORING NO. A-1
DEPTH: 35.0 FEET (ELEVATION 558.9)
SOIL TYPE: ML (WEDRON FORMATION)
MOISTURE CONTENT: 11.4%
DRY DENSITY: 129 LB/FT^3
CONFINING PRESSURE: 3000 LB/FT^2

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-81

DYNAMIC TRIAXIAL TEST RESULTS
(SHEET 2 OF 11)

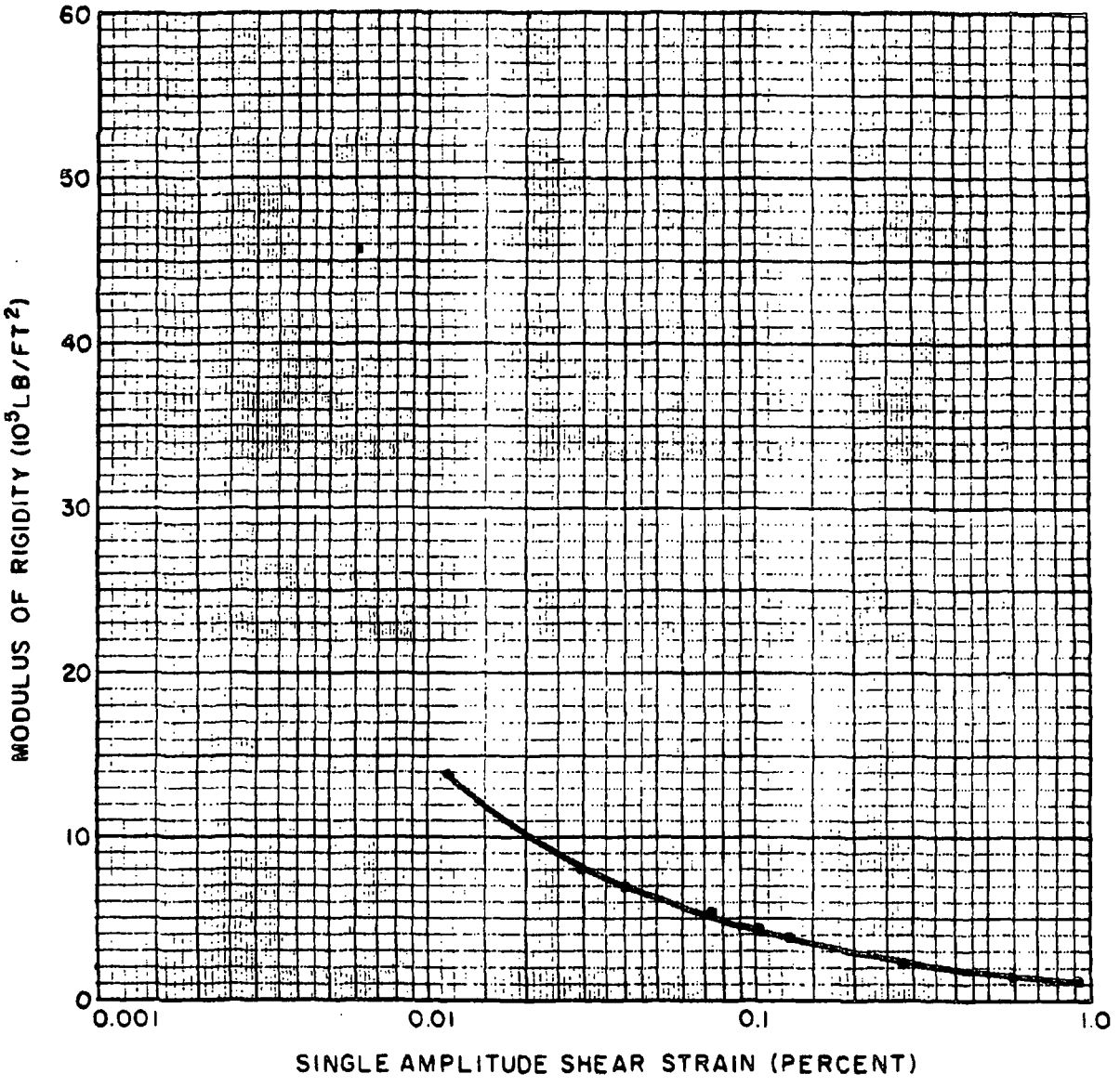


BORING NO. A-2
DEPTH: 15.0 FEET (ELEVATION 578.0)
SOIL TYPE: SP (EQUALITY FORMATION)
MOISTURE CONTENT: 22.3%
DRY DENSITY: 105 LB/FT3
CONFINING PRESSURE: 1000 LB/FT^2

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-81

DYNAMIC TRIAXIAL TEST RESULTS
(SHEET 3 OF 11)

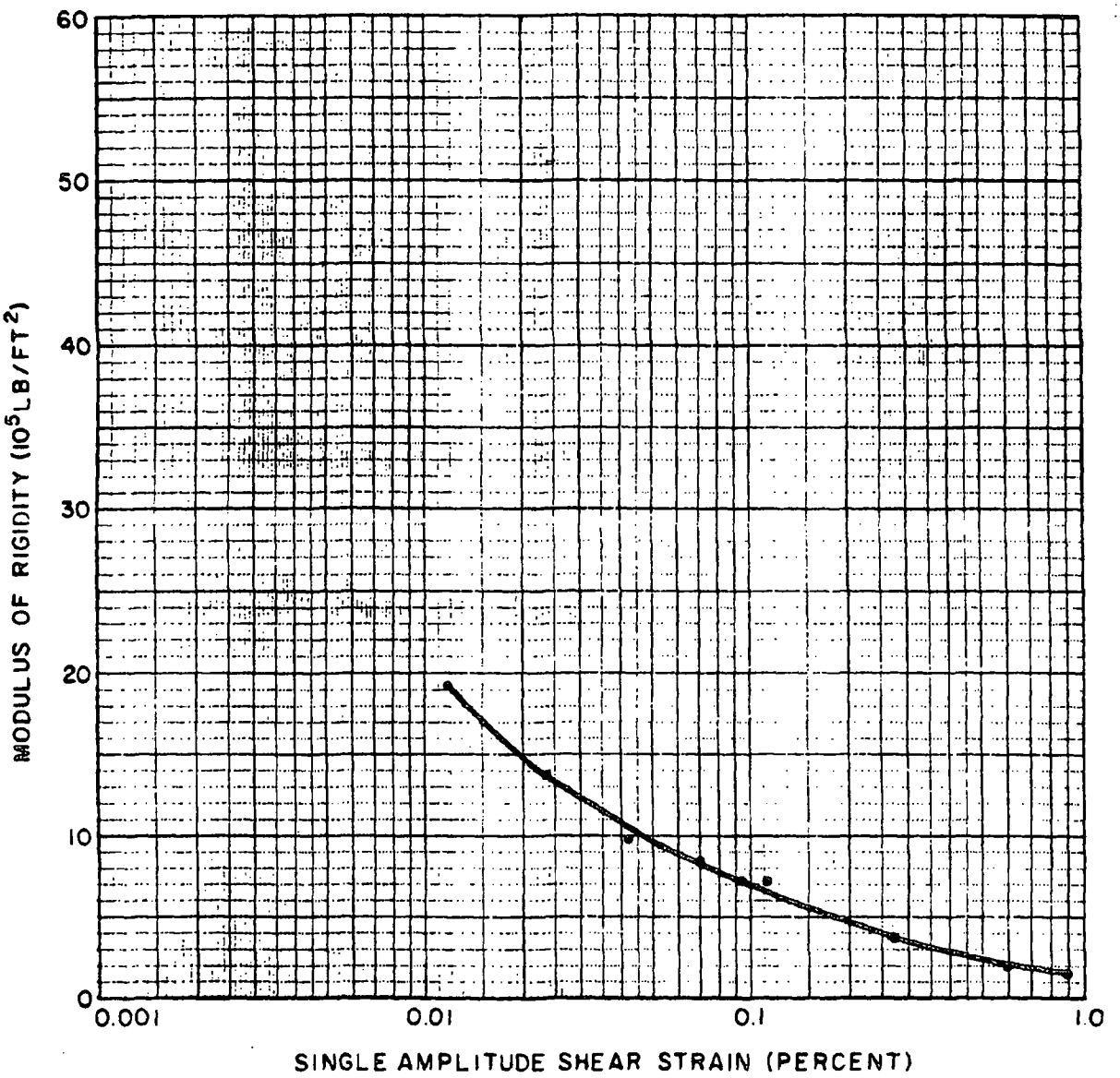


BORING NO. A-3
DEPTH: 15.0 FEET (ELEVATION 583.3)
SOIL TYPE: SP (EQUALITY FORMATION)
MOISTURE CONTENT: 22.1%
DRY DENSITY: 105 LB/FT^3
CONFINING PRESSURE: 1000 LB/FT^2

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-81

DYNAMIC TRIAXIAL TEST RESULTS
(SHEET 4 OF 11)

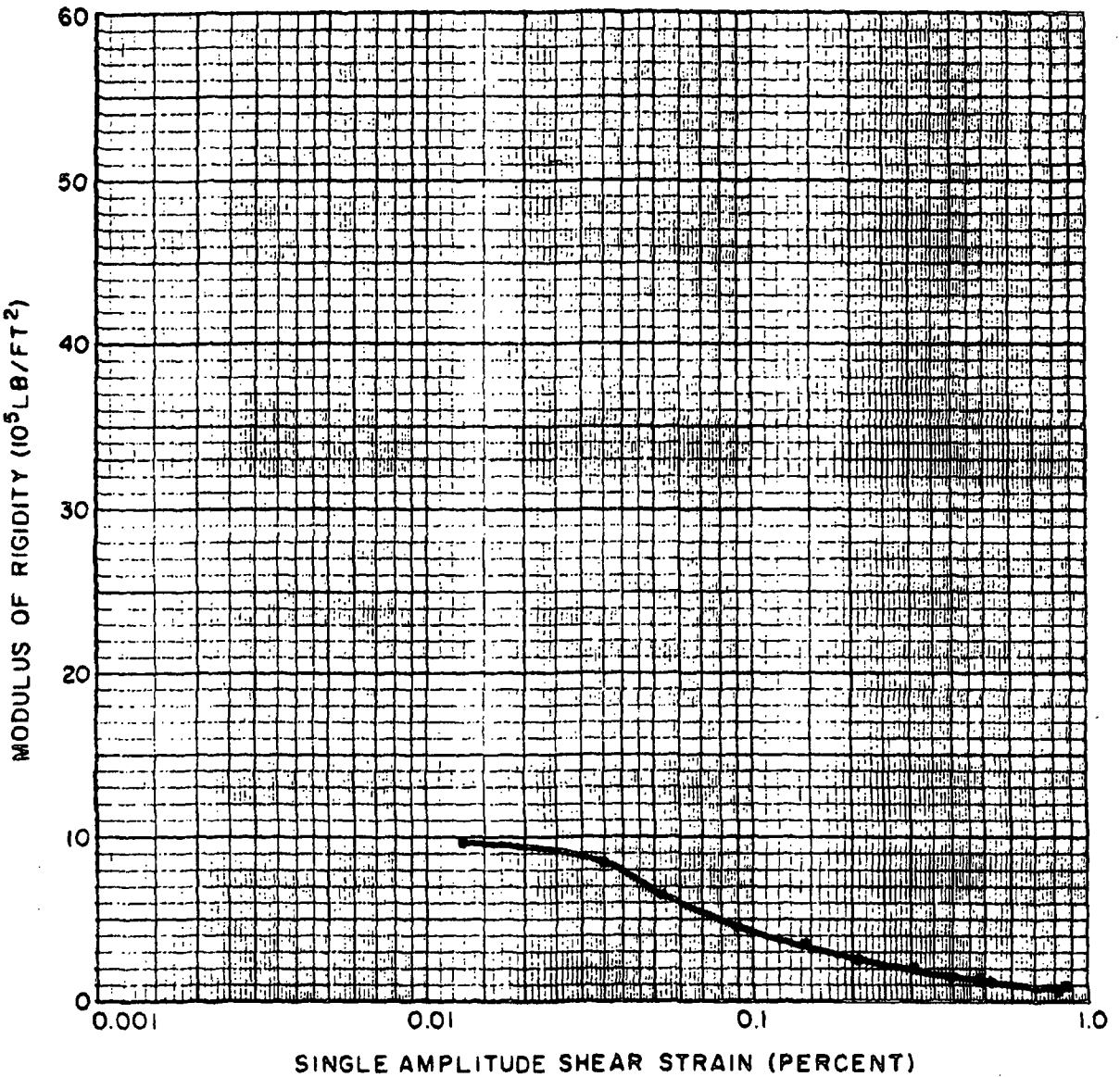


BORING NO. A-4
DEPTH: 13.0 FEET (ELEVATION 579.6)
SOIL TYPE: SP (EQUALITY FORMATION)
MOISTURE CONTENT: 20.8%
DRY DENSITY: 107 LB/FT^3
CONFINING PRESSURE: 1000 LB/FT^2

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-81

DYNAMIC TRIAXIAL TEST RESULTS
(SHEET 5 OF 11)

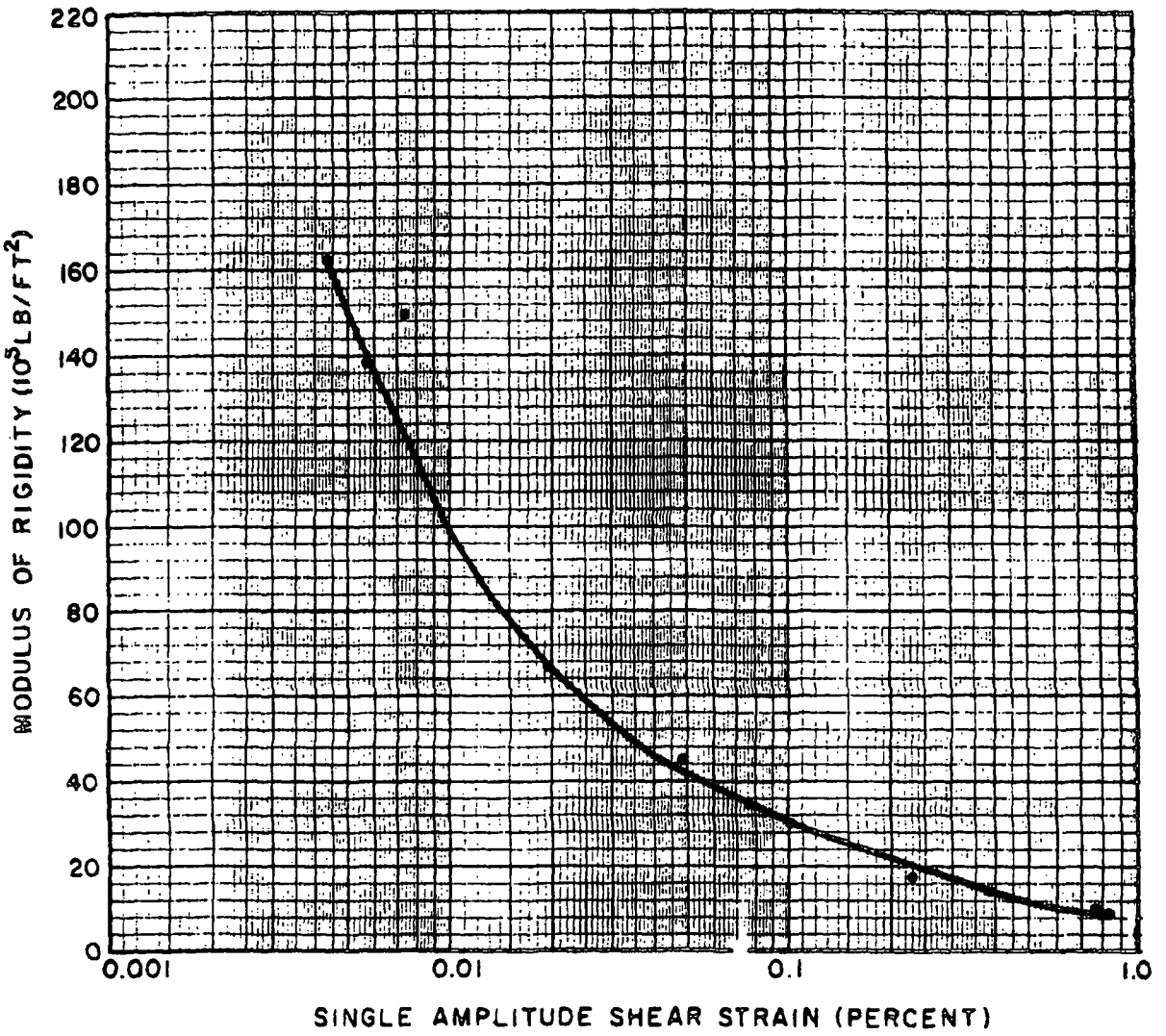


BORING NO. A-5
DEPTH: 25.0 FEET (ELEVATION 573.5)
SOIL TYPE: ML (WEDRON FORMATION)
MOISTURE CONTENT: 12.5%
DRY DENSITY: 125 LB/FT^3
CONFINING PRESSURE: 2000 LB/FT^2

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-81

DYNAMIC TRIAXIAL TEST RESULTS
(SHEET 6 OF 11)

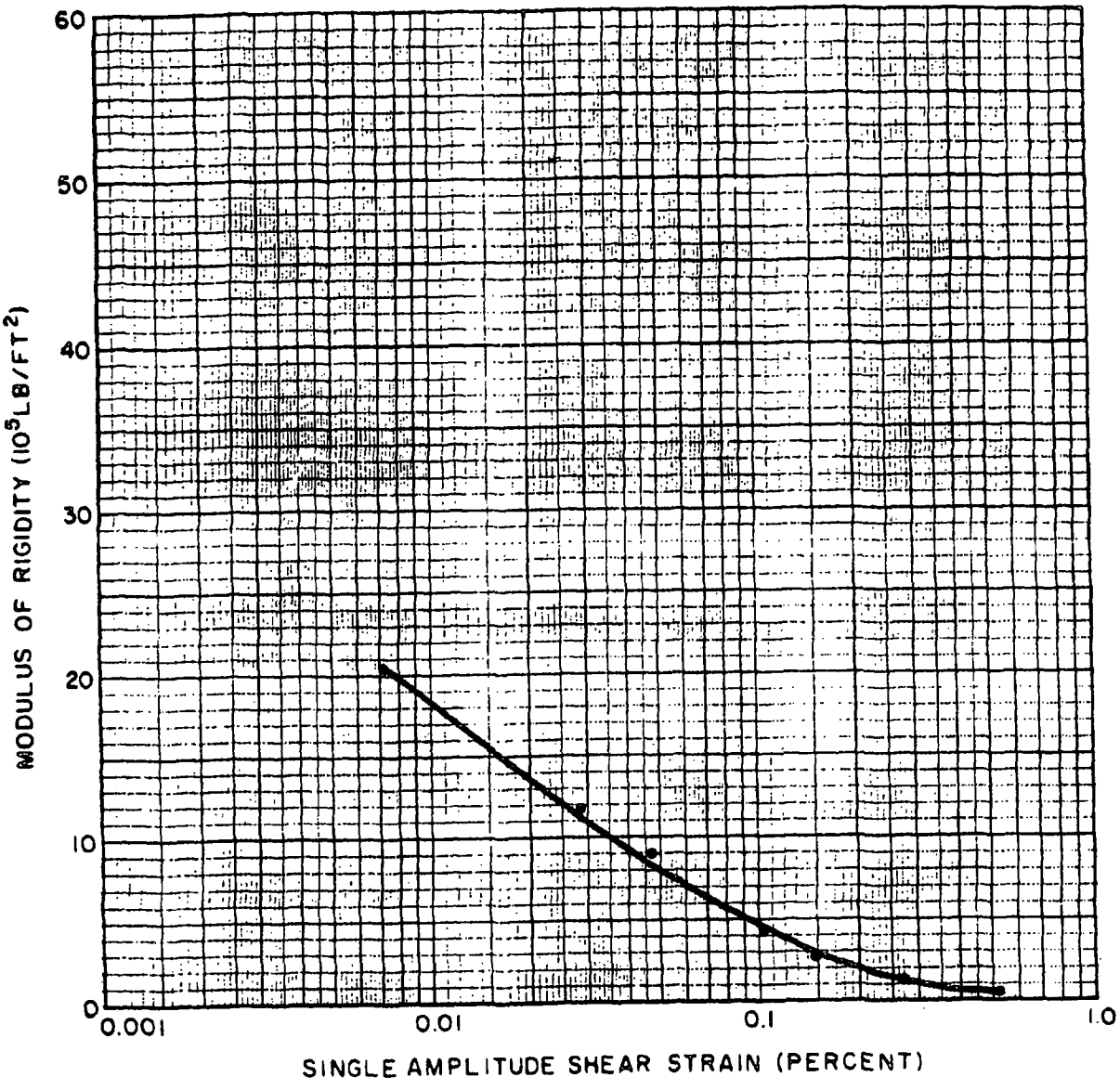


BORING NO. A-6
DEPTH: 30.0 FEET (ELEVATION 571.2)
SOIL TYPE: ML (WEDRON FORMATION)
MOISTURE CONTENT: 7.7%
DRY DENSITY: 137 LB/FT^3
CONFINING PRESSURE: 2500 LB/FT^2

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-81

DYNAMIC TRIAXIAL TEST RESULTS
(SHEET 7 OF 11)

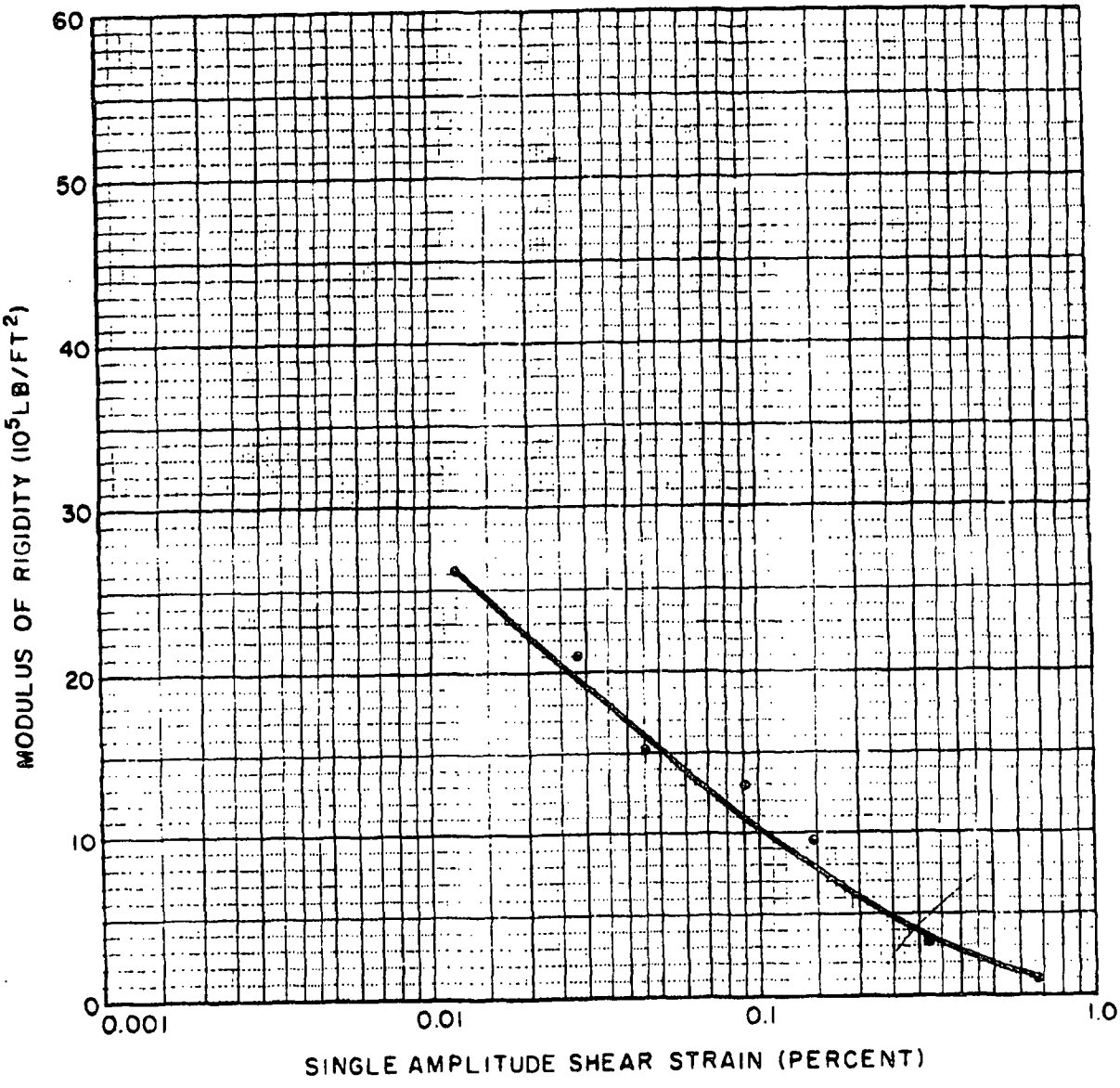


BORING NOS. MP-14 AND MP-31
DEPTH: 1.0 TO 18.0 FEET (ELEVATION 597.1-580.1)
SOIL TYPE: SM.SP (EQUALITY FORMATION)
MOISTURE CONTENT: 20.0%
DRY DENSITY: 107 LB/FT3
CONFINING PRESSURE: 2000 LB/FT^2

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-81

DYNAMIC TRIAXIAL TEST RESULTS
(SHEET 8 OF 11)

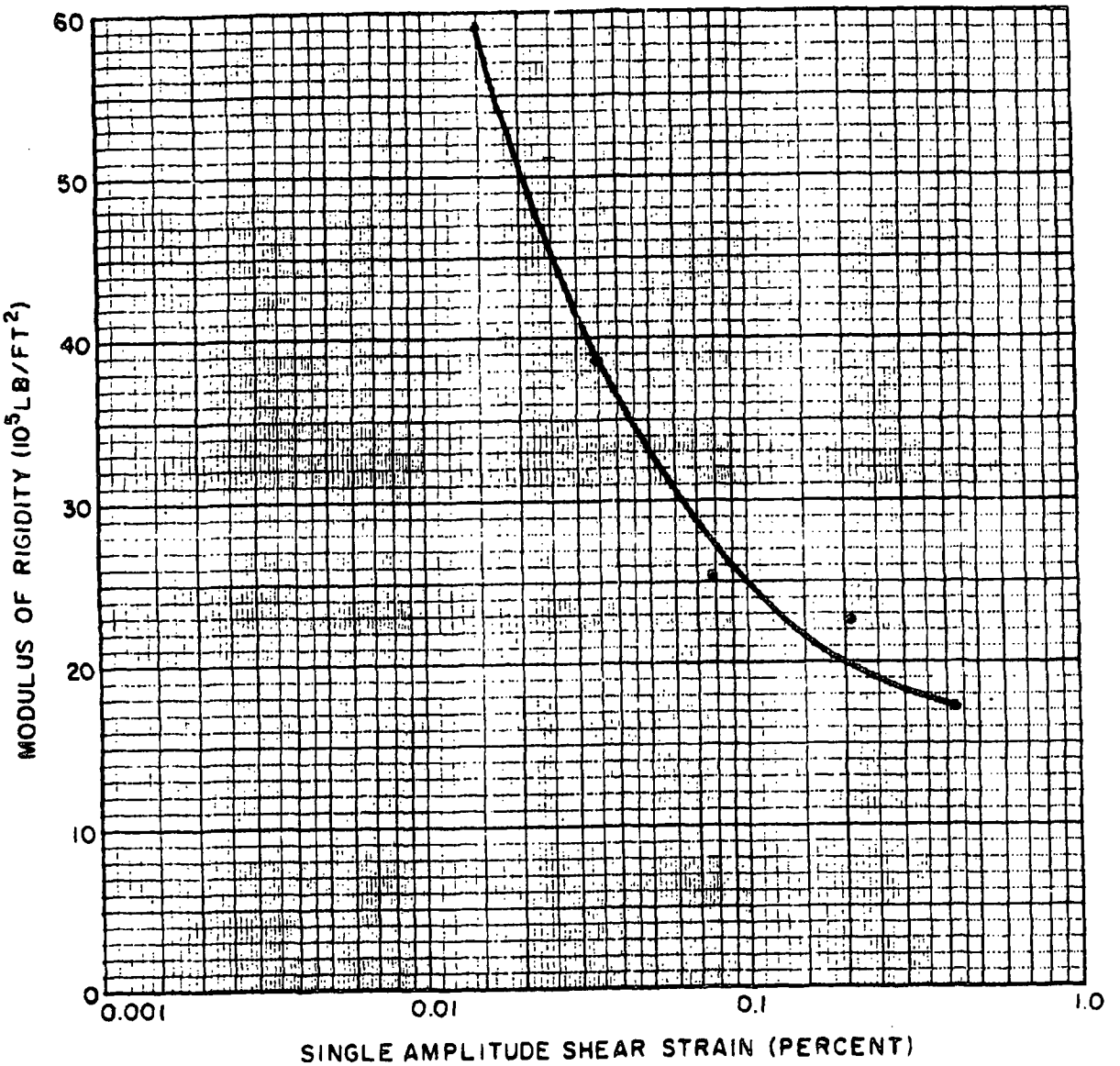


BORING NOS. MP-14 AND MP-31
DEPTH: 1.0 TO 18.0 (ELEVATION 597.1-580.1)
SOIL TYPE: SM,SP (EQUALITY FORMATION)
MOISTURE CONTENT: 21.3%
DRY DENSITY: 107 LB/FT^3
CONFINING PRESSURE: 6000 LB/FT^2

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-81

DYNAMIC TRIAXIAL TEST RESULTS
(SHEET 9 OF 11)

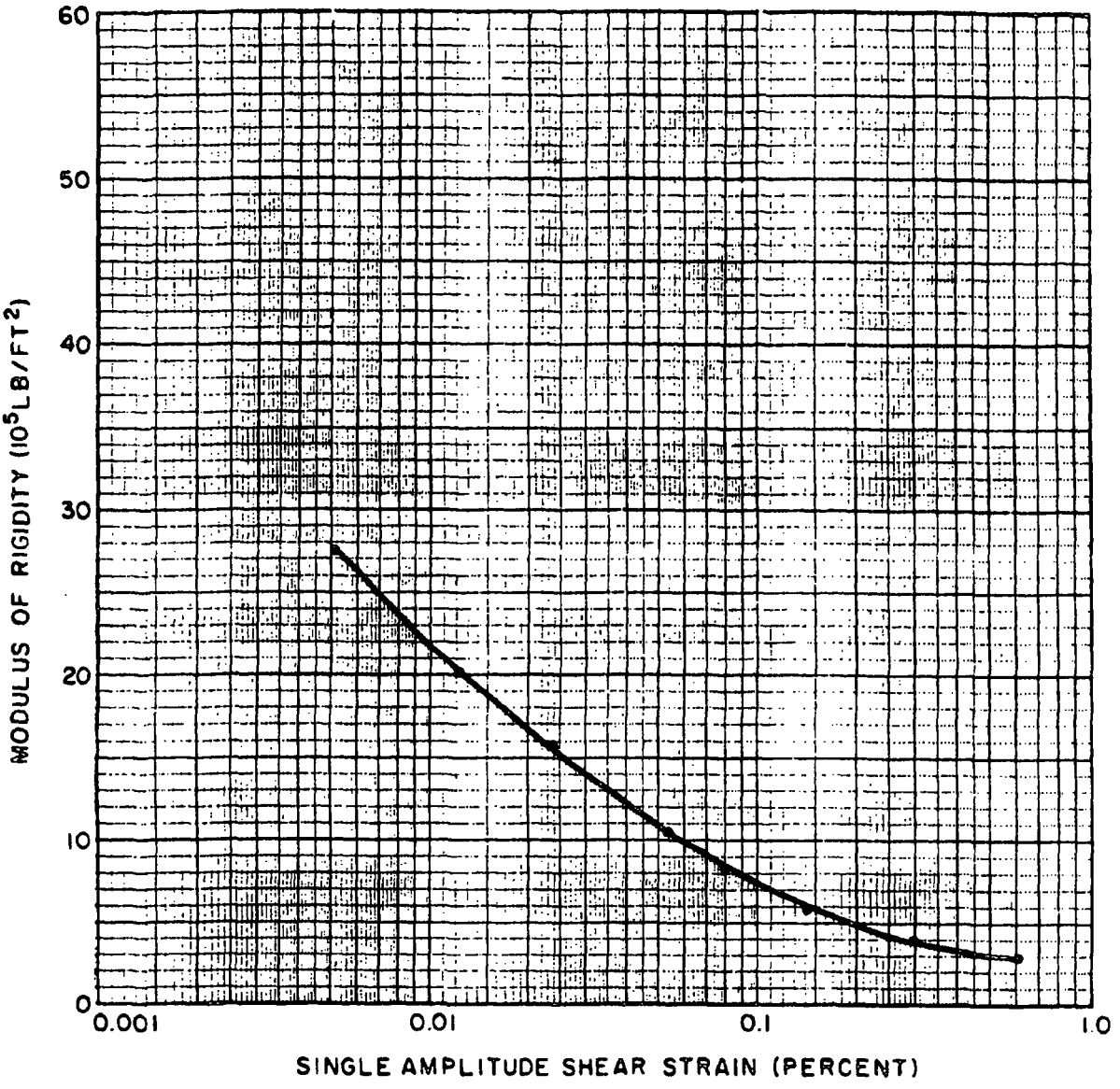


BORING NO. MP-30
DEPTH: 35.5 FEET (ELEVATION 565.7)
SOIL TYPE: ML (WEDRON FORMATION)
MOISTURE CONTENT: 7.3%
DRY DENSITY: 139 LB/FT^3
UNDRAINED PEAK SHEAR STRENGTH: 25491 LB/FT^2
CONFINING PRESSURE: 3200 LB/FT^2

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-81

DYNAMIC TRIAXIAL TEST RESULTS
(SHEET 10 OF 11)



BORING NO. MP-30
DEPTH: 38.0 FEET (ELEVATION 562.7)
SOIL TYPE: ML (WEDRON FORMATION)
MOISTURE CONTENT: 9.7%
DRY DENSITY: 134 LB/FT^3
(TEST CONDUCTED ON 4-INCH DIAMETER
CORED SAMPLE)
UNDRAINED PEAK SHEAR STRENGTH: 14114 LB/FT^2
CONFINING PRESSURE: 4100 LB/FT^2

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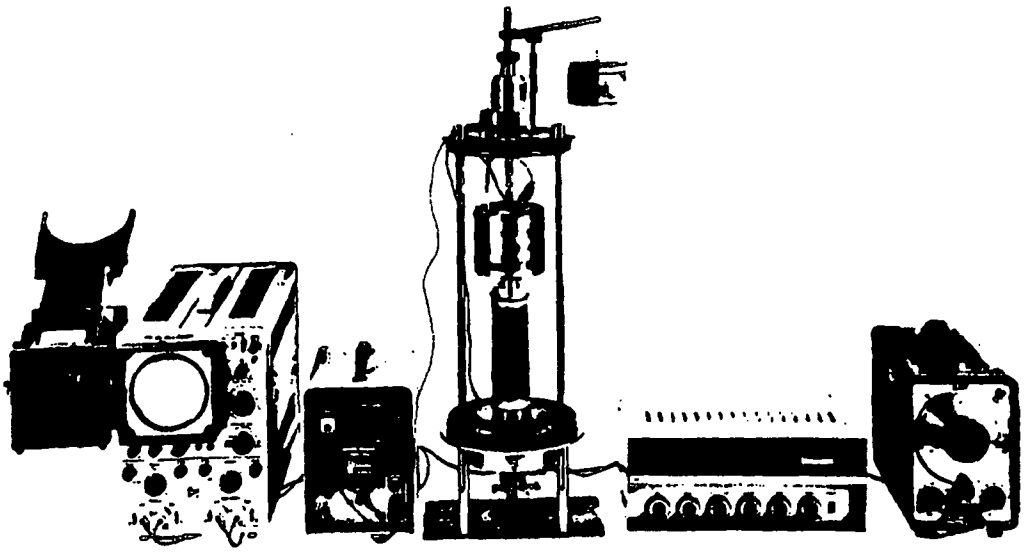
FIGURE 2.5-81

DYNAMIC TRIAXIAL TEST RESULTS
(SHEET 11 OF 11)

METHODS OF PERFORMING RESONANT COLUMN TESTS



RESONANT COLUMN TESTS ARE PERFORMED TO EVALUATE THE DYNAMIC PROPERTIES OF THE SOIL OR ROCK SAMPLES. UTILIZING THE RESONANT COLUMN APPARATUS, A CYLINDRICAL COLUMN OF SOIL OR ROCK IS SUBJECTED TO A STEADY STATE SINUSOIDAL FORCING FUNCTION, WHICH STRESSES THE SAMPLE IN TORSION. THE FREQUENCY OF THE APPLIED FORCE IS VARIED UNTIL THE RESONANT FREQUENCY OF THE SOIL APPARATUS SYSTEM IS OBTAINED. THE RESONANT FREQUENCY IS THAT WHICH PRODUCES THE MAXIMUM AMPLITUDE OF OUTPUT RECORDED. THE RESONANT FREQUENCY THUS OBTAINED IS RELATED TO THE TORSIONAL SHEAR MODULUS OF THE MATERIAL TESTED.

RESONANT COLUMN TESTS ARE PERFORMED ON UNDISTURBED OR RECONSTITUTED CYLINDRICAL SAMPLES OF SOIL APPROXIMATELY 6 INCHES IN LENGTH AND 2¼ INCHES IN DIAMETER. THE SAMPLES ARE ENCASED IN A RUBBER MEMBRANE AND PLACED IN A TEST CHAMBER. THE TESTS MAY BE PERFORMED CONFINED OR UNCONFINED ON SOILS AT FIELD MOISTURE OR ON ARTIFICIALLY SATURATED SAMPLES. THE APPARATUS EMPLOYS A VIBRATION EXCITATION DEVICE, POWERED BY A VARIABLE FREQUENCY SINE WAVE GENERATOR WHICH APPLIES A FORCING TORQUE TO THE FREE END OF THE SPECIMEN. THE RESULTING VIBRATIONS ARE MEASURED BY AN ACCELEROMETER WHICH PRODUCES A CALIBRATED OUTPUT THAT IS A MEASURE OF THE ANGULAR ACCELERATION OF THE FREE END OF THE SPECIMEN. THE SINUSOIDAL VOLTAGE USED TO PRODUCE THE FORCING TORQUE AND THE OUTPUT OF THE ACCELEROMETER ARE DISPLAYED ON THE X-Y AXES OF THE OSCILLOSCOPE RESULTING IN ELLIPTICAL CONFIGURATIONS FOR ASSOCIATED FREQUENCIES. THESE ELLIPTICAL LOOPS ARE PHOTOGRAPHED AND EVALUATED TO DETERMINE THE DAMPING CHARACTERISTICS OF THE SAMPLES TESTED.

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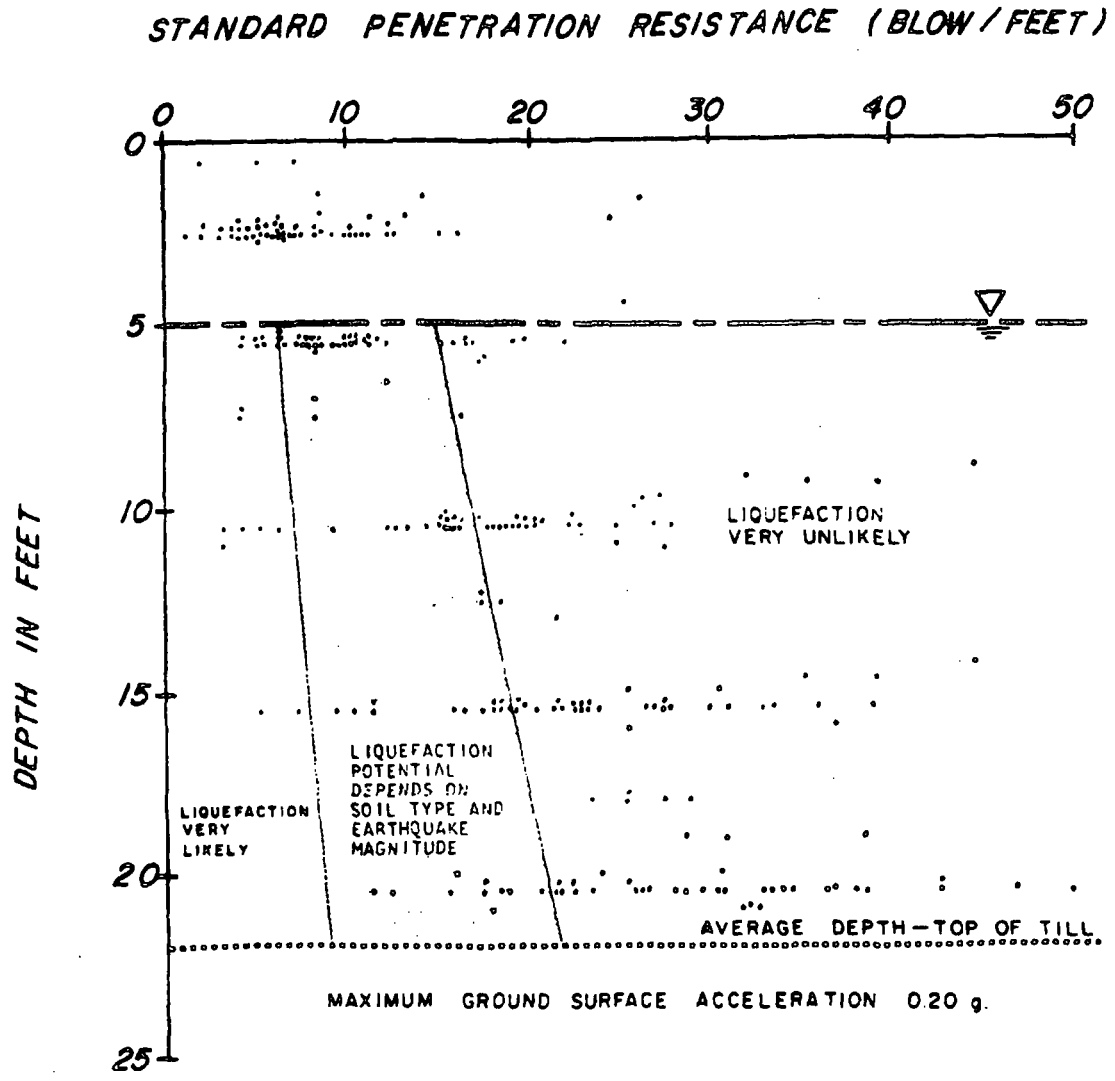
FIGURE 2.5-82

RESONANT COLUMN TEST, METHOD



KEY:

- MEASURED STANDARD PENETRATION RESISTANCE, CORRECTED FOR SILTY SANDS BELOW THE WATER TABLE.
- GROUND WATER LEVEL

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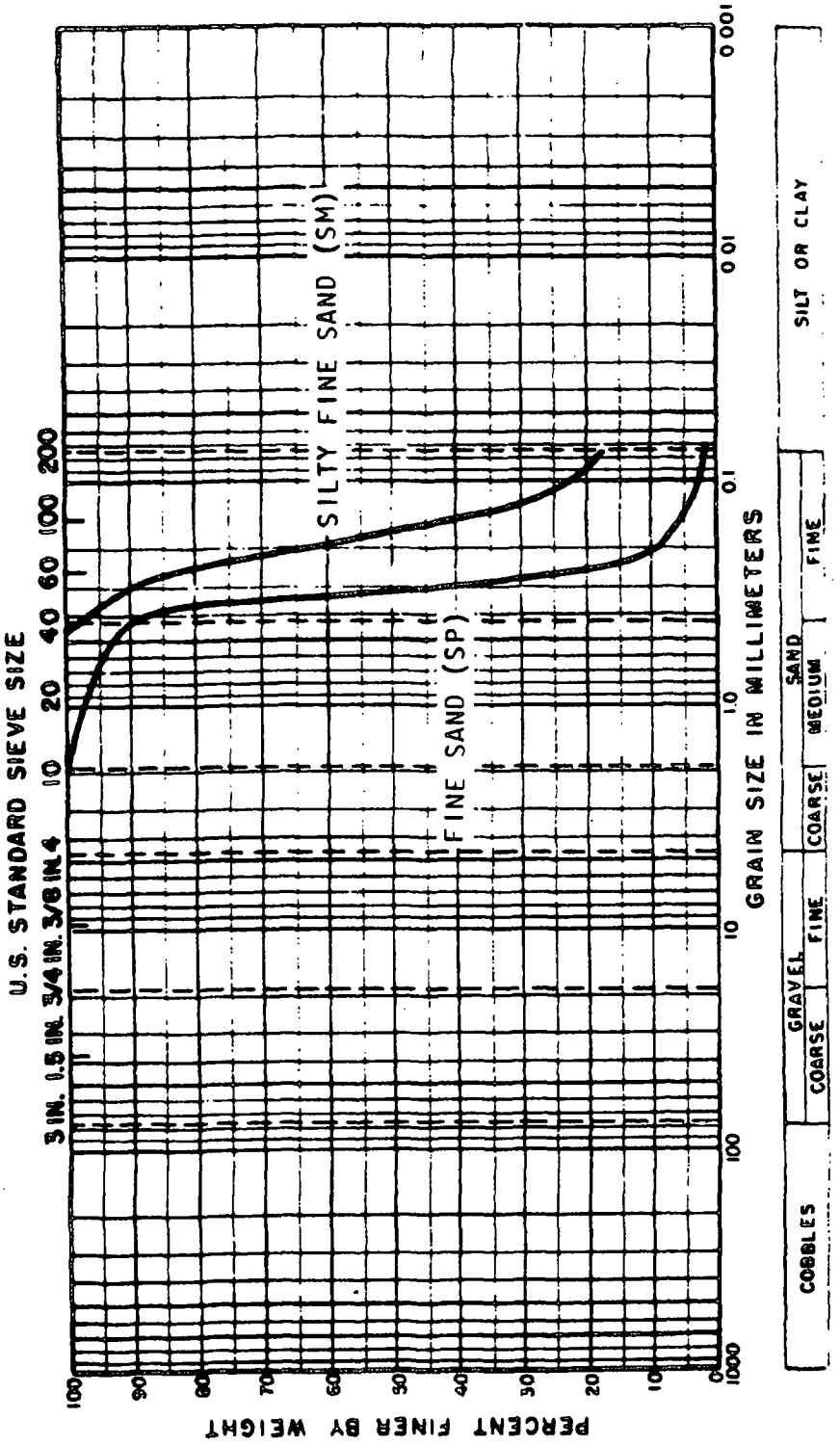
FIGURE 2.5-83

LIQUEFACTION EVALUATION - SIMPLIFIED METHOD



GRADATION CURVE

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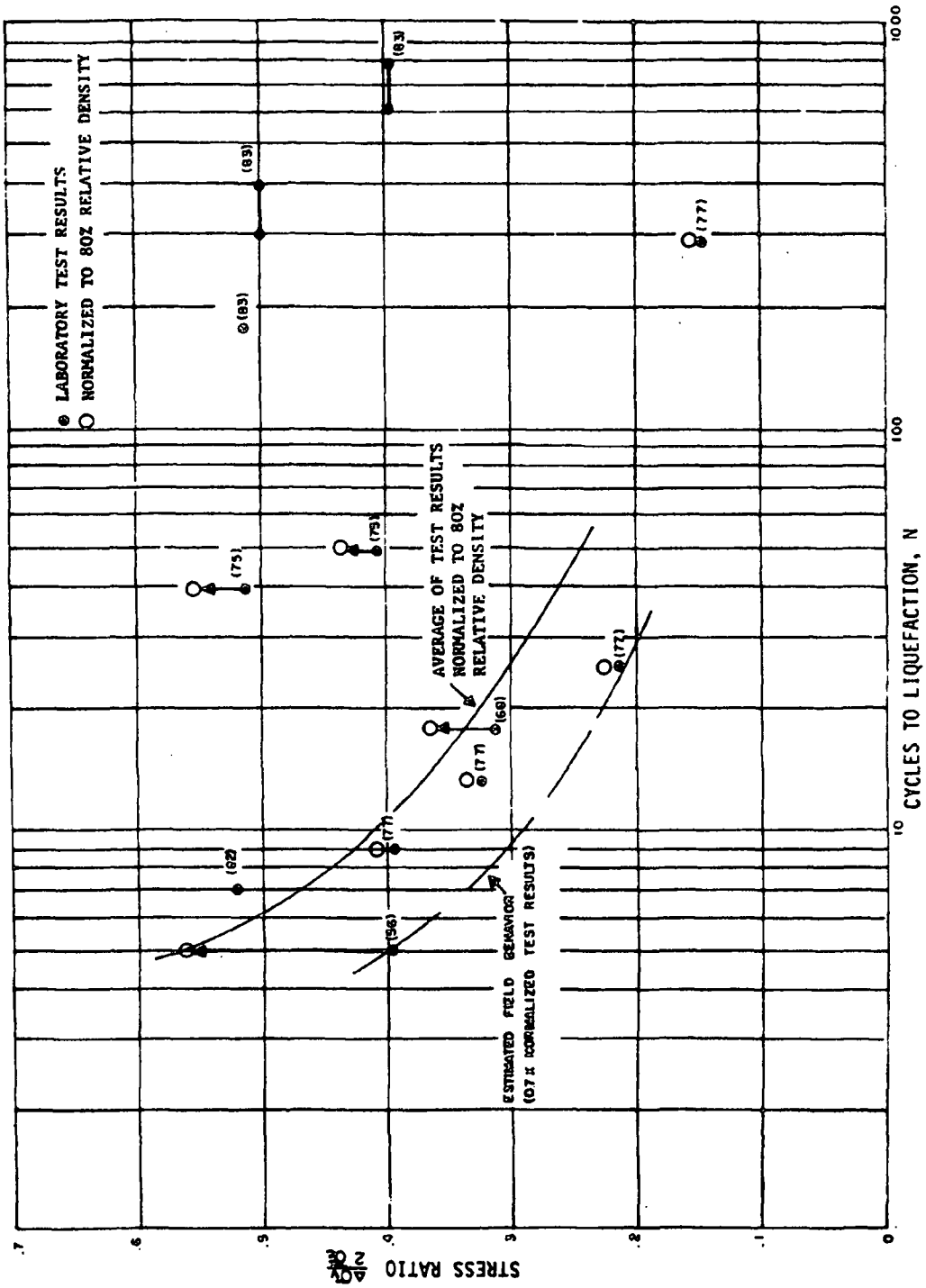
FIGURE 2.5-84 GRAIN - SIZE CHARACTERISTICS OF LIQUEFACTION SAMPLES



NOTE
1. NUMBERS IN PARENTHESS ARE VALUES OF RELATIVE DENSITY.

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FIGURE 2.5-85

CYCLIC STRENGTH CURVE FOR
COMPACTED GRANULAR SOIL

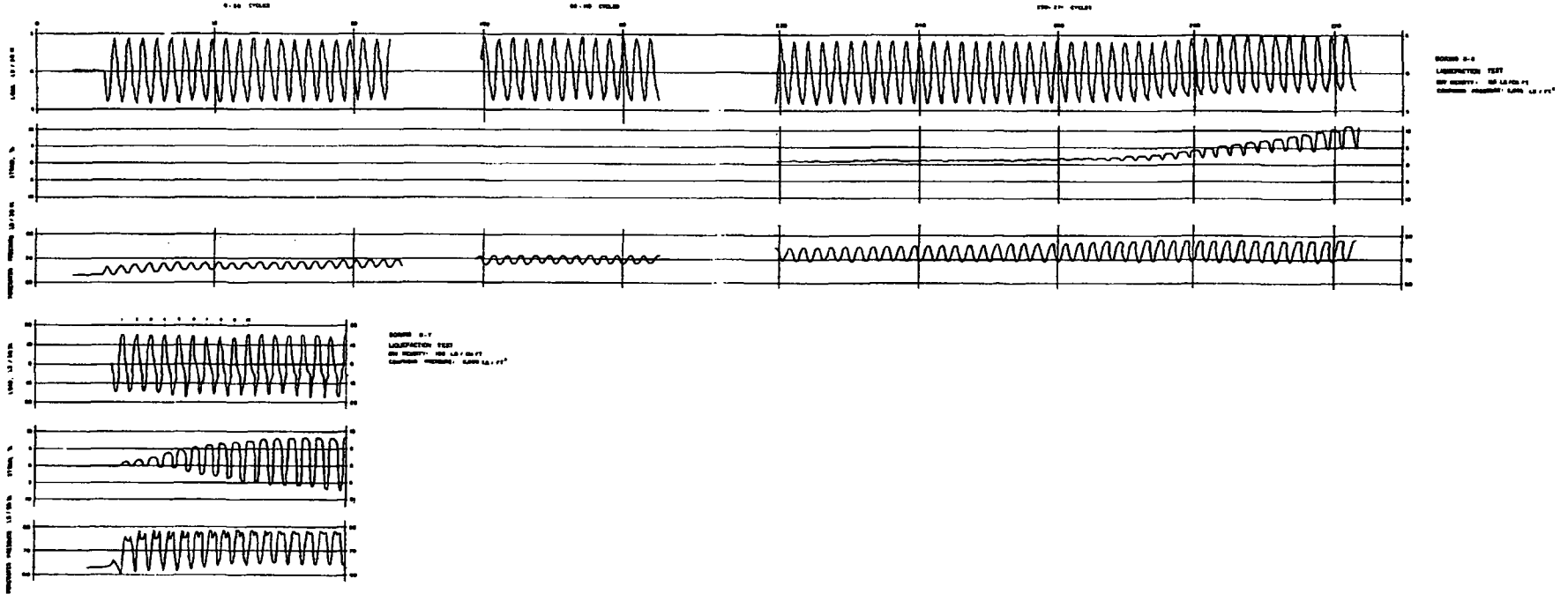

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FIGURE 2.5-86

LIQUEFACTION TEST TYPICAL
RESPONSE CURVE

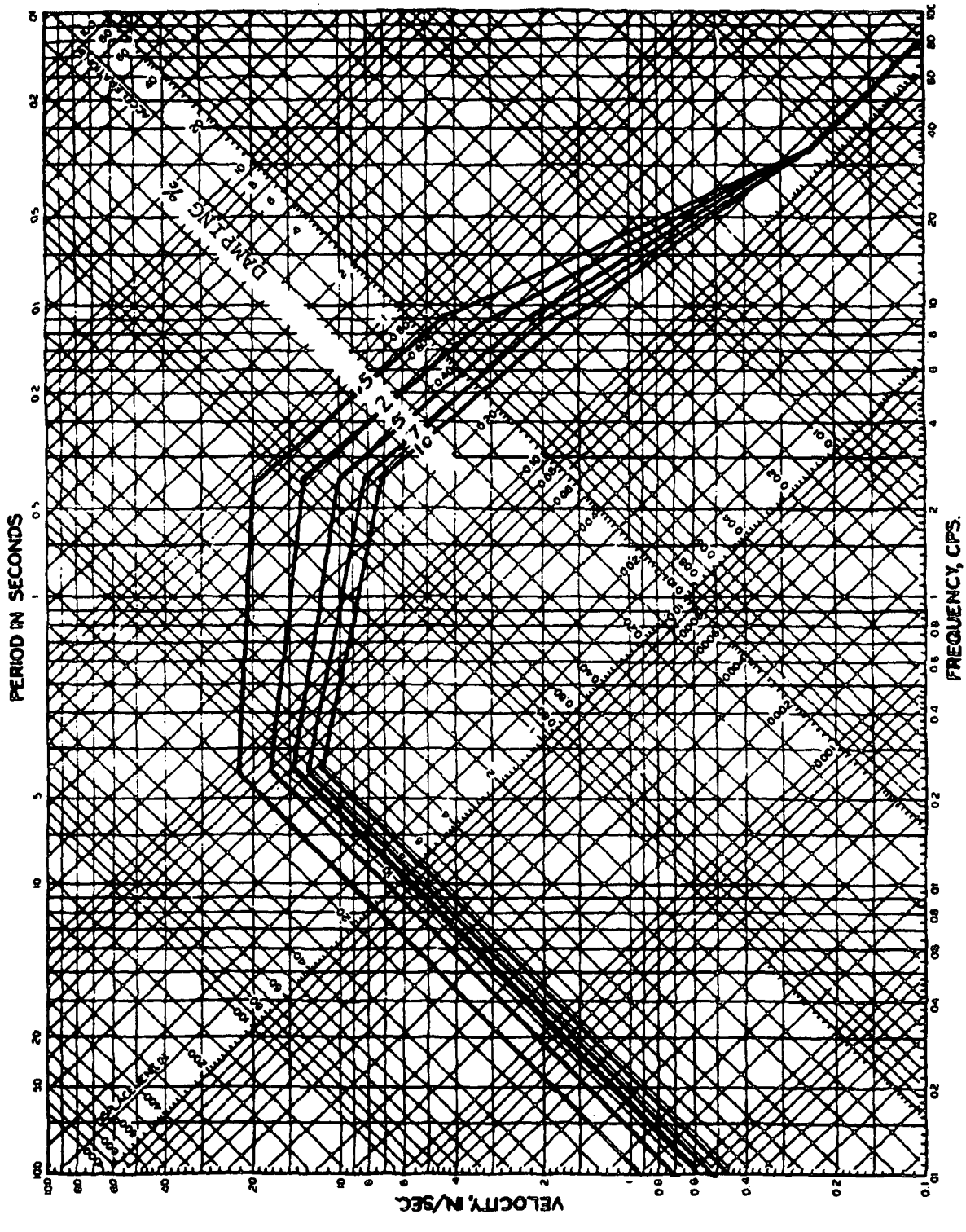

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FIGURE 2.5-87

RESPONSE SPECTRA FOR OPERATING BASIS EARTHQUAKE WITH HORIZONTAL GROUND ACCELERATION = 0.13g

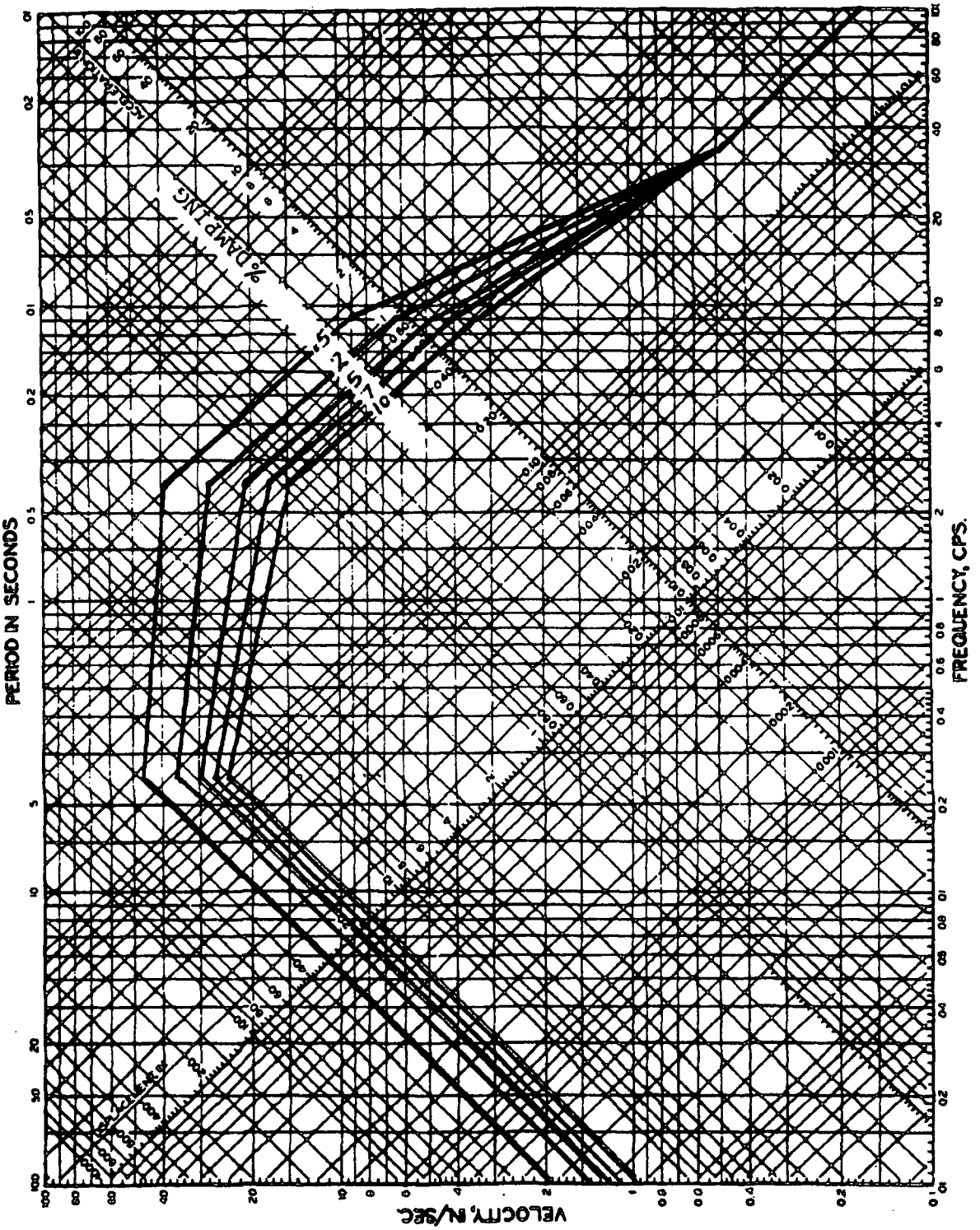

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FIGURE 2.5-88

RESPONSE SPECTRA FOR SAFE SHUTDOWN EARTHQUAKE WITH HORIZONTAL GROUND ACCELERATION = 0.26g

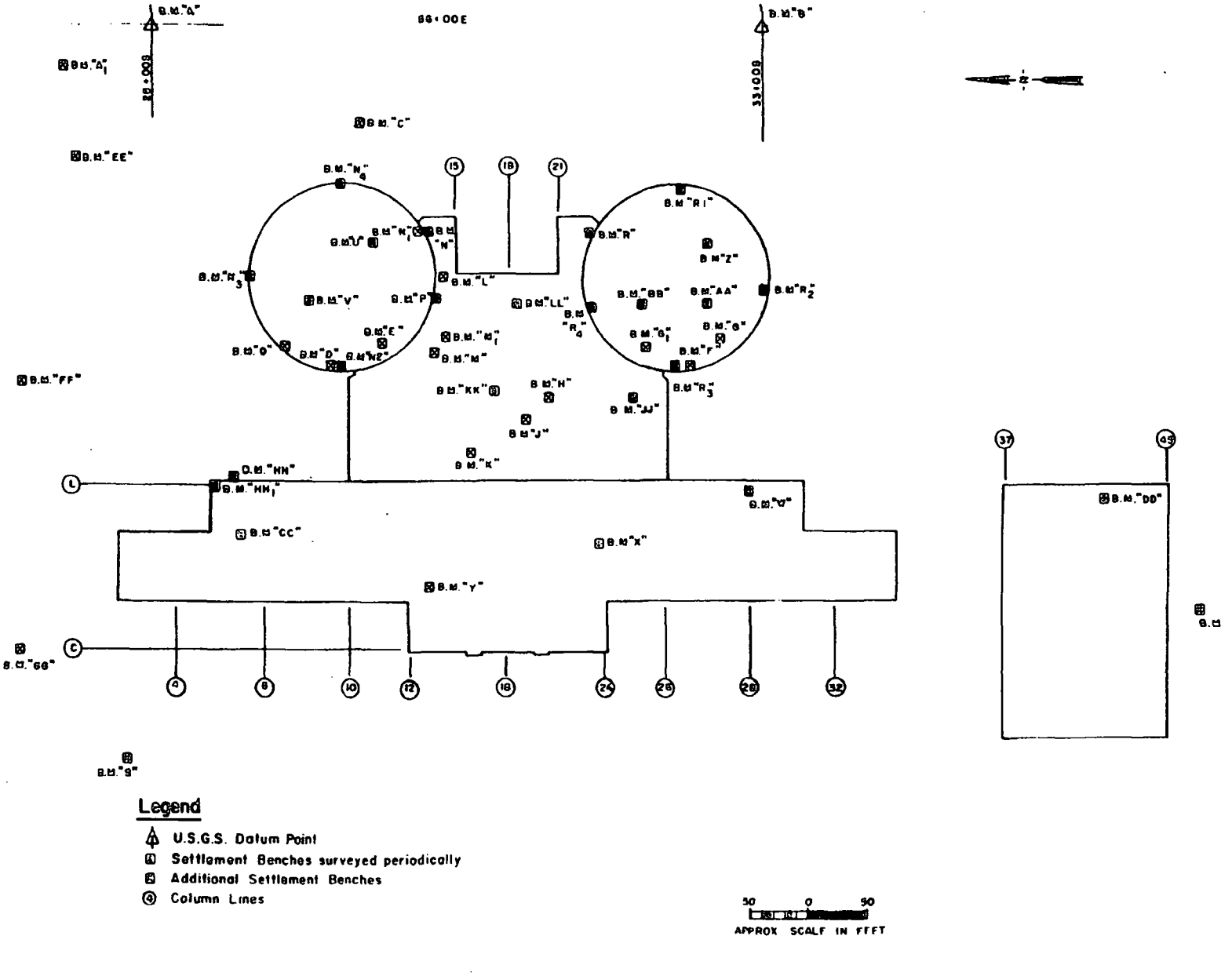

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FIGURE 2.5-89

SETTLEMENT BENCHMARK LOCATIONS

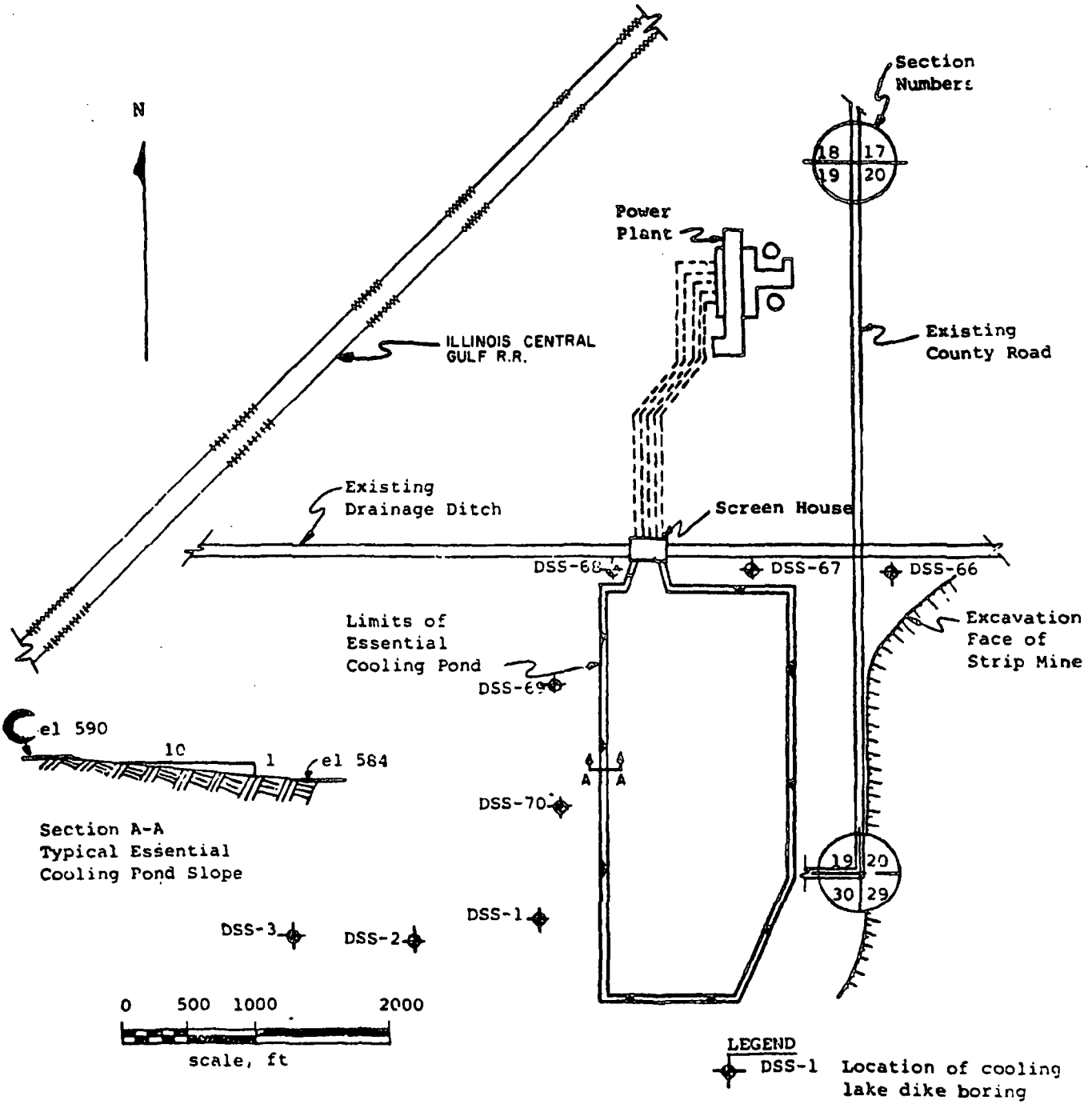

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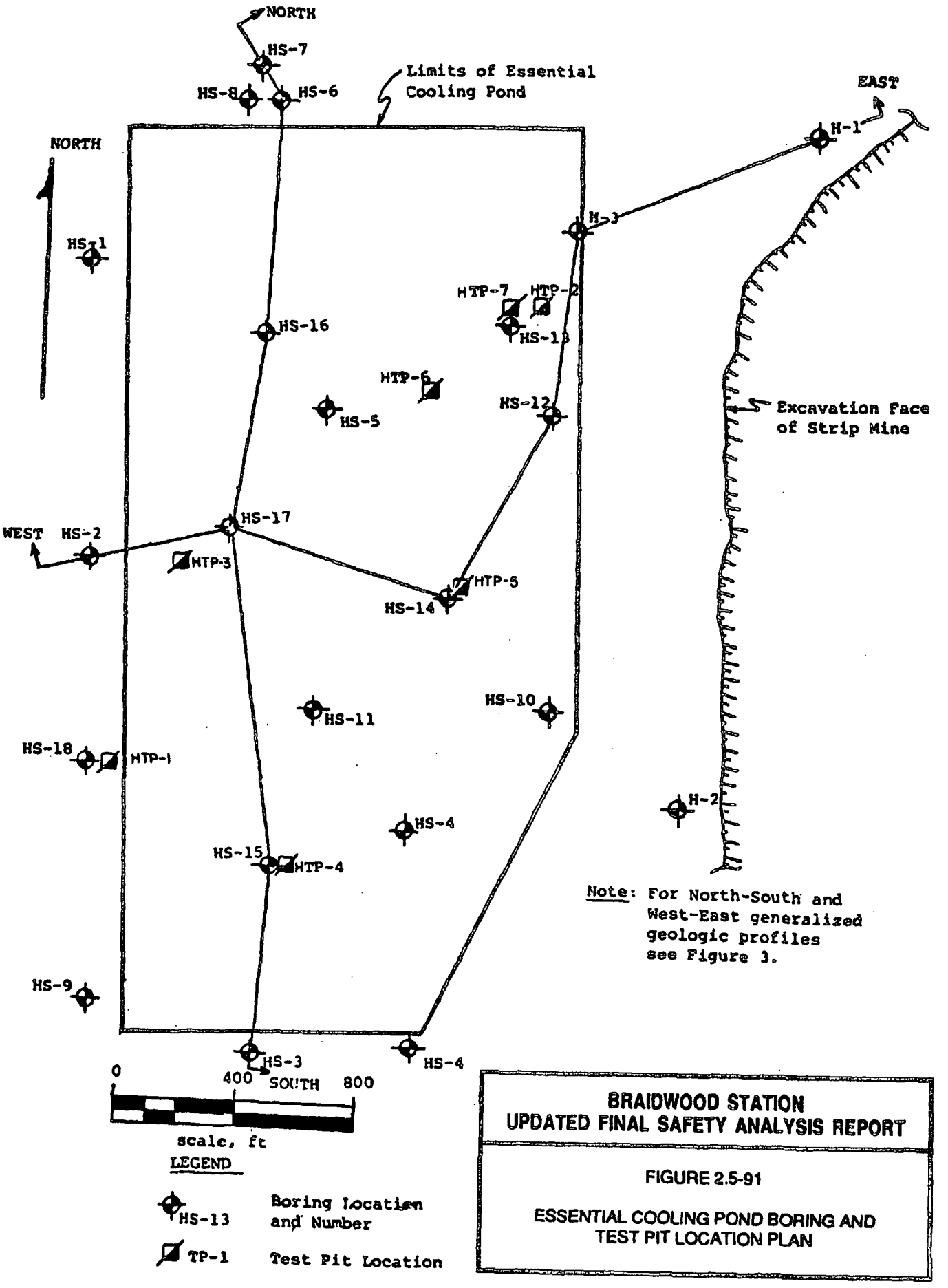
FIGURE 2.5-90

ESSENTIAL COOLING POND ARRANGEMENT
SECTION LOCATION



Note: For North-South and West-East generalized geologic profiles see Figure 3.

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FIGURE 2.5-91

ESSENTIAL COOLING POND BORING AND TEST PIT LOCATION PLAN

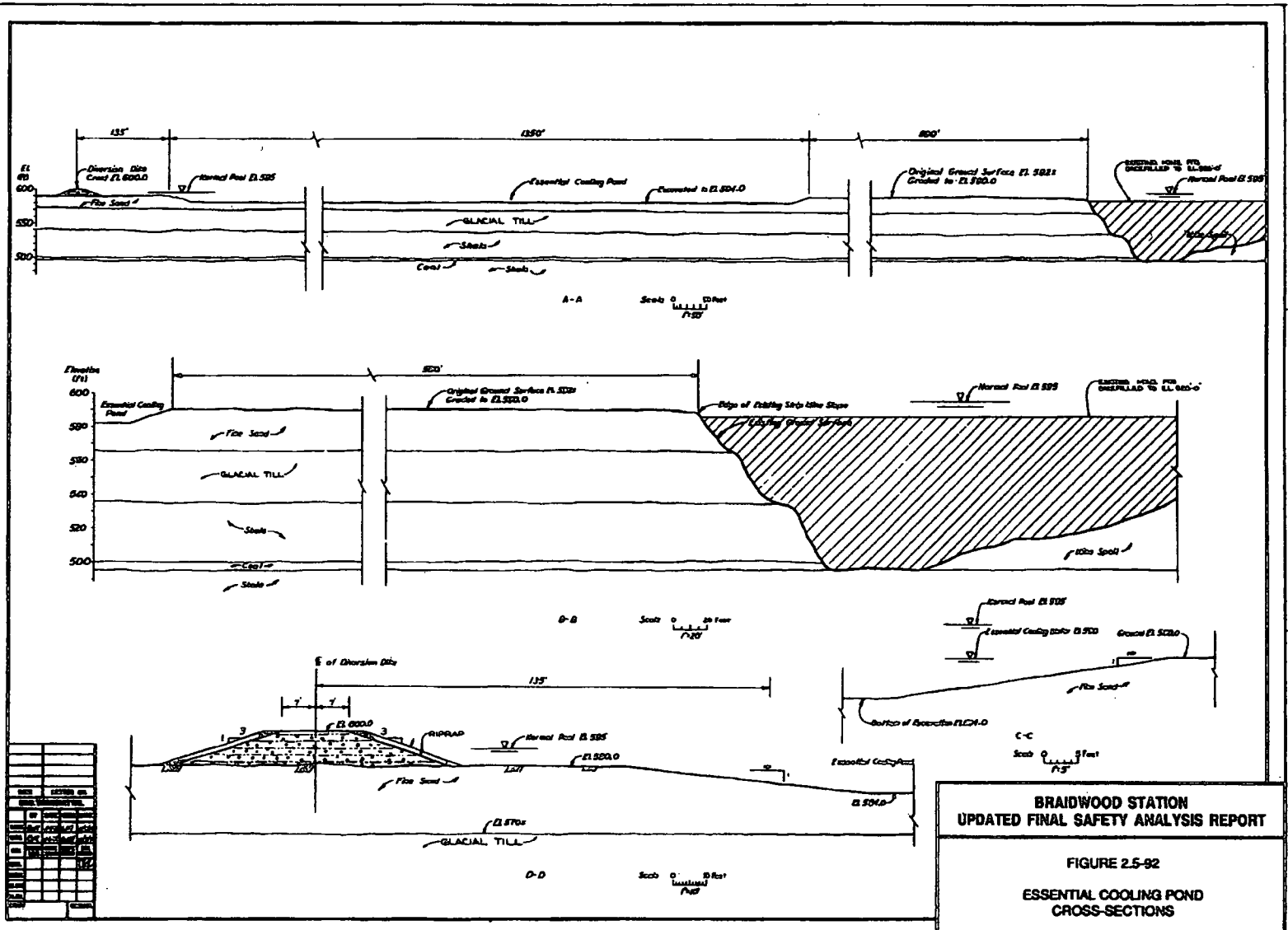

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FIGURE 2.5-92

ESSENTIAL COOLING POND
CROSS-SECTIONS

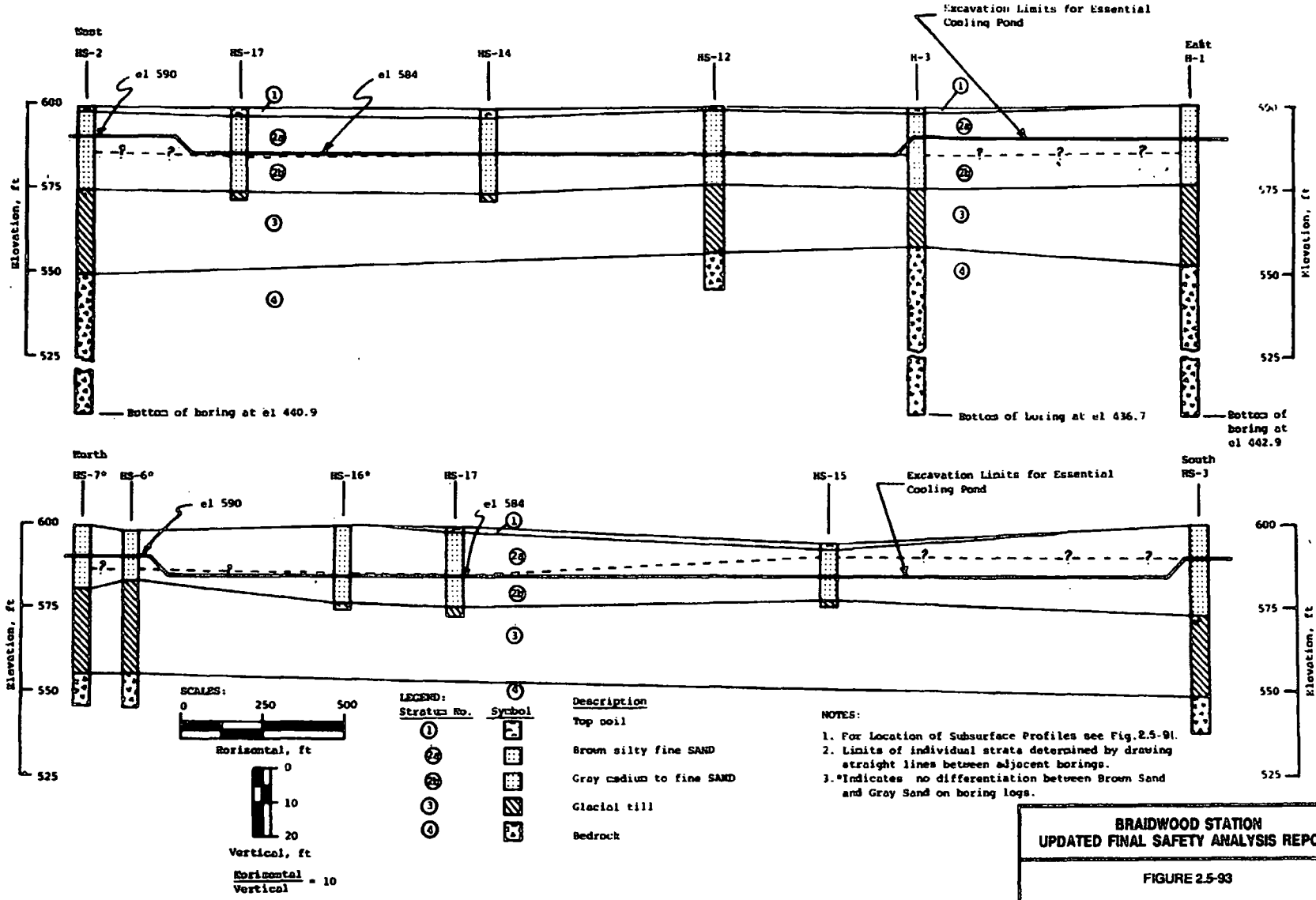

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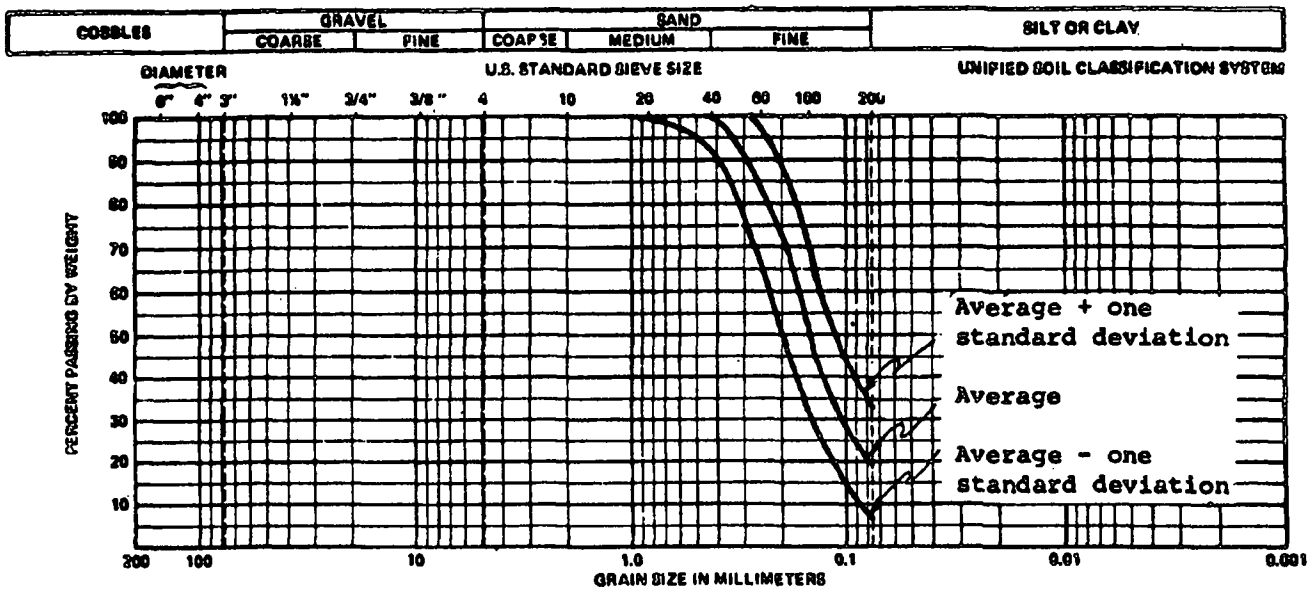
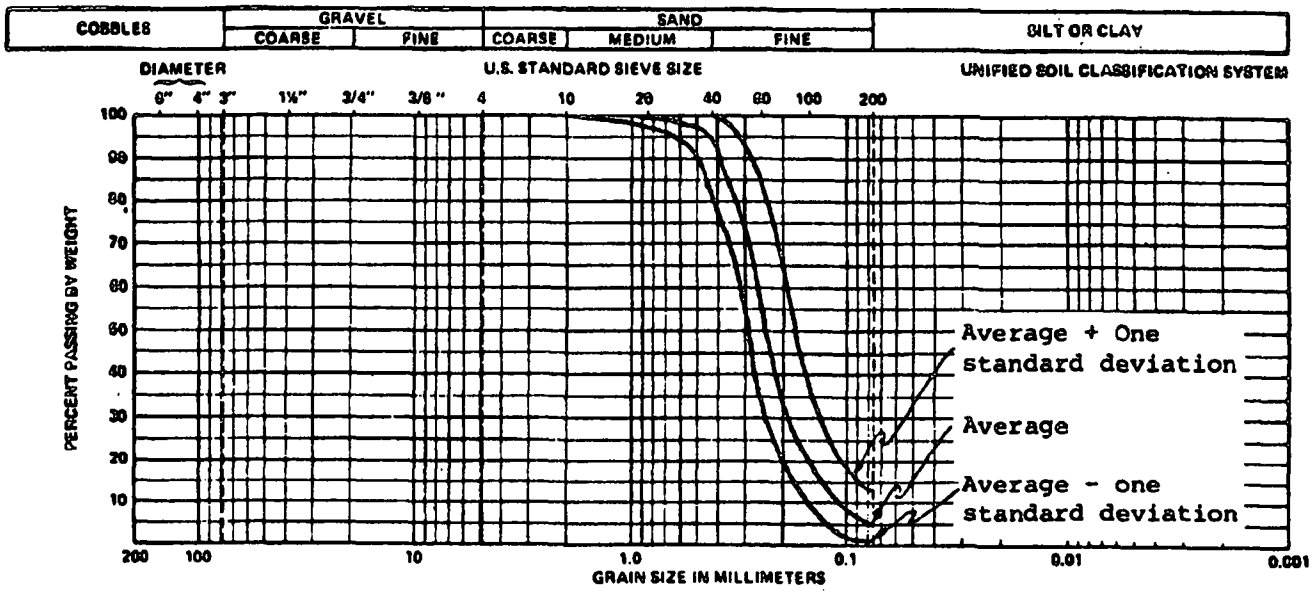
FIGURE 2.5-93

GENERALIZED GEOLOGIC PROFILES WITHIN ESSENTIAL COOLING POND



a) Brown Silty Fine SAND



b) Gray Fine SAND, Trace Silt

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FIGURE 2.5-94

TYPICAL GRADATION OF SAND DEPOSIT

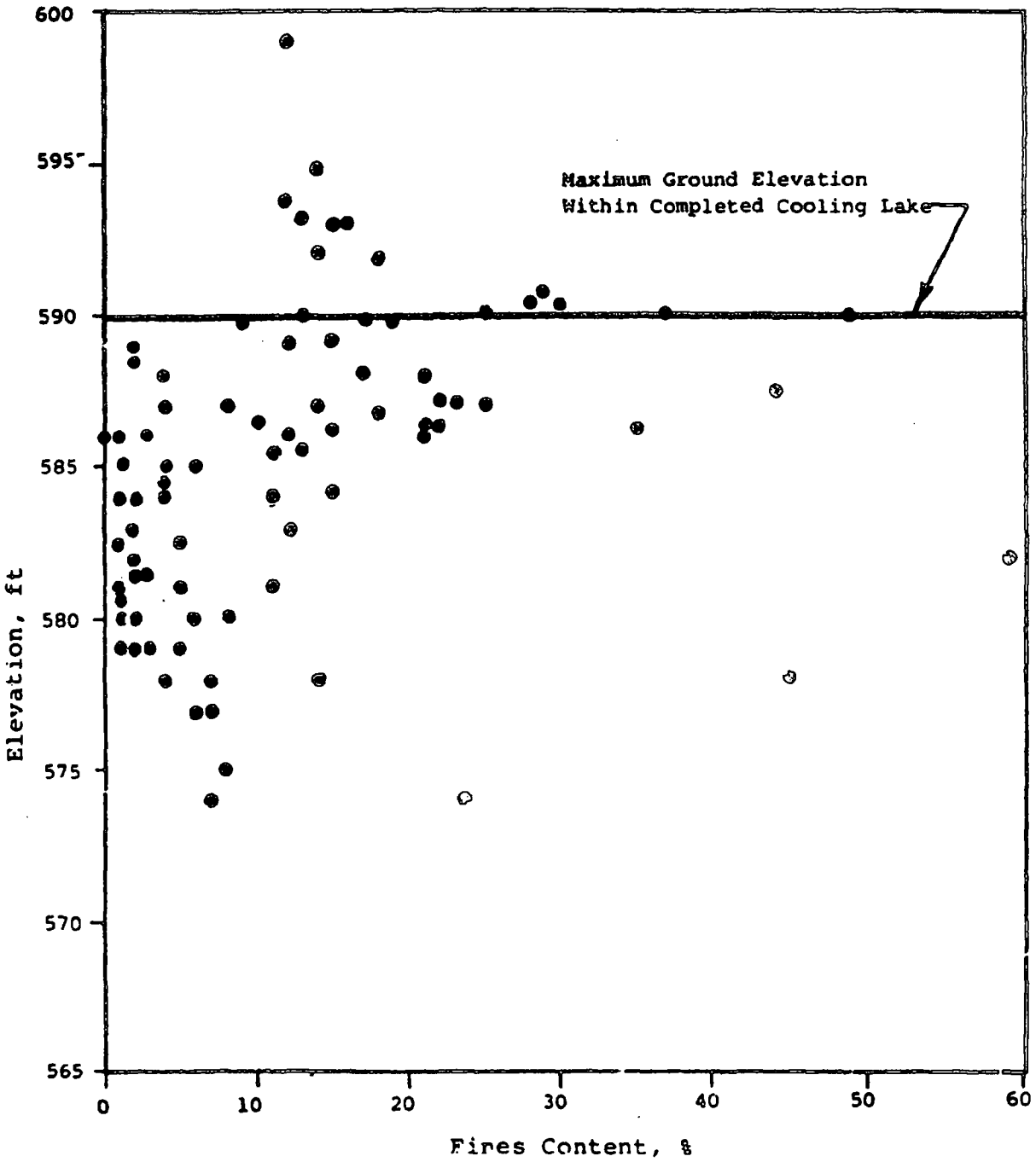

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FIGURE 2.5-95

FINES CONTENT OF SAND DEPOSIT
VS. ELEVATION

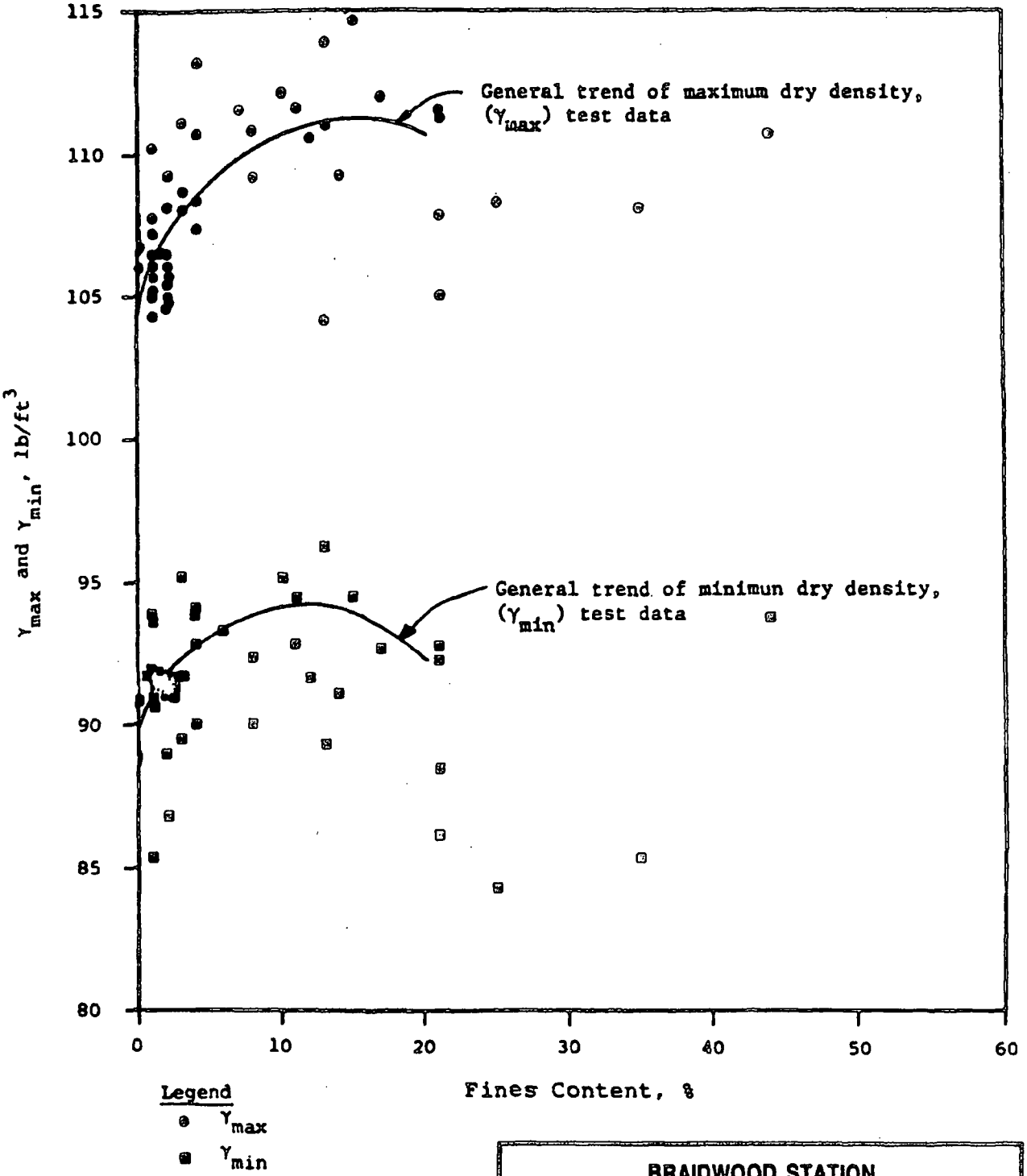

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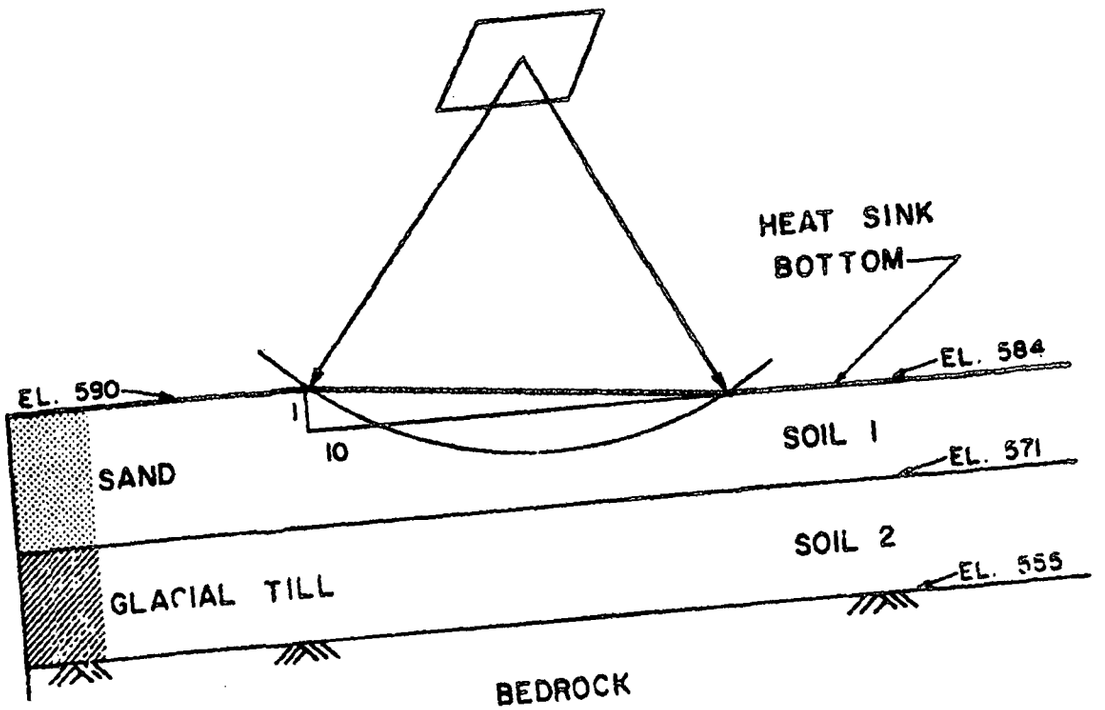
FIGURE 2.5-96

MAXIMUM AND MINIMUM DRY DENSITY VS. FINES CONTENT FOR SAND DEPOSIT WITHIN ECP



	SATURATED UNIT WEIGHT (lbs./ft.^{3})	SHEAR STRENGTH PARAMETERS	
		ϕ	C(PSF)
SOIL 1	125	34°	0
SOIL 2	140	30°	190

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FIGURE 2.5-97

GEOMETRY AND SOIL PROPERTIES USED FOR SLOPE STABILITY ANALYSIS

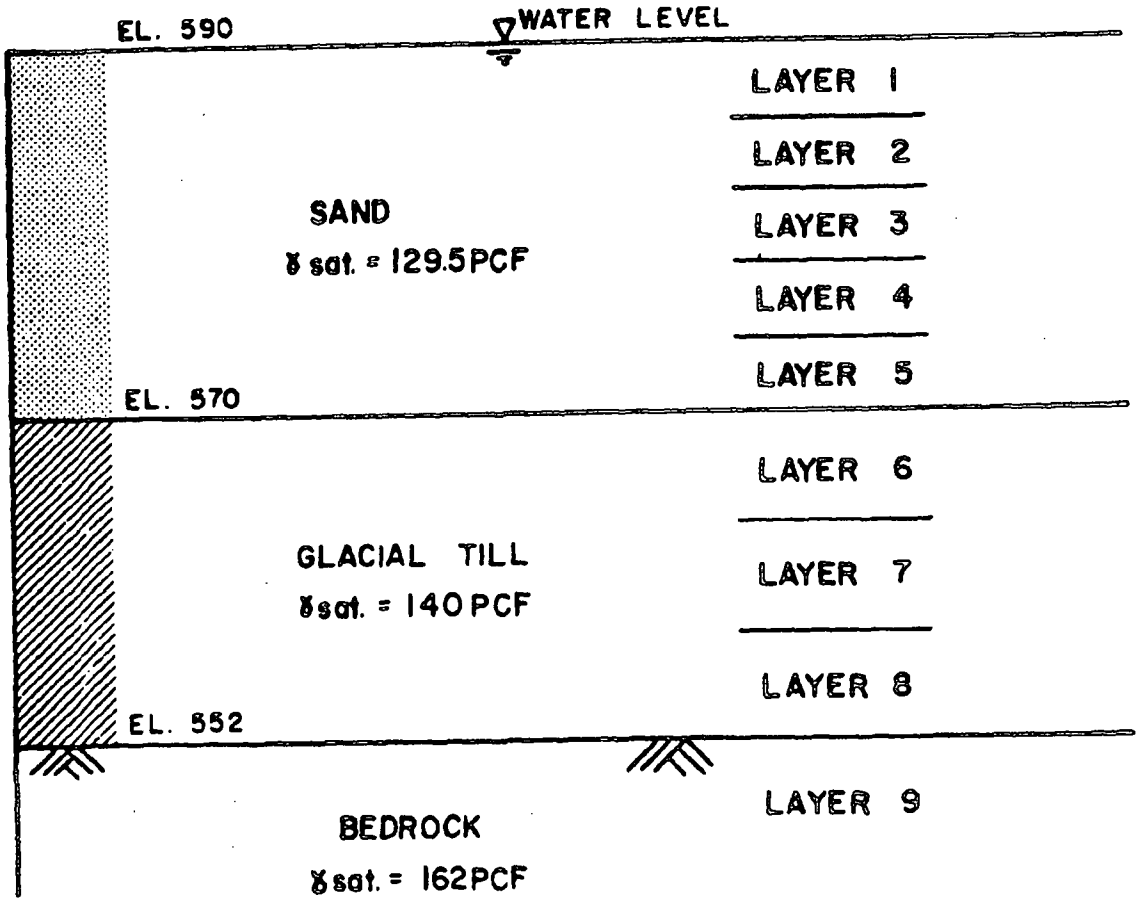

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FIGURE 2.5-98 SOIL PROPERTIES USED FOR SLOPE STABILITY ANALYSIS

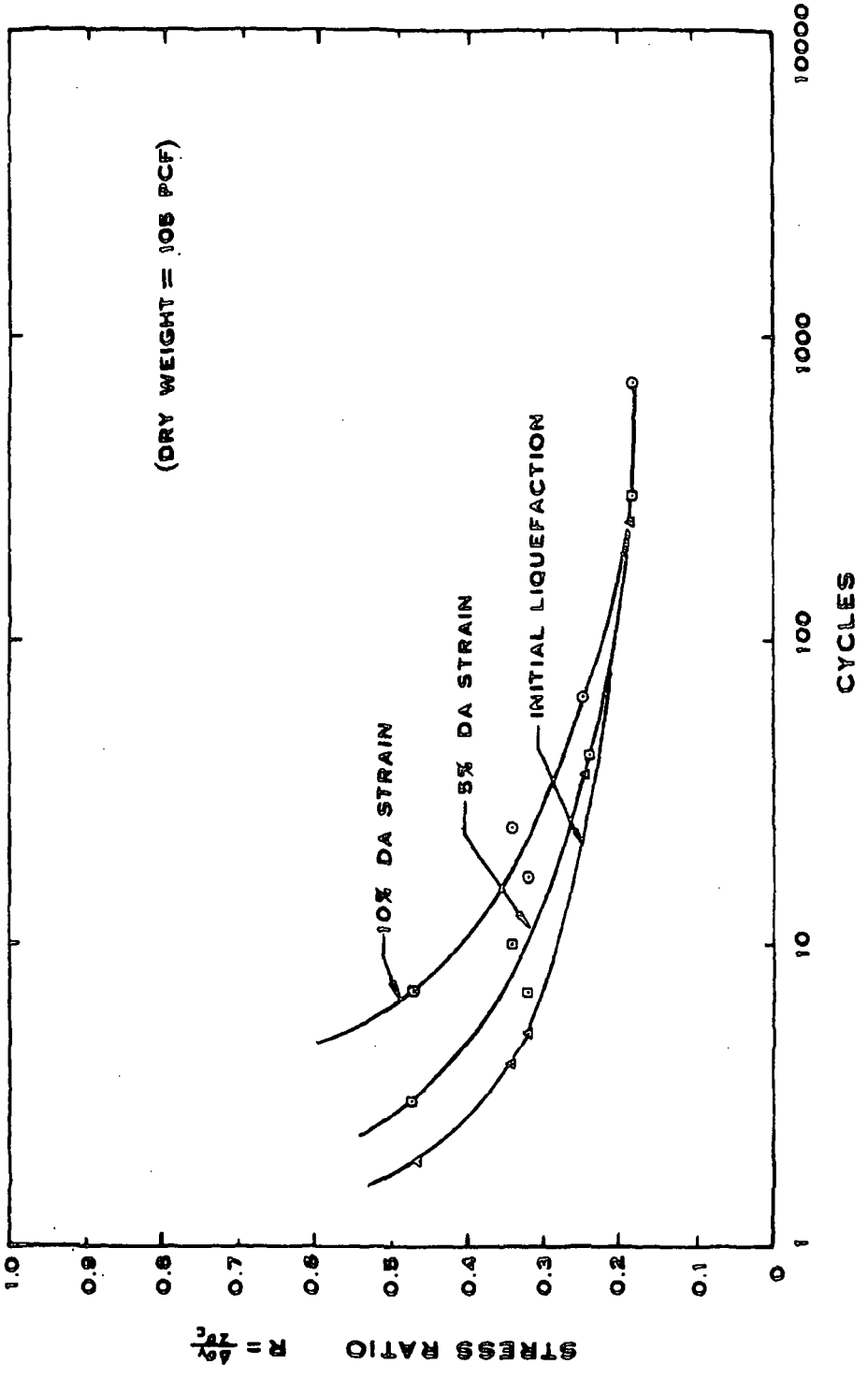

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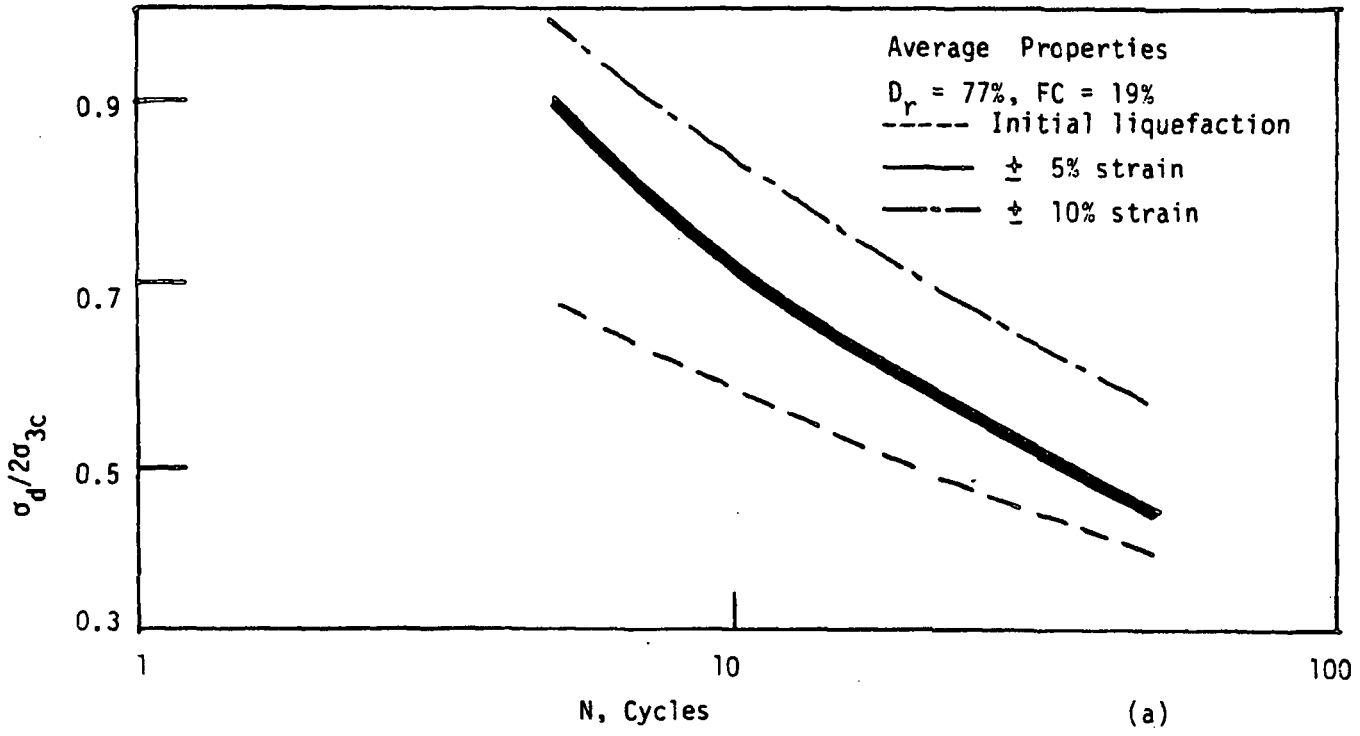
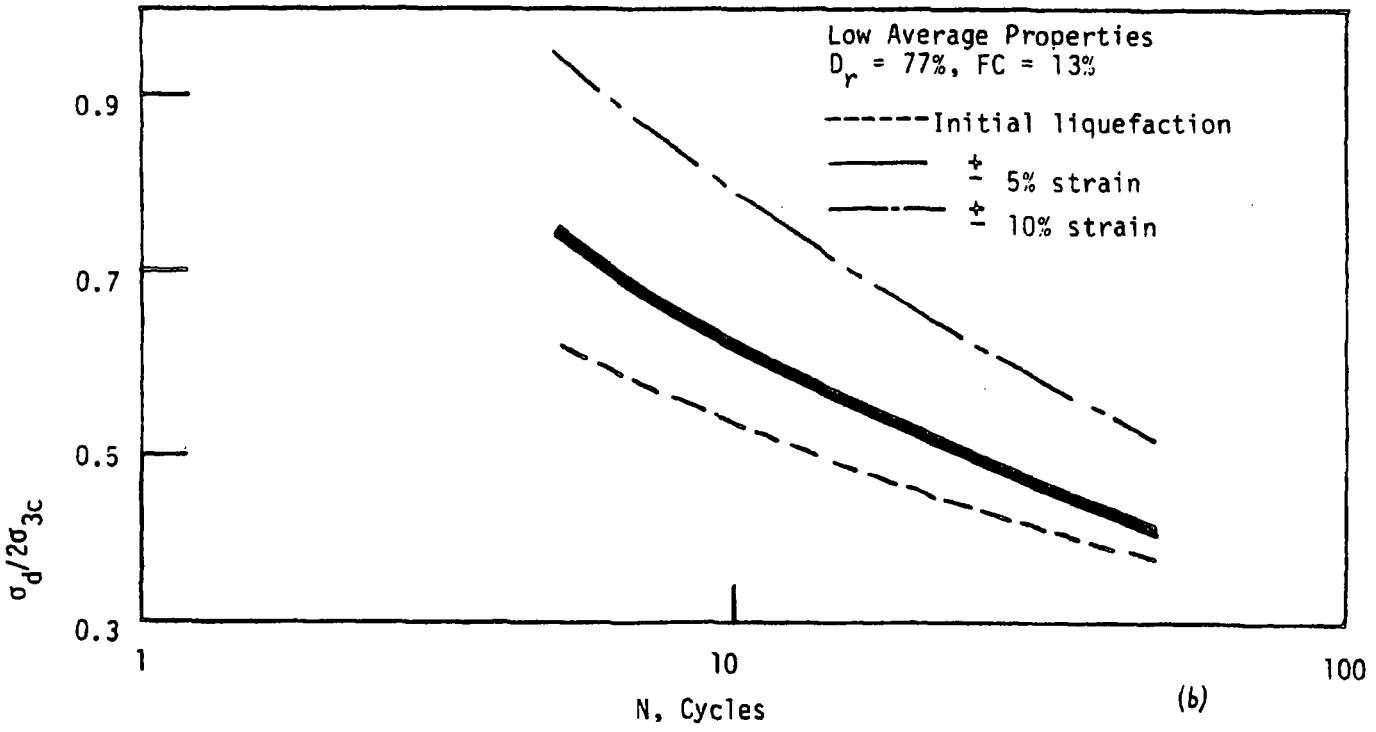
FIGURE 2.5-99

LIQUEFACTION POTENTIAL FOR DENSE UNIFORM FINE SANDS





NOTE: Curves determined using test data from reconstituted test specimens.

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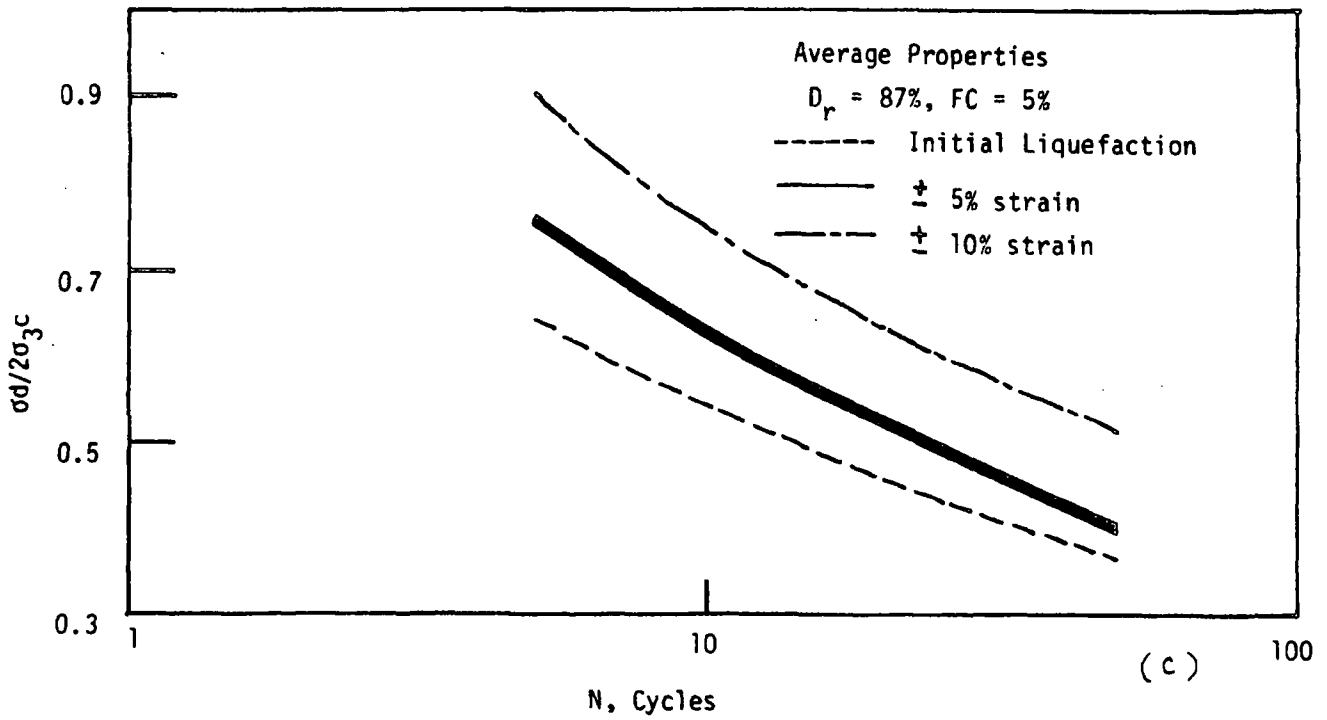
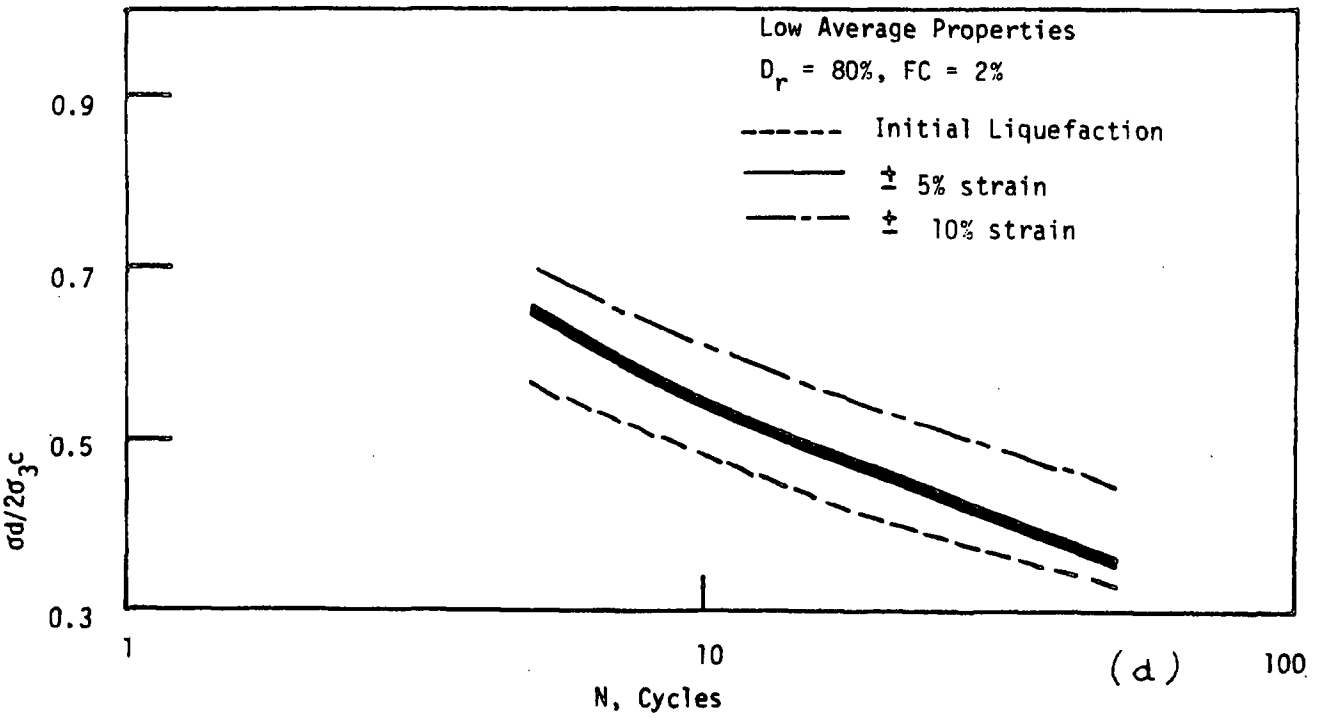
FIGURE 2.5-100

LABORATORY CYCLIC STRENGTH CURVES
FOR BROWN SILTY SAND





NOTE:
1. CURVES DETERMINED USING TEST DATA FROM RECONSTITUTED TEST SPECIMENS.

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FIGURE 2.5-101

LABORATORY CYCLIC STRENGTH CURVES FOR GRAY FINE SAND

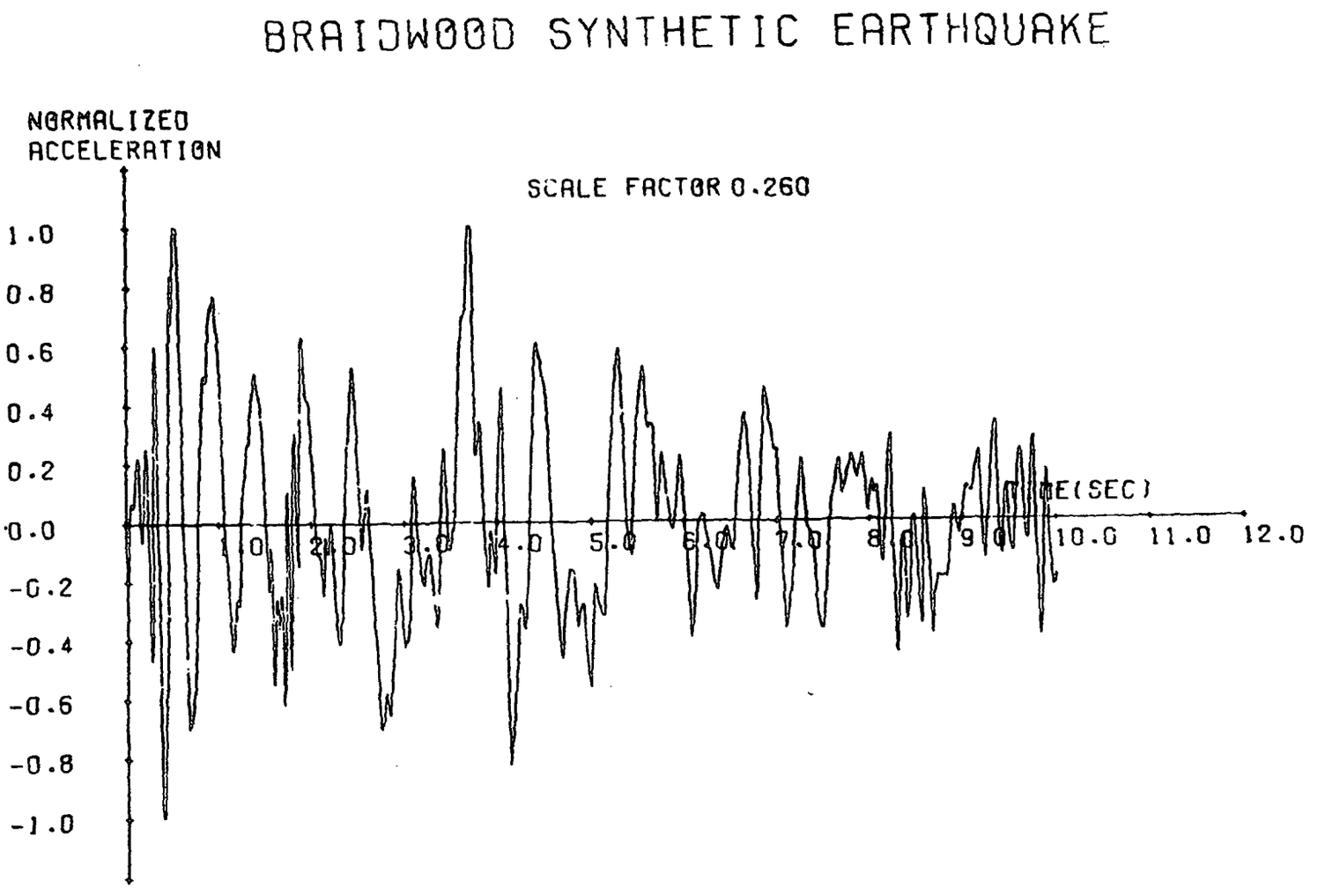

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FIGURE 2.5-102

SYNTHETIC EARTHQUAKE TIME HISTORY
USED FOR LIQUEFACTION ANALYSIS

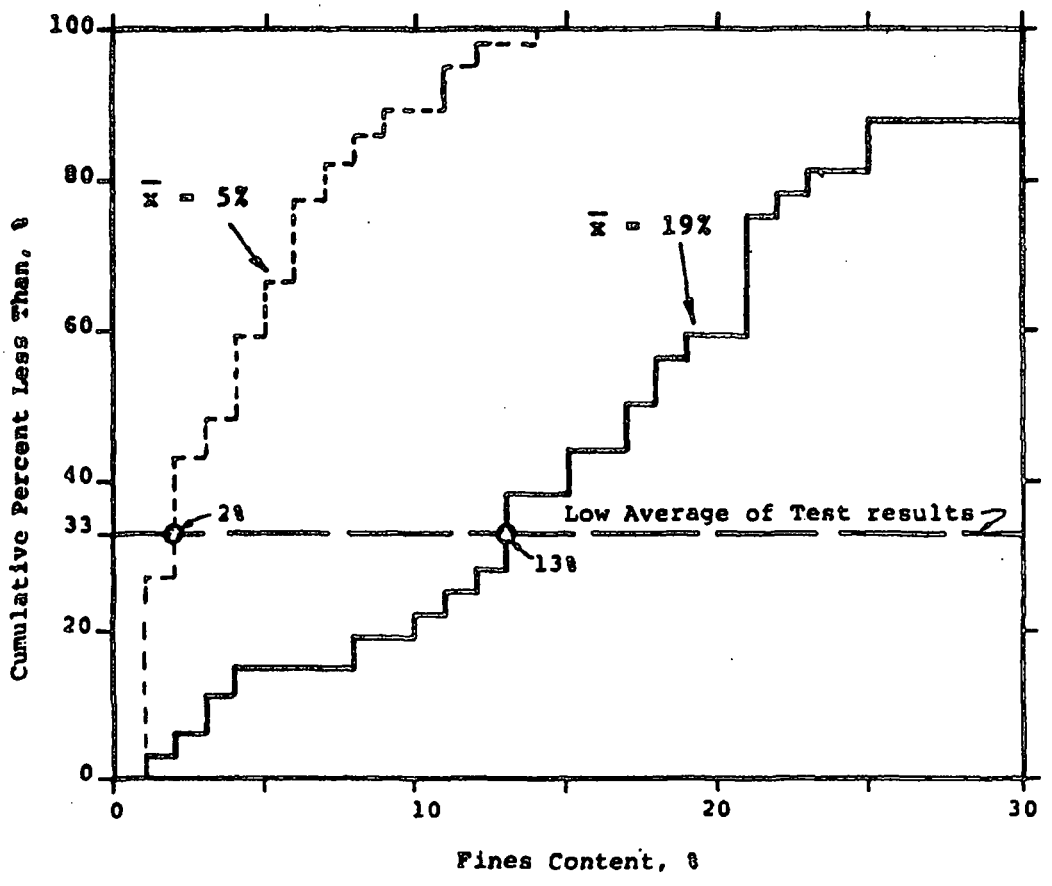

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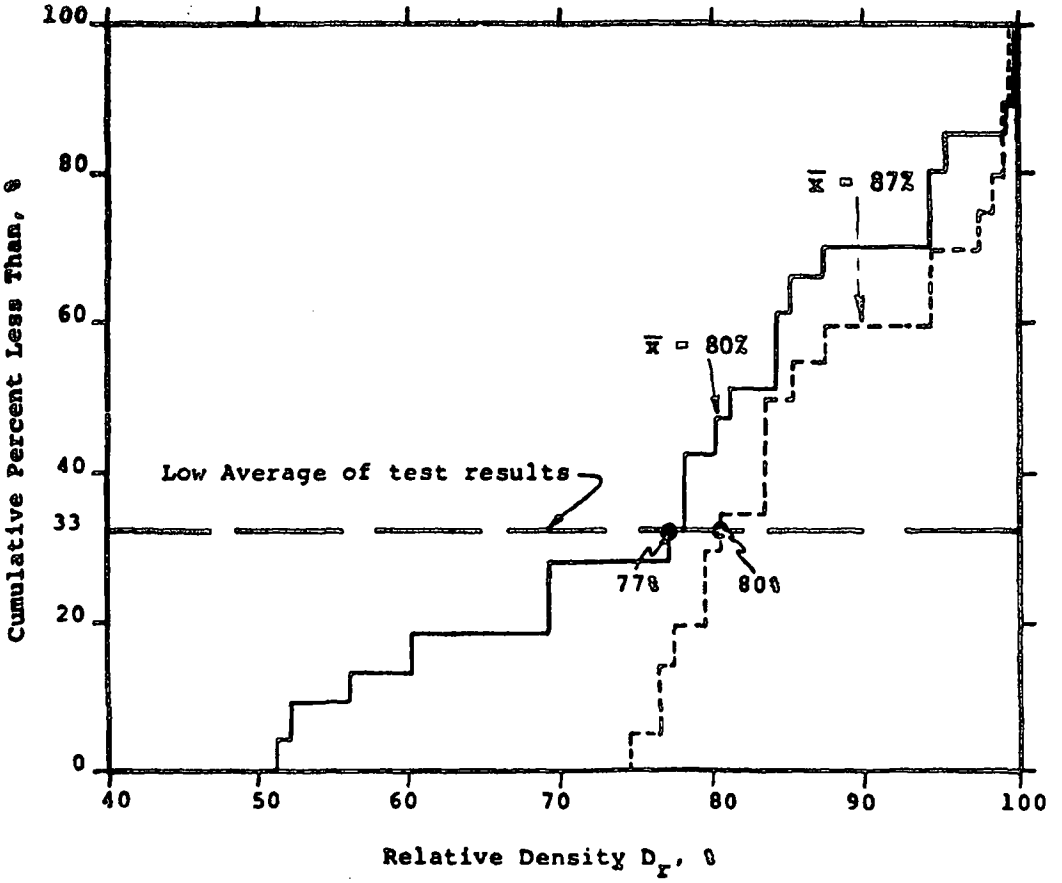
FIGURE 2.5-103 CUMULATIVE OCCURRENCE OF FINES CONTENT OF SAND DEPOSIT



——— Brown Silty Fine Sand between el 590 and el 585

------ Gray Fine Sand below el 585

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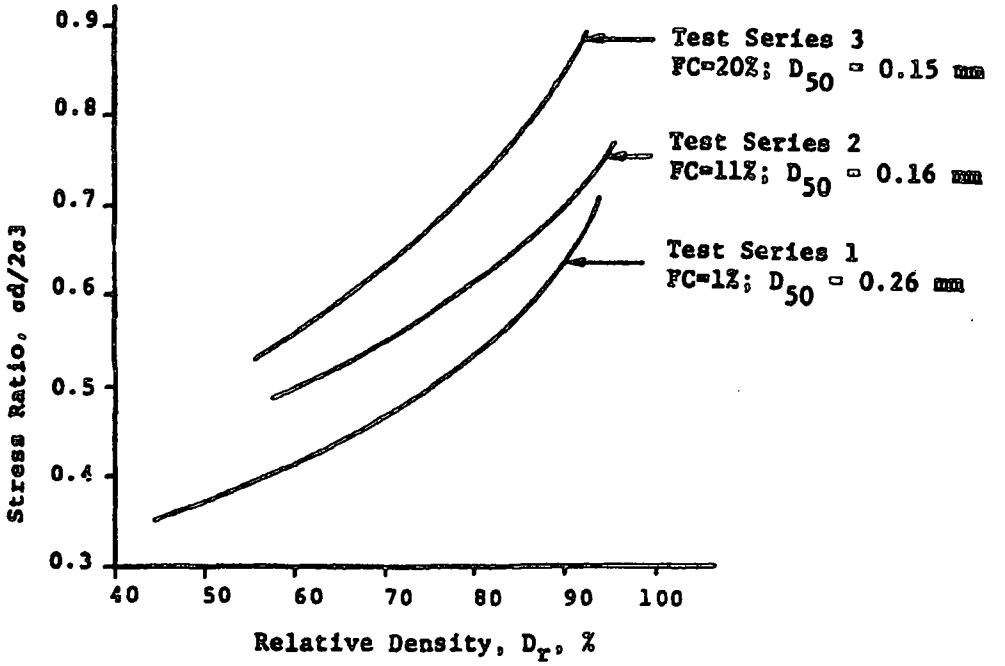
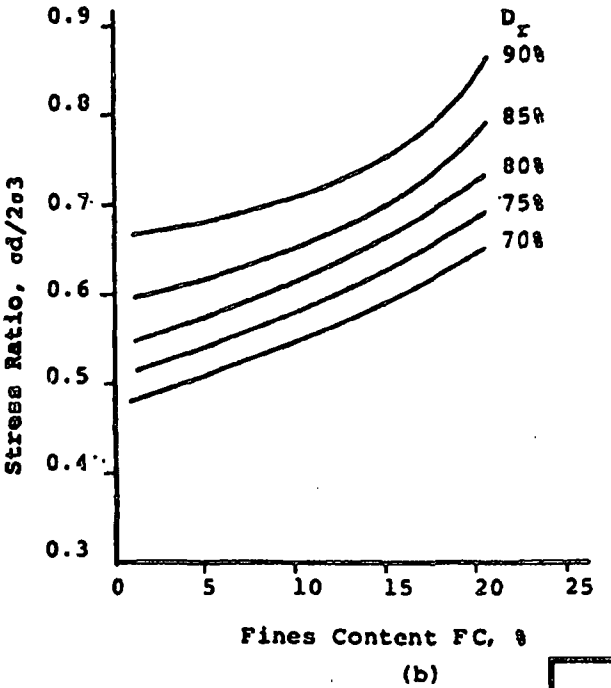
FIGURE 2.5-104

CUMULATIVE OCCURRENCE OF RELATIVE DENSITY OF SAND DEPOSIT



(a)



(b)

Note: The stress ratio shown is that required to cause 10% double amplitude strain in 10 cycles

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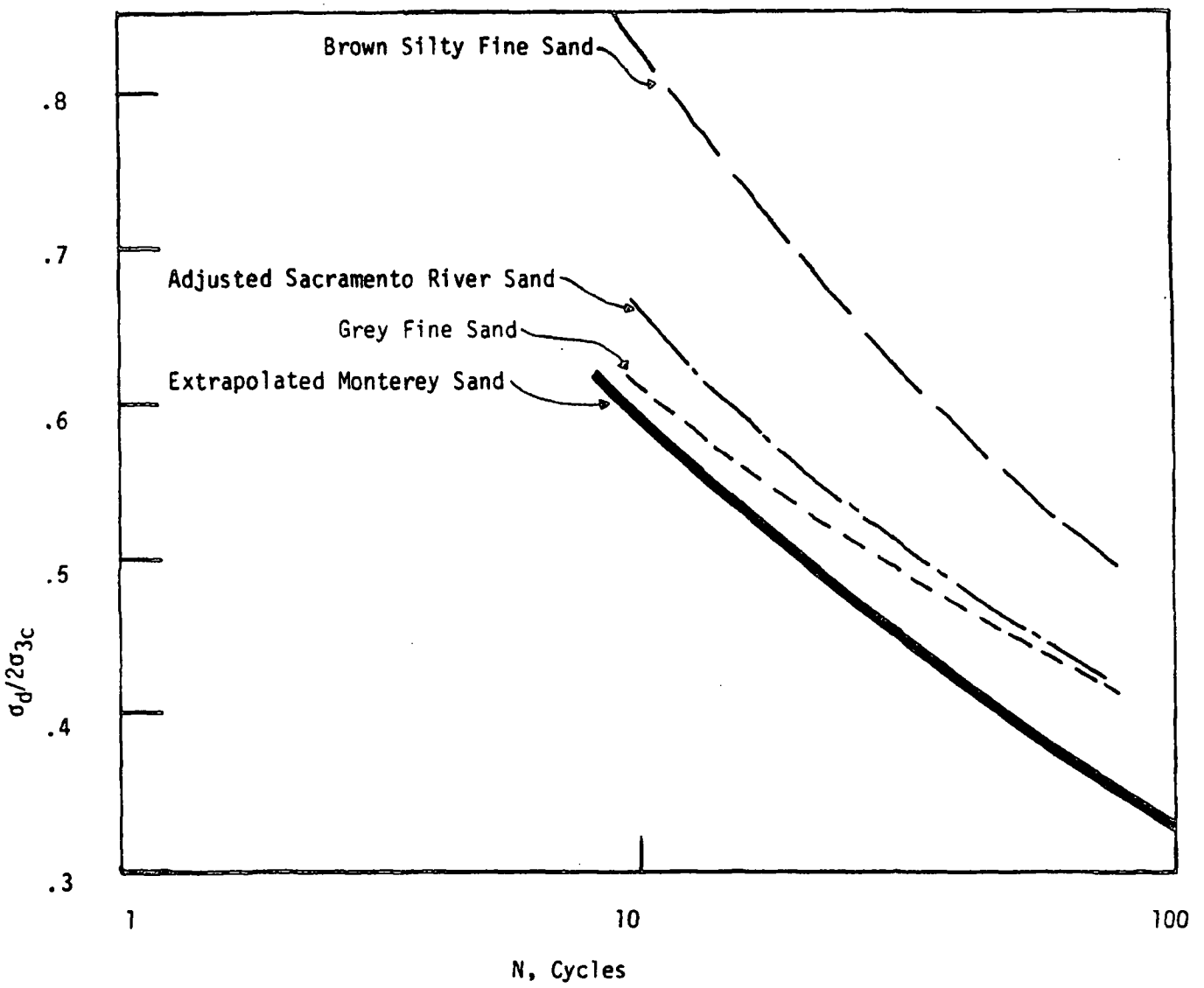
FIGURE 2.5-105

VARIATION OF CYCLIC SHEAR STRENGTH WITH FINES CONTENT AND RELATIVE DENSITY



NOTE: Comparison was made of cyclic strength of reconstituted test specimens formed using a "wet tamping" compaction procedure. Data were compared for ± 10% axial strain of test specimen compacted to D_r of 80%.

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FIGURE 2.5-106

COMPARISON OF CYCLIC STRENGTH OF SAND DEPOSITS WITH CYCLIC STRENGTH OF OTHER CLEAN FINE SANDS

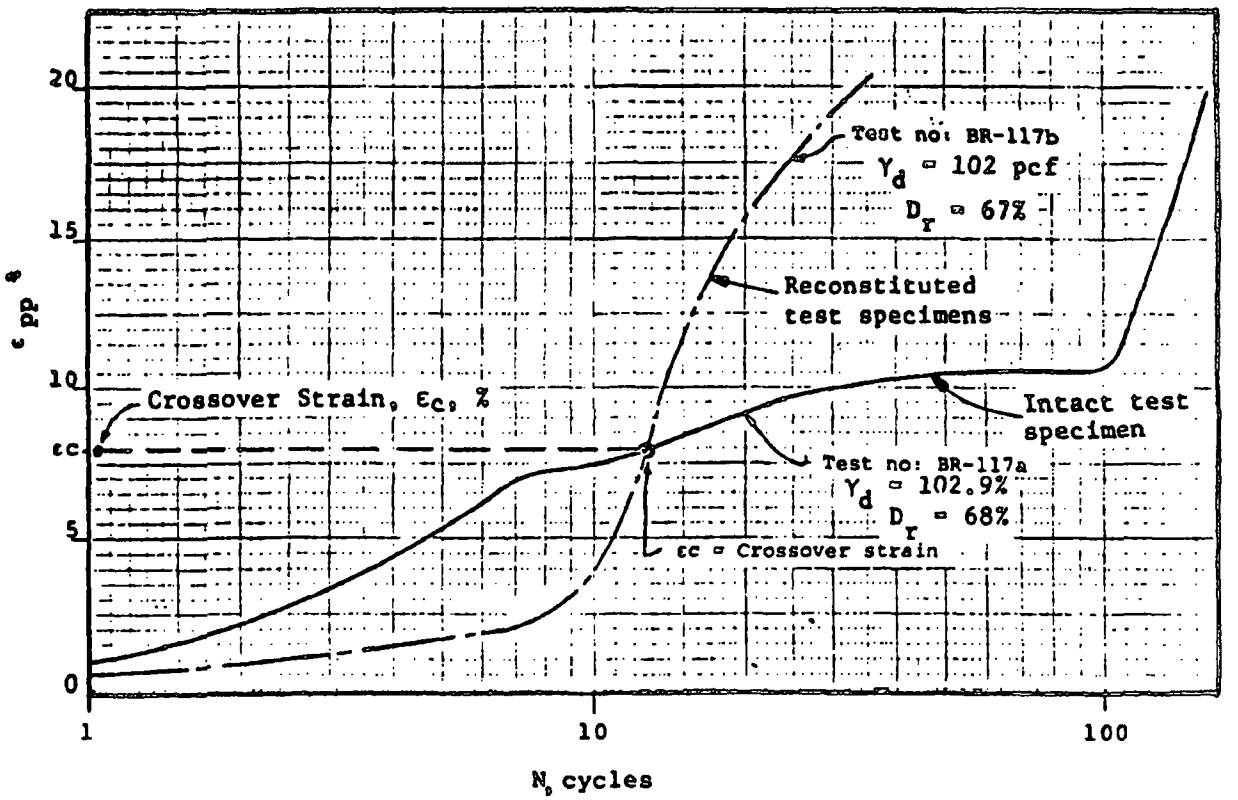

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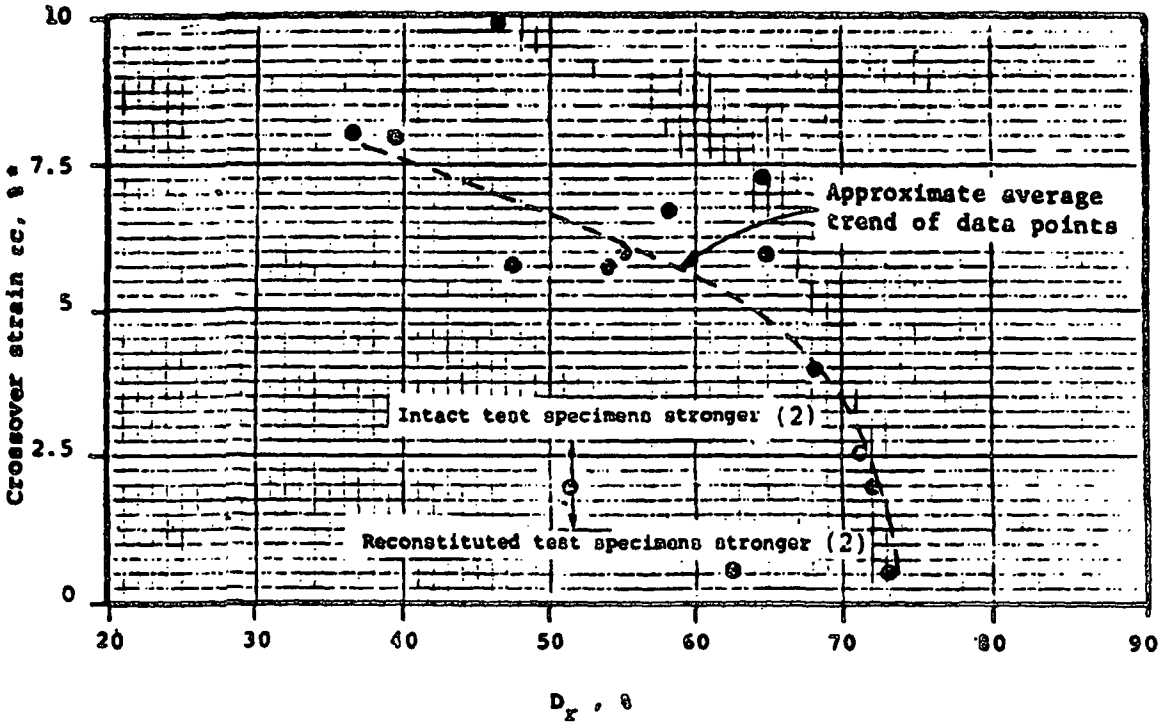
FIGURE 2.5-107

TYPICAL RESULTS OF CYCLIC TEST ON INTACT AND "COMPANION" RECONSTITUTED TEST SPECIMENS



Note: (1) ε_c expressed on $^1/_2$ the peak-to-peak axial strain

(2) This relationship applies to each data point independently

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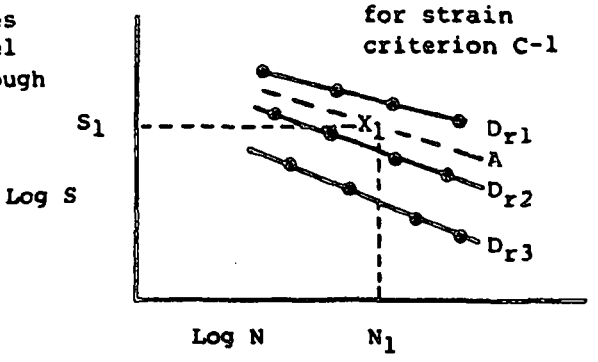
FIGURE 2.5-108

CROSSOVER STRAIN VS. RELATIVE DENSITY OF TEST SPECIMENS

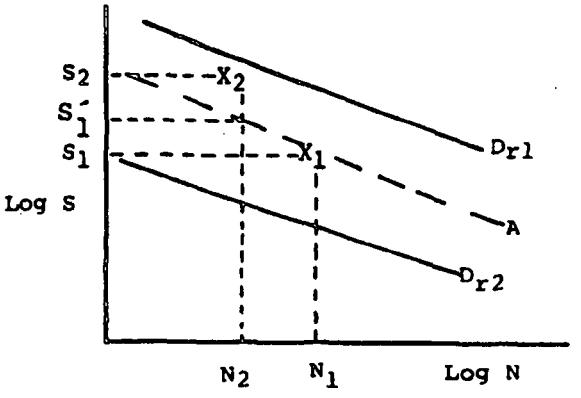
STEP 1 --Overplot remolded test results (X_1) from Phase 2 study on log-log strength curves from the Phase 1 study and draw parallel strength curve (A) (straight line) through the point (X_1)

$$\left(S = \frac{\sigma d}{2\sigma_{3c}}\right)$$

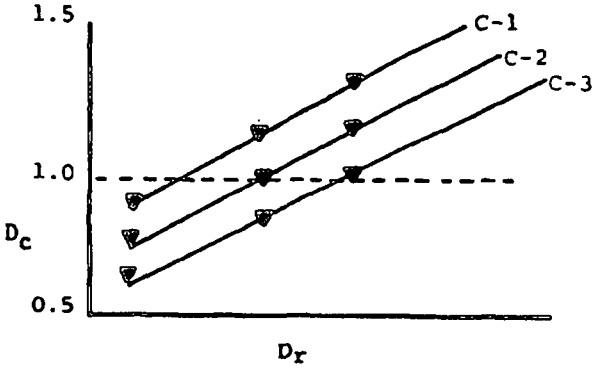


STEP 2 --Plot companion intact strength result (X_2) on the same graph

STEP 3 --Determine the equivalent value of strength (S_1') for the (X_1) specimen at the same number of cycles (N_2) of the X_2 specimen as shown



STEP 4 --Calculate the value of the ratio of strength ($S_2/S_1' = D_c$) and plot it as a function of the measured relative density. Repeat for other companion specimens and other criteria to determine liquefaction.



NOTES:

1. Typically C-1 = strength to cause ±10% strain
   C-2 = strength to cuase ±5% strain
   C-3 = strength to cause initial liquefaction

2. If D_r for the companion specimens are different a revised value of X_2 can be determined by interpolation between D_{r1} and D_{r2} curves in Step 2.

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FIGURE 2.5-109

SCHEMATIC DIAGRAM TO EVALUATE THE RATIO BETWEEN CYCLIC STRENGTH OF INTACT SAND DEPOSITS AND DETERMINED ON RECONSTITUTED TEST SPECIMENS (D_C)

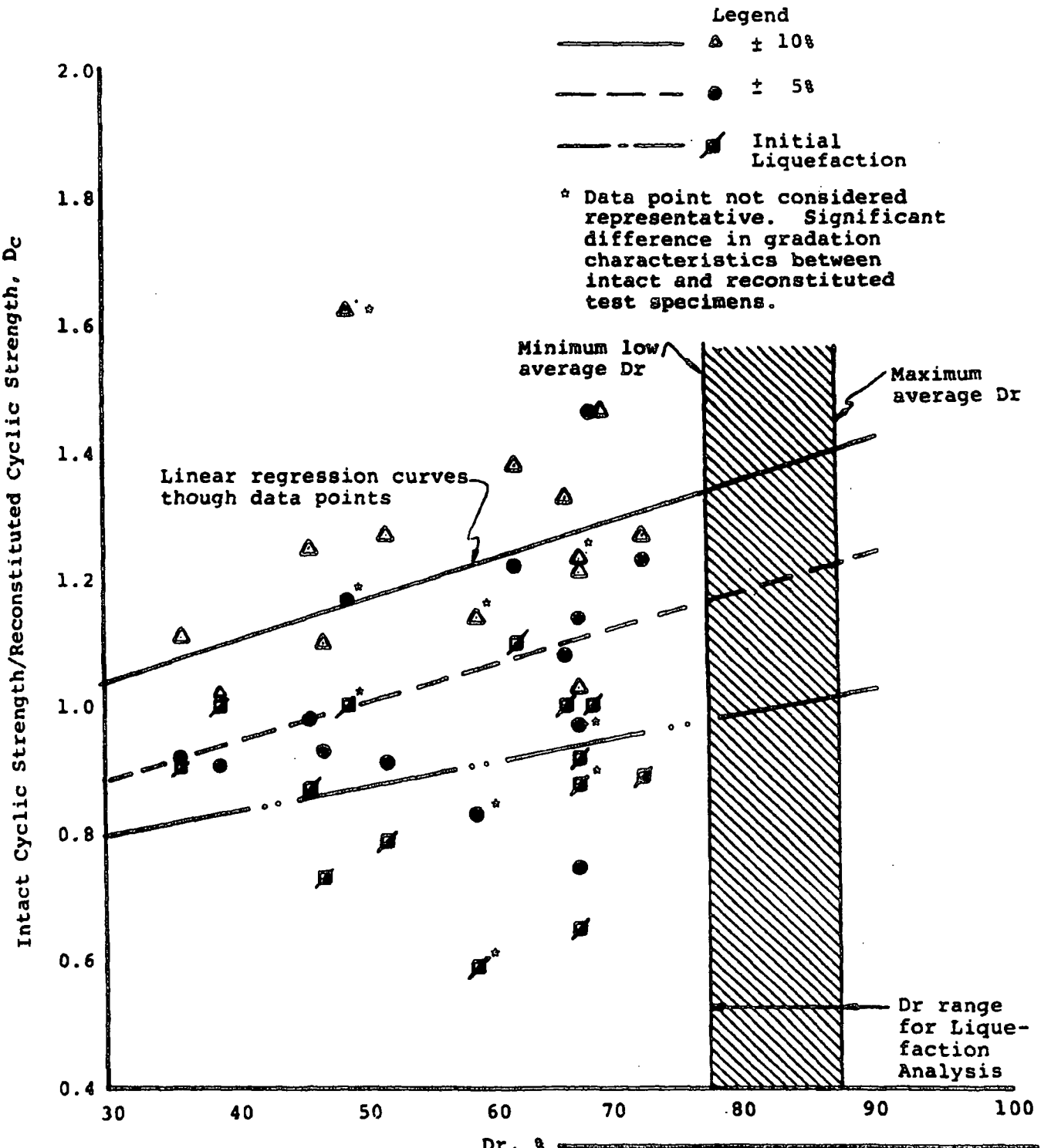

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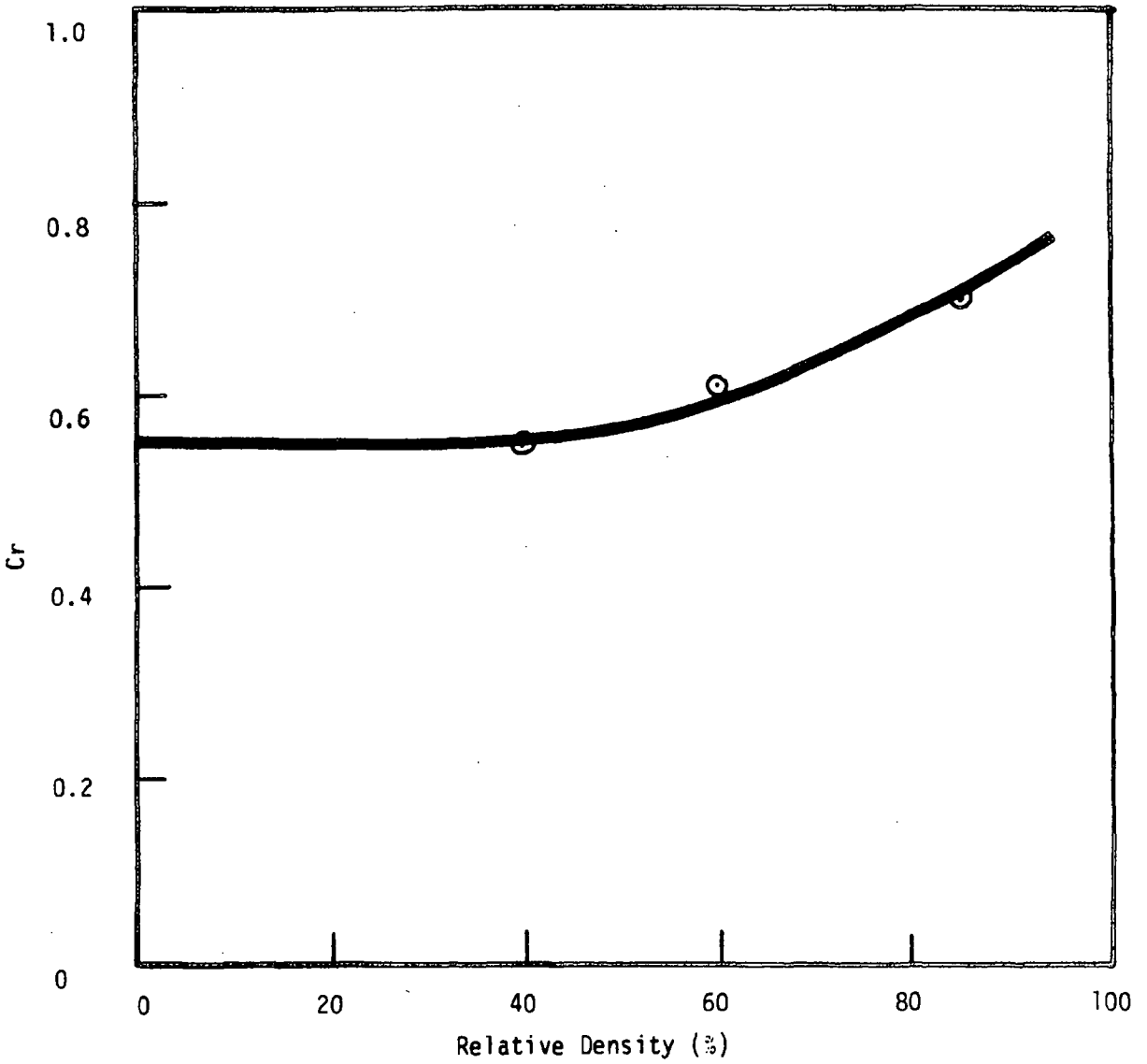
FIGURE 2.5-110

COMPARISON OF CYCLIC STRENGTH TESTS ON INTACT AND "COMPANION" RECONSTITUTED TEST SPECIMENS—BRAIDWOOD ESSENTIAL COOLING POND LIQUEFACTION POTENTIAL ANALYSIS



After Seed and Peacock (105)

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FIGURE 2.5-111

RELATIONSHIP BETWEEN C_R AND RELATIVE DENSITY

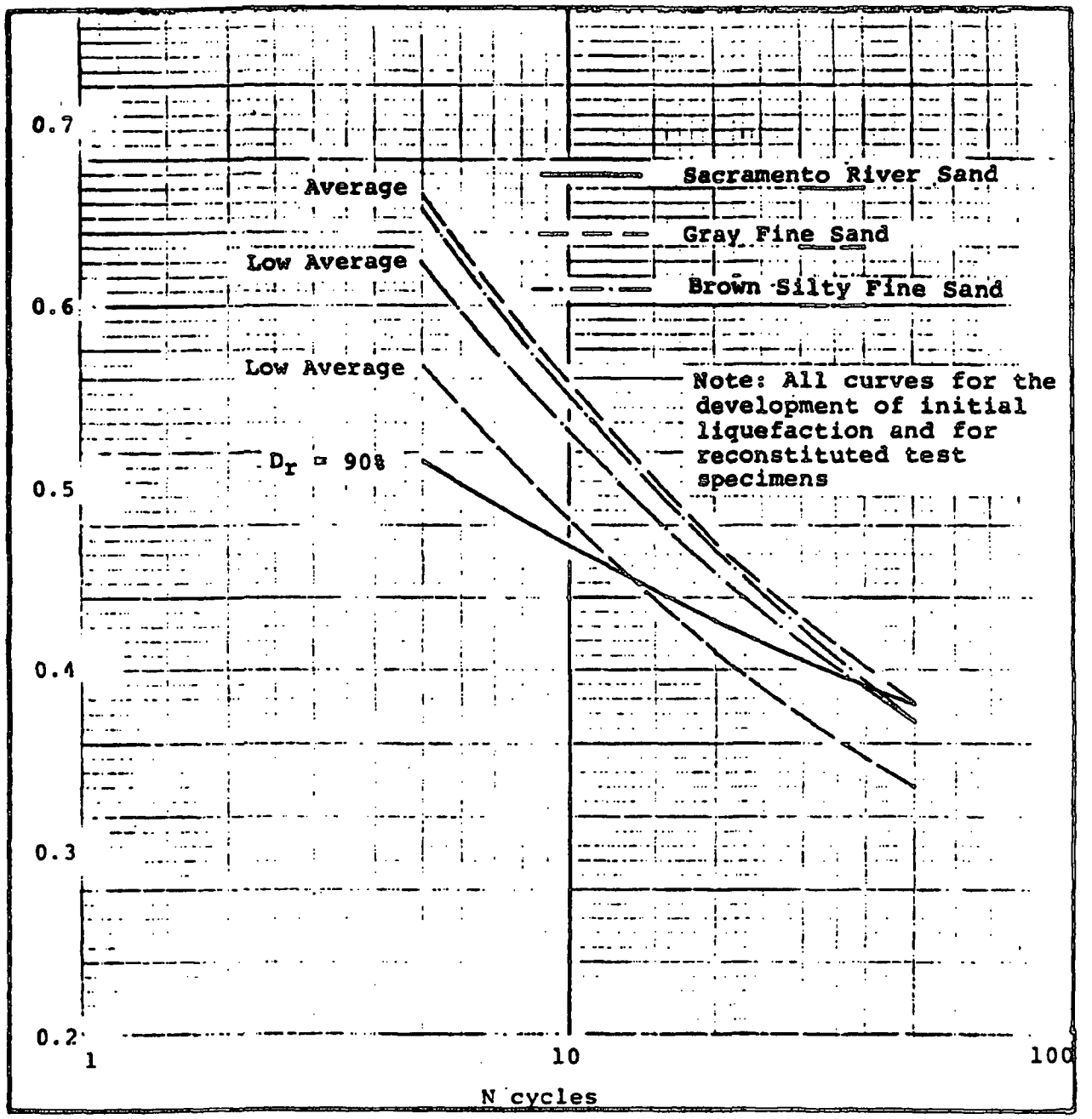

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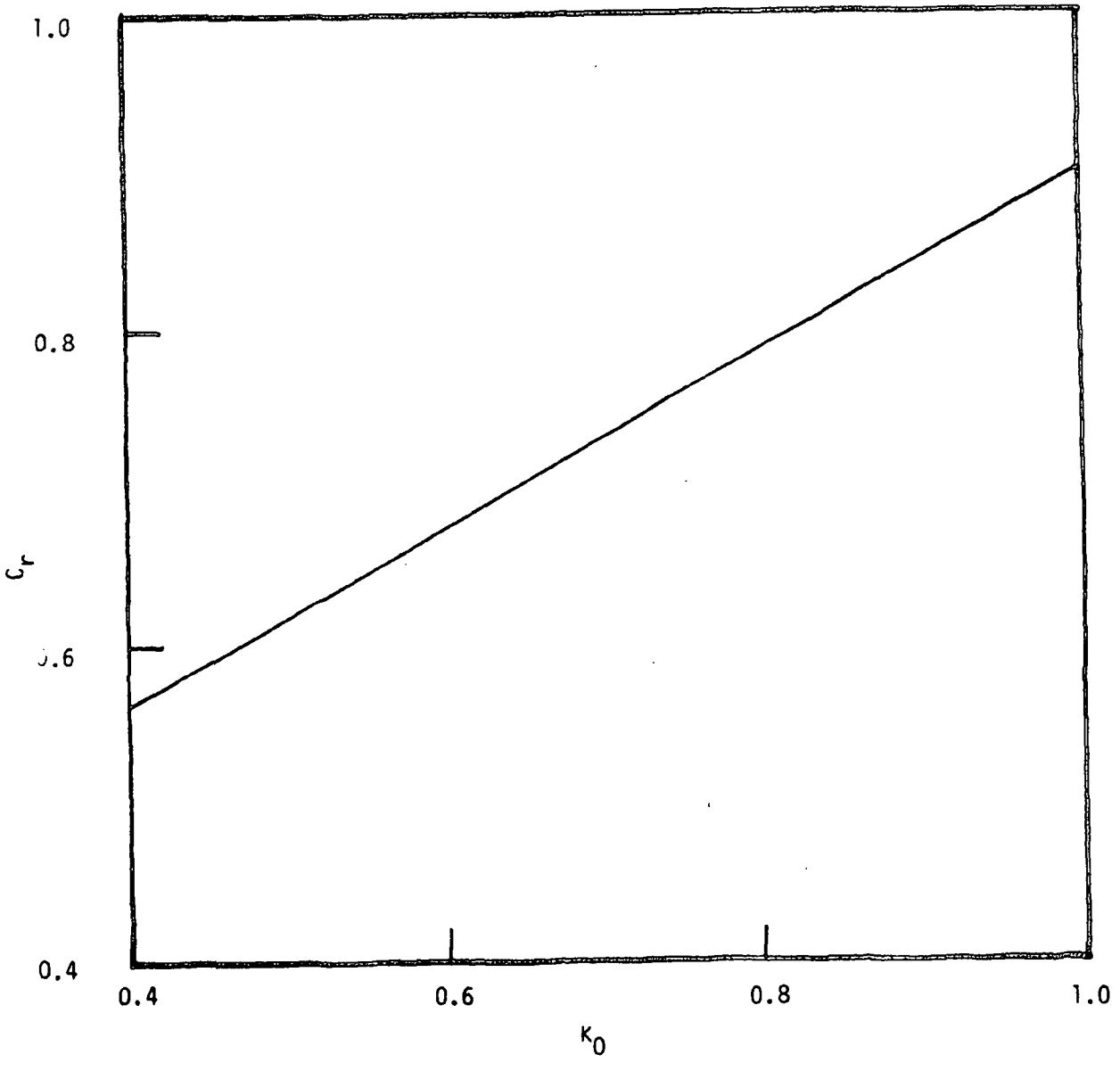
FIGURE 2.5-112

DETERMINATION OF EQUIVALENT D_r TO SELECT C_r VALUE



(After Seed 1975 - personal communication)

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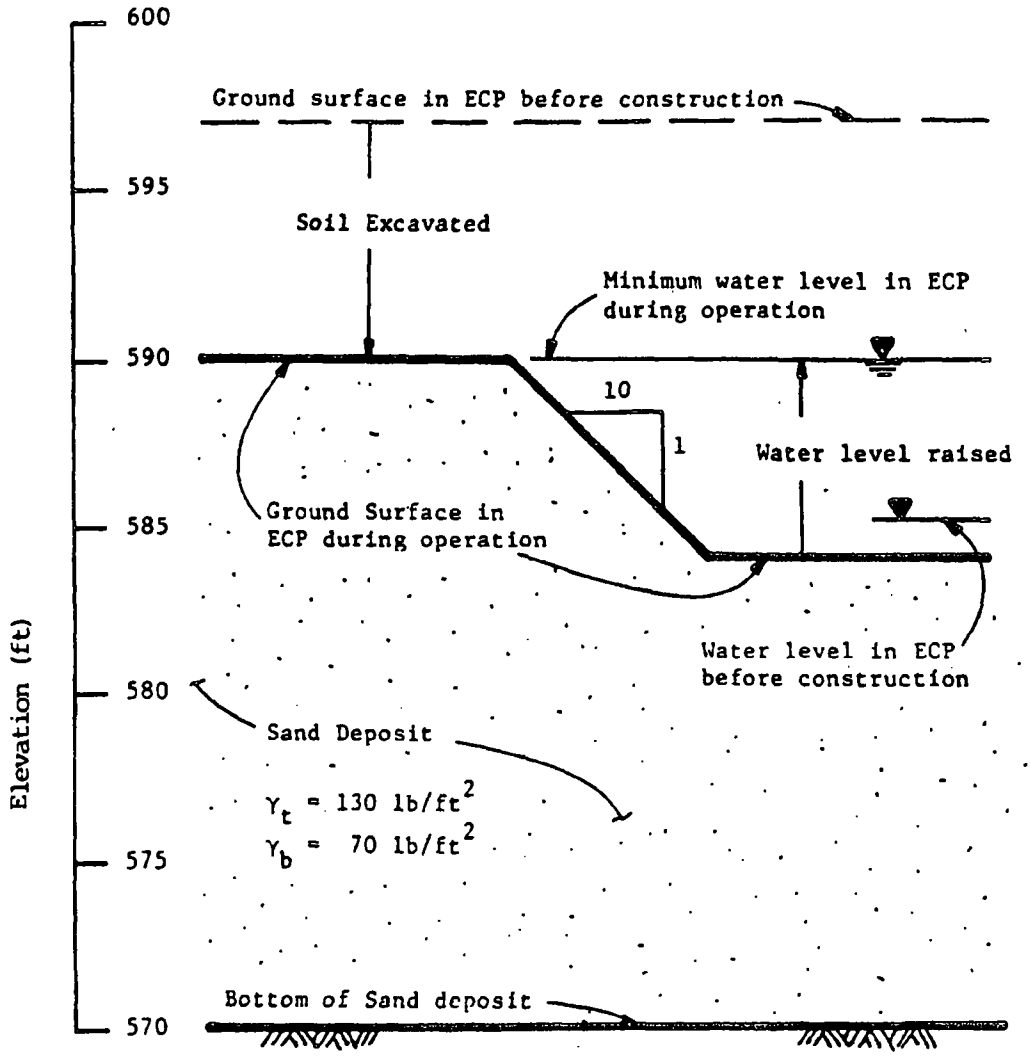
FIGURE 2.5-113

PROPOSED RELATIONSHIP BETWEEN C_r AND PRINCIPAL STRESS RATIO (K_O)



	BEFORE CONSTRUCTION			DURING OPERATION		
el ft	$\bar{\sigma}_b$ lb/ft^2	K_o	$\bar{\sigma}_h$ lb/ft^2	$\bar{\sigma}_a$ lb/ft^2	OCR*	K_o
585[4]	1560	0.40	620	350	4.5	0.88
580	1910	0.40	764	700	2.7	0.70
575	2260	0.40	900	1050	2.1	0.63
570	2610	0.40	1040	1400	1.8	0.55

*OCR = Overconsolidation ratio = $\frac{\bar{\sigma}_b}{\bar{\sigma}_a} = \frac{\text{Effective Overburden Pressure Before Construction}}{\text{Effective Overburden Pressure After Construction}}$

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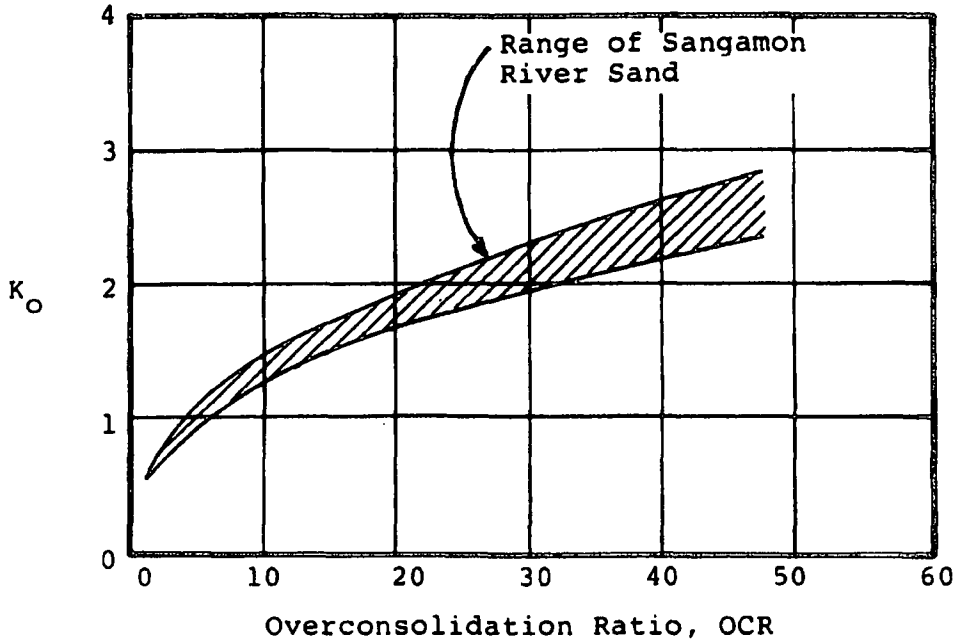
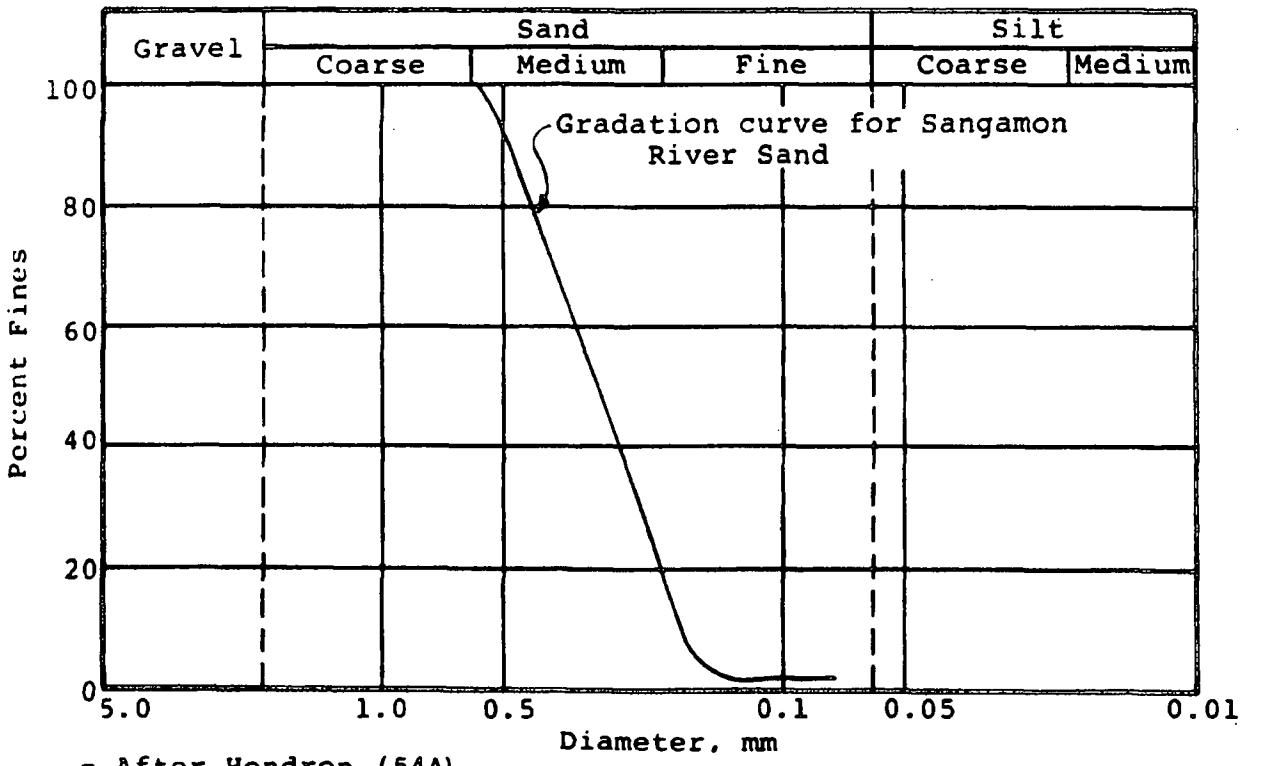
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-114

MINIMUM PRINCIPAL STRESS RATIO WITHIN SAND DEPOSIT DURING OPERATION





- After Hendron (54A)

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FIGURE 2.5-115

RELATIONSHIP BETWEEN K_o AND OVERCONSOLIDATION RATIO

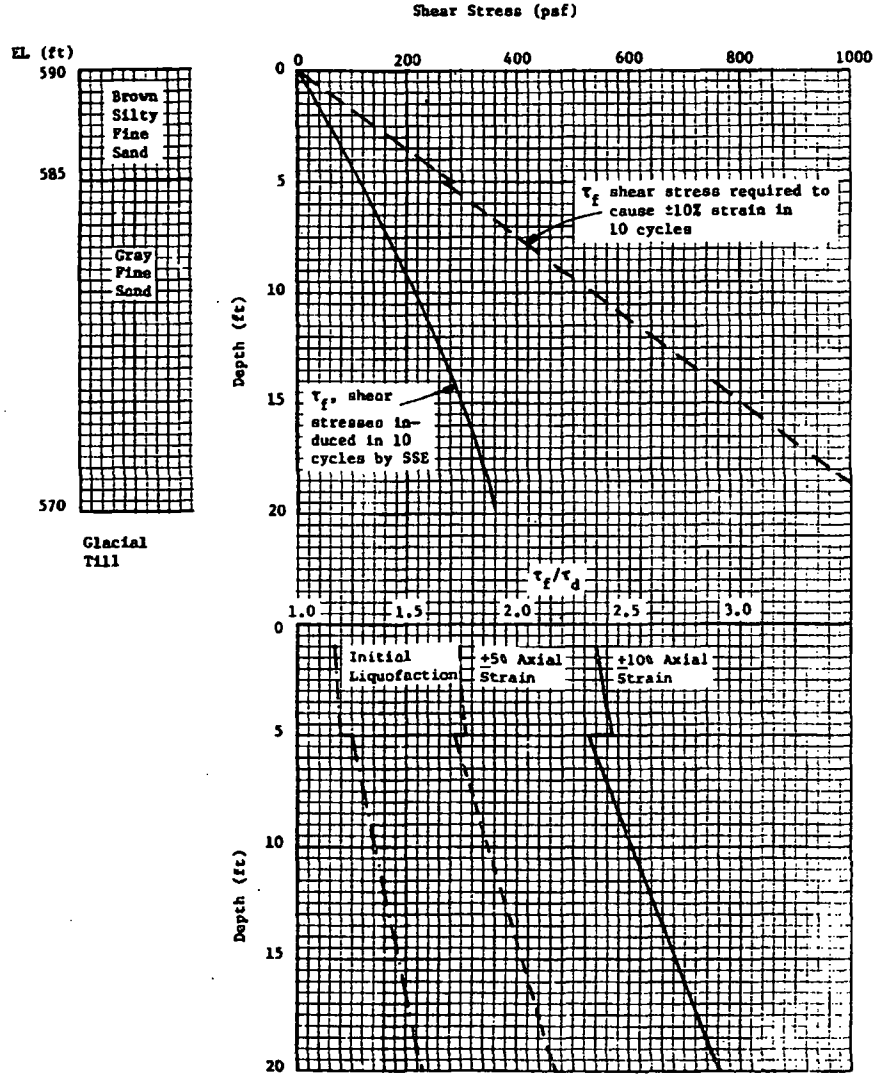

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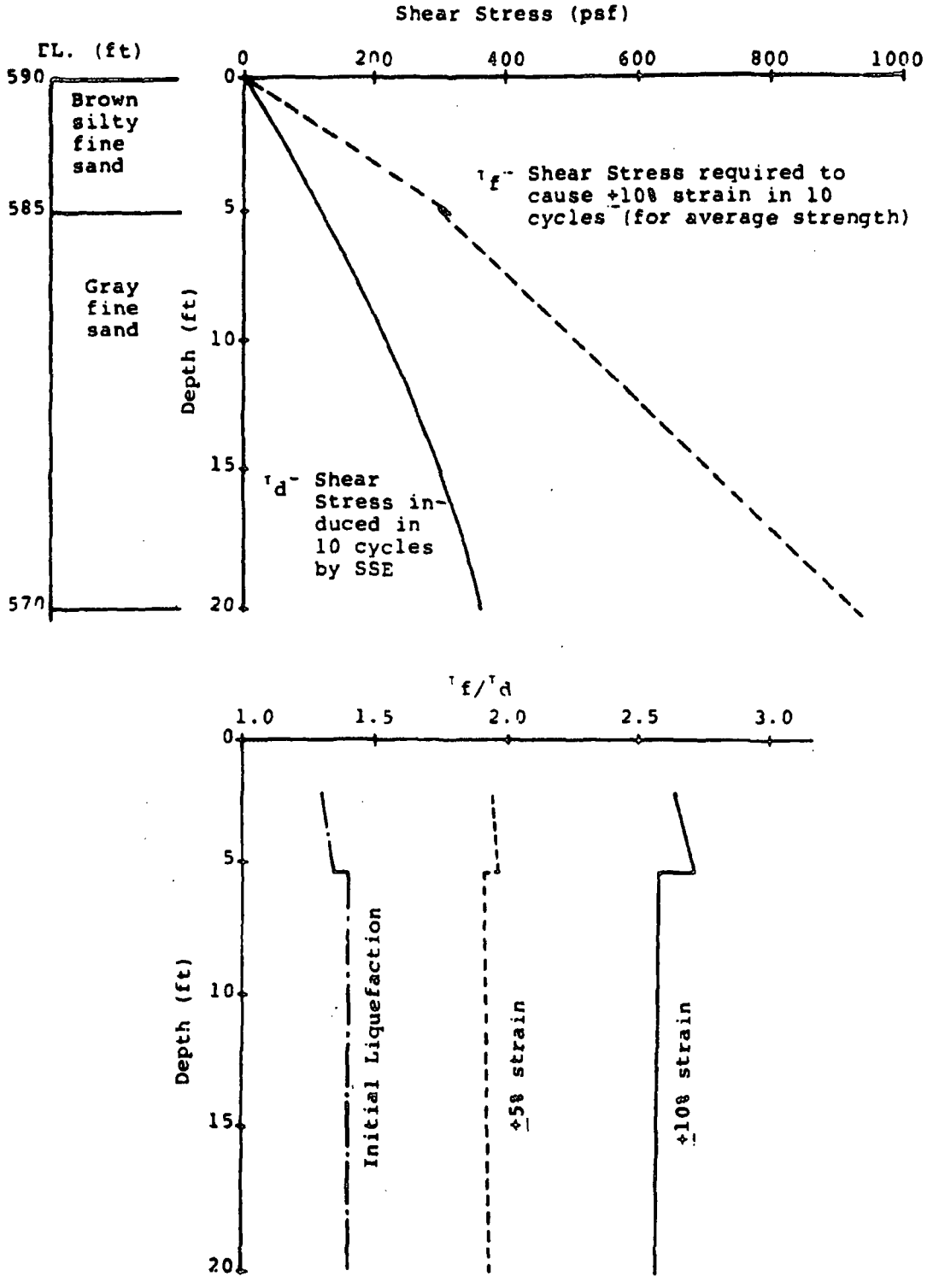
FIGURE 2.5-116

EVALUATION OF LIQUEFACTION POTENTIAL
C_r BASED ON D_r



BRAIDWOOD STATION
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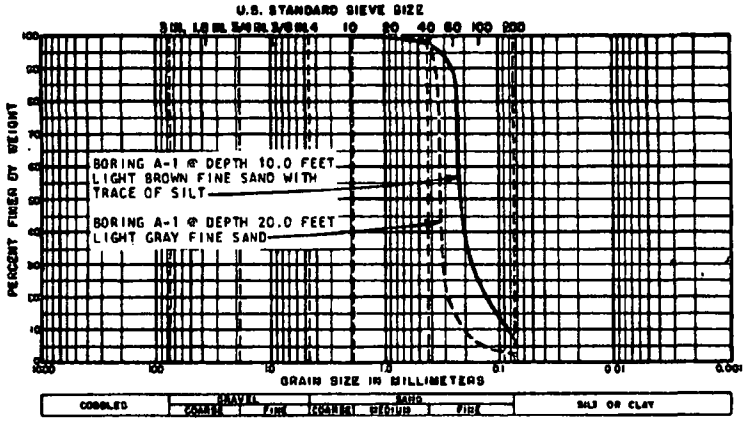
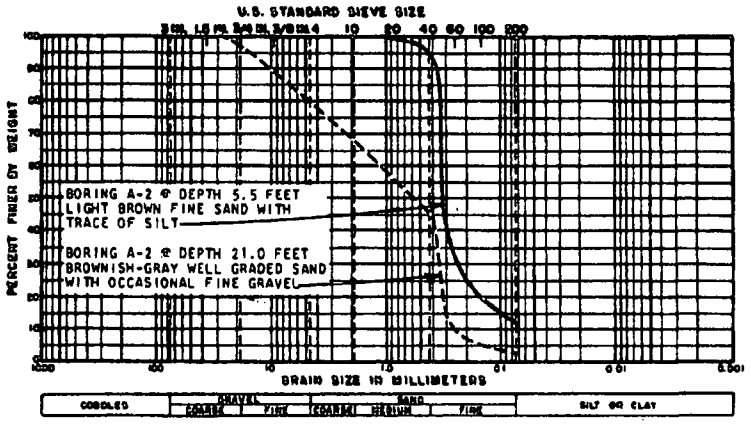
FIGURE 2.5-117

EVALUATION OF LIQUEFACTION POTENTIAL
C_r BASED ON K_o





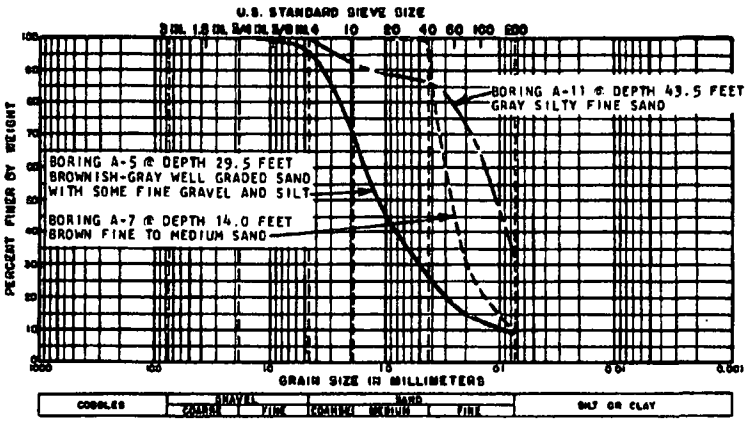


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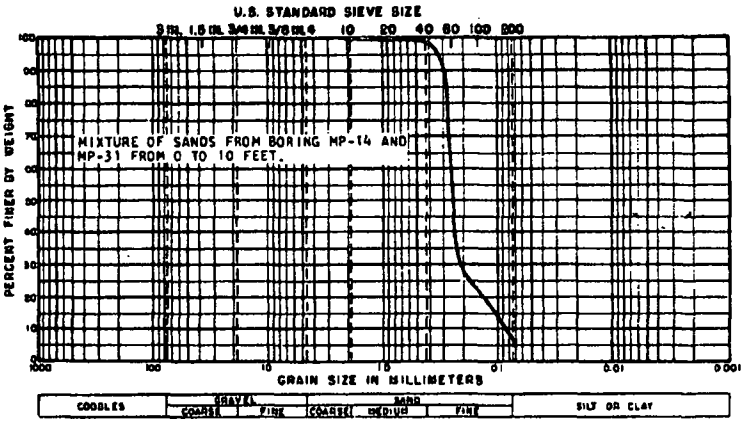
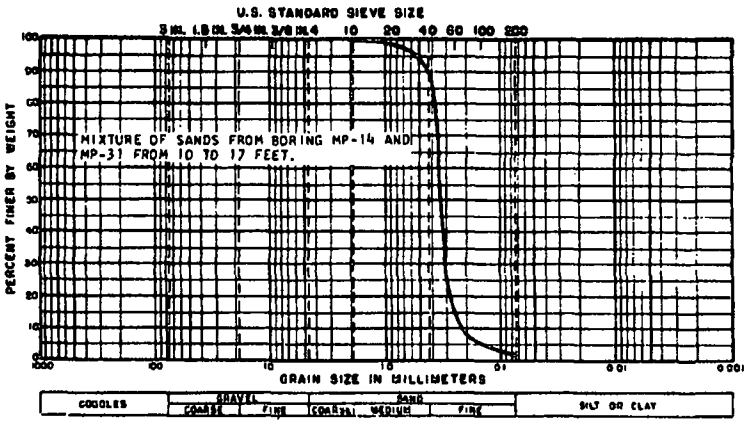
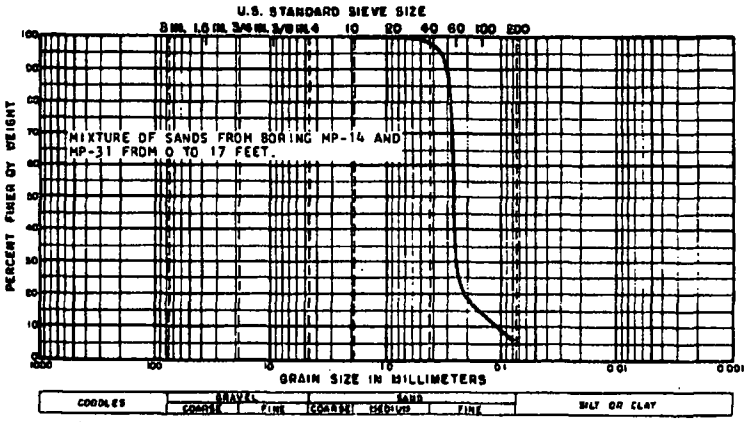
FIGURE 2.5-118

PARTICLE SIZE ANALYSIS
(SHEET 1 OF 11)



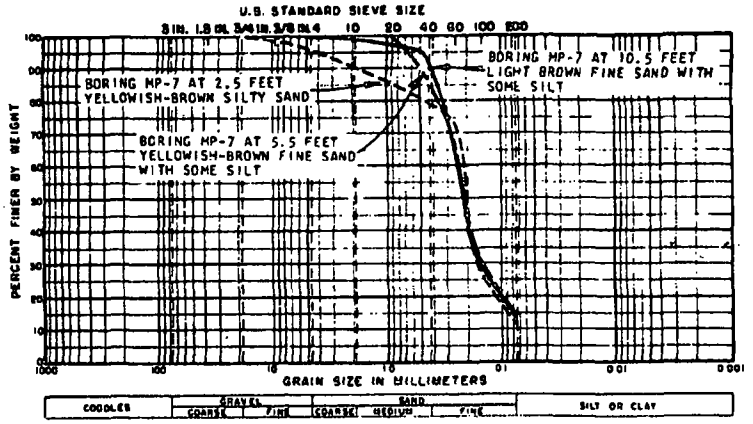


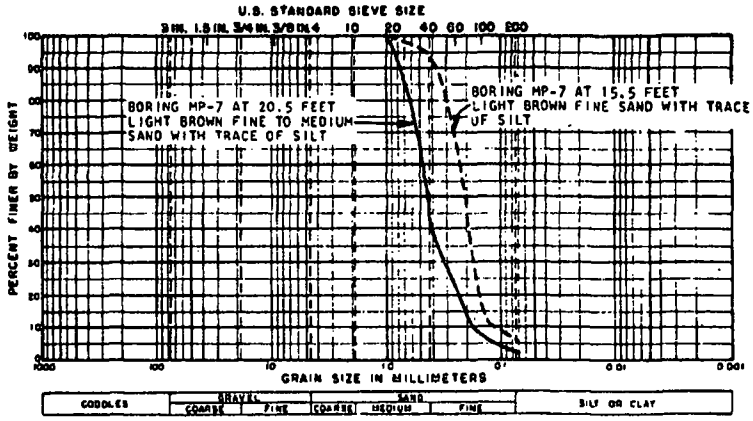


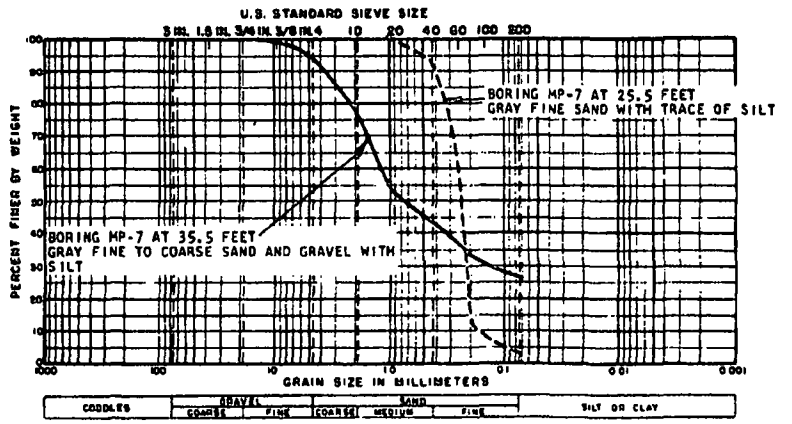
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-118

PARTICLE SIZE ANALYSIS
(SHEET 2 OF 11)



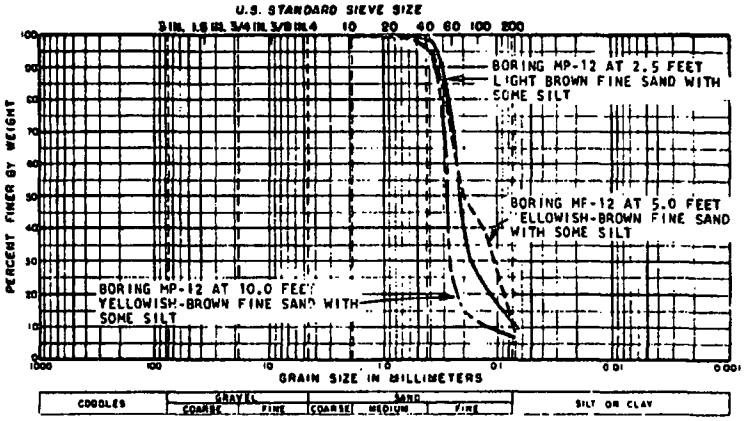


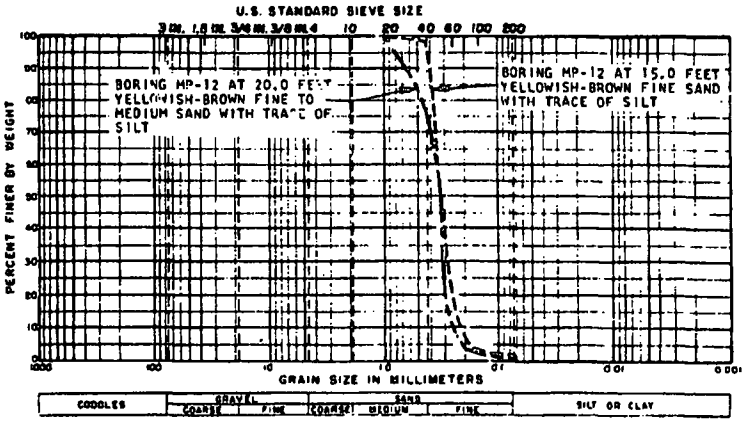


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-118

PARTICLE SIZE ANALYSIS
(SHEET 3 OF 11)

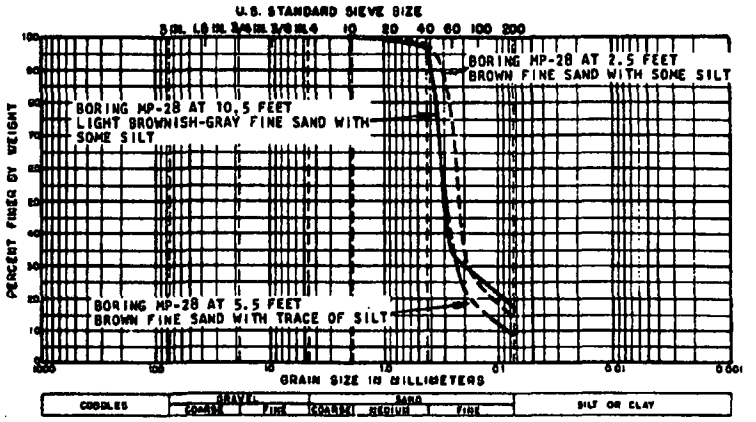


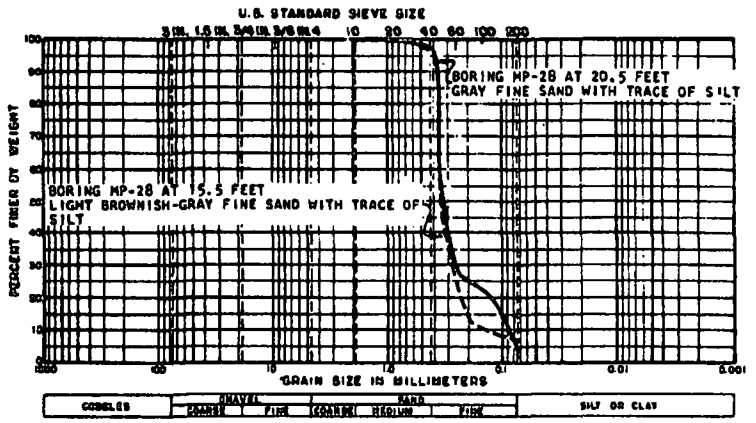


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-118

PARTICLE SIZE ANALYSIS
(SHEET 4 OF 11)





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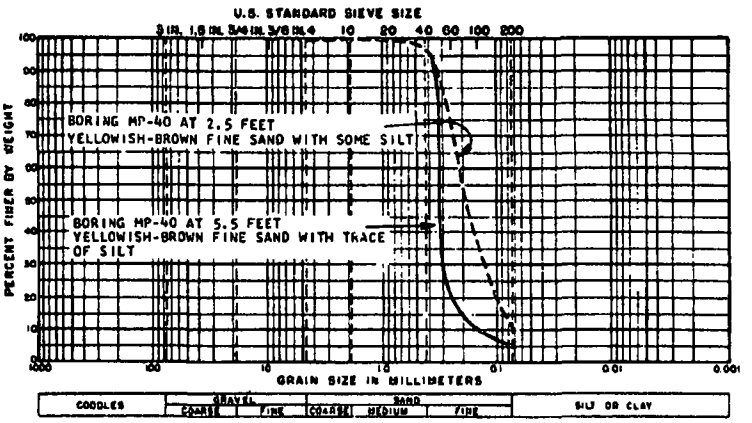
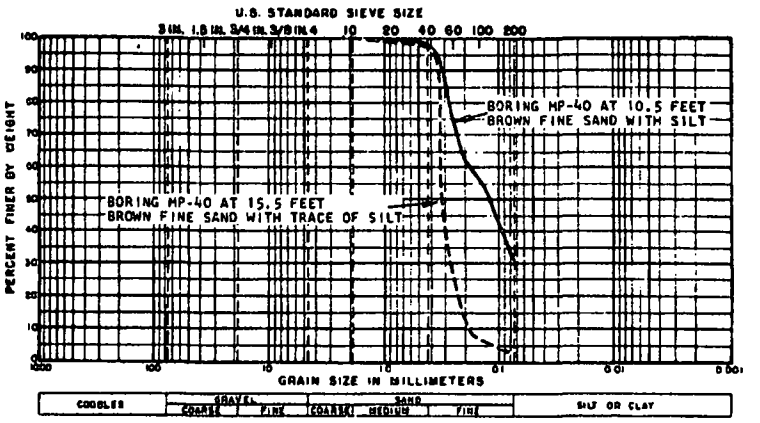
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-118

PARTICLE SIZE ANALYSIS
(SHEET 5 OF 11)





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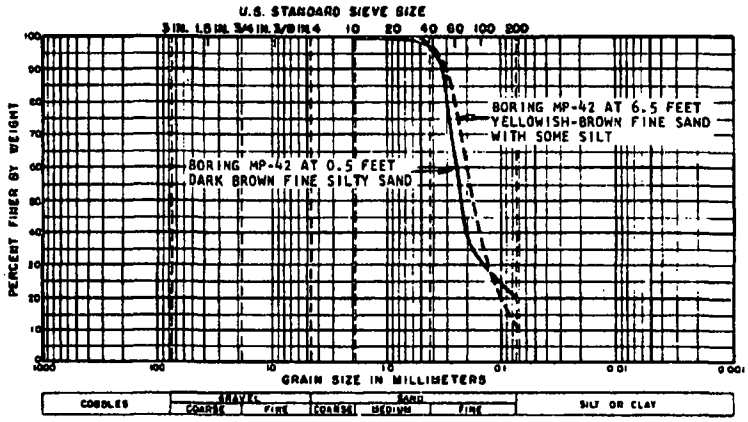
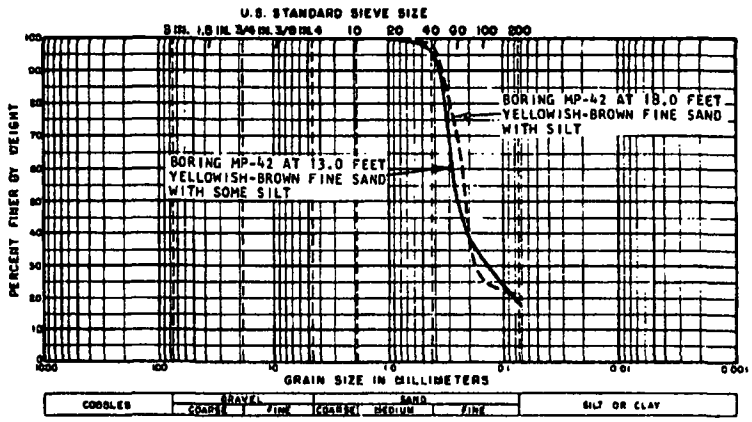
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-118

PARTICLE SIZE ANALYSIS
(SHEET 6 OF 11)





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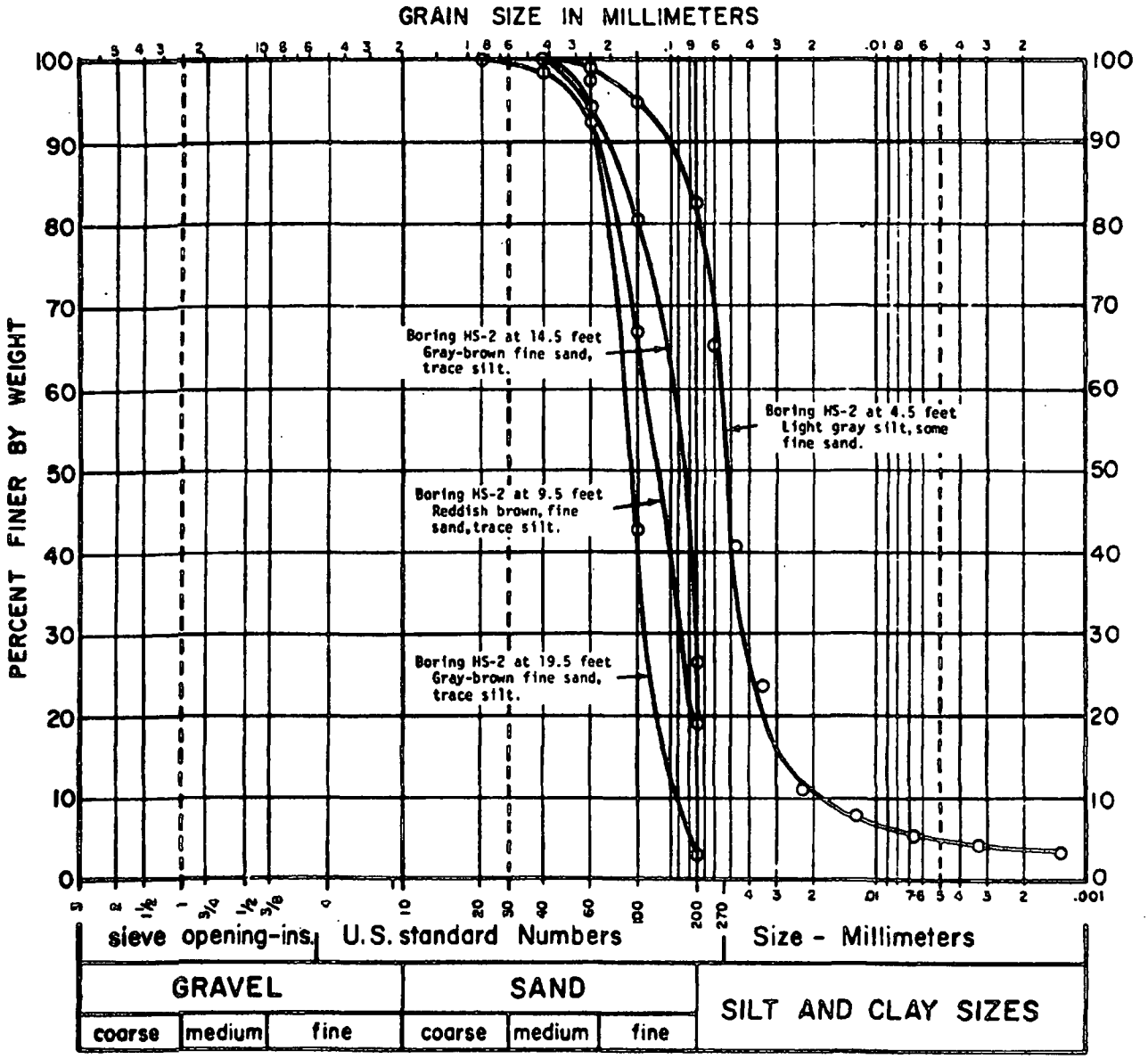
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-118

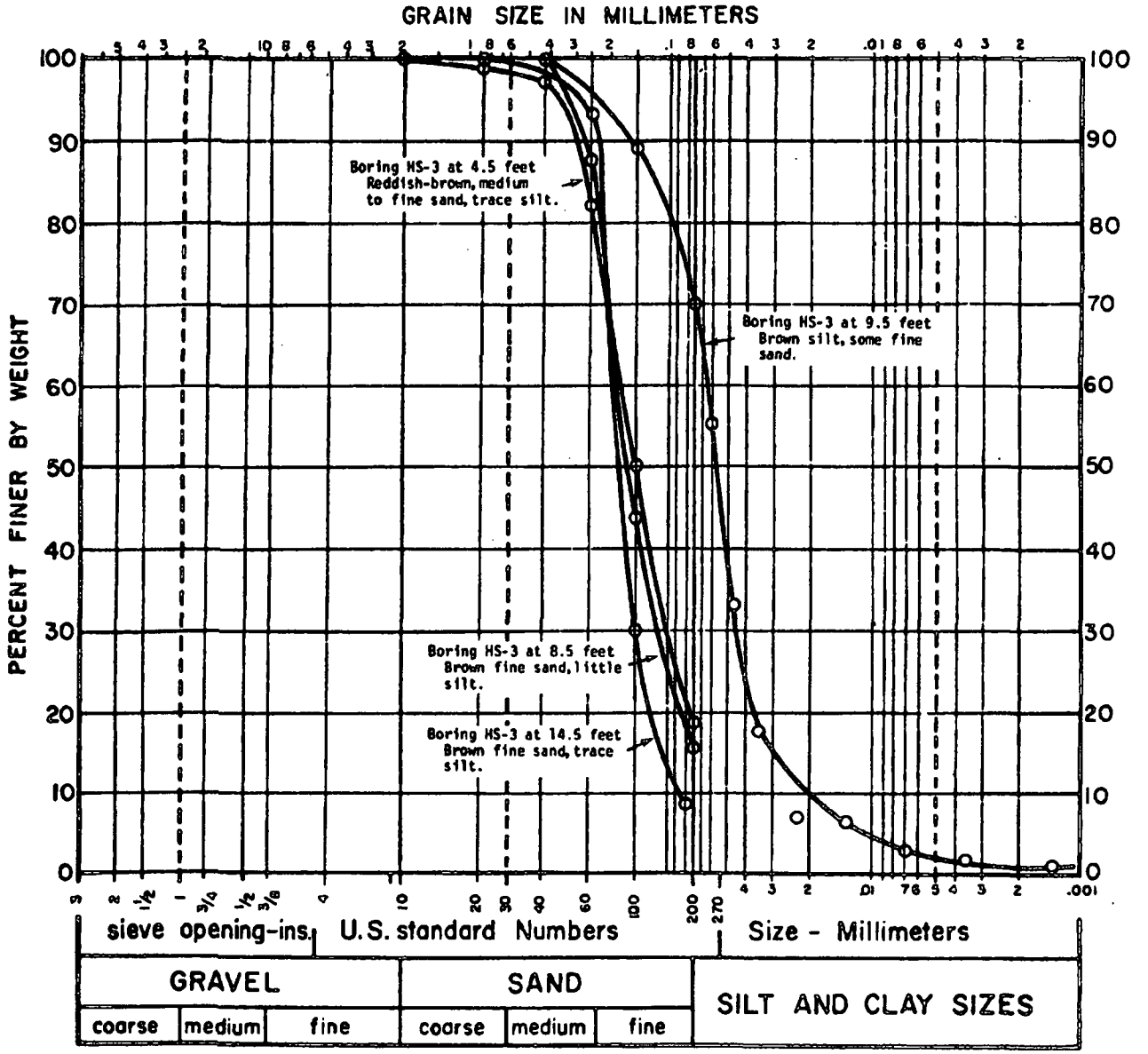
PARTICLE SIZE ANALYSIS
(SHEET 7 OF 11)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-118

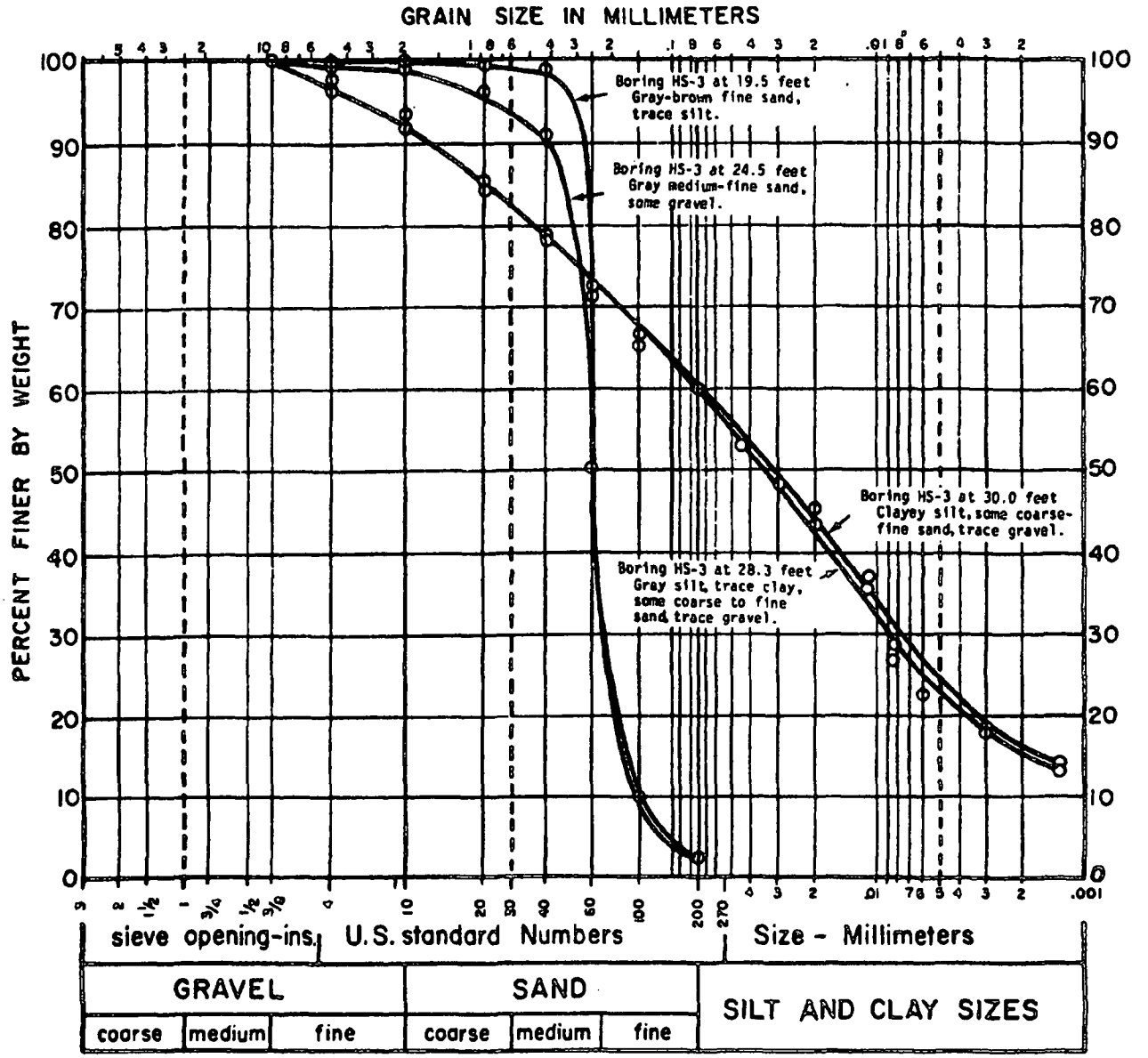
PARTICLE SIZE ANALYSIS
(SHEET 8 OF 11)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-118

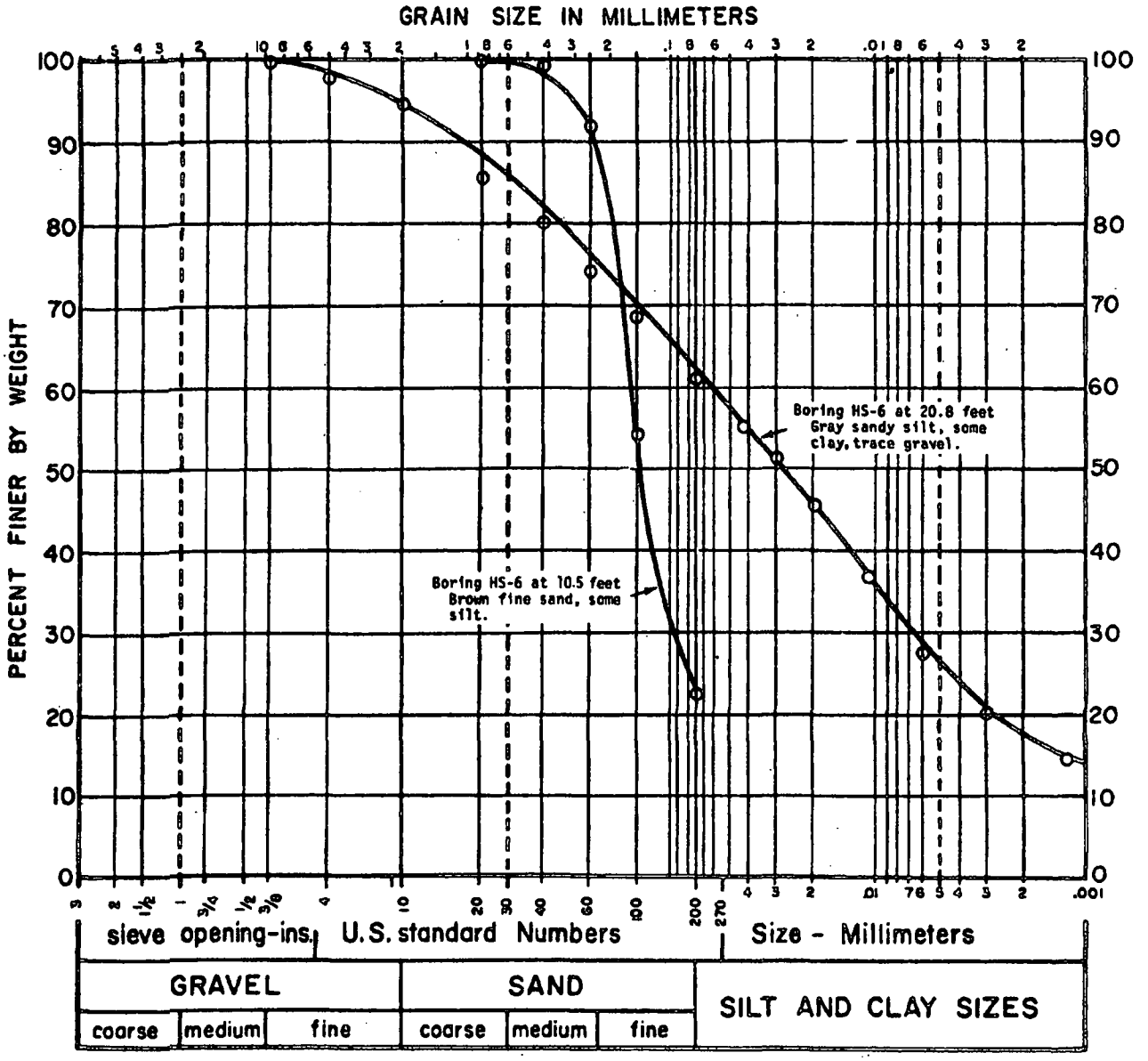
PARTICLE SIZE ANALYSIS
(SHEET 9 OF 11)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-118

PARTICLE SIZE ANALYSIS
(SHEET 10 OF 11)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-118

PARTICLE SIZE ANALYSIS
(SHEET 11 OF 11)

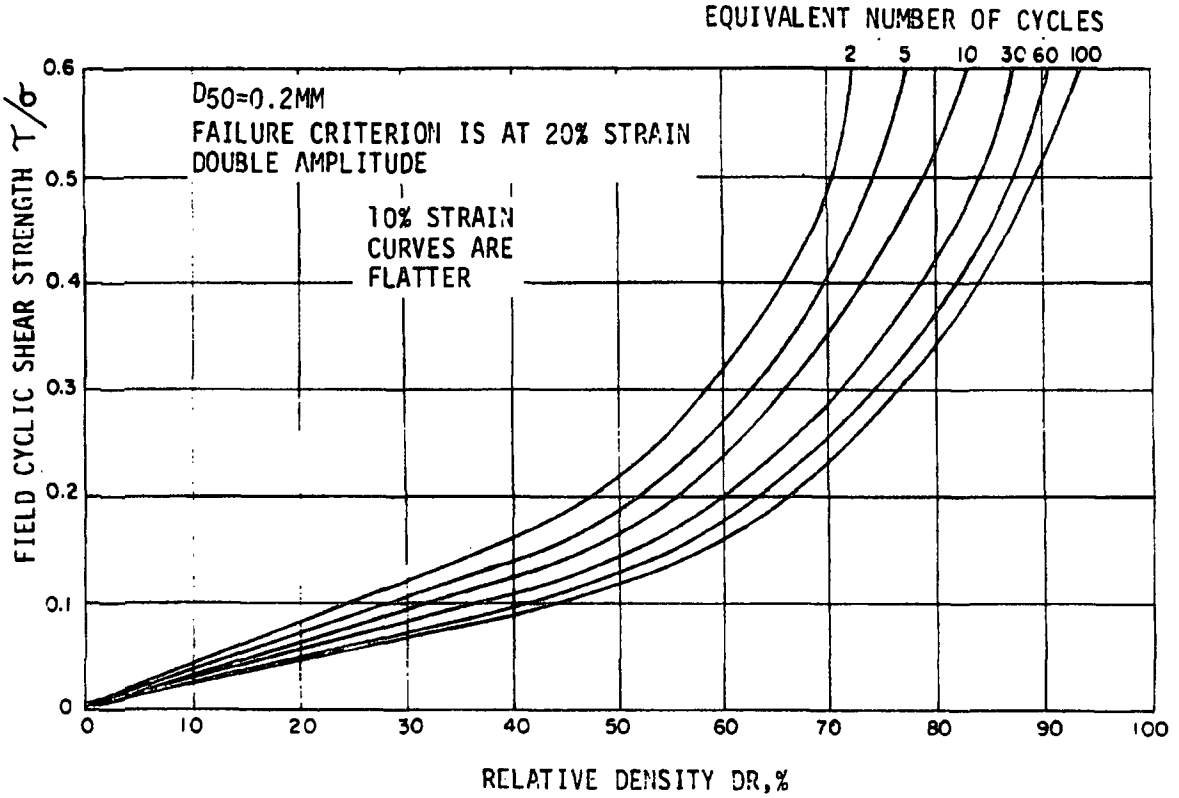


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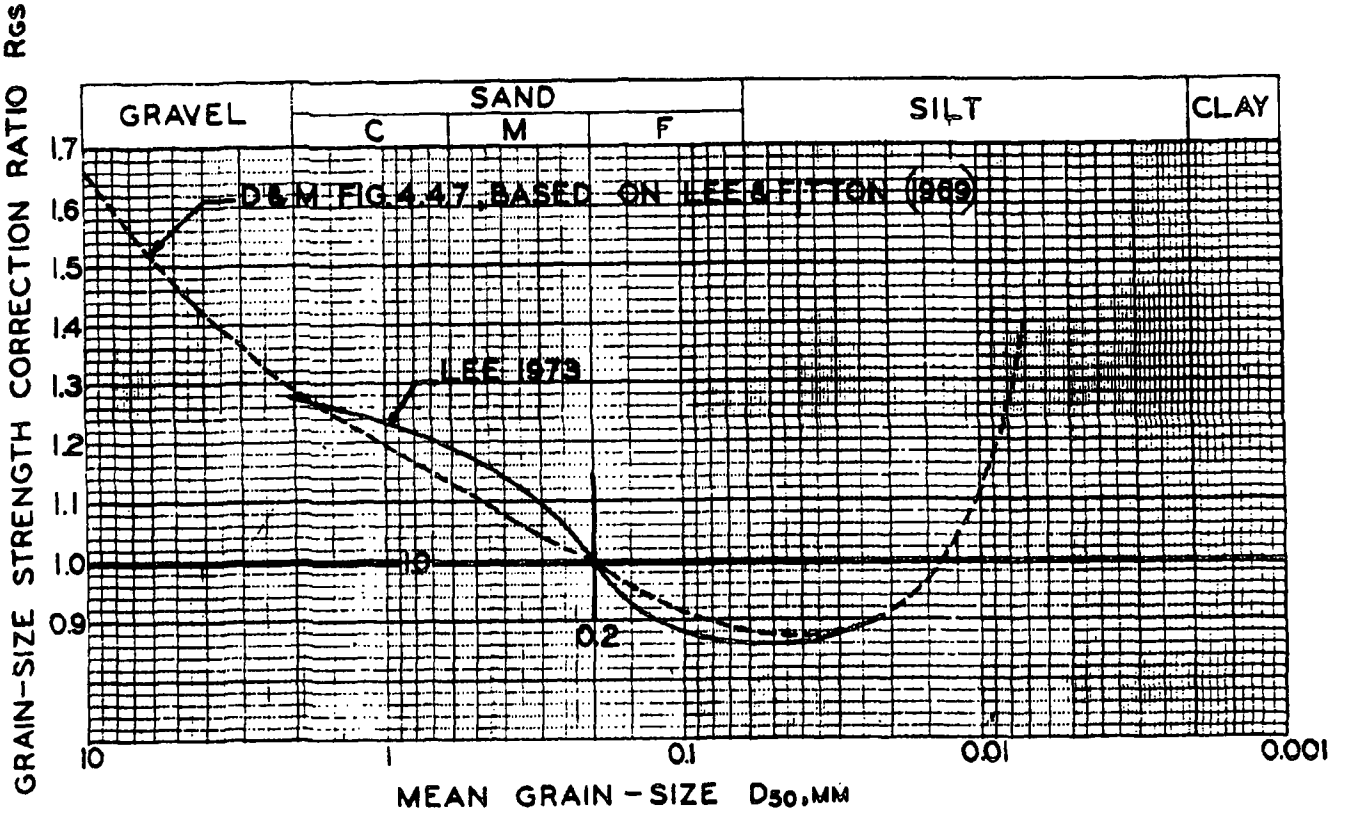
FIGURE 2.5-119

FIELD CYCLIC SHEAR STRENGTH VS.
RELATIVE DENSITY



CYCLIC SHEAR STRENGTHS RELATIVE TO MEAN GRAIN SIZE

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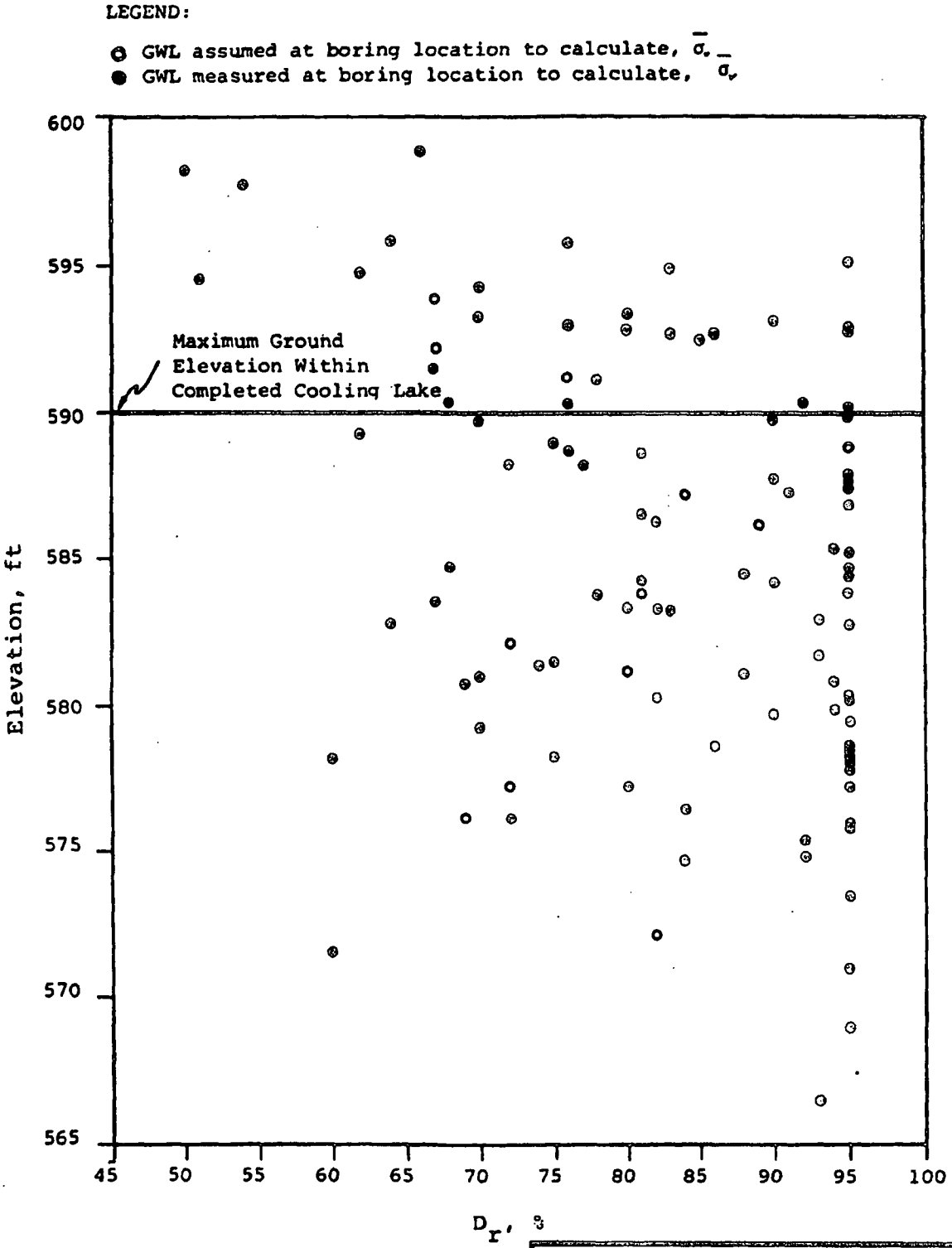
FIGURE 2.5-120 PLOT OF CYCLIC SHEAR STRENGTH CORRECTION RATIO VS. GRAIN SIZE



NOTES: 1. D_r determined in accordance with the Gibbs and Holtz (1957) relationship between N value, D_r and effective overburden pressure.
2. Data from borings H-1 through H-4, and HS-1 through HS-18.

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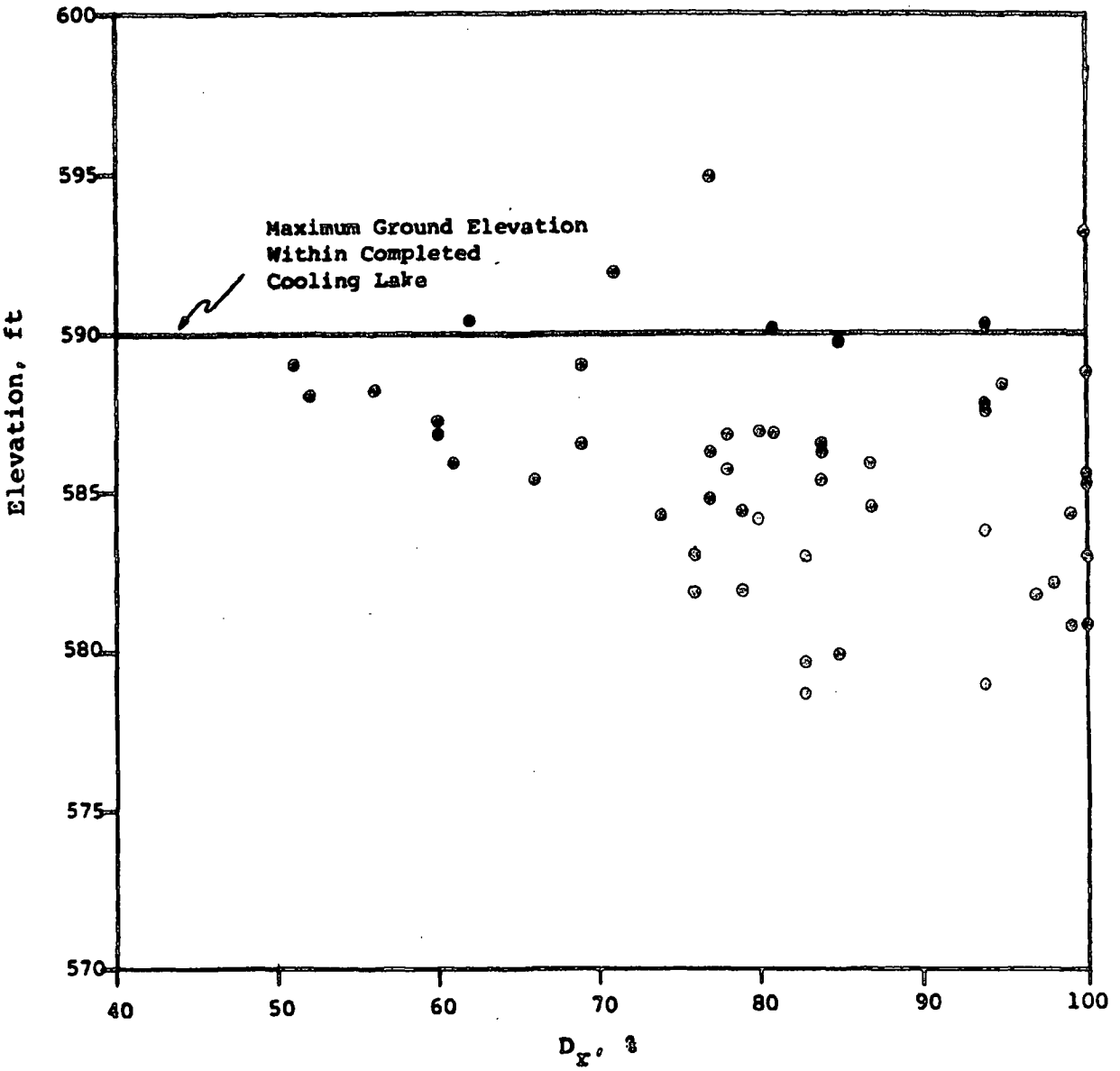
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-121

INFERRED RELATIVE DENSITY VS. ELEVATION OF SAND DEPOSIT



NOTE: $D_r = \frac{\gamma_{max}}{\gamma_d}\left[\frac{\gamma_d - \gamma_{min}}{\gamma_{max} - \gamma_{min}}\right]$ For summarized results of D_r determinations see Table 2.5-34.

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FIGURE 2.5-122

MEASURED RELATIVE DENSITY VS.
ELEVATION OF SAND DEPOSIT

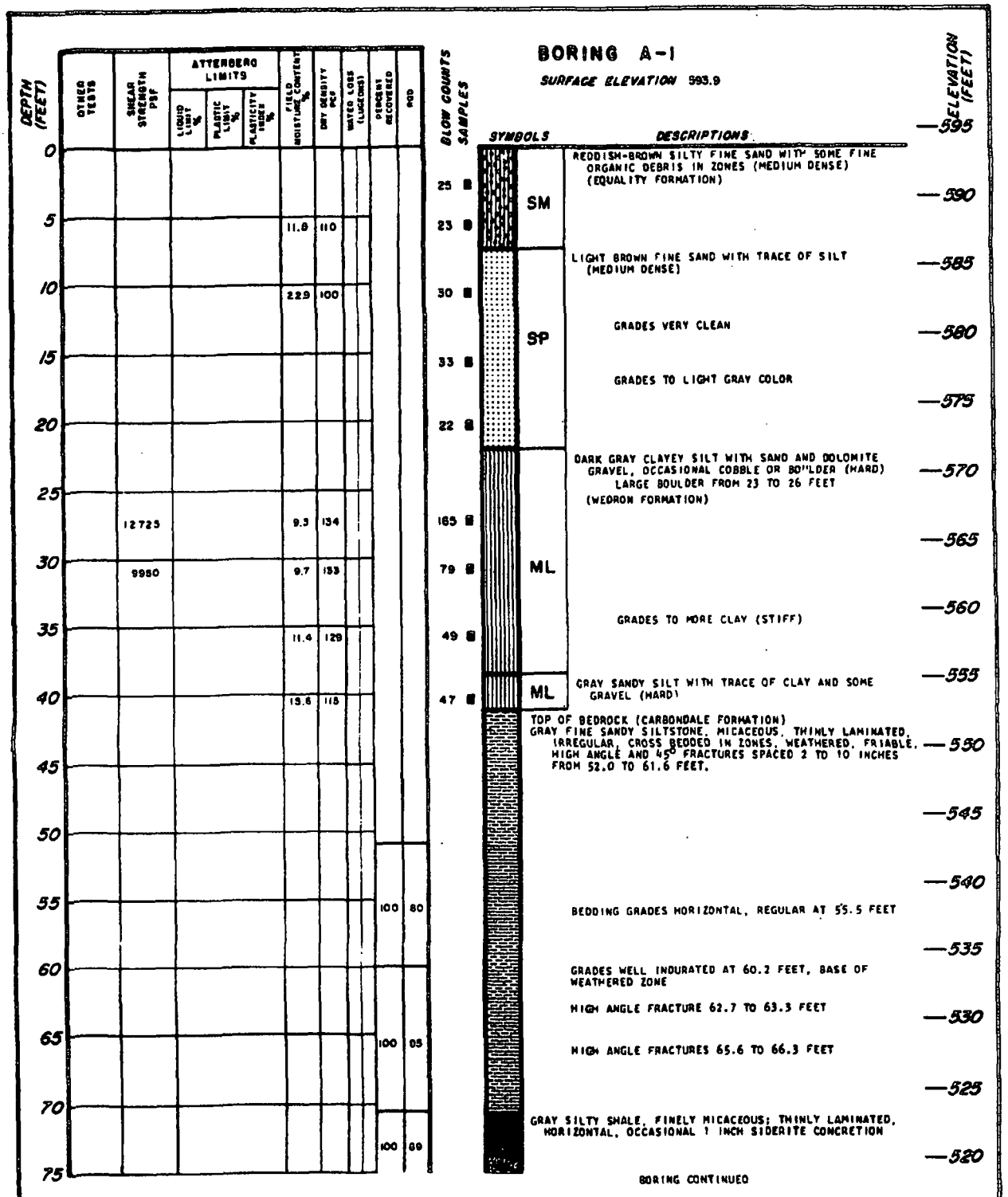

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FIGURE 2.5-123

LOG OF BORING A-1
(SHEET 1 OF 4)

BORING A-1 CONTINUED

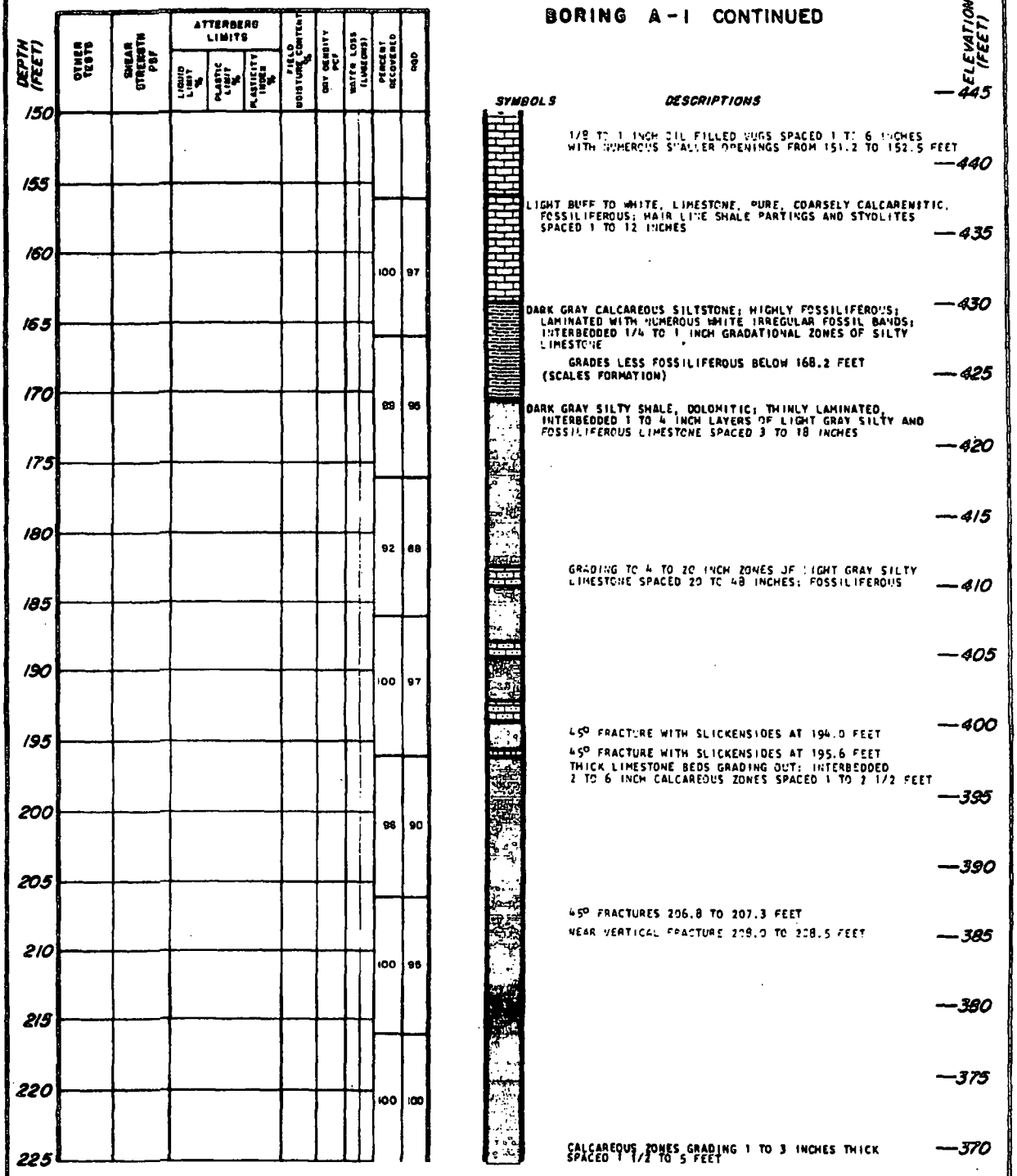
DEPTH (FEET)	STRATA SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)	STEER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
			—520										
75		45° FRACTURE AT 78.8 FEET	—515										
80		GRADES CARBONACEOUS AT 80.5 FEET BLACK COAL; THIN BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY	—510									100	98
85		DARK GRAY CLAYEY SHALE, CARBONACEOUS; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES GRADES LIGHT GRAY, NONCARBONACEOUS AT 87.0 FEET (SPOON FORMATION)	—505										
90		GRADES TO DARK GRAY CARBONACEOUS SHALE BELOW 91.8 FEET										83	70
95		LIGHT GREENISH-GRAY FINE SANDY SILTSTONE, MICACEOUS, THINLY LAMINATED	—500										
100		BLACK CLAYEY SHALE, CARBONACEOUS, HIGHLY FRAGMENTED WITH RANDOM SLICKENSIDES	—495									93	76
105		GRAY SILTY SHALE, FINELY MICACEOUS; BRITTLE; NUMEROUS SLICKENSIDES ALONG RANDOM PLANES OF WEAKNESS AT 106.0 FEET 45° FRACTURES SPACED APPROXIMATELY 12 INCHES BELOW 103.7 FEET WITH SLICKENSIDES GRADES CARBONACEOUS BELOW 106.0 FEET	—490										
110		MOTTLED BROWNISH-RED AND GRAYISH-GREEN SHALE; INDISTINCT BEDDING; HIGHLY FRACTURED AND FRAGMENTED, NUMEROUS RANDOM SLICKENSIDES; SCATTERED OOLITIC GRANULES IN ZONES	—485									100	71
115		GREENISH-GRAY DOLOMITIC SHALE; THINLY LAMINATED; OCCASIONAL MARINE FOSSIL; NEAR VERTICAL FRACTURE 114.1 TO 114.7 FEET (BRAINARD FORMATION)	—480										
120			—475									100	100
125		GRADES CALCAREOUS AT 123.4 FEET	—470										
130		GRAY SILTY LIMESTONE, FINE TO MEDIUM CRYSTALLINE; INTERBEDDED WITH IRREGULAR STRINGERS AND GRADATIONAL ZONES OF CALCAREOUS SHALE 1/4 TO 2 INCHES THICK, SPACED 1/2 TO 5 INCHES; HIGHLY FOSSILIFEROUS 1/4 TO 1/2 INCH OIL FILLED VUGS, SPACED 1 TO 2 INCHES FROM 127.8 TO 128.2 FEET 2 INCH OPEN VUG WITH CALCITE CRYSTALS AT 129.7 FEET (FORT ATKINSON FORMATION)	—465									100	95
135			—460										
140			—455									100	97
145			—450										
150		LIGHT GRAY LIMESTONE, COARSELY CALCARENITIC, FOSSILIFEROUS, THIN TO MEDIUM BEDDED, FINE IRREGULAR SHALE PARTINGS CONCENTRATED IN 2 TO 4 INCH ZONES SPACED 2 TO 8 INCHES	—445									100	100

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-123

LOG OF BORING A-1
(SHEET 2 OF 4)

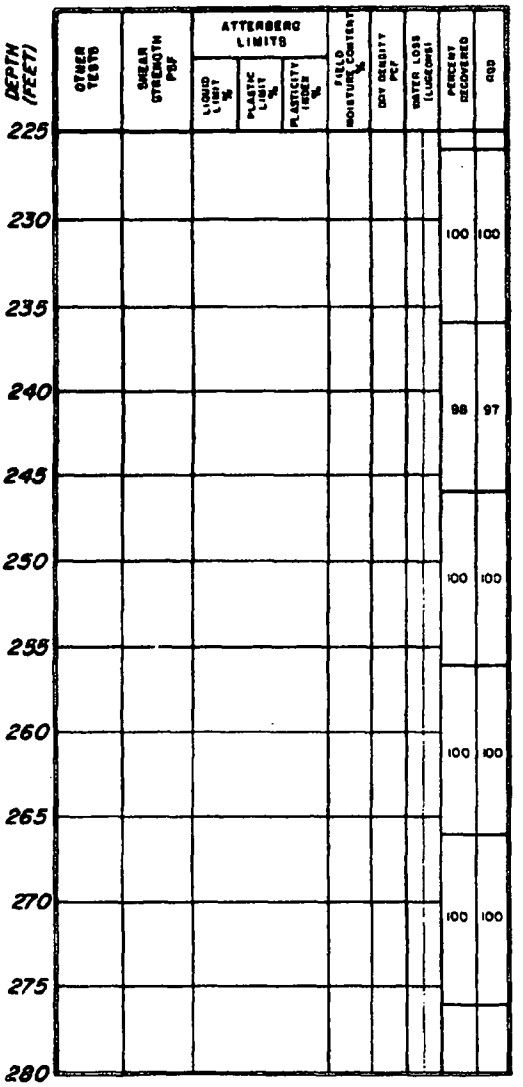


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-123

LOG OF BORING A-1
(SHEET 3 OF 4)

BORING A-1 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

—370
—365
—360
—355
—350
—345
—340
—335
—330
—325
—320
—315

MOTTLED LIGHT GRAY TO BUFF DOLOMITIC LIMESTONE; FINE TO MEDIUM CRYSTALLINE; THIN BEDDED, NUMEROUS WAVY HAIRLINE SHALE PARTINGS SPACED 1/4 TO 6 INCHES THROUGHOUT; UPPER CONTACT WITH NUMEROUS 1 TO 2 INCH VOIDS WHICH HAVE BEEN FILLED BY OVERLYING DEPOSITS, WELL INDURATED, TIGHT
(WISE LAKE - DUNLEITH FORMATIONS)

60° FRACTURE 273.3 TO 273.7 FEET WITH DRUSY CRYSTALLINE SURFACE

BORING COMPLETED AT 276.0 FEET ON 9-30-72

CASING INSTALLED TO DEPTH OF 45 FEET
WATER LEVEL MEASURED AT ELEVATION 580.0 FEET ON 10-10-72
300 POUND HAMMER FALLING 18 INCHES

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-123

LOG OF BORING A-1
(SHEET 4 OF 4)

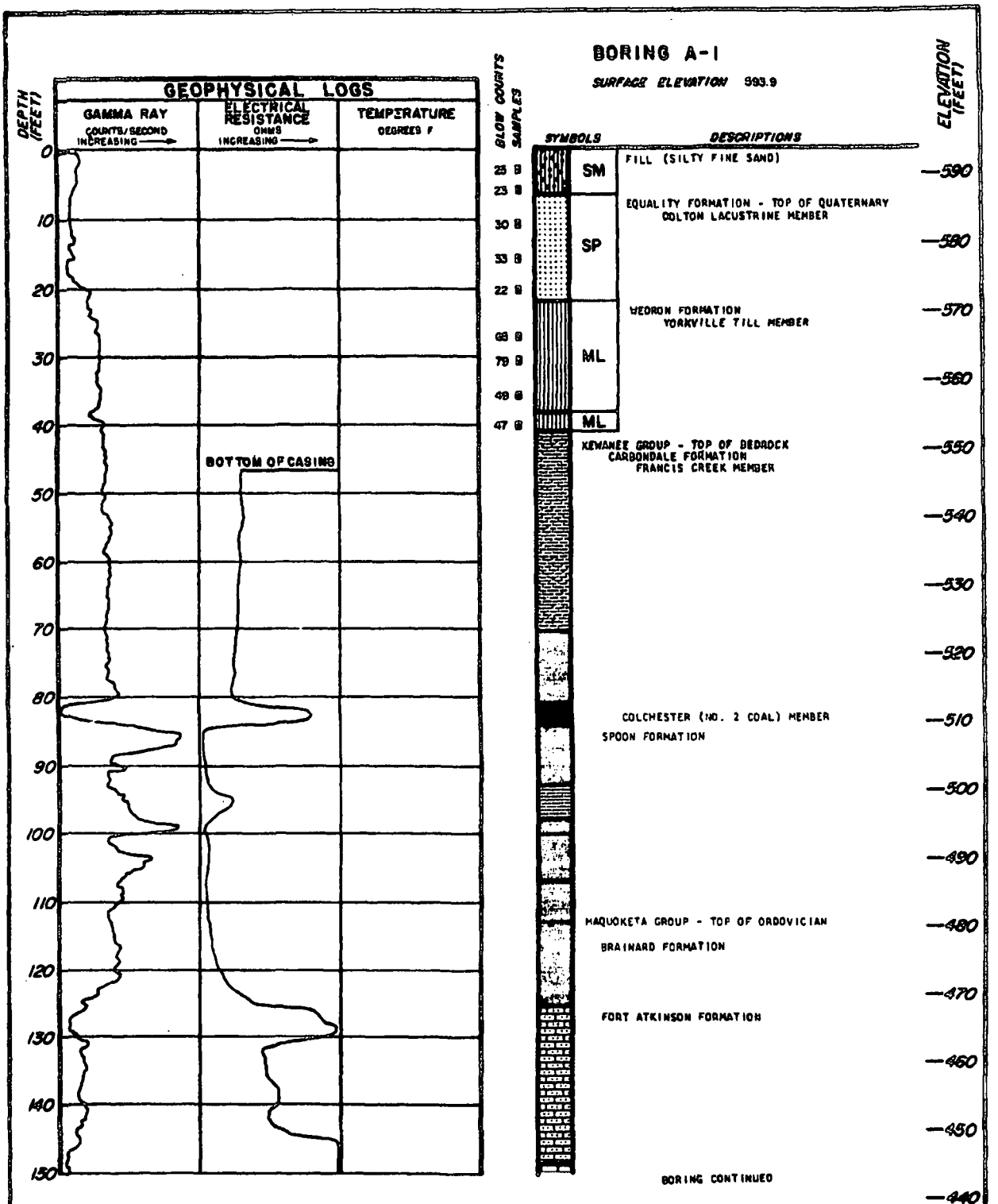


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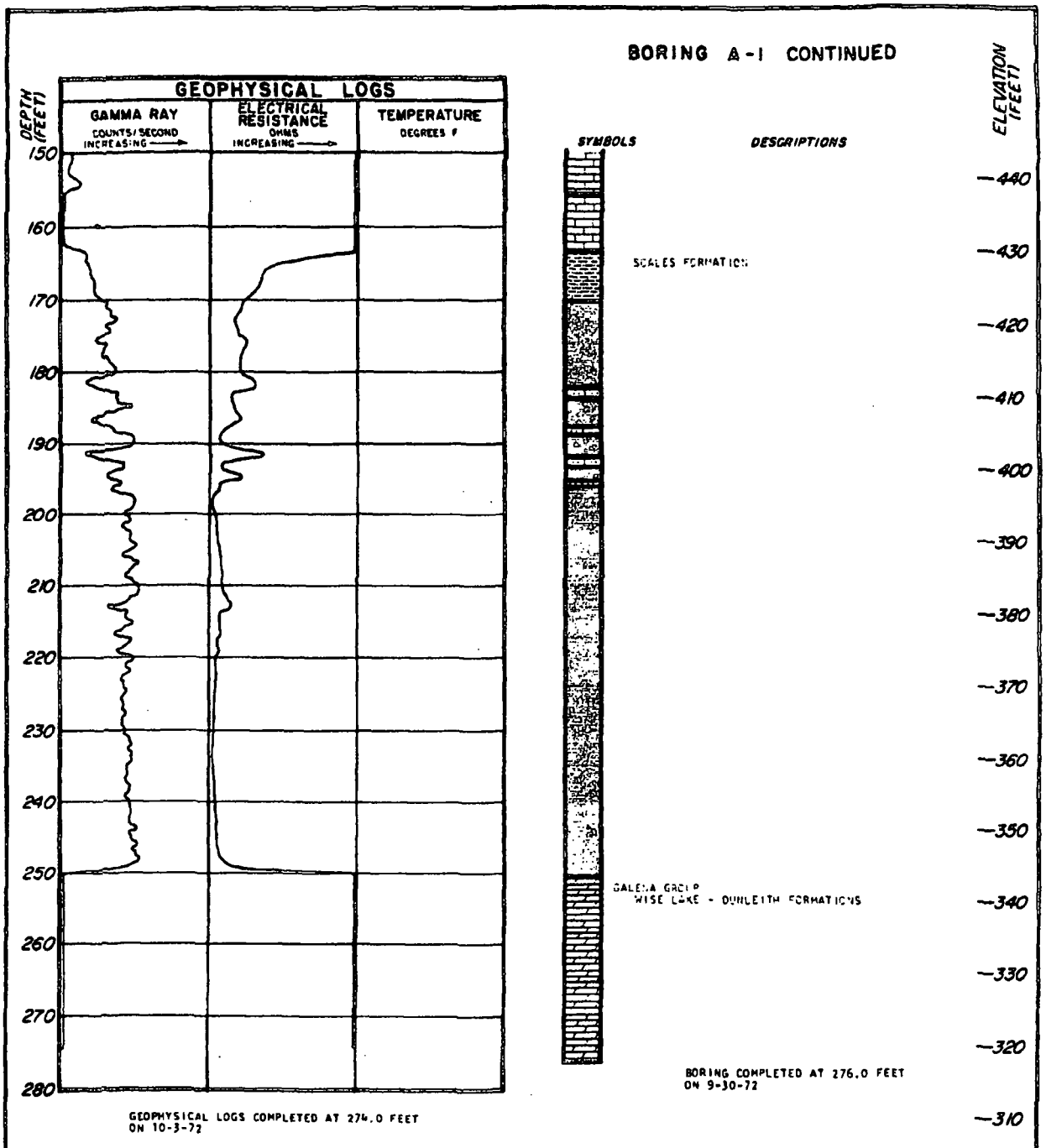
FIGURE 2.5-124

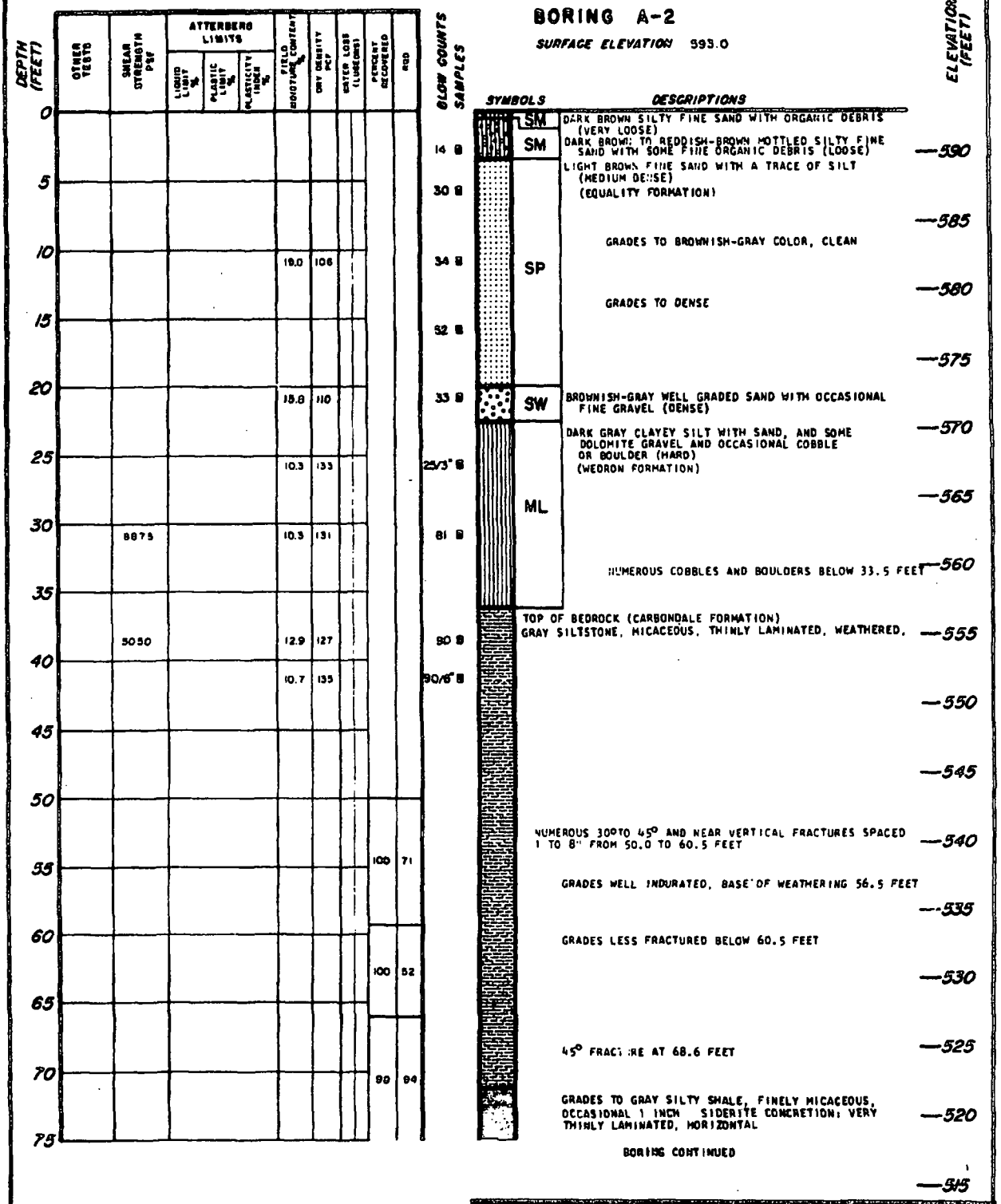
LOG OF BORING A-1 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-124

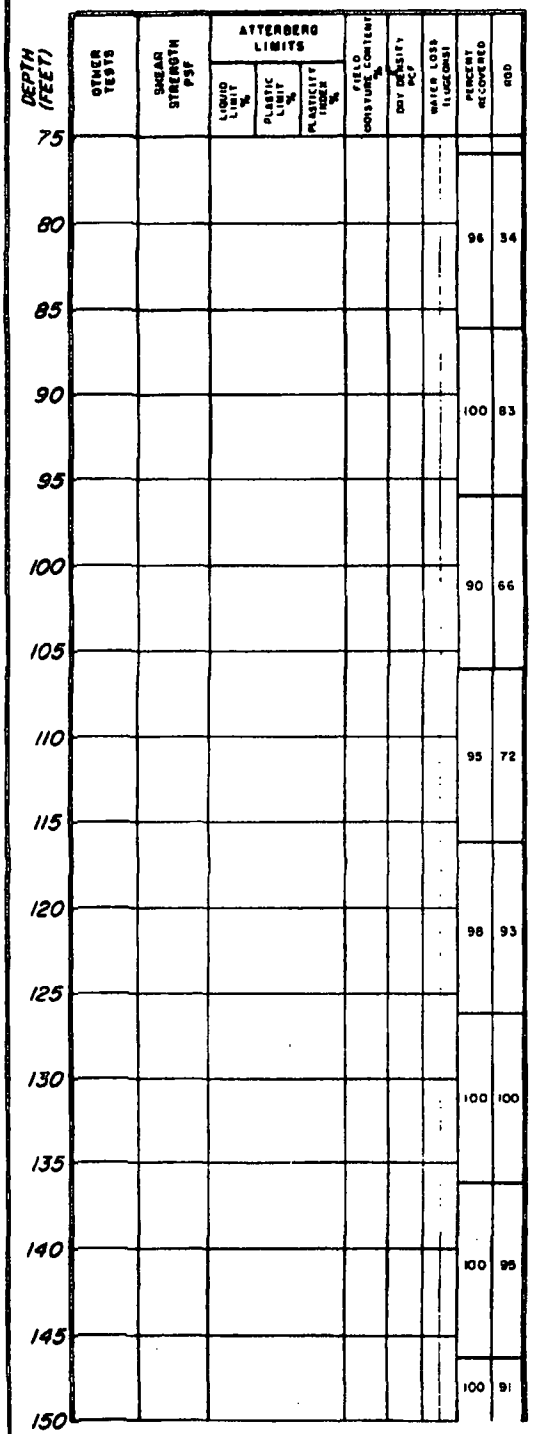
LOG OF BORING A-1 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-125

LOG OF BORING A-2
(SHEET 1 OF 4)



BORING A-2 CONTINUED

ELEVATION (FEET)

SYMBOLS DESCRIPTIONS

60° AND HIGH ANGLE FRACTURES SPACED 2 TO 12 INCHES FROM 75.5 TO 78.5 FEET — 515

ZONE OF FRACTURED DISTORTED LAMINATIONS 78.5 TO 79.8 FEET

BLACK COAL; THIN BEDDED; NUMEROUS VERTICAL TIGHT FRACTURES WITH SOME PYRITE AND CLAY; GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 3 INCHES — 510

DARK GRAY CLAYEY SHALE, CARBONACEOUS; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES (SPOON FORMATION)

GRADES LESS CARBONACEOUS, LIGHT BROWN TO GRAY COLOR BELOW 87.0 FEET — 505

GRADES CARBONACEOUS AT 90.5 FEET

LIGHT GRAY FINE SANDY SILTSTONE, MICACEOUS; INDISTINCTLY LAMINATED — 500

GRADES THINLY LAMINATED BELOW 96.0 FEET

2 INCH LAYER OF BROWN SILTY OOLITIC SIDERITE AT 98.2 FEET — 495

DARK BROWNISH-GRAY CLAYEY SHALE, CARBONACEOUS IN ZONES; FRAGMENTED WITH NUMEROUS SLICKENSIDES ALONG RANDOM PLANES OF WEAKNESS

— 490

GRADES HIGHLY CARBONACEOUS 104.9 TO 105.3 FEET

MOTTLED BROWNISH-RED TO GREEN SHALE, INDISTINCTLY LAMINATED; FRAGMENTED, NUMEROUS RANDOM FRACTURES WITH SLICKENSIDES — 485

DARK GREENISH-GRAY SHALE, DOLOMITIC; LAMINATED 30° AND 45° FRACTURES AT 110.5 AND 111.5 FEET (BRAINARD FORMATION) — 480

— 475

GRADES CALCAREOUS AT 122.0 FEET — 470

GRAY SILTY LIMESTONE, FINE TO MEDIUM CRYSTALLINE, FOSSILIFEROUS; THIN BEDDED WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4 TO 2 INCH ZONES OF CALCAREOUS SHALE SPACED 1/4 TO 10 INCHES. (FORT ATKINSON FORMATION) — 465

— 460

— 455

— 450

LIGHT GRAY LIMESTONE WITH SOME SILT, CALCARENITIC; THIN BEDDED, IRREGULAR HAIR LINE SHALE PARTINGS AND STYOLITES SPACED 1/2 TO 8 INCHES — 445

BORING CONTINUED

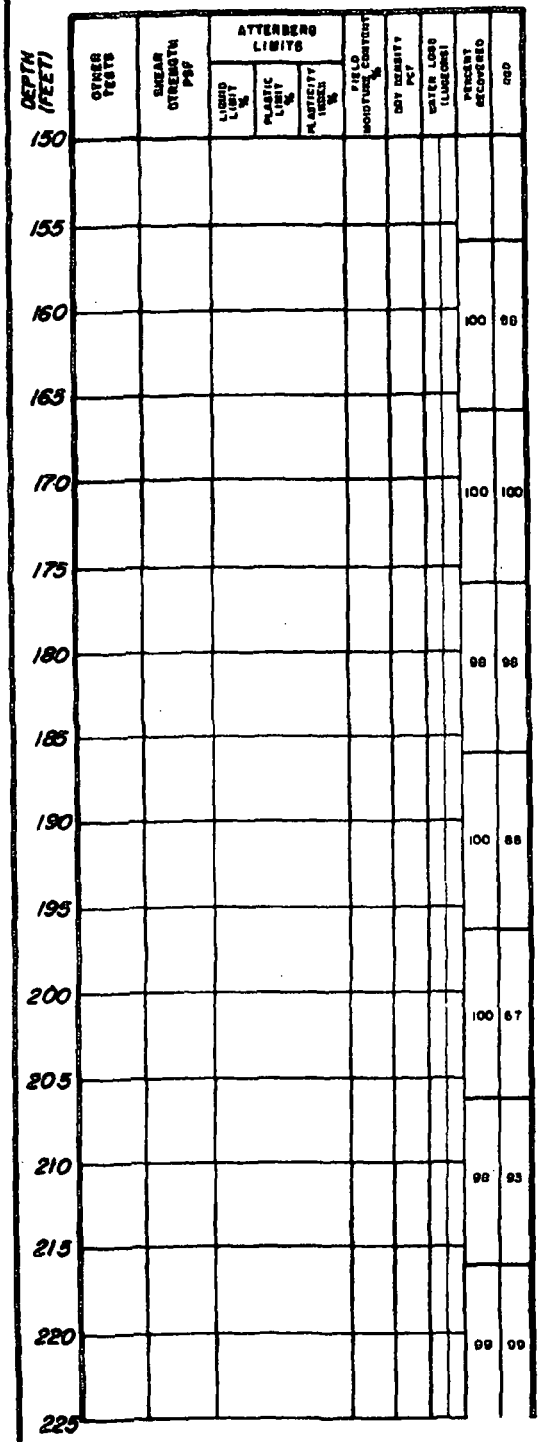
— 440

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-125

LOG OF BORING A-2
(SHEET 2 OF 4)

BORING A-2 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

NEAR VERTICAL FRACTURE 149.5 TO 151.1 FEET
1 INCH OPEN VUG AT 149.7 FEET; OIL STAINED THROUGHOUT

NEAR VERTICAL FRACTURE 152.5 TO 153.5 FEET, VERY TIGHT — 440

GRADES TO LIGHT BUFF PURE LIMESTONE, COARSELY CALCARENITIC BELOW 155.0 FEET, MEDIUM BEDDED; NEAR VERTICAL TIGHT FRACTURE WITH OIL STAIN FROM 155.0 TO 156.3 FEET — 435

1/2 INCH OPEN VUG AT 162.5 FEET — 430

DARK GRAY CALCAREOUS SILTSTONE; LAMINATED, EXTREMELY ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS; INTERBEDDED GRADATIONAL 1/2 TO 2 INCH ZONES OF GRAY SILTY LIMESTONE SPACED 1 TO 6 INCHES (SCALES FORMATION) — 425

DARK GRAY SILTY SHALE, DOLOMITIC; LAMINATED; 1 TO 6 INCH CALCAREOUS AND FOSSILIFEROUS ZONES SPACED 1 TO 18 INCHES; FISSILE IN SHALEY ZONES — 420

— 415

GRADES TO INTERBEDDED ZONES OF GRAY SILTY LIMESTONE 6 TO 18 INCHES THICK SPACED 1 TO 4 FEET; FINE TO COARSELY CRYSTALLINE, CALCARENITIC AND FOSSILIFEROUS IN ZONES — 410

— 405

— 400

— 395

INTERBEDDED SILTY LIMESTONE BEDS GRADE OUT AT 198.3 FEET
DARK GRAY SILTY SHALE, DOLOMITIC, LAMINATED, FISSILE; INTERBEDDED 2 TO 6 INCHES CALCAREOUS ZONES SPACED 6 INCHES TO 3 FEET — 390

— 385

— 380

— 375

— 370

CORING CONTINUED

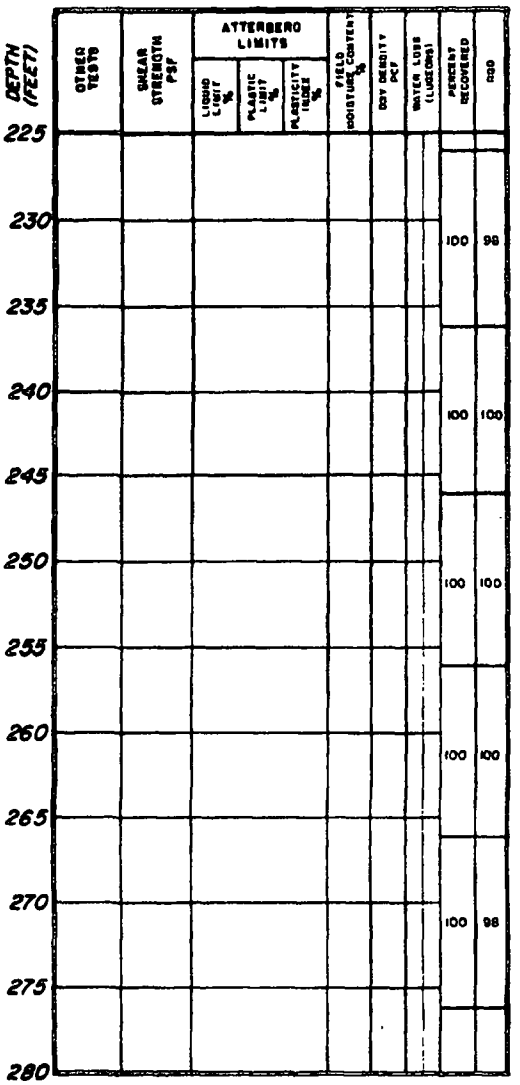
— 365

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-125

LOG OF BORING A-2
(SHEET 3 OF 4)

BORING A-2 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

CALCAREOUS ZONES GRADED THINNER AND MORE WIDELY SPACED BELOW 227.0 FEET — 365

— 360

— 355

— 350

— 345

MOTTLED LIGHT GRAY TO BUFF DOLOMITIC LIMESTONE; FINE TO MEDIUM CRYSTALLINE; THIN TO MEDIUM BEDDED, NUMEROUS IRREGULAR HAIR LINE SHALE PARTINGS SPACED 1/2 TO 12 INCHES; UPPER CONTACT DISPLAYS NUMEROUS 1 TO 3 INCH SOLUTION CAVITIES WHICH HAVE BEEN FILLED COMPLETELY BY CONSOLIDATED MATERIAL WHICH GRADES INTO THE OVERLYING SCALES FORMATION — 340

1 INCH VUG AT 256.3 FEET, PARTIALLY FILLED WITH CALCITE CRYSTALS — 335

(WISE LAKE - DUNLEITH FORMATIONS)

— 330

— 325

— 320

1/2 INCH OPEN VUG AT 274.5 FEET

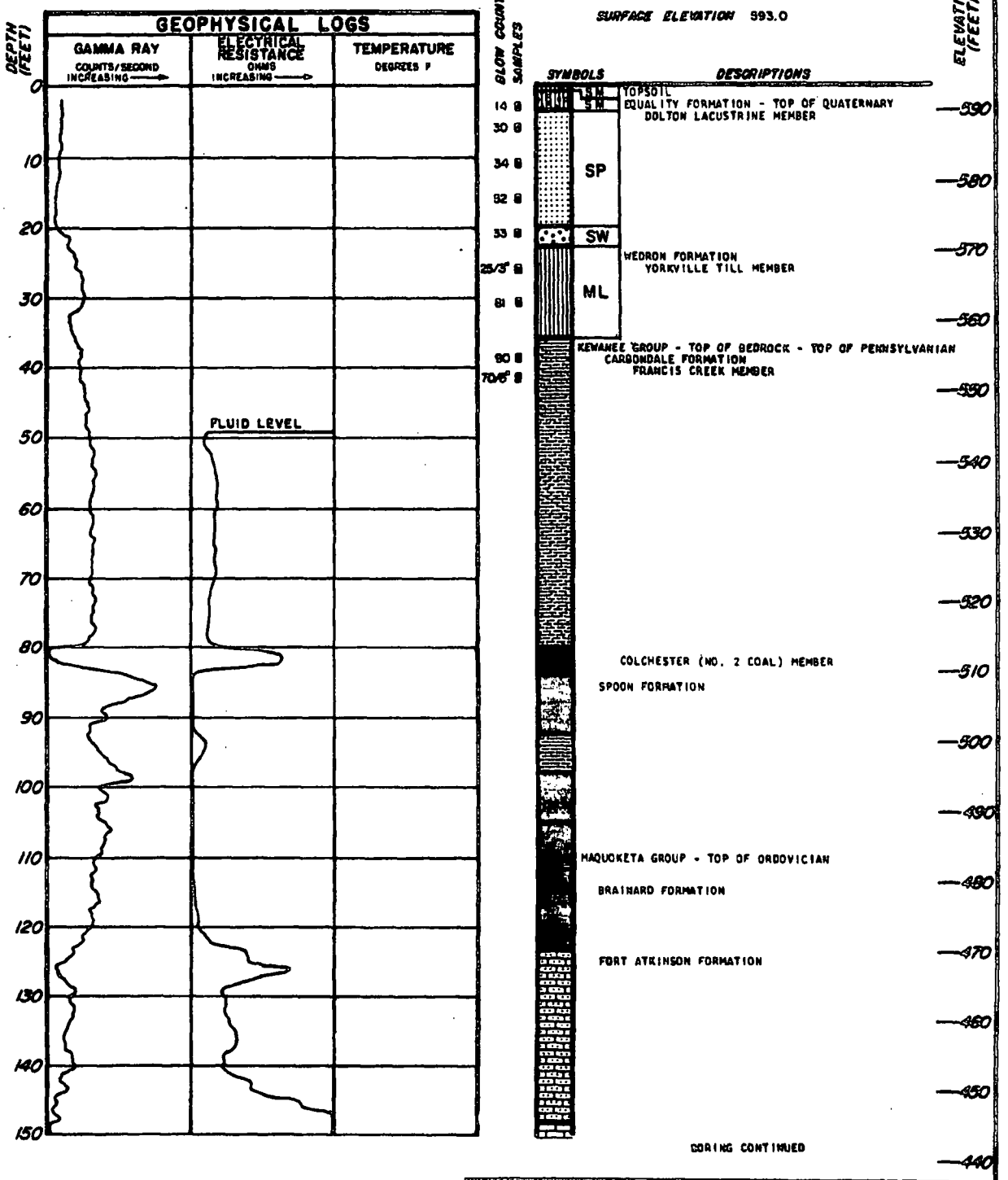
BORING COMPLETED AT 276.0 FEET
ON 9-14-72
300 POUND HAMMER FALLING 18 INCHES — 315

— 310

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-125

LOG OF BORING A-2
(SHEET 4 OF 4)



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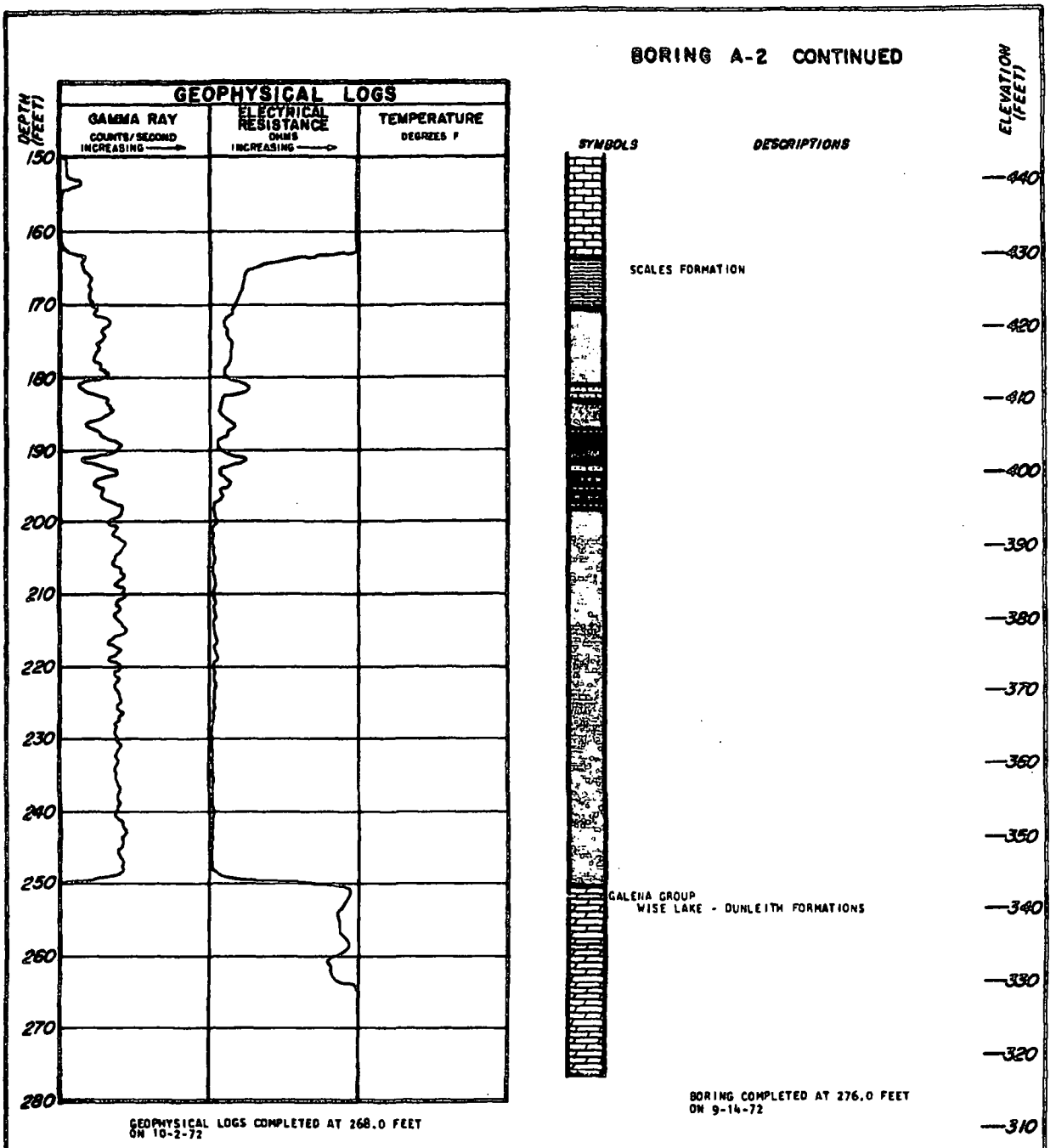
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-126

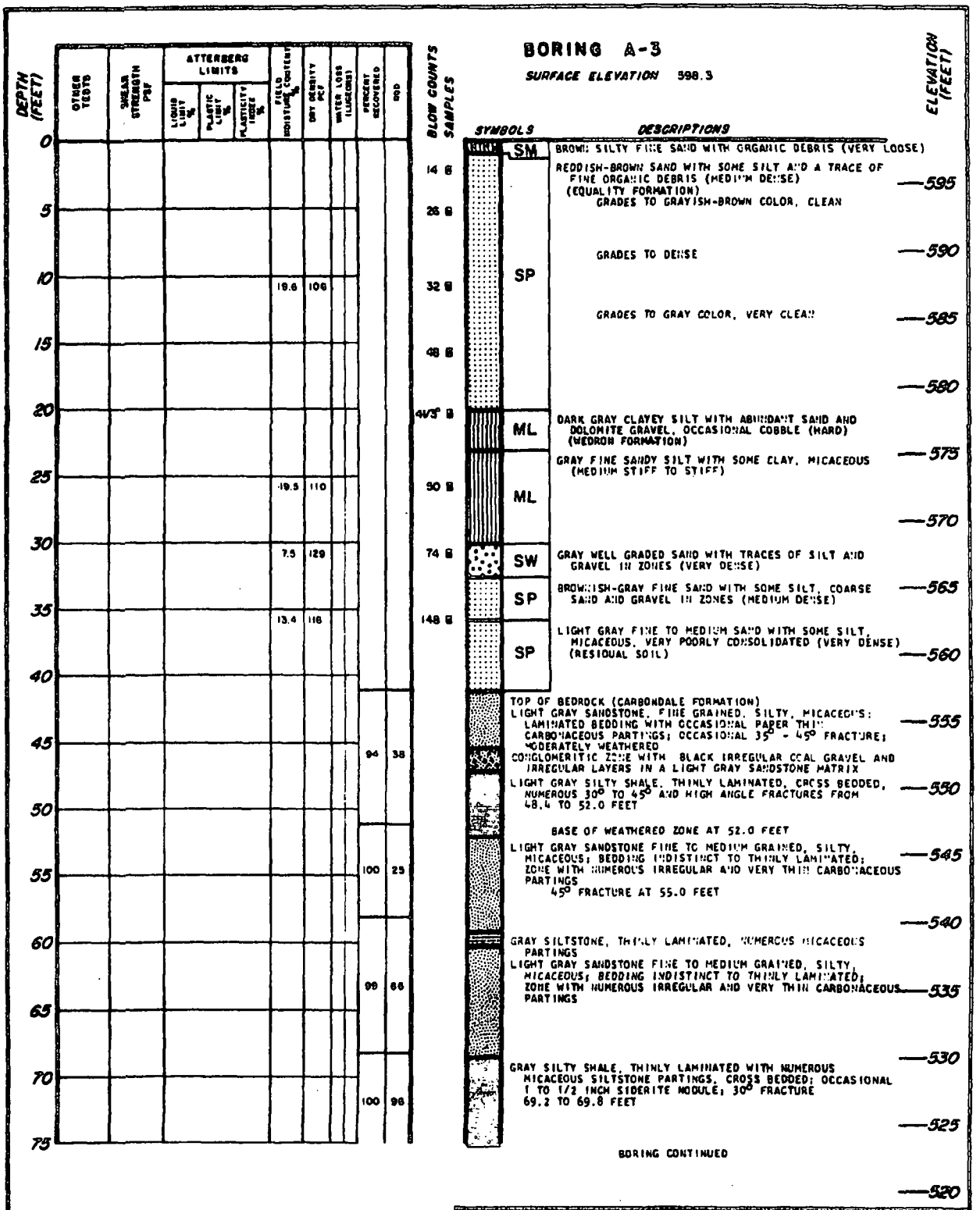
LOG OF BORING A-2 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-126

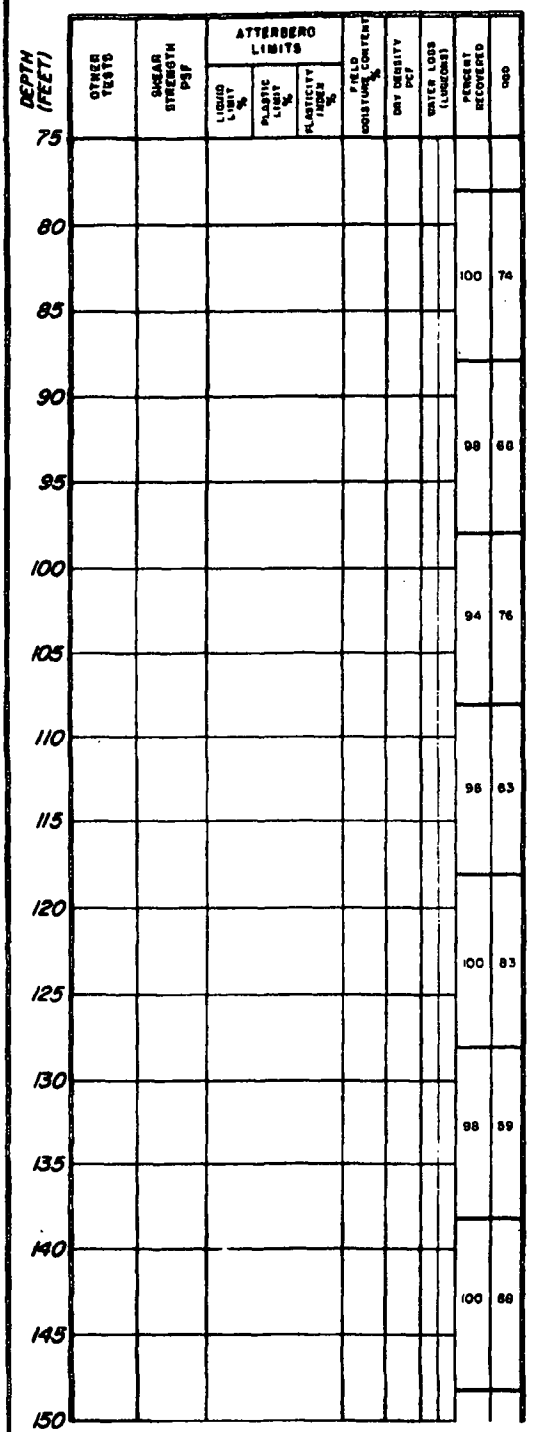
LOG OF BORING A-2 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-127

LOG OF BORING A-3
(SHEET 1 OF 5)



BORING A-3 CONTINUED

ELEVATION (FEET)

SYMBOLS

DESCRIPTIONS

30° FRACTURES SPACED 1 INCH AT 75.6 FEET

LIGHT GRAY SILTY SANDSTONE, NUMEROUS CARBONACEOUS PLANT FOSSILS, SIDERITE NODULES AT BASE — 520

GRAY SILTSTONE, THINLY LAMINATED, IRREGULAR CROSS BEDDING WITH NUMEROUS GRADATIONAL ZONES OF SILTY SAND AND SHALE, OCCASIONAL 1 TO 3 INCH SIDERITE NODULE, OCCASIONAL 45° FRACTURE SPACED 1 TO 3.5 FEET — 515

LIGHT GRAY SILTY SANDSTONE, THILY LAMINATED WITH NUMEROUS CARBONACEOUS PARTING THROUGHOUT; OCCASIONAL SIDERITE NODULE — 510

GRAY SILTSTONE, THINLY LAMINATED WITH NUMEROUS MICACEOUS AND FINE SANDY PARTINGS, SOME 30° TO 45° FRACTURES — 505

GRAY SILTY SANDSTONE, INDISTINCT BEDDING; GRADES SHALEY AND CONGLOMERATIC WITH NUMEROUS SIDERITE NODULES BELOW 98 FEET — 500

GRAY SILTSTONE, THINLY LAMINATED, BEDDING GRADES EVEN AND REGULAR

GRADES TO SILTY SHALE, EVENLY BEDDED WITH NUMEROUS VERY THIN ALTERNATING LAMINATIONS OF MICACEOUS SILT AND SHALE — 495

— 490

BLACK COAL, THIN BEDDED, NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY — 485

LIGHT GRAY CLAY SHALE, HIGHLY FRAGMENTED WITH NUMEROUS SLICKENSIDES THROUGHOUT (SPOON FORMATION)
3 INCH LAYER OF COAL AT 116.7 FEET

LIGHT GRAY CLAY SHALE, HIGHLY FRAGMENTED, OCCASIONAL 1/2 TO 1 INCH CARBONACEOUS LAYER — 480

6 INCH LAYER OF COAL AT 121.2 FEET
BLACK CARBONACEOUS SHALE, FRAGMENTED, SOME NEAR VERTICAL FRACTURES
15 INCH LAYER OF COAL AT 123.1 FEET — 475
GRAY SILTY SHALE, MICACEOUS, THINLY LAMINATED; 45° FRACTURES SPACED 2 TO 6 INCHES FROM 124.3 TO 125.0 FEET

LIGHT GREENISH-GRAY SILTSTONE, LAMINATED, HIGHLY MICACEOUS, SANDY IN ZONES — 470

BLACK CARBONACEOUS SHALE, FRAGMENTED, NUMEROUS SLICKENSIDES ALONG RANDOM PLANES OF WEAKNESS; 45° AND HIGH ANGLE FRACTURES FROM 131.8 TO 132.7 FEET — 465

7 INCH LAYER OF COAL AT 135.0 FEET
DARK GRAYISH-BROWN SHALE, CARBONACEOUS IN ZONES, FRAGMENTED WITH NUMEROUS SLICKENSIDES

GRADES NON CARBONACEOUS, SILTY AT 138.5 FEET — 460

GRADES SILTY AT 141.5 FEET, NUMEROUS INTERBEDDED LAMINATIONS OF MICACEOUS SILTSTONE UP TO 1/10 INCH THICK — 455

GRADES INCREASINGLY CARBONACEOUS BELOW 145.0 FEET NUMEROUS INTERBEDDED PARTINGS UP TO 1/20 INCH THICK

GREENISH-GRAY SILTY SHALE, THINLY LAMINATED, OCCASIONAL MARINE FOSSIL, 45° FRACTURE AT 149.4 FEET (BRAINARD FORMATION) — 450

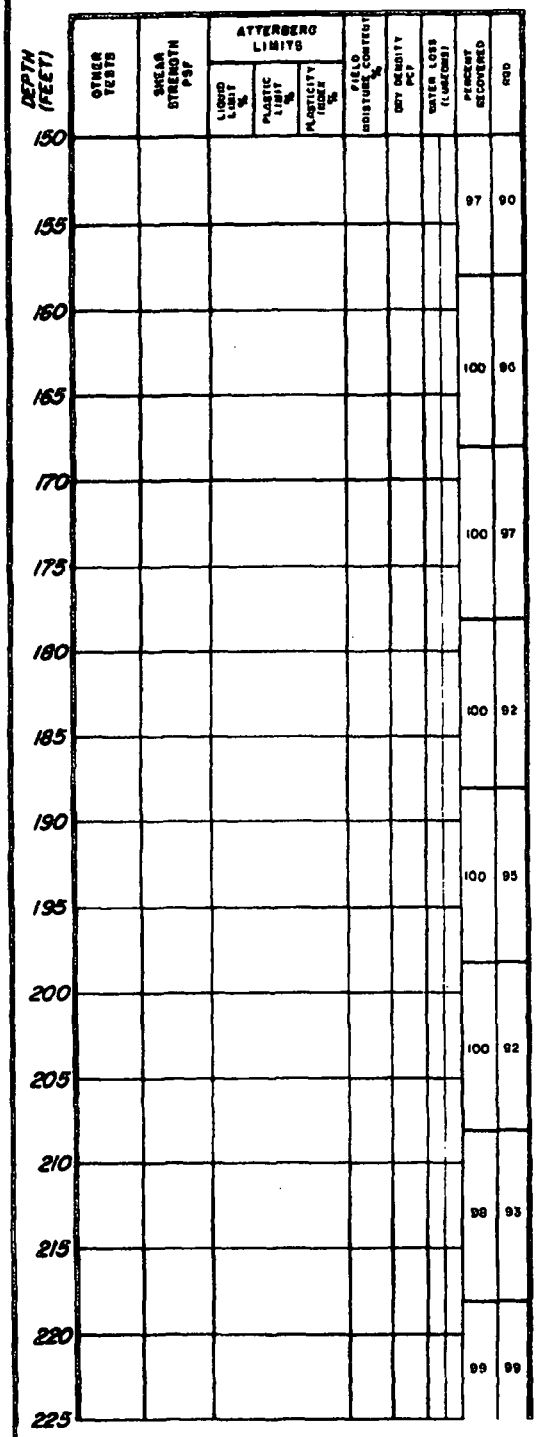
CORING CONTINUED

— 445

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-127

LOG OF BORING A-3
(SHEET 2 OF 5)



BORING A-3 CONTINUED

ELEVATION (FEET)

SYMBOLS

DESCRIPTIONS

GRADES CALCAREOUS AT 153.0 FEET — 445

GRAY SILTY LIMESTONE, FINE TO MEDIUM CRYSTALLINE; INTERBEDDED IRREGULAR PARTINGS AND GRADATIONAL ZONES OF CALCAREOUS SHALE 1/4 TO 2 INCHES THICK SPACED 1 TO 8 INCHES; HIGHLY FOSSILIFEROUS (FORT ATKINSON FORMATION) — 440

— 435

— 430

— 425

GRADES TO LIGHT GRAY LIMESTONE, COARSELY CRYSTALLINE CALCARENITIC; IRREGULAR SHALE PARTINGS IN 1 TO 3 INCH ZONES SPACED 3 TO 12 INCHES; FOSSILIFEROUS — 420

— 415

6 INCH SILTY ZONE; HIGHLY FOSSILIFEROUS 185.0 TO 185.5 FEET

GRADES TO LIGHT BUFF LIMESTONE, VERY PURE, COARSELY CALCARENITIC, THICK BEDDED, OCCASIONAL VERY THIN AND TIGHT STYOLITE; 1/2 INCH CRYSTAL LINED SOLUTION CHANNEL AT 186.0 FEET — 410

— 405

DARK GRAY CALCAREOUS SILTY SHALE, LAMINATED BEDDING; HIGHLY FOSSILIFEROUS; 2 TO 4 INCH ZONES OF BROWN SILTY LIMESTONE SPACED 3 TO 12 INCHES (SCALES FORMATION) — 400

GRADES TO DOLOMITIC SILTY SHALE, LESS FOSSILIFEROUS; 2 TO 6 INCH CALCAREOUS LAYERS SPACED 1 TO 2 FEET, LAMINATED — 395

— 390

— 385

— 380

GRADES TO INTERBEDDED ZONES OF LIGHT GRAY SILTY LIMESTONE 7 TO 18 INCHES THICK SPACED 1 TO 5 FEET, FINE TO COARSELY CRYSTALLINE, CALCARENITIC AND FOSSILIFEROUS IN ZONES — 375

BORING CONTINUED

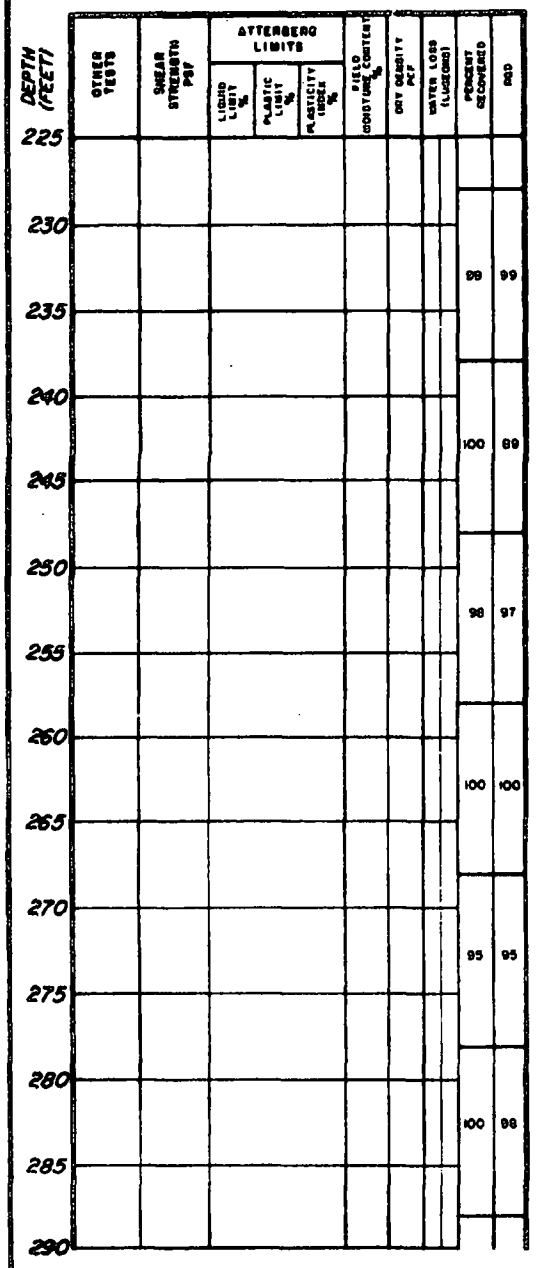
— 370

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-127

LOG OF BORING A-3
(SHEET 3 OF 5)

BORING A-3 CONTINUED



DESCRIPTIONS

ELEVATION (FEET)

370

INTERBEDDED SILTY LIMESTONE GRADES OUT

363

DARK GRAY CLAYEY SHALE; HIGHLY FRACTURED WITH NUMEROUS SLICKENSIDES 238.9 TO 239.3 FEET

360

355

350

345

340

335

330

325

320

GRADES PYRITIC AT 282.0 FEET

MOTTLED LIGHT GRAY TO BUFF DOLOMITIC LIMESTONE, FINE TO MEDIUM CRYSTALLINE, GRADES FOSSILIFEROUS AND CALCARENITIC IN ZONES, ARGILLACEOUS; THIN BEDDED WITH NUMEROUS IRREGULAR HAIR LINE PARTINGS OF SHALE SPACED 1/4 TO 4 INCHES; OCCASIONAL 1/2 TO 1 INCH VUG WITH CALCITE FILLING, TIGHT; NO FRACTURES OBSERVED IN CORE (WISE LAKE - DUNLEITH FORMATIONS)

315

310

BORING CONTINUED

305

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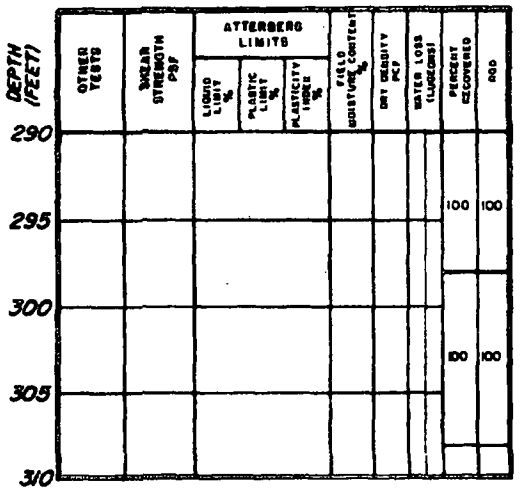
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-127

LOG OF BORING A-3
(SHEET 4 OF 5)

BORING A-3 CONTINUED



DESCRIPTIONS

1/2 INCH ISOLATED VUG WITH CALCITE CRYSTALS AT 305 FEET

BORING COMPLETED AT 308.0 FEET ON 9-27-72

ELEVATION (FEET)

305
300
295
290
285

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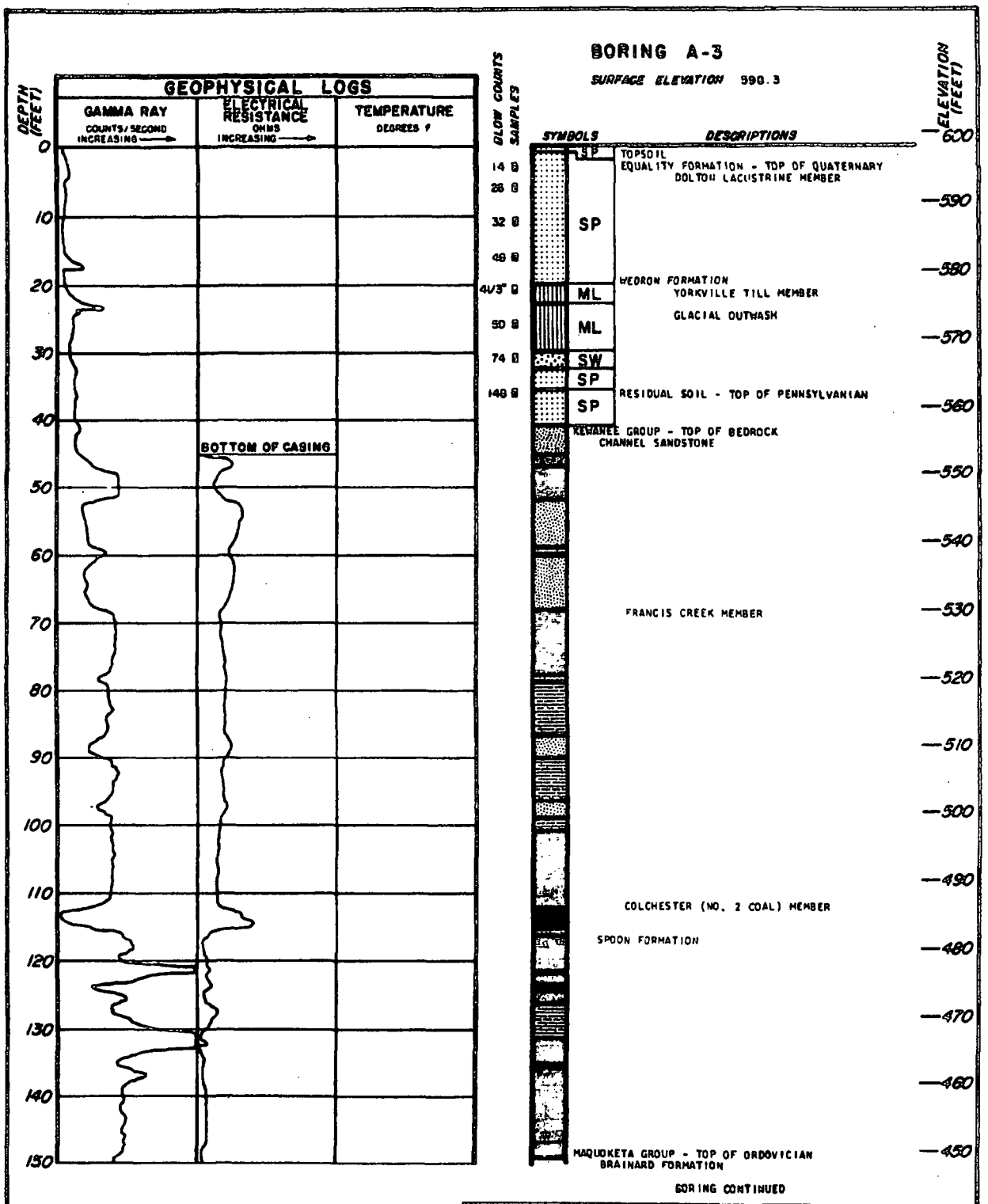
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-127

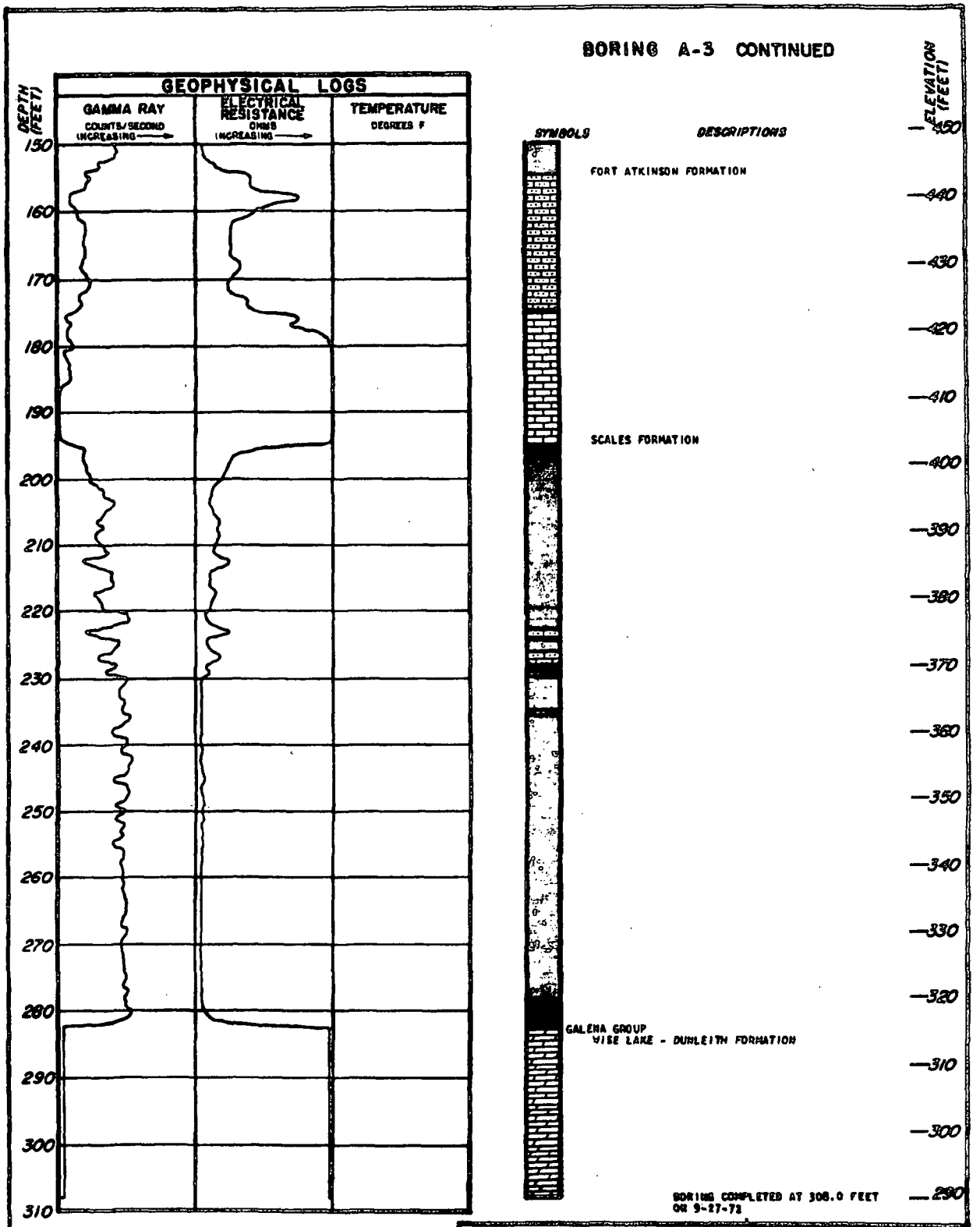
LOG OF BORING A-3
(SHEET 5 OF 5)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-128

LOG OF BORING A-3 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-128

LOG OF BORING A-3 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)

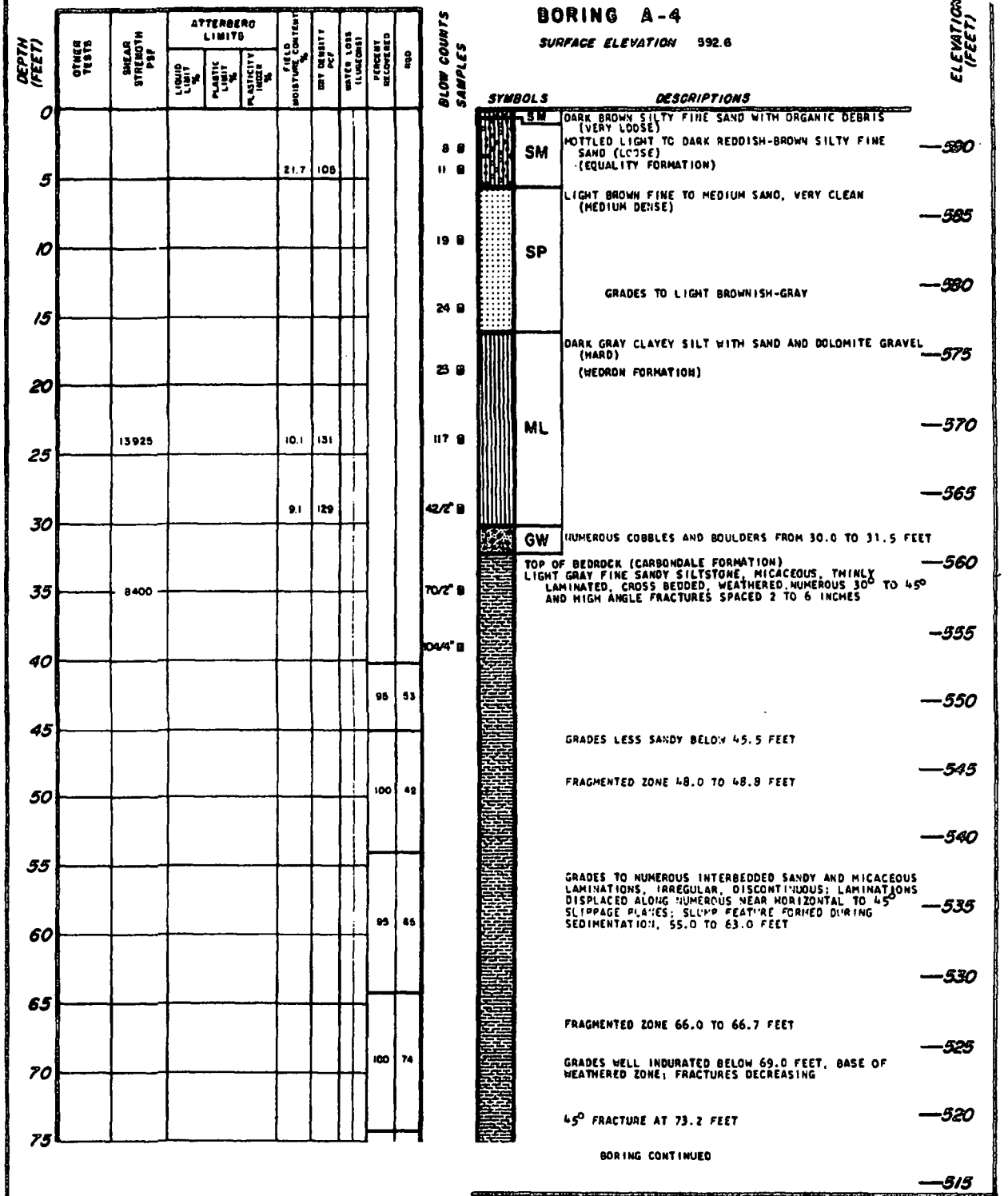


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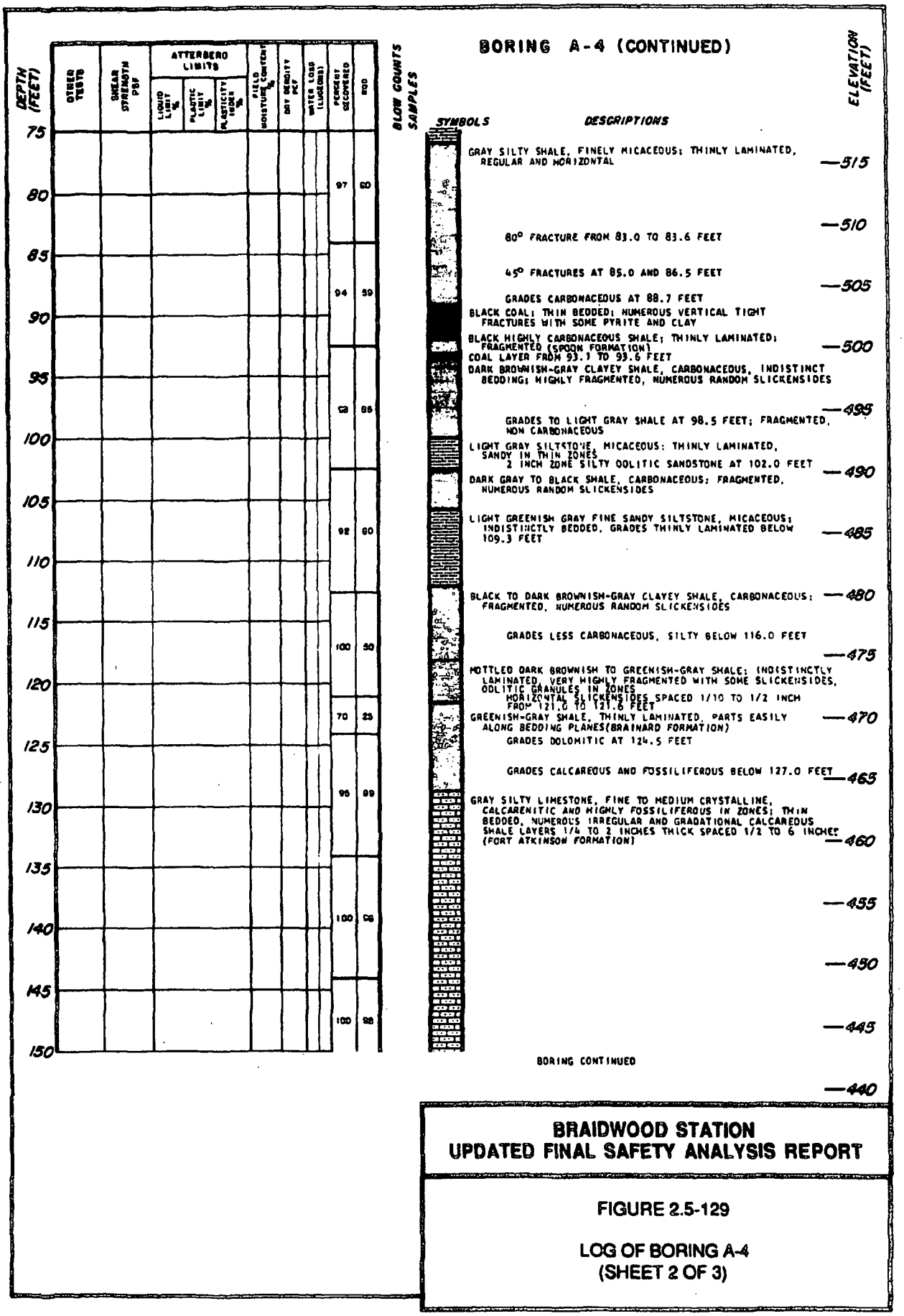
FIGURE 2.5-129

LOG OF BORING A-4
(SHEET 1 OF 3)

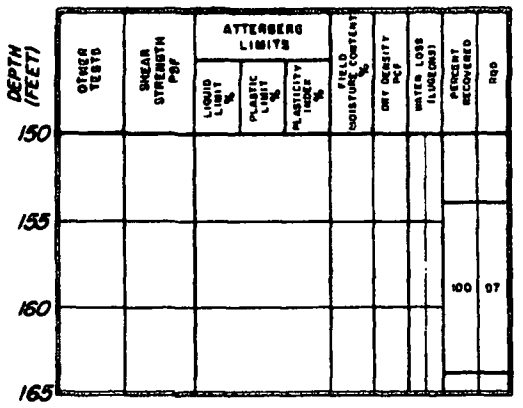


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-129

LOG OF BORING A-4
(SHEET 2 OF 3)

BORING A-4 (CONTINUED)



SYMBOLS

DESCRIPTIONS

GRADES LESS SILTY BELOW 152.3 FEET
1/10 INCH SEAMS SPACED 1/2 TO 4 INCHES WITH OIL STAIN FROM 152.6 TO 153.3 FEET

LIGHT GRAY TO BUFF PURE LIMESTONE, COARSELY CALCARENITIC; THIN TO MEDIUM BEDDED, HAIR LINE SHALE PARTINGS AND STYOLITES SPACED 1/2 TO 12 INCHES

BORING COMPLETED AT 164.0 FEET
ON 10-3-72
300 POUND HAMMER FALLING 24 INCHES

ELEVATION (FEET)
440
435
430
425

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-129

LOG OF BORING A-4
(SHEET 3 OF 3)

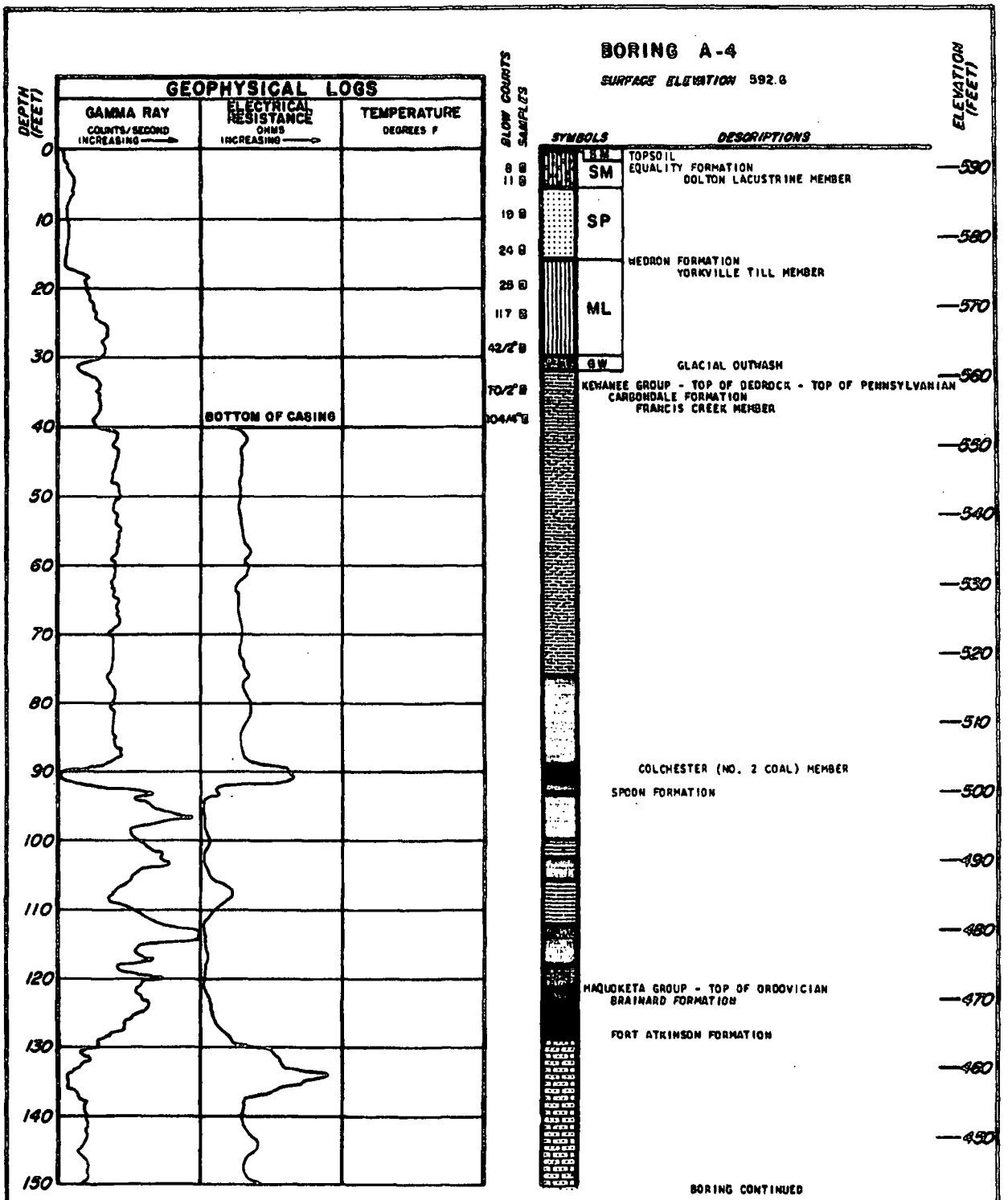


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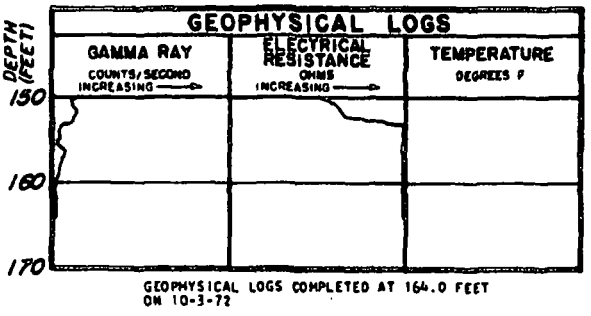
FIGURE 2.5-130

LOG OF BORING A-4 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)

BORING A-4 CONTINUED



GEOPHYSICAL LOGS COMPLETED AT 164.0 FEET
ON 10-3-72

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

440

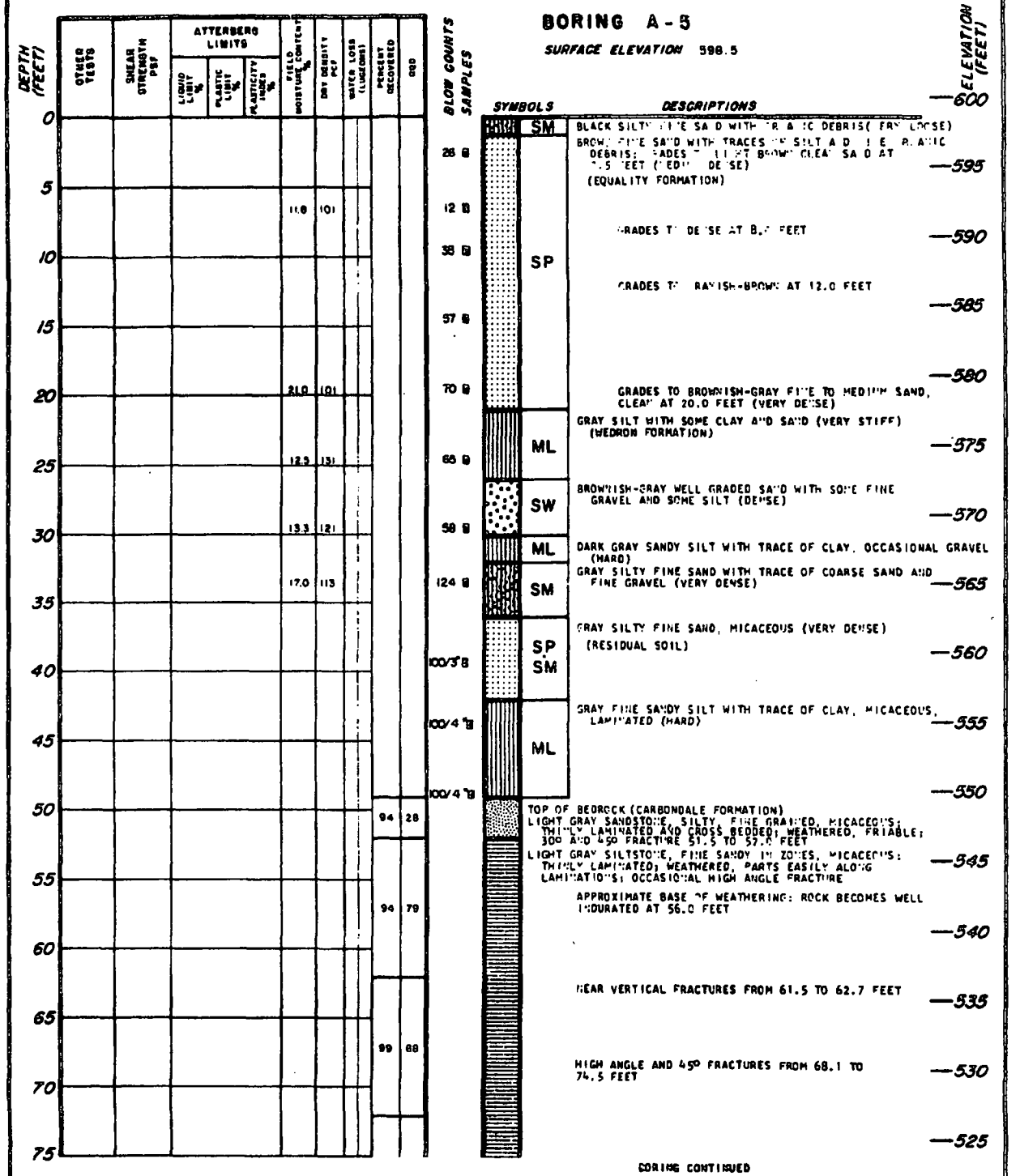
430

BORING COMPLETED AT 164.0 FEET
ON 10-3-72

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-130

LOG OF BORING A-4 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-131

LOG OF BORING A-5
(SHEET 1 OF 2)

BORING A-5 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	93
85										
90									98	87
95										
100									100	98
105										
110									97	80
115									100	0
120									100	35
125									100	45
130										
135									100	78
140										
145									100	99
150									100	97

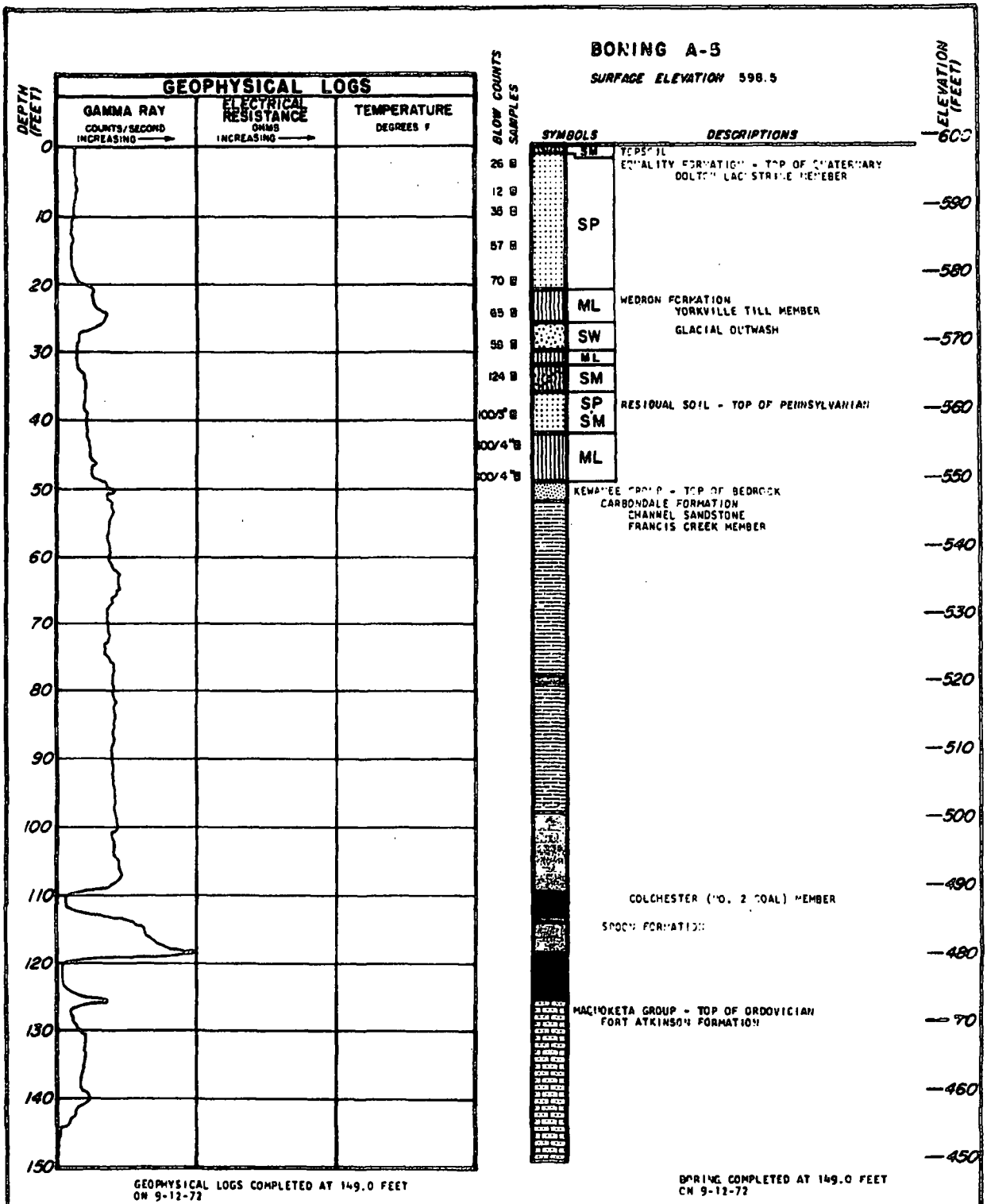
SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		525
	GRAY SILTY SHALE, MICACEOUS; FRAGMENTED WITH NUMEROUS FRACTURES	520
	SILTSTONE LAMINATIONS GRADE IRREGUALR AT 80.0 FEET WITH DIPS OF 30° TO 45°, STEEPLY DIPPING LAYERS ARE OFFSET ALONG NEAR HORIZONTAL PLANES AS A RESULT OF SLUMPING AND LATERAL DISPLACEMENT DURING SEDIMENTATION, FAULTING IS NOT INDICATED	515
	45° FRACTURE AT 89.3 FEET	510
	SILTSTONE LAMINATIONS GRADE NEAR HORIZONTAL AND REGULAR; 45° FRACTURE AT 93.2 FEET	505
	GRAY SILTY SHALE, FINELY MICACEOUS; THINLY LAMINATED, CR CROSS BEDDED IN ZONES WITH DIPS FROM 10° TO 45°; OCCASIONAL SIDERITE CONCRETION	500
	45° FRACTURE AT 99.3 FEET	
	30° FRACTURES SPACED 1 TO 8 INCHES FROM 104.6 TO 105.6 FEET	495
	45° FRACTURE AT 108.5 FEET	
	BLACK COAL, VERY THIN BEDDED; NUMEROUS VERTICAL FRACTURES WITH PYRITE AND KAOLONITE	490
	DARK GRAY CLAYEY SHALE; FRAGMENTED WITH NUMEROUS SLICKENSIDES IN ALL DIRECTIONS (SPOON FORMATION)	485
	1 INCH COAL LAYER AT 114.1 FEET	
	GRADES TO BLACK SHALE, HIGHLY CARBONACEOUS BELOW 115.8 FEET	
	BLACK COAL, VERY THIN BEDDED; NUMEROUS VERTICAL FRACTURES WITH PYRITE AND KAOLONITE	480
		475
	4 INCH ZONE OF DARK GRAY FINE SANDY SILTSTONE, CARBONACEOUS; THINLY LAMINATED, NUMEROUS PLANT FOSSILS	
	YUGGY ZONE FROM 127.5 TO 127.8 FEET WITH 1/10 TO 1 INCH CRYSTAL LINED VUGS, SPACED 1/2 TO 2 INCHES	
	LIGHT GRAY SILTY LIMESTONE, FINE TO MEDIUM CRYSTALLINE, INTERBEDDED WITH IRREGULAR AND GRADATIONAL 1/10 TO 2 INCH PARTINGS AND LAYERS OF CALCAREOUS SHALE SPACED 1/10 TO 12 INCHES; FOSSILIFEROUS. (FORT ATKINSON FORMATION)	470
		465
		460
	GRADES TO LIGHT GRAY AND BUFF PURE LIMESTONE, COARSELY CALCARENITIC; THIN BEDDED, HAIR LINE SHALE PARTINGS AND STYOLITES SPACED 1/4 TO 10 INCHES	455
		450

BORING COMPLETED AT 149.0 FEET
ON 9-12-73
300 POUND HAMMER FALLING 24 INCHES

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-131

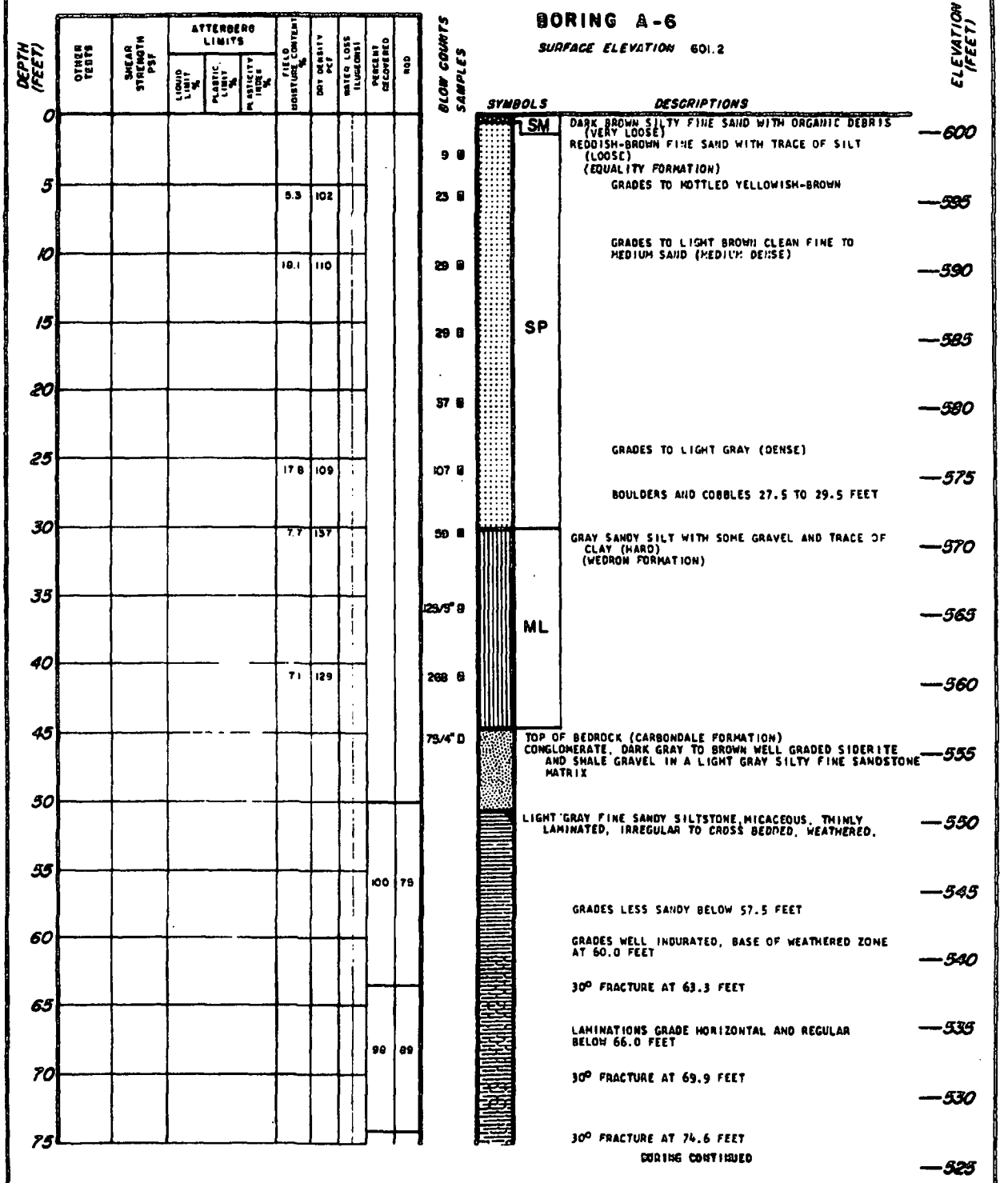
LOG OF BORING A-5
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-132

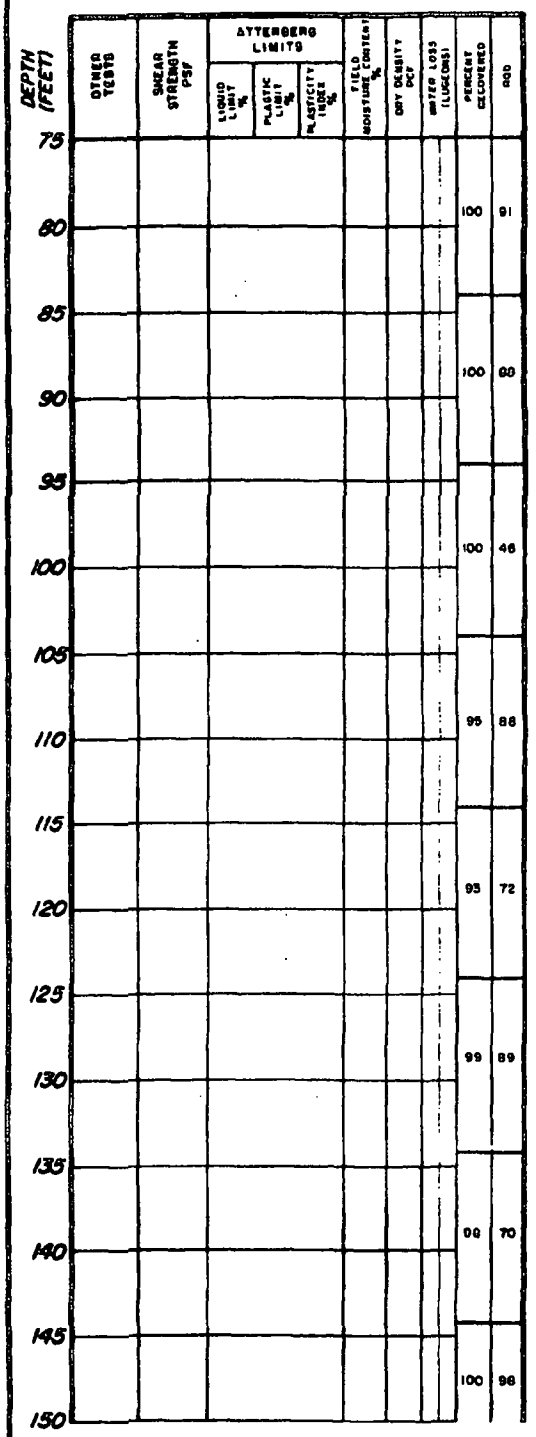
LOG OF BORING A-5 (GEOPHYSICAL LOG)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-133

LOG OF BORING A-6
(SHEET 1 OF 3)



BORING A-6 CONTINUED

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

525

VERTICAL FRACTURE 79.9 TO 81.6 FEET

520

GRAY SILTY SHALE, FINELY MICACEOUS; THINLY LAMINATED, HORIZONTAL BEDDING, OCCASIONAL 1 TO 1/2 INCH SIDERITE NODULE

515

510

HIGH ANGLE FRACTURE 94.3 TO 95.0 FEET
30° FRACTURE AT 95.6 FEET

505

BLACK COAL; THIN BEDDED; NUMEROUS VERTICAL TIGHT FRACTURES WITH SOME PYRITE AND CLAY

DARK BROWNISH GRAY SHALE, CARBONACEOUS, INDISTINCTLY LAMINATED, HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES (SPOON FORMATION)

500

GRADES LESS CARBONACEOUS BELOW 105.0 FEET

495

LIGHT GRAY FINE SANDY SILTSTONE, MICACEOUS, INDISTINCT BEDDING

DARK GRAY CARBONACEOUS SHALE, SILTY IN ZONES, THINLY LAMINATED; FRAGMENTED, NUMEROUS SLICKENSIDES

490

LIGHT GREENISH-GRAY FINE SANDY SILTSTONE, MICACEOUS; LAMINATED BEDDING, GRADES IRREGULAR AND CROSS BEDDED BELOW 116.5 FEET

485

480

GRAYISH-BROWN TO BLACK SHALE; THINLY LAMINATED TO INDISTINCT BEDDING; HIGHLY CARBONACEOUS IN ZONES, BRITTLE WITH CONCHOIDAL FRACTURE, FRAGMENTED IN ZONES WITH NUMEROUS SLICKENSIDES

HIGHLY CARBONACEOUS 121.8 TO 122.6 FEET

475

HIGHLY CARBONACEOUS 127.8 TO 128.2 FEET

470

GRADES CARBONACEOUS AND THINLY LAMINATED AT 134.5 FEET
ABUNDANT PYRITE IN BASAL 4 INCHES OF SHALE

465

GRAY SILTY LIMESTONE, FINE TO MEDIUM CRYSTALLINE; THIN BEDDED, NUMEROUS IRREGULAR PARTINGS AND GRADATIONAL ZONES OF CALCAREOUS SHALE 1/4 TO 3 INCHES THICK SPACED 1/2 TO 6 INCHES, NEAR VERTICAL FRACTURE 139.0 TO 140.5 FEET
(FORT ATKINSON FORMATION)

460

455

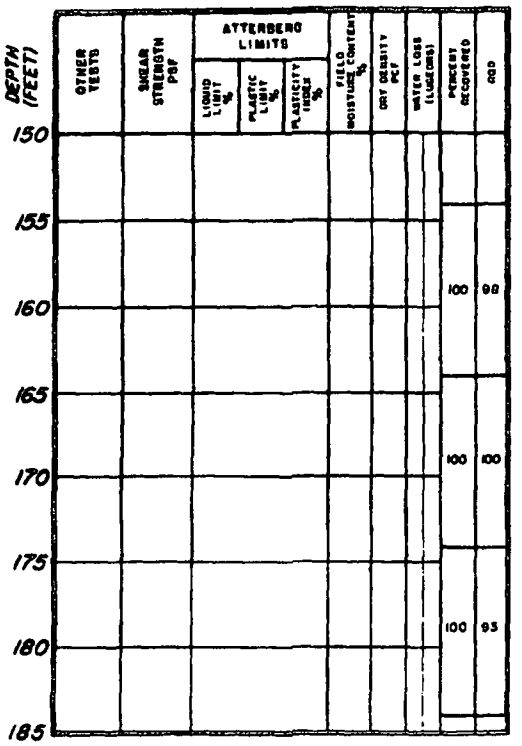
CORING CONTINUED

450

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-133

LOG OF BORING A-6
(SHEET 2 OF 3)



BORING A-6 CONTINUED

ELEVATION (FEET)

SYMBOLS

DESCRIPTIONS

—450

LIGHT GRAY TO BUFF PURE LIMESTONE, COARSELY CALCARENITIC; THIN TO MEDIUM BEDDED, IRREGULAR HAIR LINE TO 1/4 INCH SHALE PARTINGS AND STYOLITES SPACED 1/2 TO 12 INCHES; OIL STAINED POROUS ZONE FROM 152.6 TO 163.9 FEET

—445

—440

—435

—430

DARK GRAY CALCAREOUS SILTSTONE, HIGHLY FOSSILIFEROUS IN NUMEROUS IRREGULAR THIN WHITE BANDS; LAMINATED, 1 TO 4 INCH LAYERS OF SILTY LIMESTONE SPACED 2 TO 8 INCHES

(SCALES FORMATION)

—425

—420

DARK GRAY SILTY SHALE, CALCAREOUS; LAMINATED, INTERBEDDED SILTY LIMESTONE

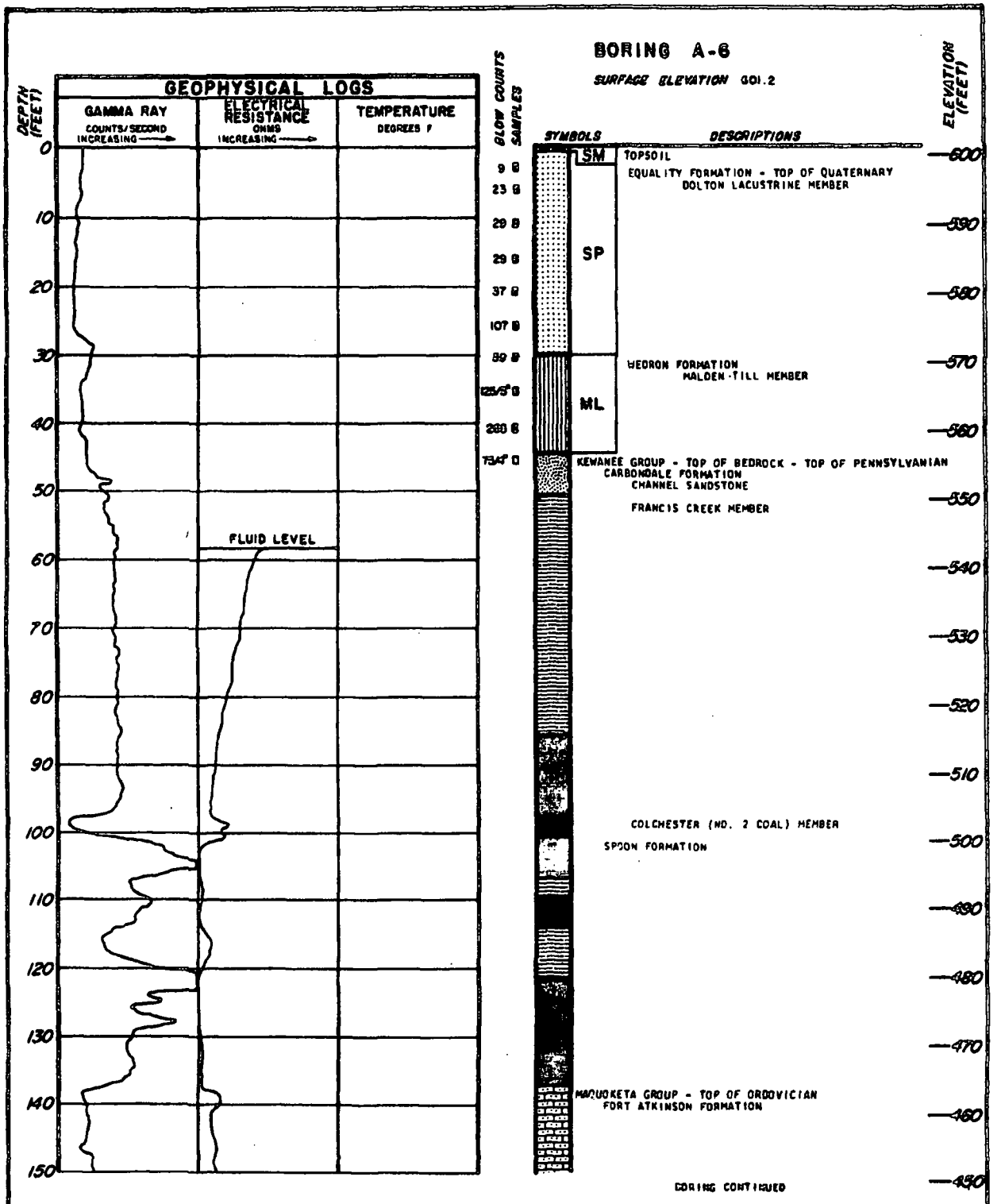
BORING COMPLETED AT 184.0 FEET
ON 10-7-72
300 POUND HAMMER FALLING 18 INCHES

—415

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-133

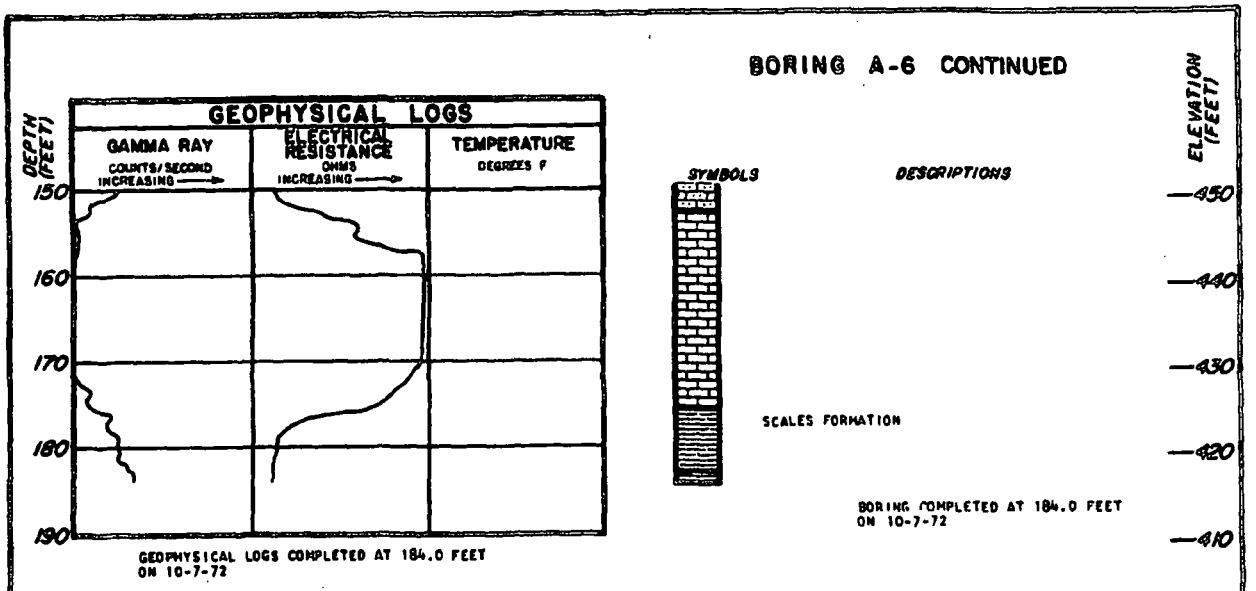
LOG OF BORING A-6
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-134

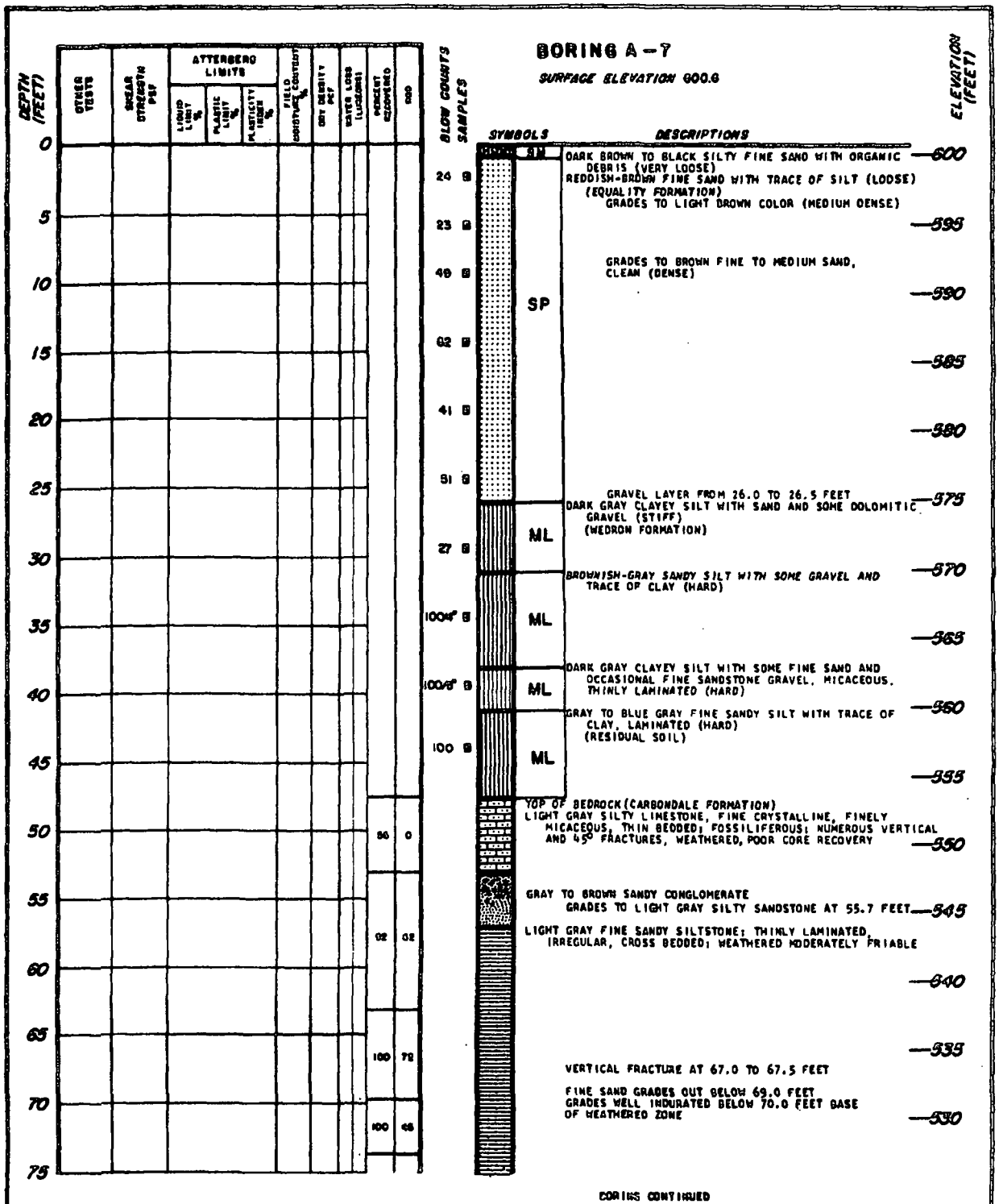
LOG OF BORING A-6 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-134

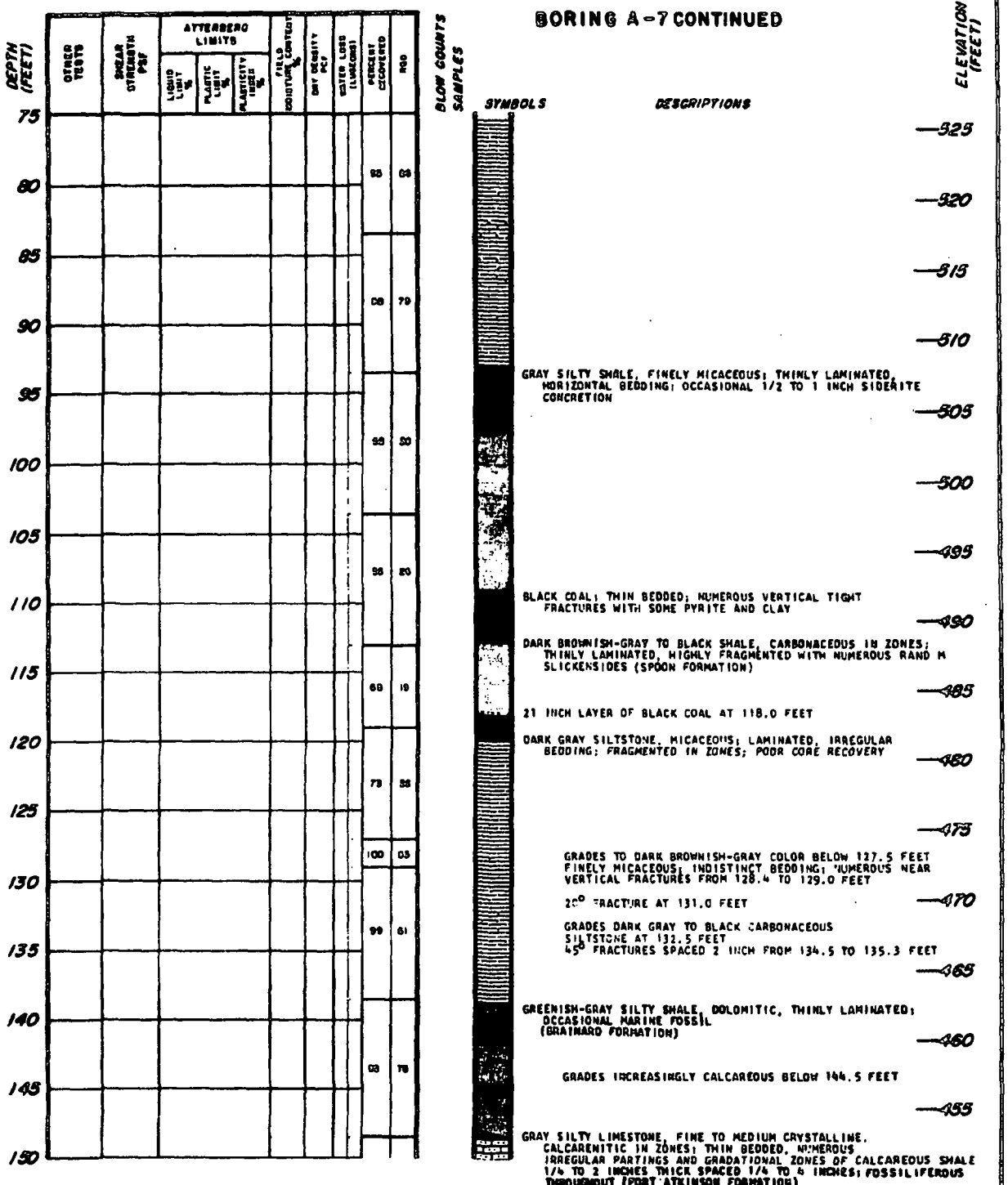
LOG OF BORING A-6 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-135

LOG OF BORING A-7
(SHEET 1 OF 3)

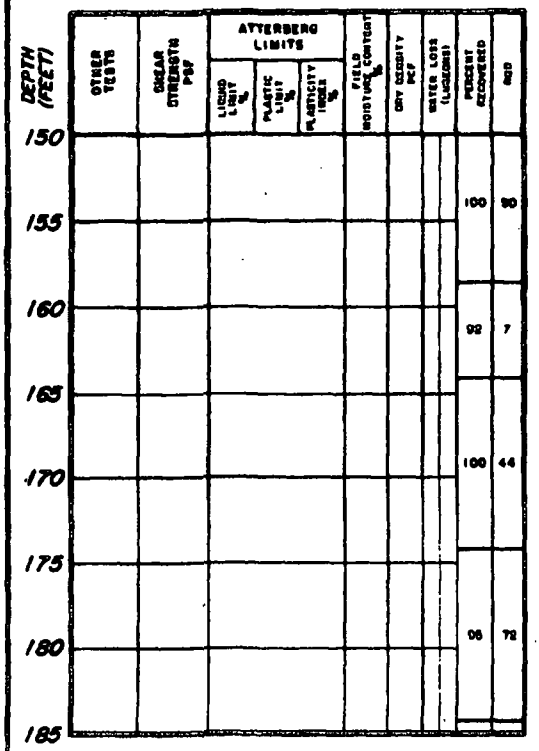


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-135

LOG OF BORING A-7
(SHEET 2 OF 3)

BORING A-7 CONTINUED



SYMBOLS | DESCRIPTIONS | ELEVATION (FEET)

1/2 INCH VUG AT 150.3 FEET, PARTIALLY FILLED WITH CALCITE CRYSTALS — 450

— 445

— 440

— 435

GRADES LESS SILTY BELOW 172.0 FEET, CALCARENITIC — 430

LIGHT GRAY TO BUFF PURE LIMESTONE, COARSELY CALCARENITIC, FOSSILIFEROUS, SHALE PARTINGS AND STYOLITES SPACED 2 TO 8 INCHES — 425

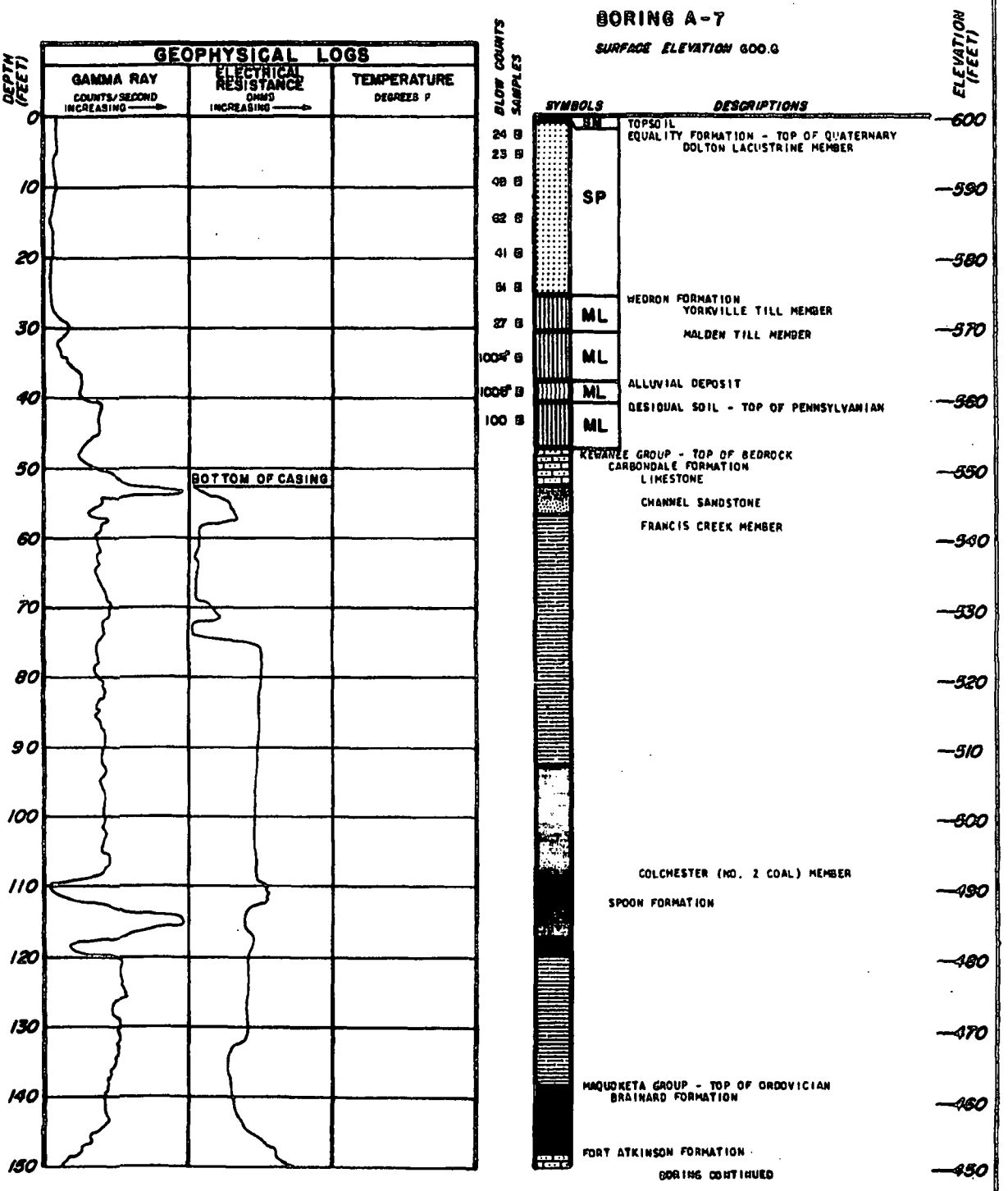
— 420

BORING COMPLETED AT 184.0 FEET
ON 10-10-72
140 POUND HAMMER FALLING 30 INCHES — 413

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-135

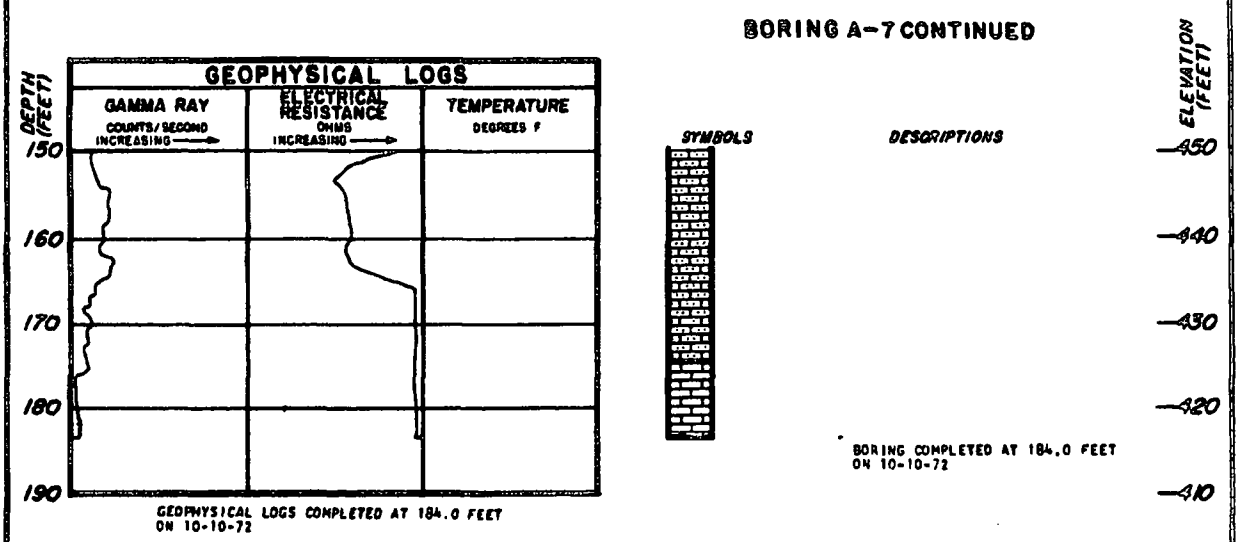
LOG OF BORING A-7
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-136

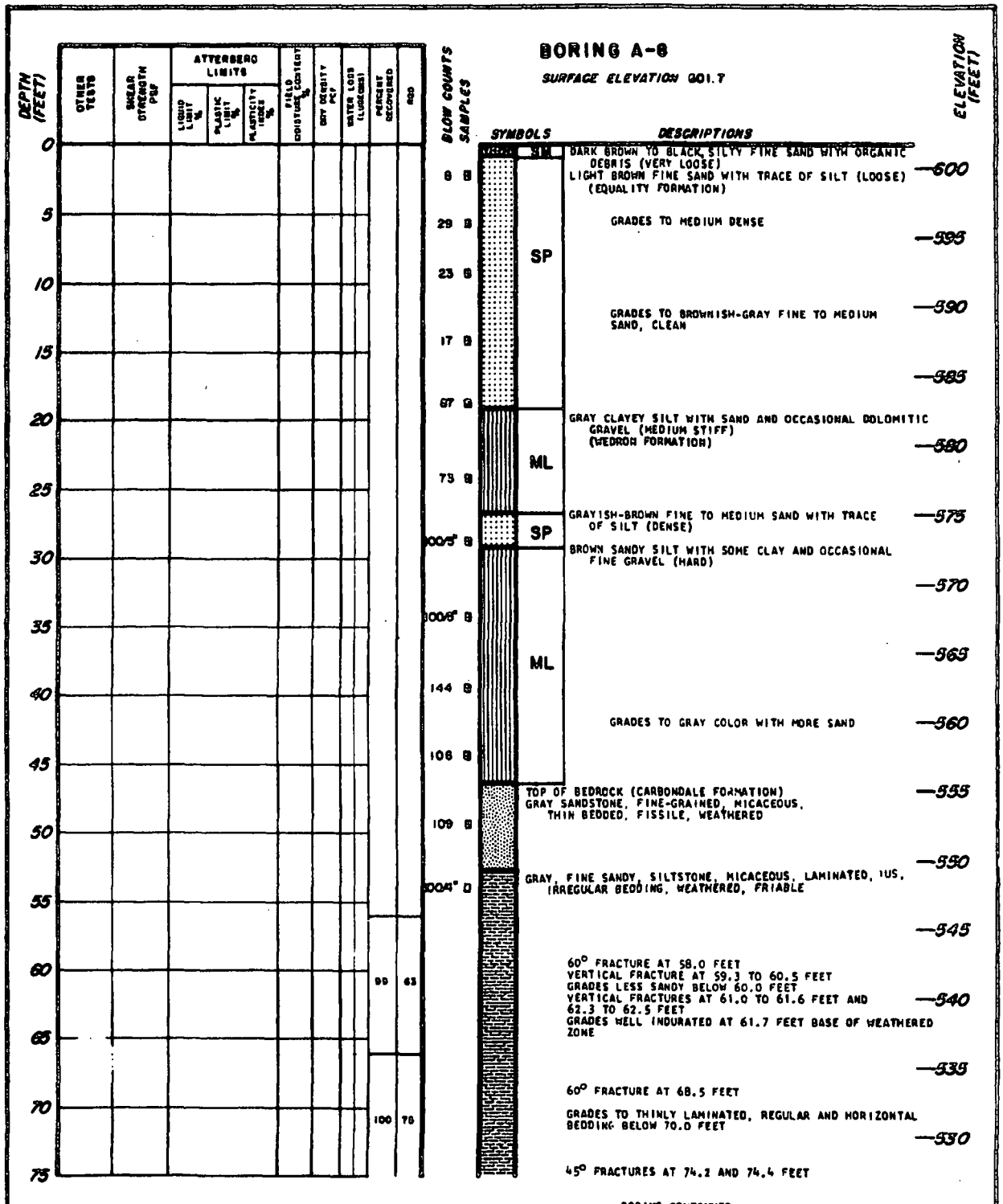
LOG OF BORING A-7 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-136

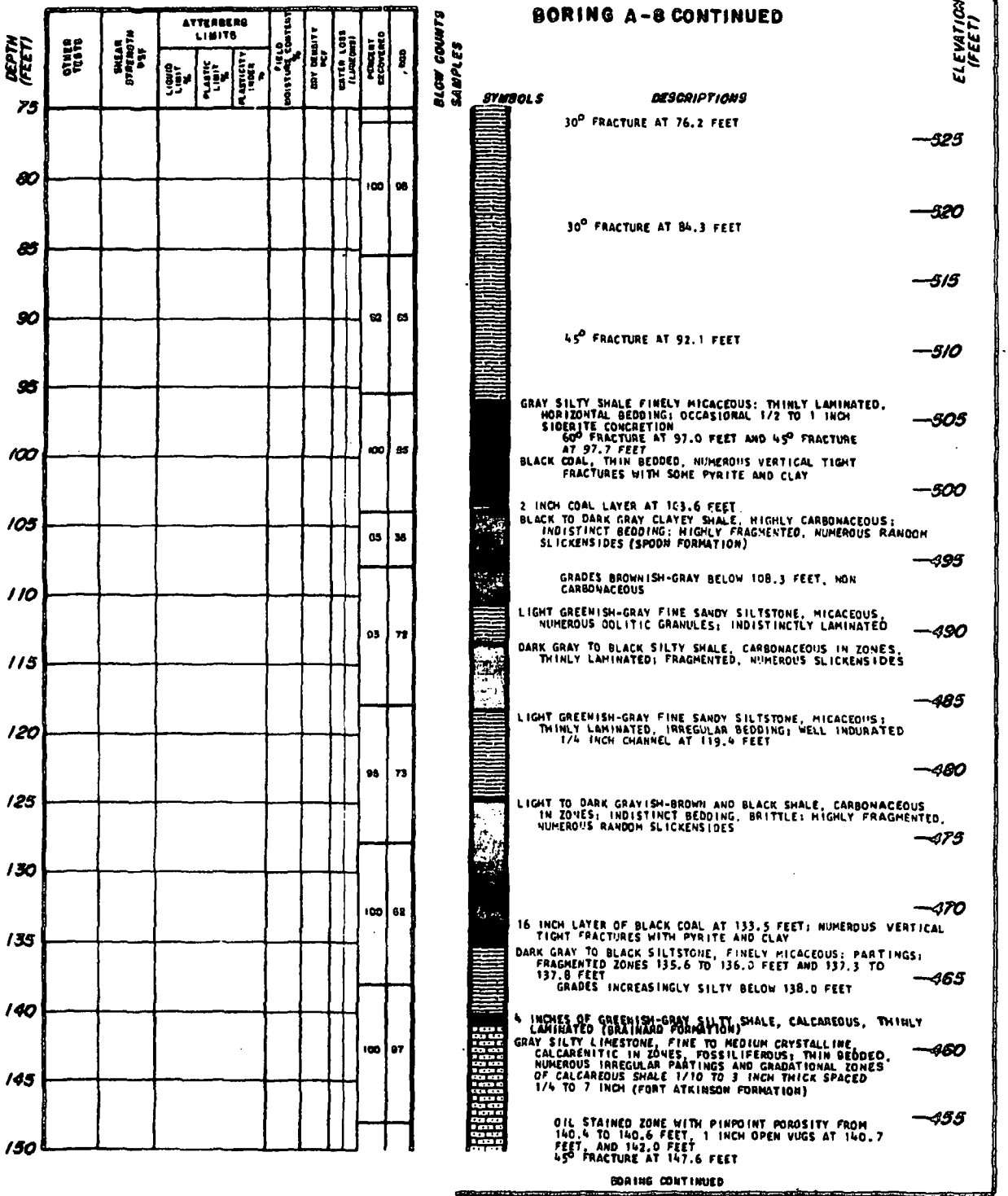
LOG OF BORING A-7 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-137

LOG OF BORING A-8
(SHEET 1 OF 3)

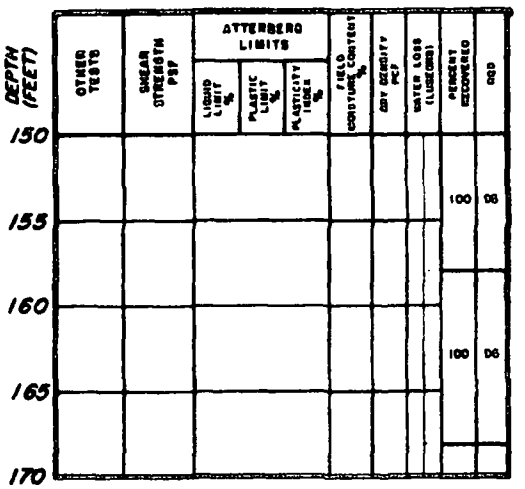


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5 -137

LOG OF BORING A-8
(SHEET 2 OF 3)

BORING A-8 CONTINUED



BLOW COUNTS SAMPLES

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

—450

—445

OIL STAINED ZONE WITH NUMEROUS PINPOINT OPENINGS FROM 161.3 TO 161.7 FEET —440

LIGHT GRAY TO BUFF PURE LIMESTONE, COARSELY CALCARENITIC, MEDIUM BEDDED, VERY THIN SHALE PARTINGS AND STYOLITES SPACED 1 TO 10 INCHES

OIL STAINED POROUS ZONES WITH NUMEROUS PINPOINT TO 1/10 INCH OPENINGS FROM 185.7 TO 186.2 FEET; 186.6 TO 187.2 FEET, AND 167.6 TO 168.0 FEET —435

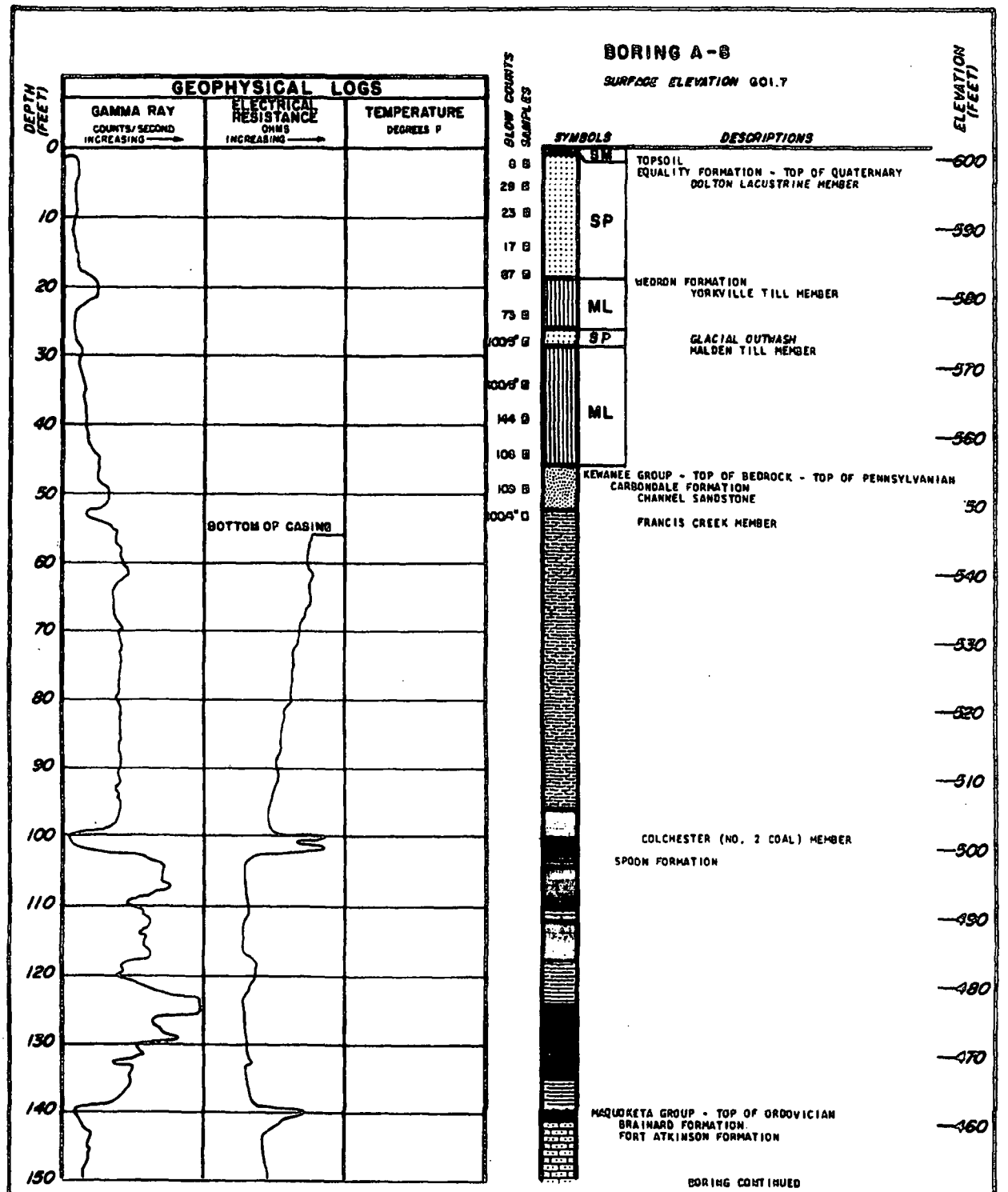
BORING COMPLETED AT 168.0 FEET
ON 10-14-72
140 POUND HAMMER FALLING 30 INCHES

—430

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-137

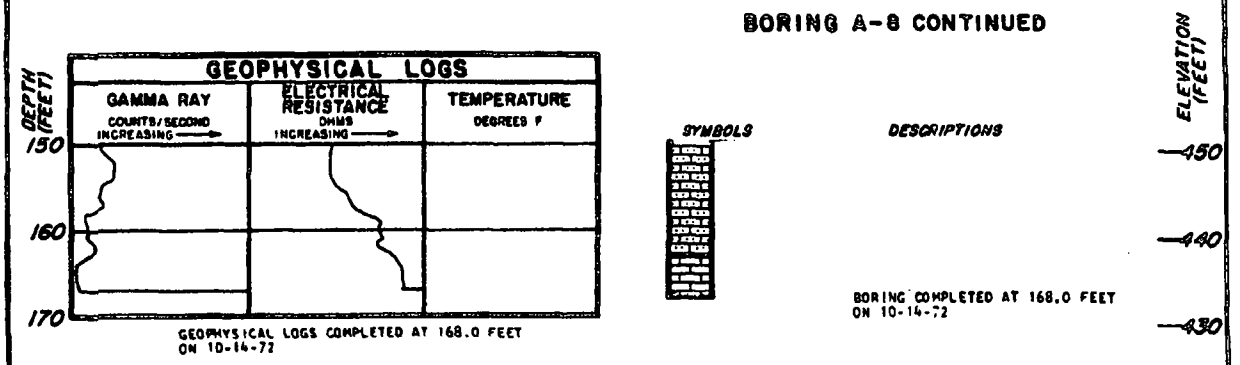
LOG OF BORING A-8
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-138

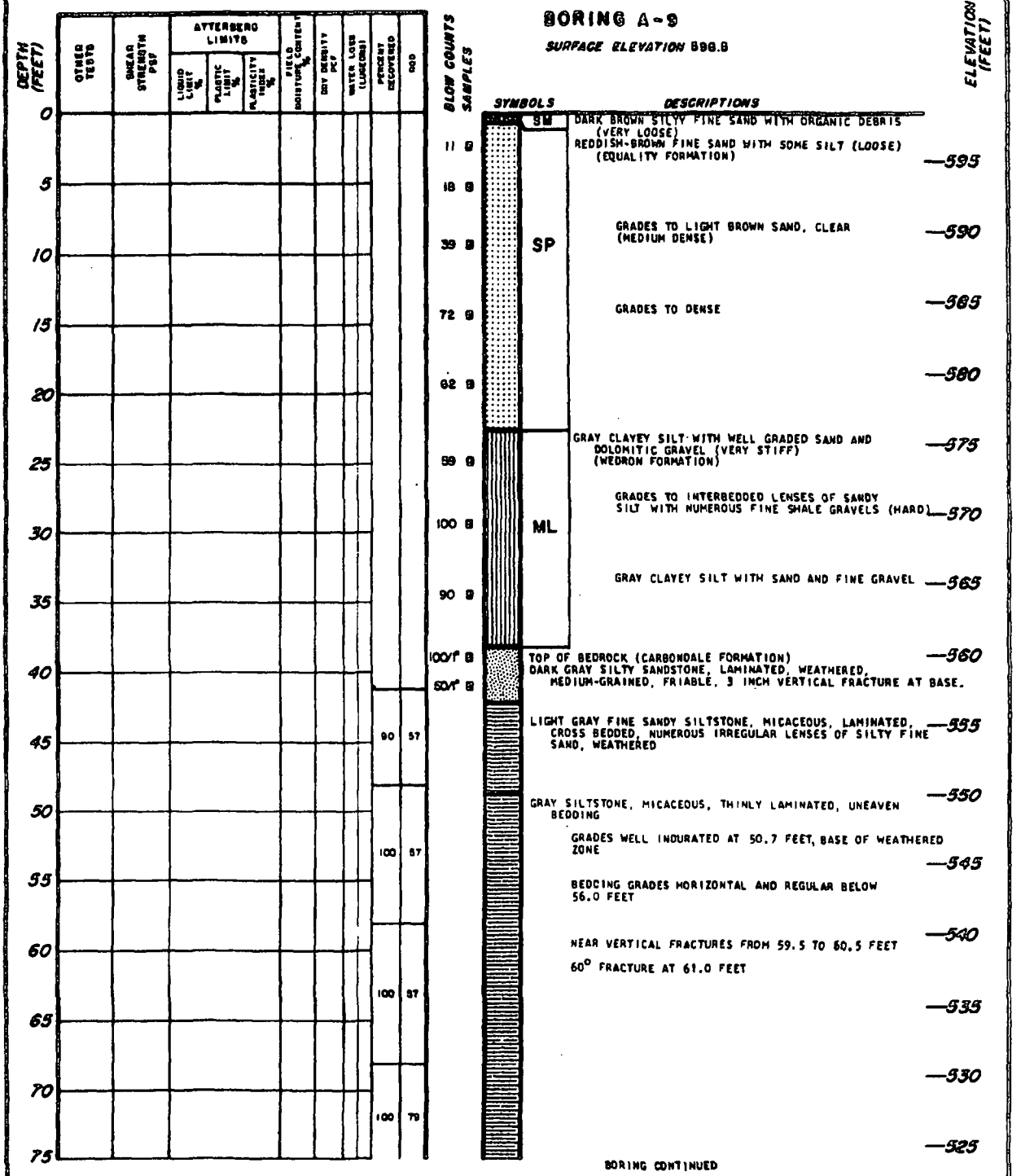
LOG OF BORING A-8 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-138

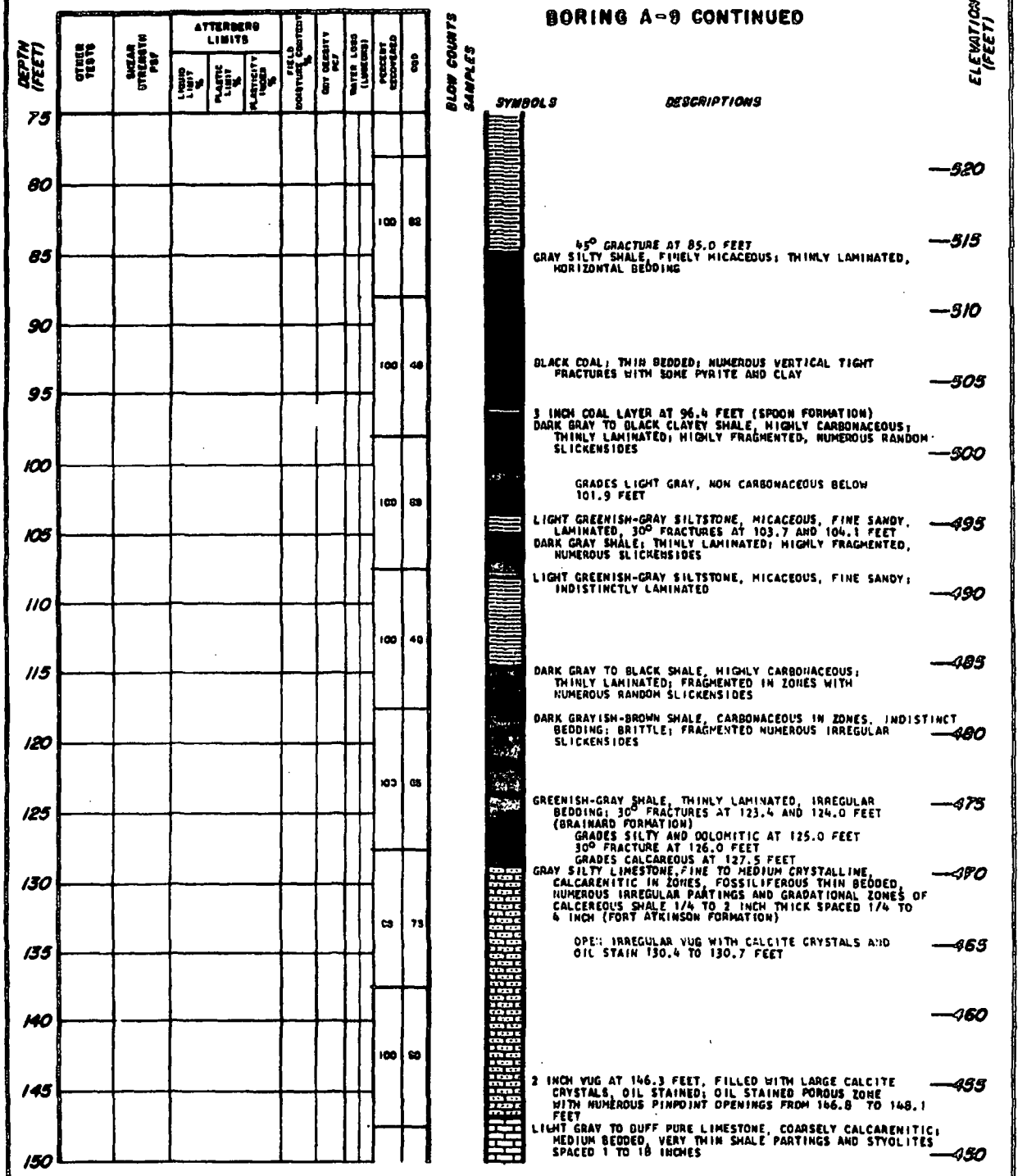
LOG OF BORING A-8 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-139

LOG OF BORING A-9
(SHEET 1 OF 3)

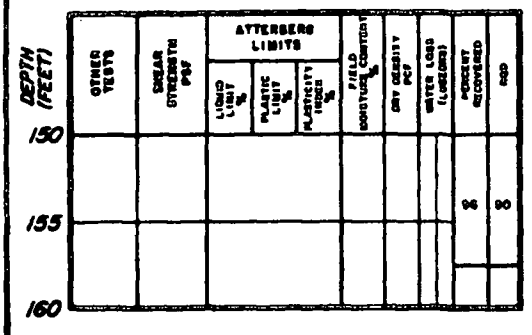


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-139

LOG OF BORING A-9
(SHEET 2 OF 3)

BORING A-9 CONTINUED



SYMBOLS

DESCRIPTIONS

NEAR VERTICAL FRACTURE 153.5 TO 154.3 FEET, TIGHT

POROUS OIL STAINED ZONES WITH NUMEROUS PINPOINT OPENINGS AT 150.7 TO 151.2 FEET, 153.3 TO 154.4 FEET, AND 155.1 TO 155.8 FEET. —445

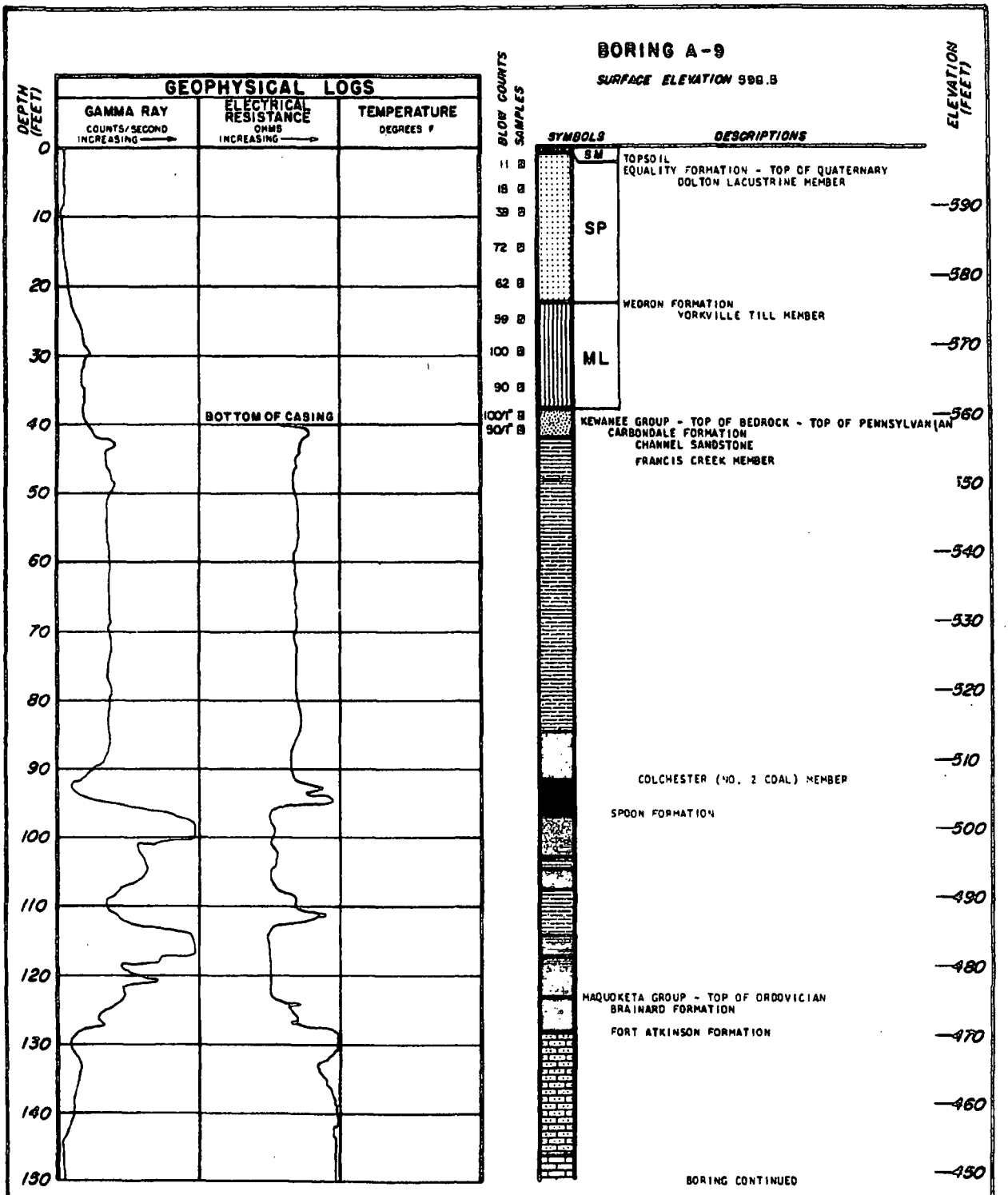
BORING COMPLETED AT 157.5 FEET ON 10-17-72 —440
140 POUND HAMMER FALLING 30 INCHES

ELEVATION (FEET)

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-139

LOG OF BORING A-9
(SHEET 3 OF 3)

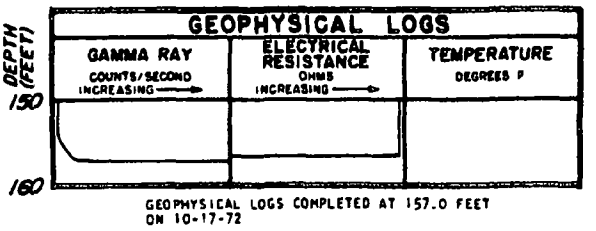


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-140

LOG OF BORING A-9 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)

BORING A-9 CONTINUED



GEOPHYSICAL LOGS COMPLETED AT 157.0 FEET ON 10-17-72

SYMBOLS

DESCRIPTIONS

BORING COMPLETED AT 157.5 FEET ON 10-17-72

ELEVATION (FEET)

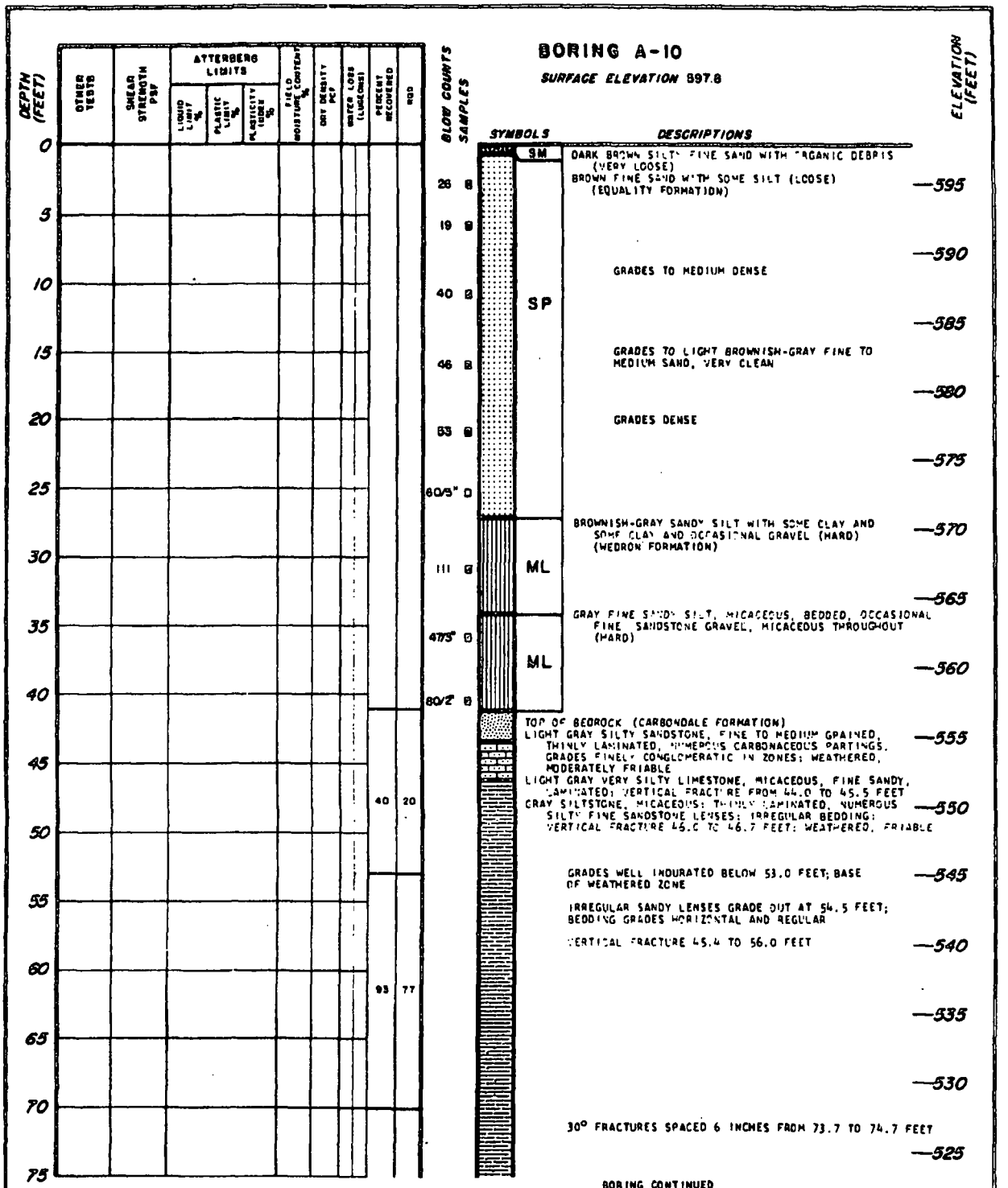
450

440

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-140

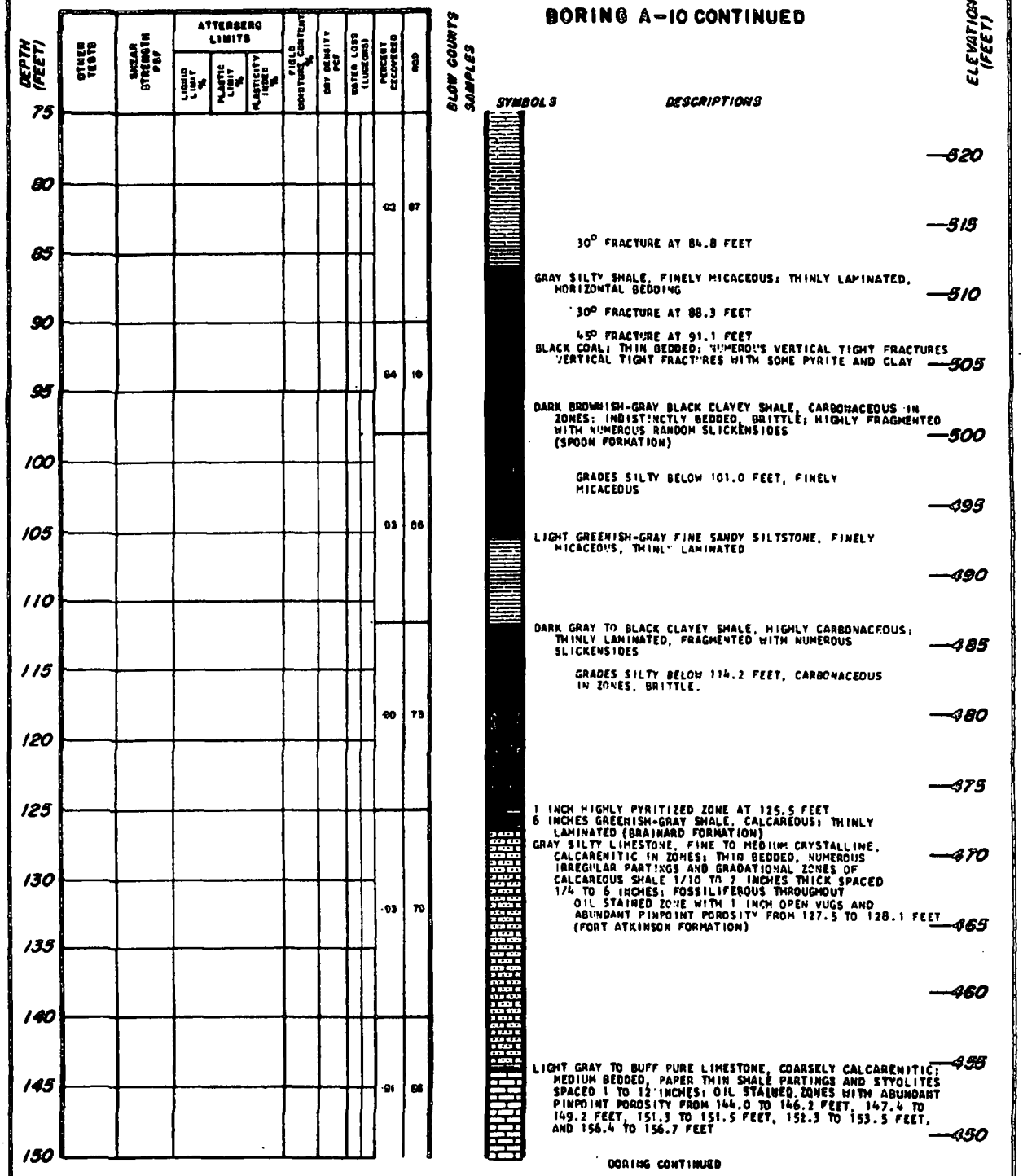
LOG OF BORING A-9 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-141

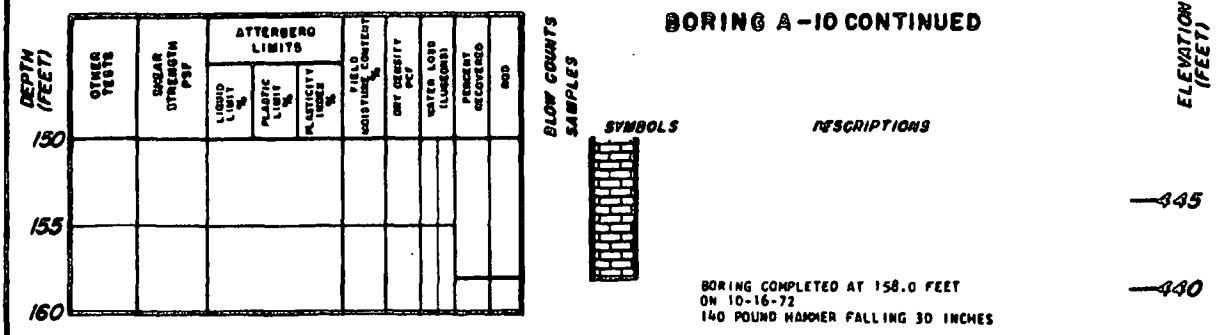
LOG OF BORING A-10
(SHEET 1 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-141

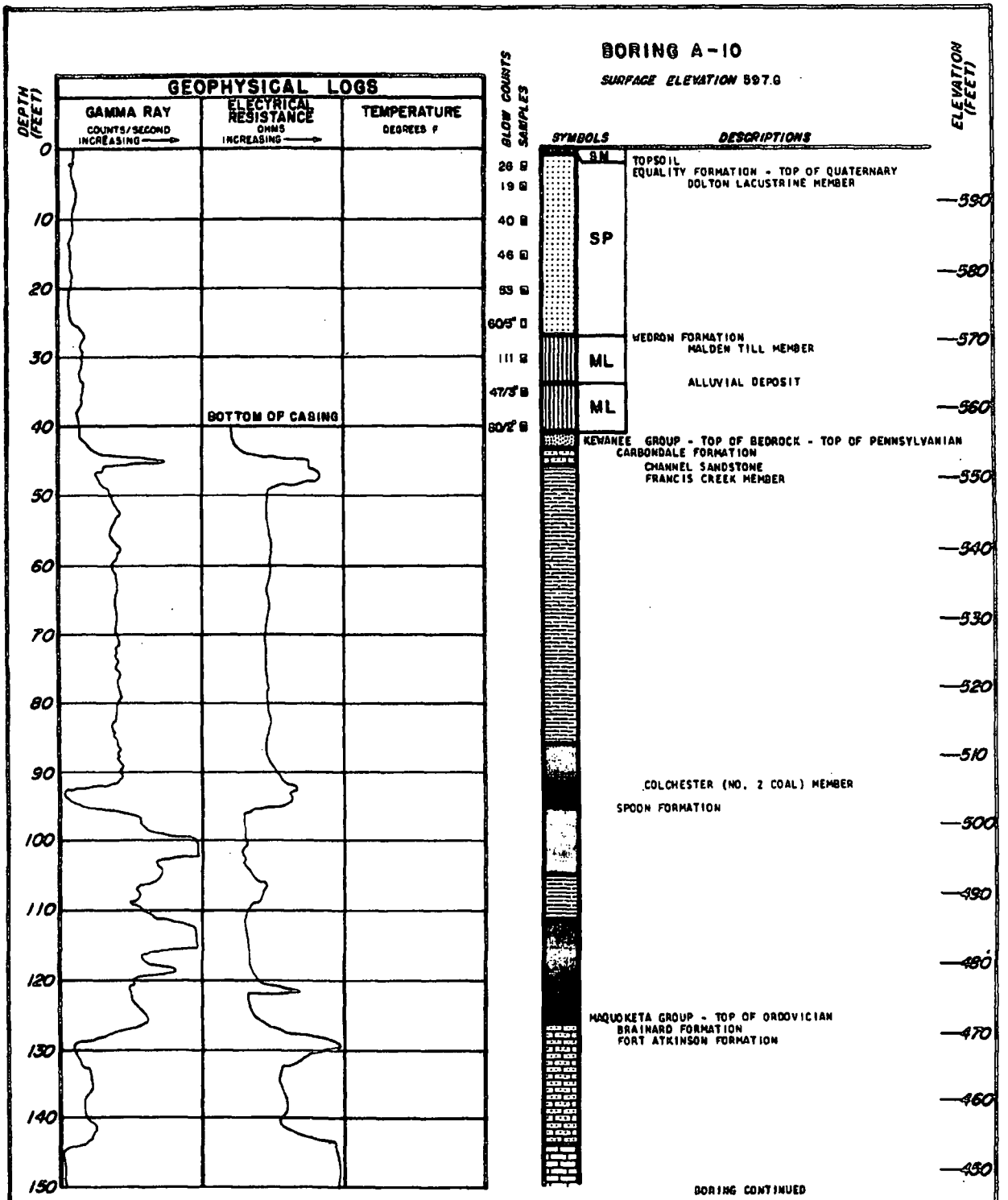
LOG OF BORING A-10
(SHEET 2 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-141

LOG OF BORING A-10
(SHEET 3 OF 3)

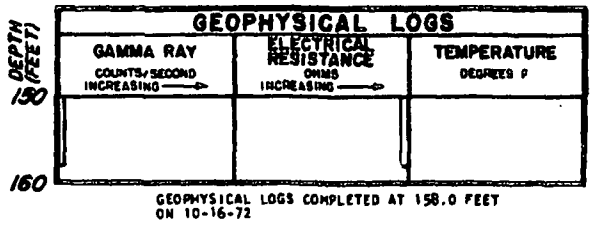


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-142

LOG OF BORING A-10 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)

BORING A-10 CONTINUED



GEOPHYSICAL LOGS COMPLETED AT 158.0 FEET
ON 10-16-72

SYMBOLS

DESCRIPTIONS

BORING COMPLETED AT 158.0 FEET
ON 10-16-72

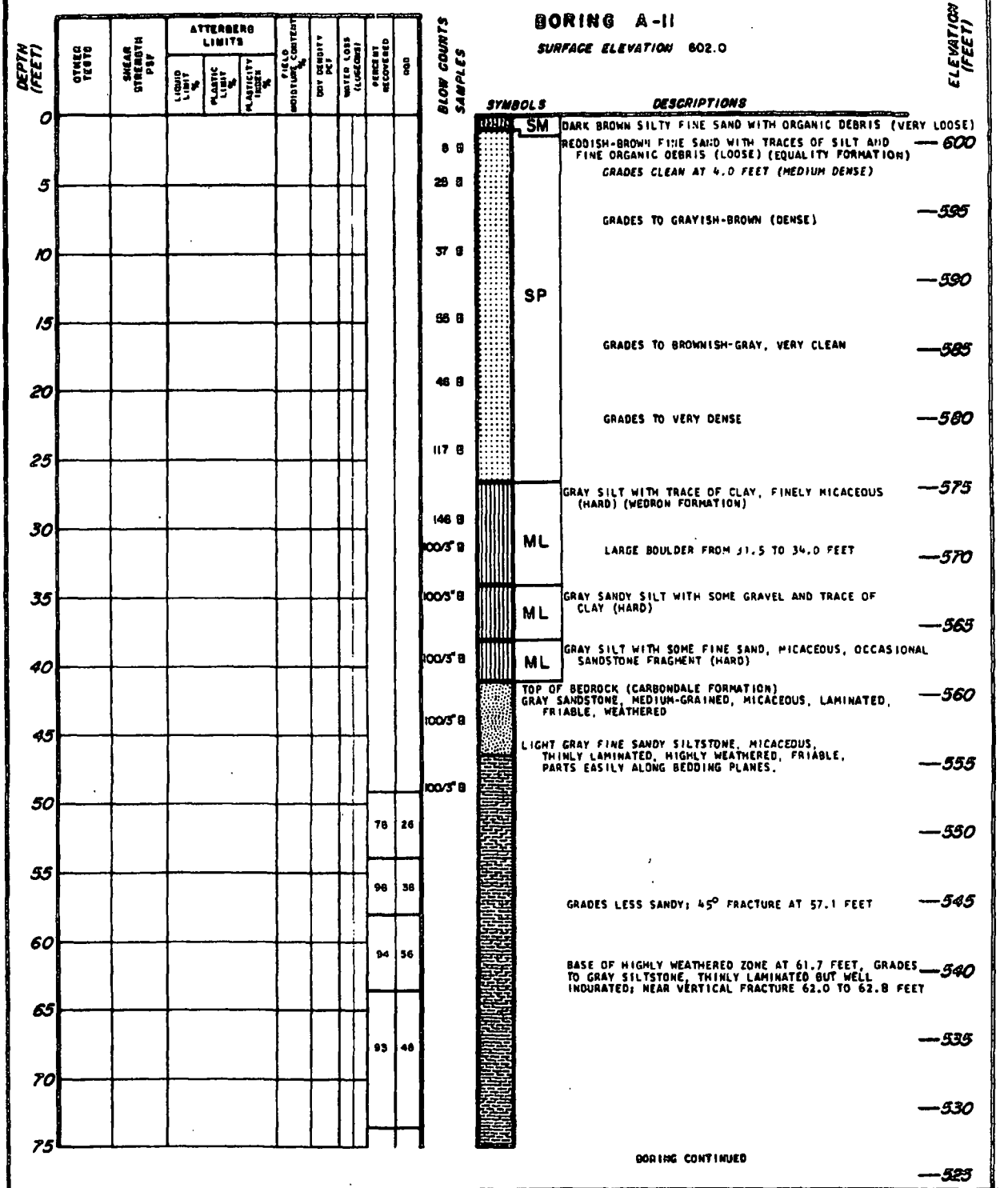
ELEVATION (FEET)

440

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-142

LOG OF BORING A-10 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)

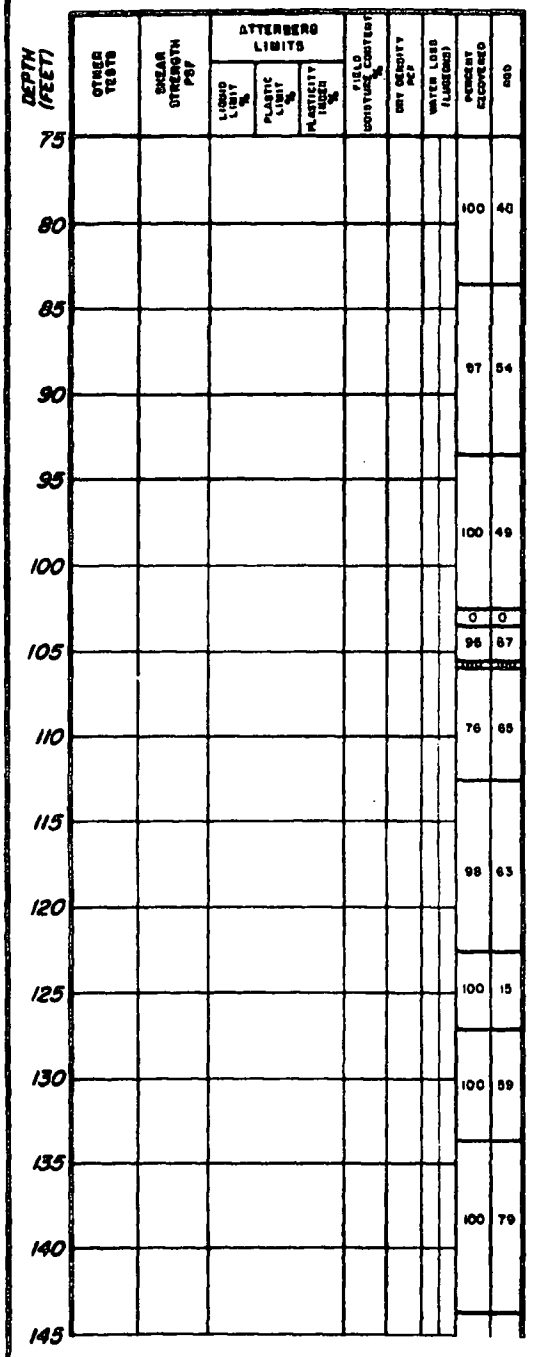


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-143

LOG OF BORING A-11
(SHEET 1 OF 3)

BORING A-11 CONTINUED



ELEVATION (FEET)

SYMBOLS DESCRIPTIONS

GRAY SILTY SHALE, MICACEOUS; BEDDING IS THINLY LAMINATED, HORIZONTAL AND REGULAR; OCCASIONAL SIDERITE NODULE; SOME HIGH ANGLE AND 45° FRACTURE FROM 75.4 TO 79.2 FEET — 525

— 520

NEAR VERTICAL FRACTURE FROM 83.4 TO 84.0 FEET

45° AND HIGH ANGLE FRACTURES SPACED 3 TO 18 INCHES FROM 86.0 TO 91.5 FEET — 515

ZONE OF HIGHLY CONTORTED AND FRACTURED LAMINATIONS FROM 92.0 TO 92.8 FEET — 510

NEAR VERTICAL FRACTURE 93.0 TO 93.5 FEET

— 505

BLACK COAL THINLY LAMINATED, NUMEROUS TIGHT VERTICAL FRACTURES THROUGHOUT WITH PYRITE AND CLAY

— 500

GRAY CLAYEY SHALE, FRAGMENTED WITH NUMEROUS SLICKENSIDES ALONG RANDOM ORIENTED PLANES OF WEAKNESS, MICACEOUS SILTY IN ZONES (SPOON FORMATION)

— 495

LIGHT GRAY SILTSTONE, MICACEOUS, INDISTINCTLY BEDDED

GRAY CLAYEY SHALE, FRAGMENTED WITH NUMEROUS SLICKENSIDES

GRADES DARK GRAY, CARBONACEOUS AT 110.8 FEET

— 490

LIGHT GREENISH-GRAY SILTSTONE, FINE SANDY, MICACEOUS, INDISTINCTLY LAMINATED

— 485

LIGHT GRAY SILTY SHALE, THINLY LAMINATED, FISSILE

GRADES BLACK, HIGHLY CARBONACEOUS AT 120.5 FEET

11 INCH COAL LAYER AT 121.2 FEET — 480

MOTTLED DARK BROWN TO GRAY SHALE, HIGHLY FRAGMENTED, CARBONACEOUS IN ZONES

— 475

DARK BROWNISH-GRAY SILTSTONE, FINELY MICACEOUS, INDISTINCTLY LAMINATED WITH NUMEROUS FRAGMENTED ZONES, OCCASIONAL CARBONACEOUS LAYER

— 470

45° FRACTURE AT 133.2 FEET

BLACK SHALE, HIGHLY CARBONACEOUS, THINLY LAMINATED WITH NUMEROUS INTERLAYERED PLANT IMPRESSIONS, FISSILE — 465

DARK GREENISH-GRAY CALCAREOUS SHALE, INDISTINCT BEDDING

GRAY CALCAREOUS SILTSTONE WITH IRREGULAR THIN LAMINATIONS OF SHALE, FOSSILIFEROUS (BRAINARD FORMATION)

GRAY SILTY LIMESTONE, FINE TO MEDIUM CRYSTALLINE, COARSELY CALCARENITIC IN ZONES; INTERBEDDED WITH NUMEROUS 1/4 TO 1/2 INCH IRREGULAR SHALE PARTINGS SPACED 1 TO 8 INCHES; FOSSILIFEROUS THROUGHOUT, NO FRACTURES OBSERVED IN CORE (FORT ATKINSON FORMATION) — 460

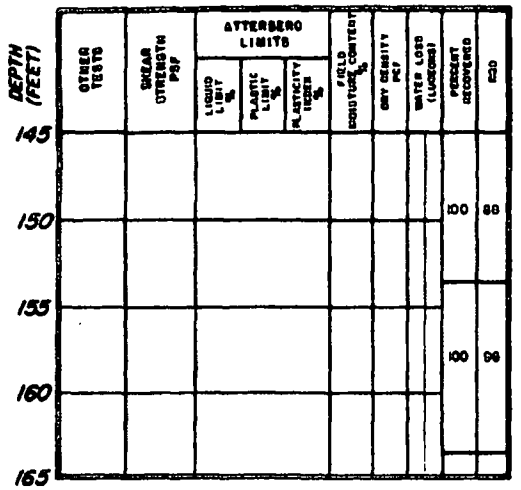
BORING CONTINUED — 455

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-143

LOG OF BORING A-11
(SHEET 2 OF 3)

BORING A-11 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

—455

—450

—445

3/4 INCH CALCITE LINED VUG AT 159.5 FEET

GRADES TO LIGHT GRAY AND BUFF PURE LIMESTONE, CALCARENITIC, MEDIUM BEDDED, OCCASIONAL VERY THIN STYLOLITE

—440

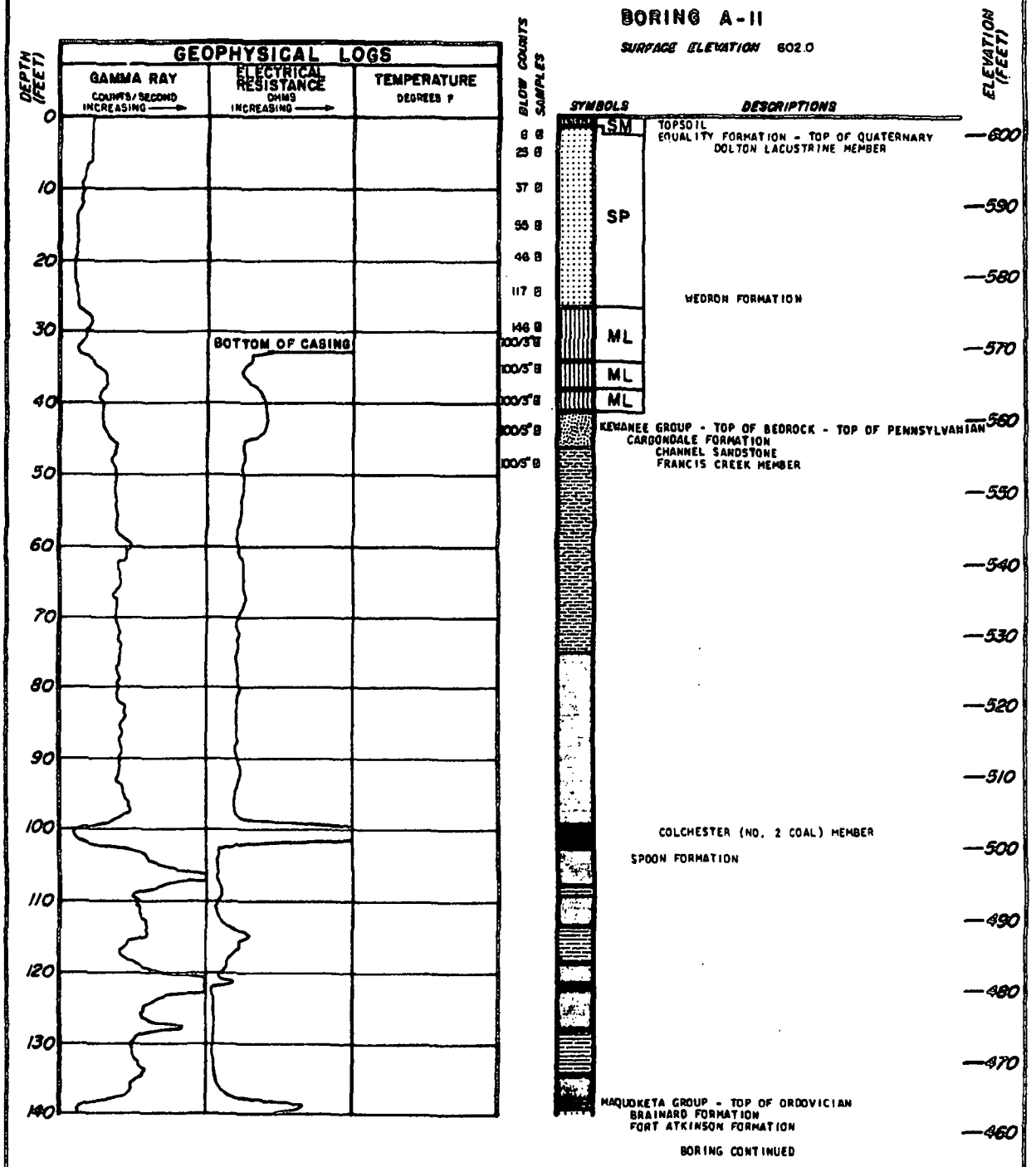
CORING COMPLETED AT 163.5 FEET
ON 9-19-72
140 POUND HAMMER FALLING 30 INCHES

—435

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-143

LOG OF BORING A-11
(SHEET 3 OF 3)

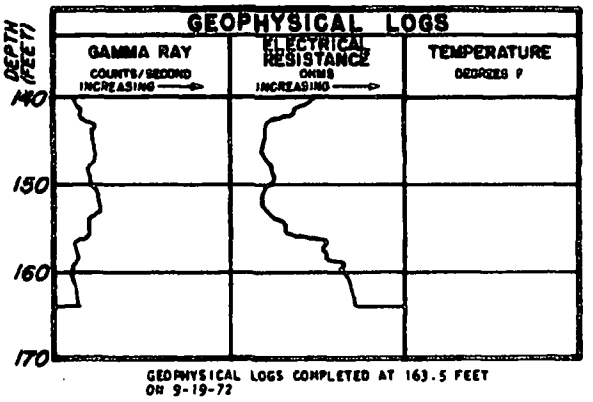


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-144

LOG OF BORING A-11 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)

BORING A-11 CONTINUED



GEOPHYSICAL LOGS COMPLETED AT 163.5 FEET ON 9-19-72

DESCRIPTIONS

BORING COMPLETED AT 163.5 FEET ON 9-19-72

ELEVATION (FEET)

460

450

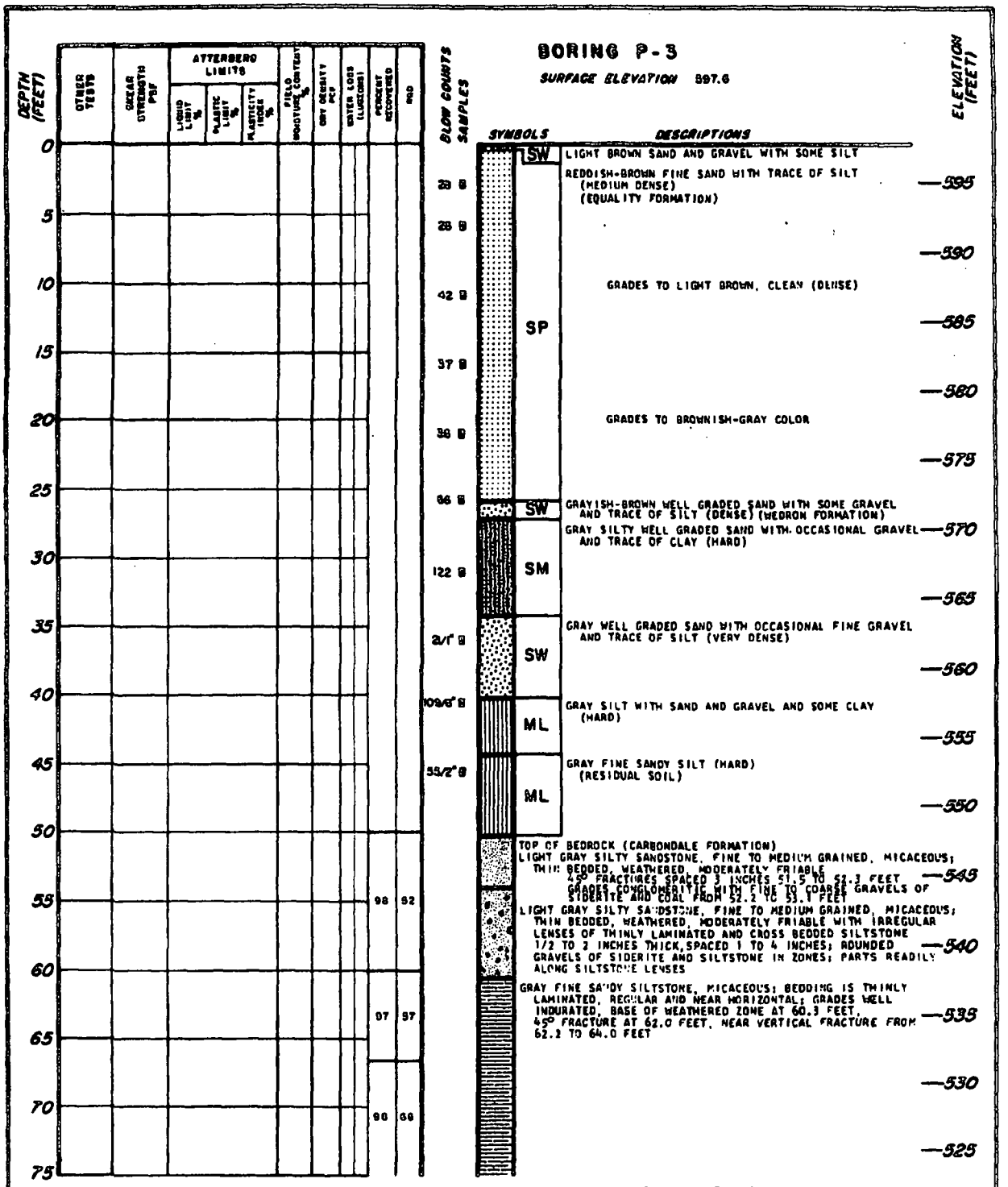
440

430

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-144

LOG OF BORING A-11 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)



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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-145

LOG OF BORING P-3
(SHEET 1 OF 5)

BORING P-3 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEON)	PERCENT RECOVERED	RQD	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
75													
												GRADES TO GRAY SILTY SHALE, FINELY MICACEOUS; THINLY LAMINATED HORIZONTAL BEDDING; OCCASIONAL 1 TO 2 INCH SIDERITE CONCRETION	—520
80									90	63		50° FRACTURE AT 81.0 FEET	—515
85												45° FRACTURE AT 86.2 FEET	—510
90									94	26		NEAR VERTICAL FRACTURE 90.5 TO 91.0 FEET 20° FRACTURE AT 91.5 FEET, GRADES CARBONACEOUS	
												BLACK COAL; THIN BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH THIN DEPOSITS OF PYRITE AND KAOLONITE	—505
95												BLACK HIGHLY CARBONACEOUS SHALE FROM 95.6 TO 96.1 FEET DARK BROWNISH GRAY CLAYEY SHALE; INDISTINCT BEDDING, HIGHLY FRAGMENTED WITH NUMEROUS SLICKENSIDES ALONG RANDOM PLANES OF WEAKNESS (SPOON FORMATION)	—500
100									100	69		GRADES TO GRAY BELOW 99.0 FEET LIGHT GRAY FINE SANDY SILTSTONE, MICACEOUS, INDISTINCTLY LAMINATED; SOME HIGH ANGLE AND 45° FRACTURES FROM 100.4 TO 102.0 FEET	
105												DARK GRAY SILTY SHALE, FRAGMENTED WITH NUMEROUS SLICKENSIDES, CARBONACEOUS ALONG UPPER CONTACT	—495
110									97	69		LIGHT GREENISH-GRAY SILTSTONE, MICACEOUS, FINE SANDY IN IRREGULAR POCKETS AND LENSES HIGH ANGLE FRACTURE FROM 105.3 TO 106.0 FEET	—490
												GRADES TO DARKER COLOR AT 110.0 FEET GRADES INCREASINGLY SANDY WITH NUMEROUS INTERBEDDED THIN LAMINATIONS	
115												GRADES TO SILTY SANDSTONE BELOW 113.5 FEET	—485
												BLACK TO DARK BROWN SHALE, HIGHLY CARBONACEOUS, FRAGMENTED 6 INCH LAYER OF COAL FROM 115.9 TO 116.4 FEET DARK BROWNISH-GRAY SHALE, FRAGMENTED WITH NUMEROUS SLICKENSIDES ALONG RANDOM PLANES OF WEAKNESS	—480
120									96	63		1 INCH COAL SEAM IN 3 INCHES OF BLACK CARBONACEOUS SHALE	
125												DARK GRAY SILTSTONE, MICACEOUS; THINLY LAMINATED, CROSS BEDDED IN ZONES GRADES SANDY IN NUMEROUS IRREGULAR LAMINATIONS BELOW 124.0 FEET	—475
130									100	98		25° FRACTURES SPACED 1/2 INCH AT 127.5 FEET GRADES VERY SANDY; CARBONACEOUS IN NUMEROUS IRREGULAR LAMINATIONS	—470
												DARK GREENISH-GRAY SILTY SHALE, CALCAREOUS; INDISTINCTLY LAMINATED, HORIZONTAL, OCCASIONAL MARINE FOSSIL (BRAINARD FORMATION)	—465
135												NEAR VERTICAL FRACTURE FROM 137.0 TO 138.2 FEET, TIGHT	—460
140									98	98			—455
145												GRADES DOLOMITIC BELOW 146.0 FEET	—450
150									100	100		GRAY SILTY LIMESTONE, FINE TO MEDIUM CRYSTALLINE; THIN BEDDED, NUMEROUS GRADATIONAL AND IRREGULAR 1/4 TO 2 INCH ZONES OF CALCAREOUS SHALE SPACED 1/2 TO 6 INCHES; FOSSILIFEROUS THROUGHOUT (FORT ATKINSON FORMATION) BORING CONTINUED	—445

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-145

LOG OF BORING P-3
(SHEET 2 OF 5)

BORING P-3 CONTINUED

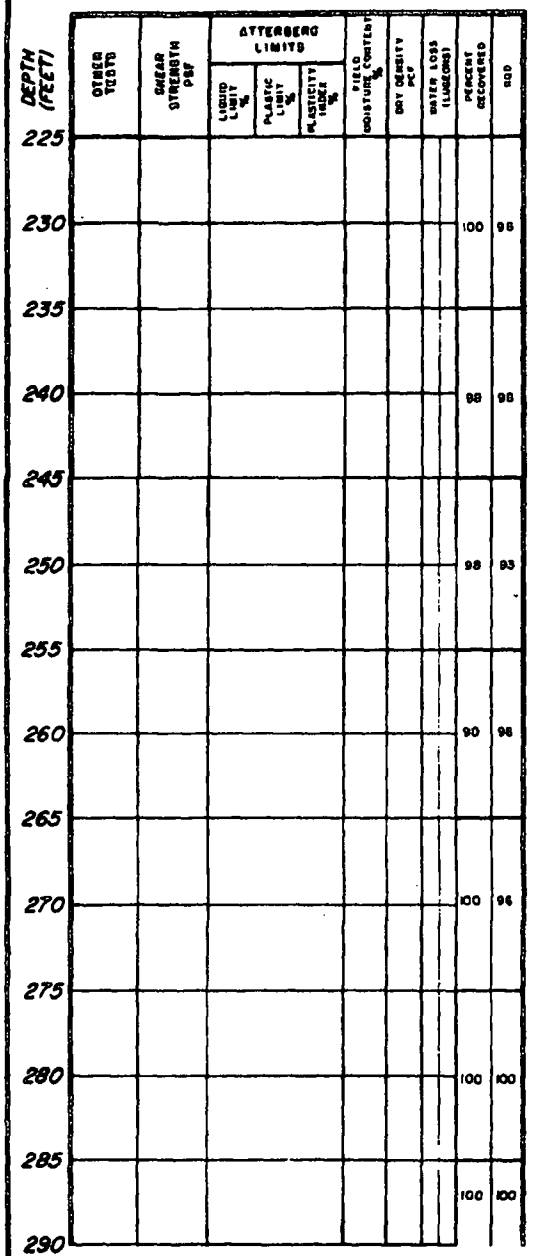
DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
150													445
155													440
160									100	69			435
165													
170									100	90		LIGHT GRAY LIMESTONE WITH SOME SILT, COARSELY CALCARENITIC; THIN BEDDED WITH 1 TO 2 INCHES SHALEY ZONES SPACED 2 TO 12 INCHES GRADES TO LIGHT BUFF PURE LIMESTONE AT 169.5 FEET, CALCARENITIC; THIN BEDDED WITH STYOLITES SPACED 1 TO 4 INCHES	430
175													425
180									98	98		ZONE OF IRREGULAR TIGHT FRACTURES 177.0 TO 178.5 FEET WITH 1/4 TO 1/2 INCH CRYSTALLINE VUGS SPACED 1 TO 2 INCHES 1/4 INCH VUG AT 180.7 FEET	420
185													415
190									98	98		1/2 INCH VUG AT 189.8 FEET	410
195												DARK GRAY CALCAREOUS SILTSTONE; LAMINATED WITH EXTREMELY NUMEROUS WHITE IRREGULAR FOSSIL BANDS (SCALES FORMATION)	405
200									100	72		GRADES TO DARK GRAY SILTY SHALE AT 194.5 FEET, CALCAREOUS; LAMINATED, 1 TO 2 INCH INTERBEDDED ZONES OF SILTY LIMESTONE SPACED 2 TO 18 INCHES	400
205													395
210									99	97			390
215												LIGHT GRAY SILTY LIMESTONE; THIN BEDDED, NUMEROUS WAVY SHALE PARTINGS; FOSSILIFEROUS DARK GRAY SILTY SHALE, CALCAREOUS; LAMINATED, 1 TO 2 INCH INTERBEDDED ZONES OF SILTY LIMESTONE SPACED 2 TO 18 INCHES	385
220									96	84		LIGHT GRAY SILTY LIMESTONE, FOSSILIFEROUS VERY DARK GRAY SHALE, DOLOMITIC; LAMINATED, PARTS READILY ALONG HORIZONTAL BUT UNEVEN BEDDING PLANES SPACED 1/10 TO 1/4 INCH; 2 TO 10 INCH CALCAREOUS AND FOSSILIFEROUS ZONES SPACED 1 TO 4 FEET	380 375
225												45° FRACTURE AT 224.2 FEET BORING CONTINUED	370

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-145

LOG OF BORING P-3
(SHEET 3 OF 5)

BORING P-3 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

370

365

360

355

30° FRACTURE AT 245.7 FEET

350

345

340

CALCAREOUS ZONES GRADE OUT

335

330

325

320

MOTTLED LIGHT GRAY AND BUFF DOLOMITIC LIMESTONE, FINE TO MEDIUM CRYSTALLINE; THIN BEDDED, NUMEROUS WAVY HAIR LINE SHALE PARTINGS SPACED 1/2 TO 4 INCHES; FOSSILIFEROUS IN ZONES

2 INCH CRYSTAL FILLED VUG AT 280.3 FEET, TIGHT

315

(WISE LAKE - DUNLEITH FORMATIONS)

1/2 INCH CRYSTALLINE VUG AT 288.4 FEET, OPEN
1 INCH CRYSTALLINE VUG AT 289.0 FEET, OPEN

310

BORING CONTINUED

305

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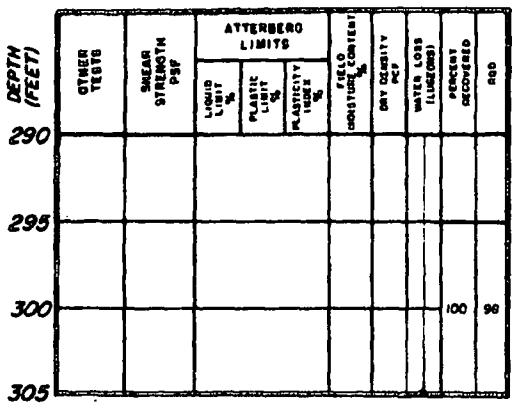
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-145

LOG OF BORING P-3
(SHEET 4 OF 5)

BORING P-3 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

305

300

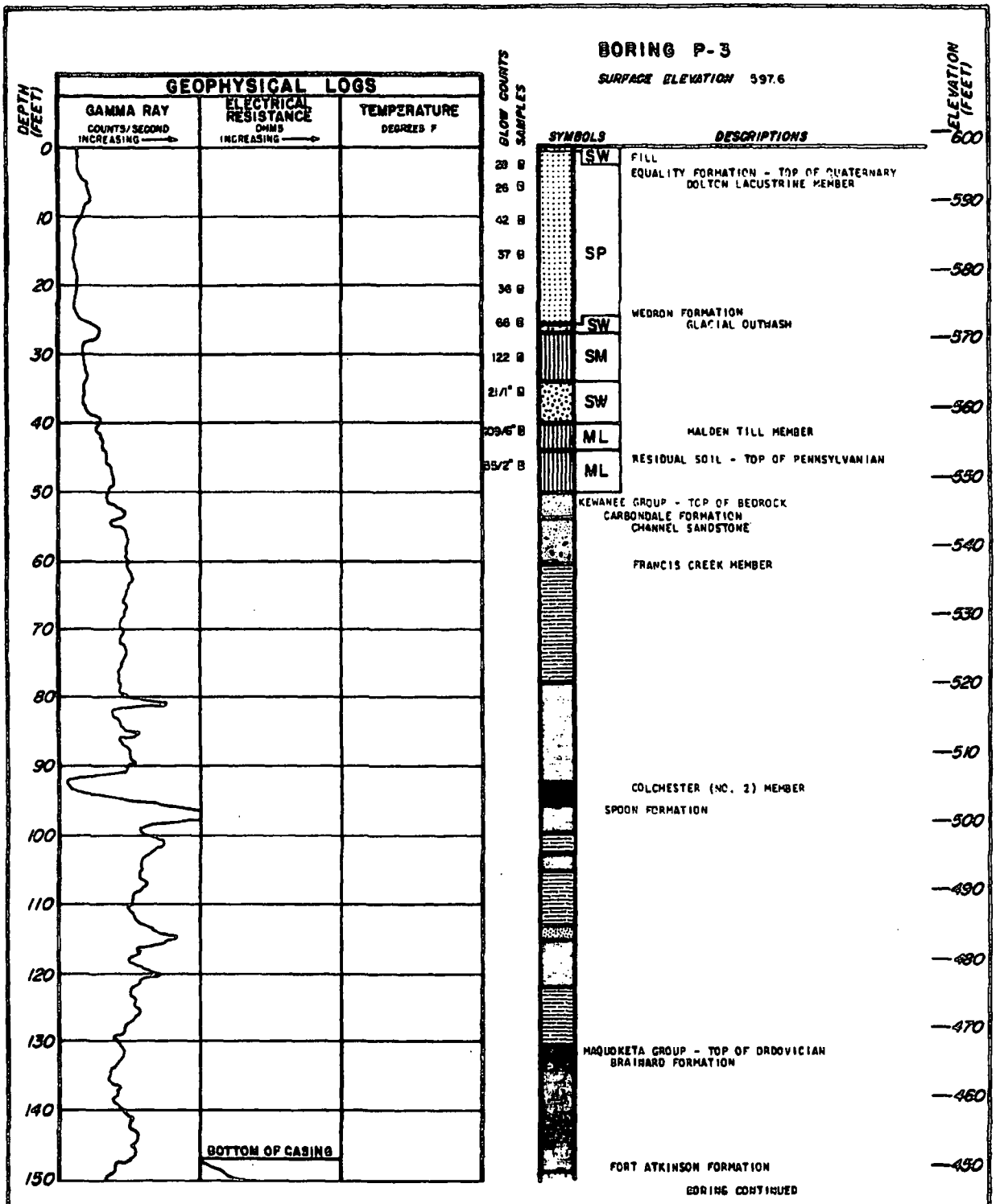
295

BORING COMPLETED AT 305.0 FEET
ON 9-8-72
300 POUND FALLING 18 INCHES

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-145

LOG OF BORING P-3
(SHEET 5 OF 5)



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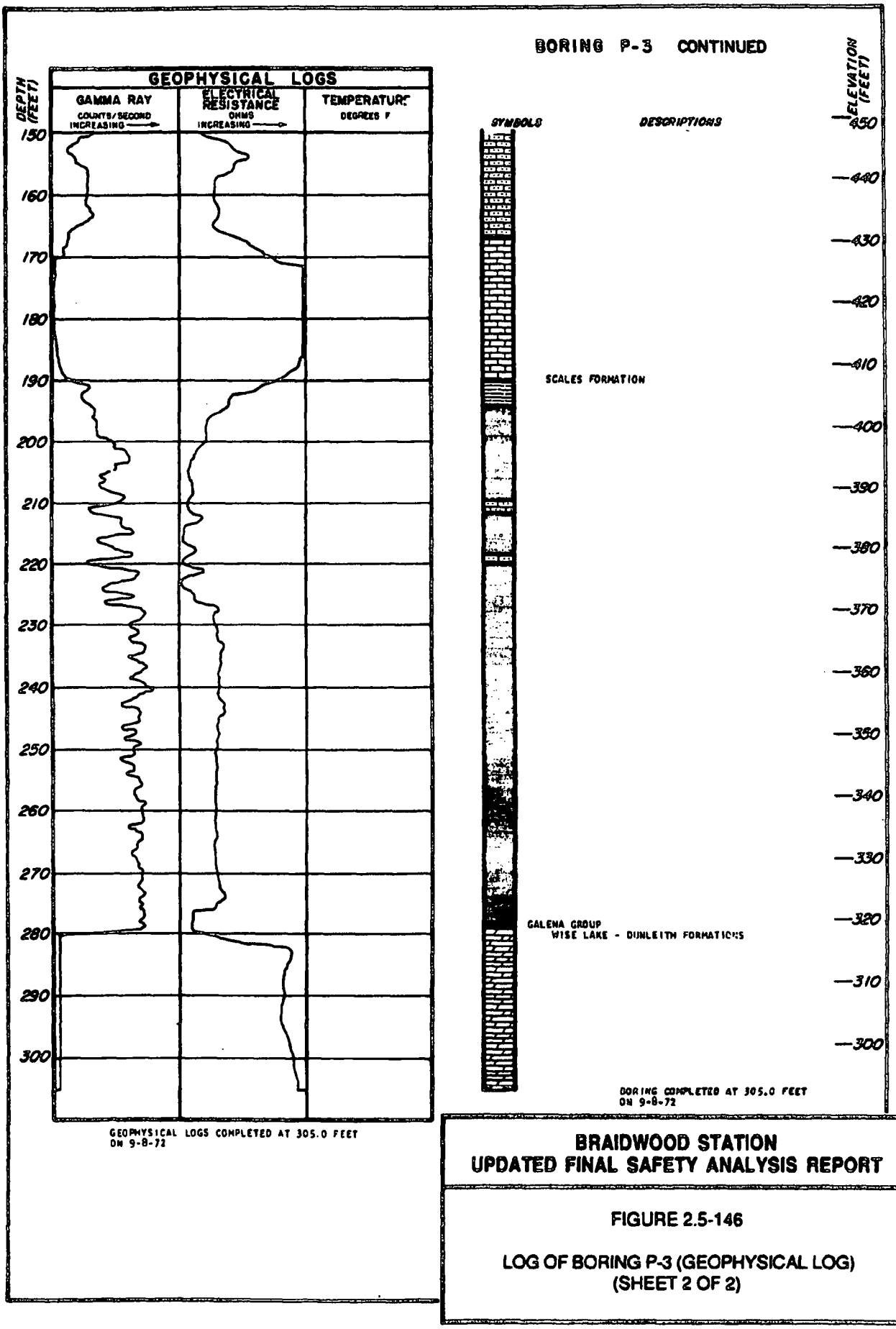
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-146

LOG OF BORING P-3 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)



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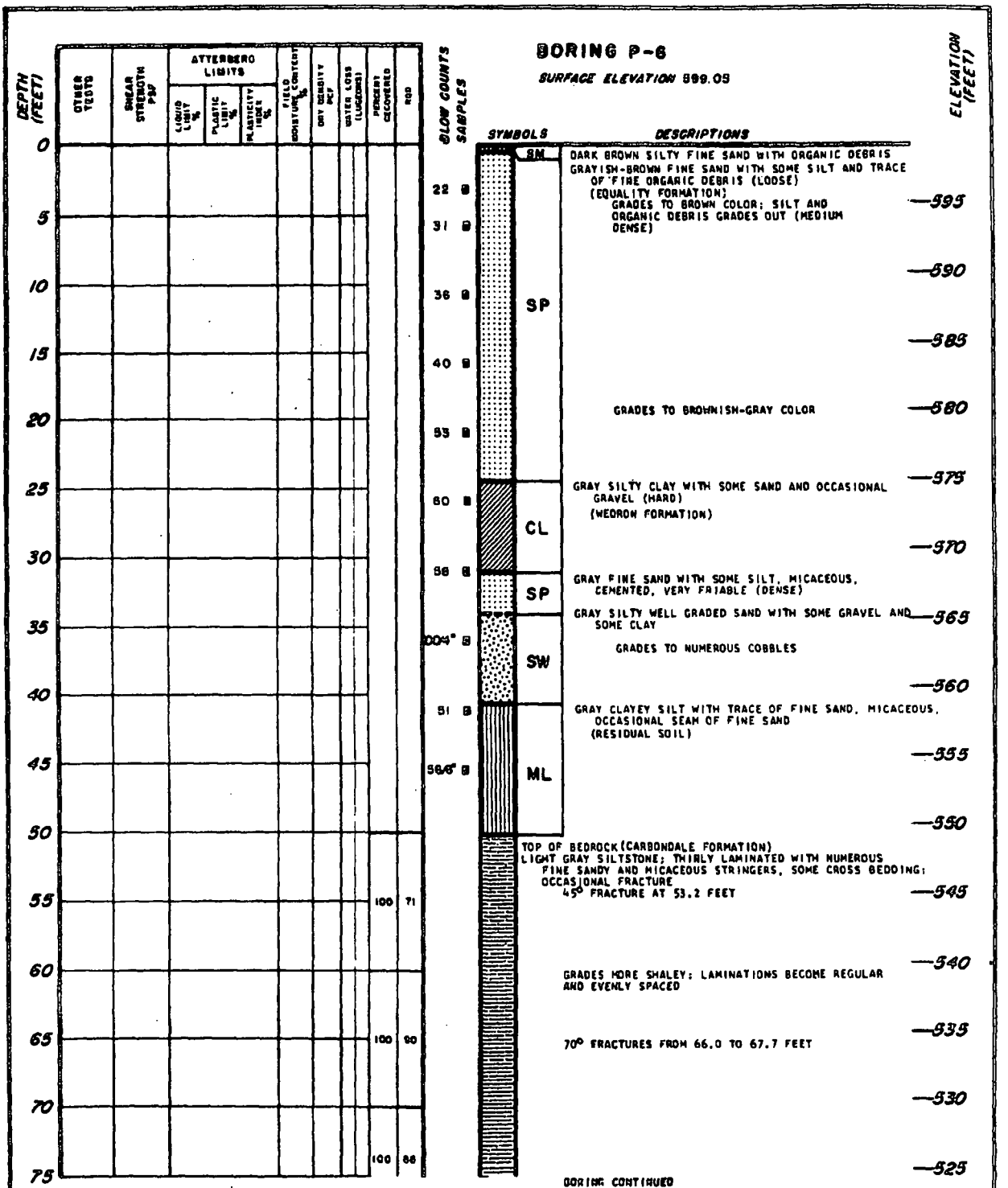
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-146

LOG OF BORING P-3 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)



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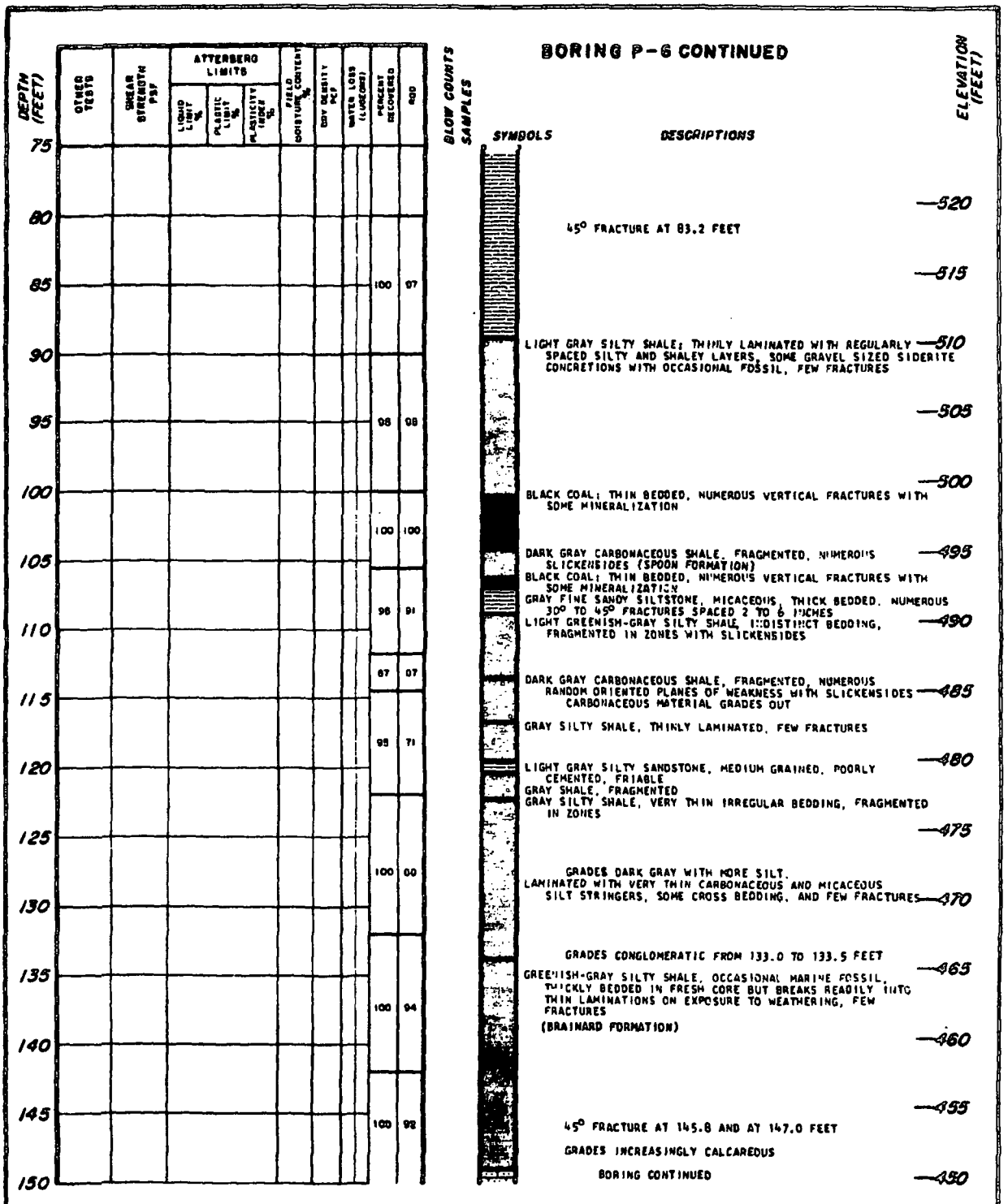
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-147

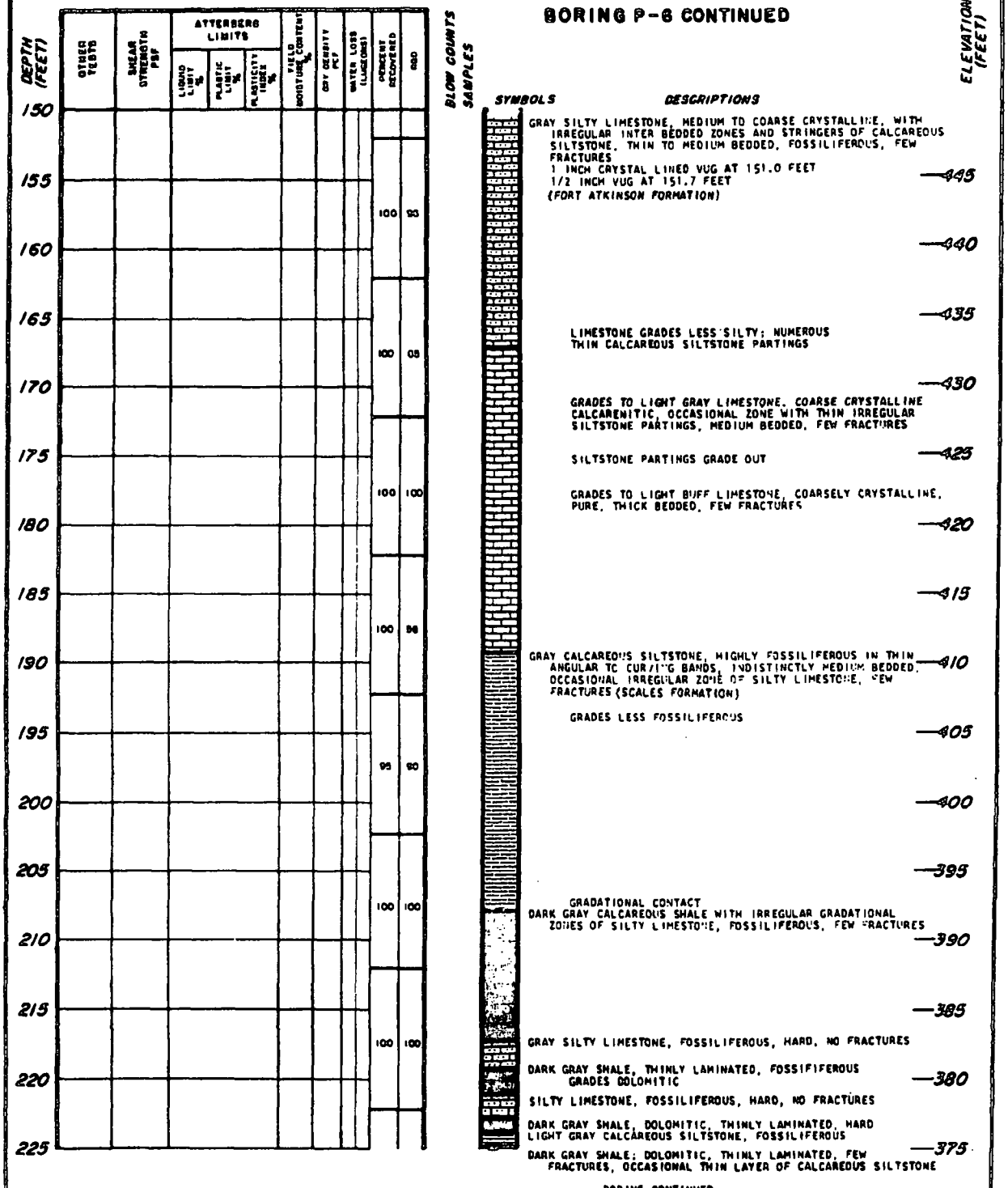
LOG OF BORING P-6
(SHEET 1 OF 4)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-147

LOG OF BORING P-6
(SHEET 2 OF 4)

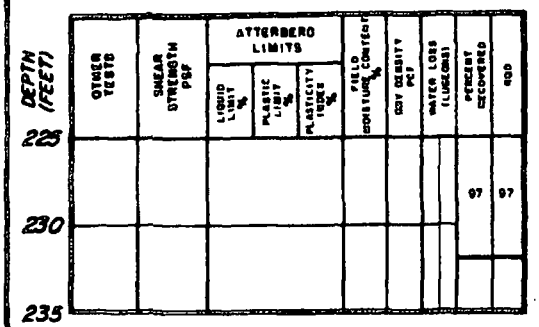


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-147

LOG OF BORING P-6
(SHEET 3 OF 4)

BORING P-6 CONTINUED



BORING COMPLETED AT 232.0 FEET
ON 8-28-72
CASING USED AT A DEPTH OF 50.0 FEET
300 POUND HAMMER FALLING 18 INCHES

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-147

LOG OF BORING P-6
(SHEET 4 OF 4)

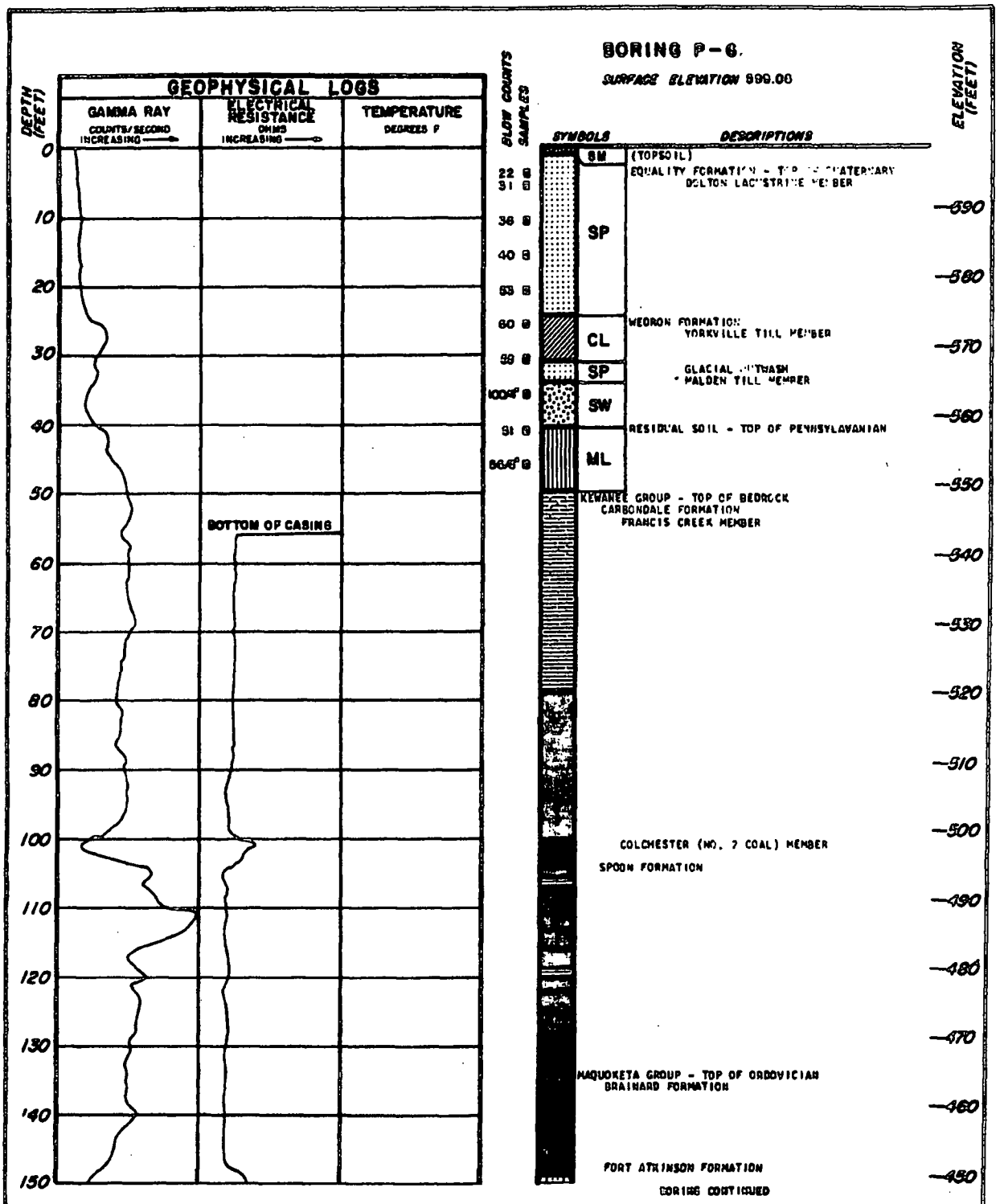


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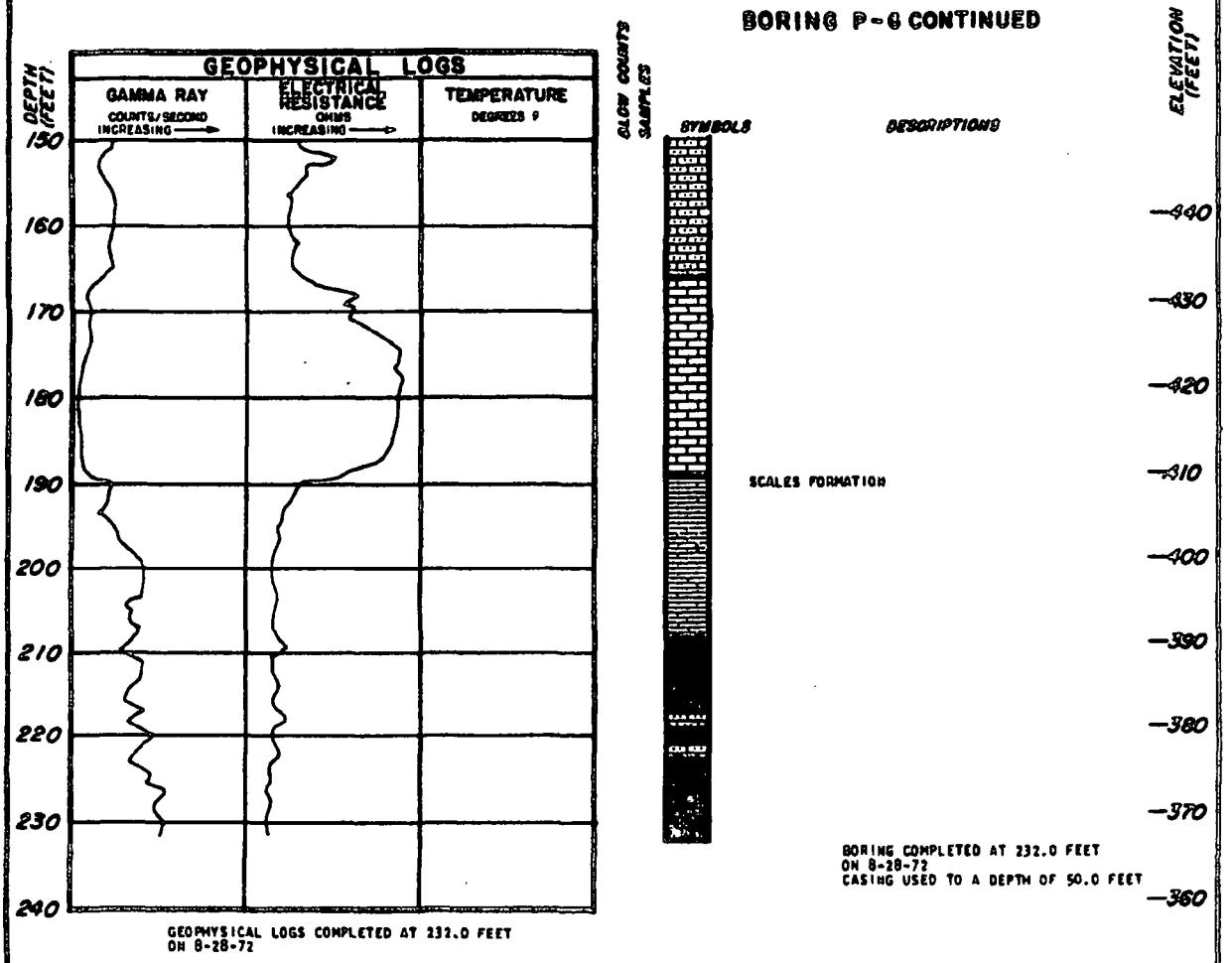
FIGURE 2.5-148

LOG OF BORING P-6 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)



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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-148

LOG OF BORING P-8 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)

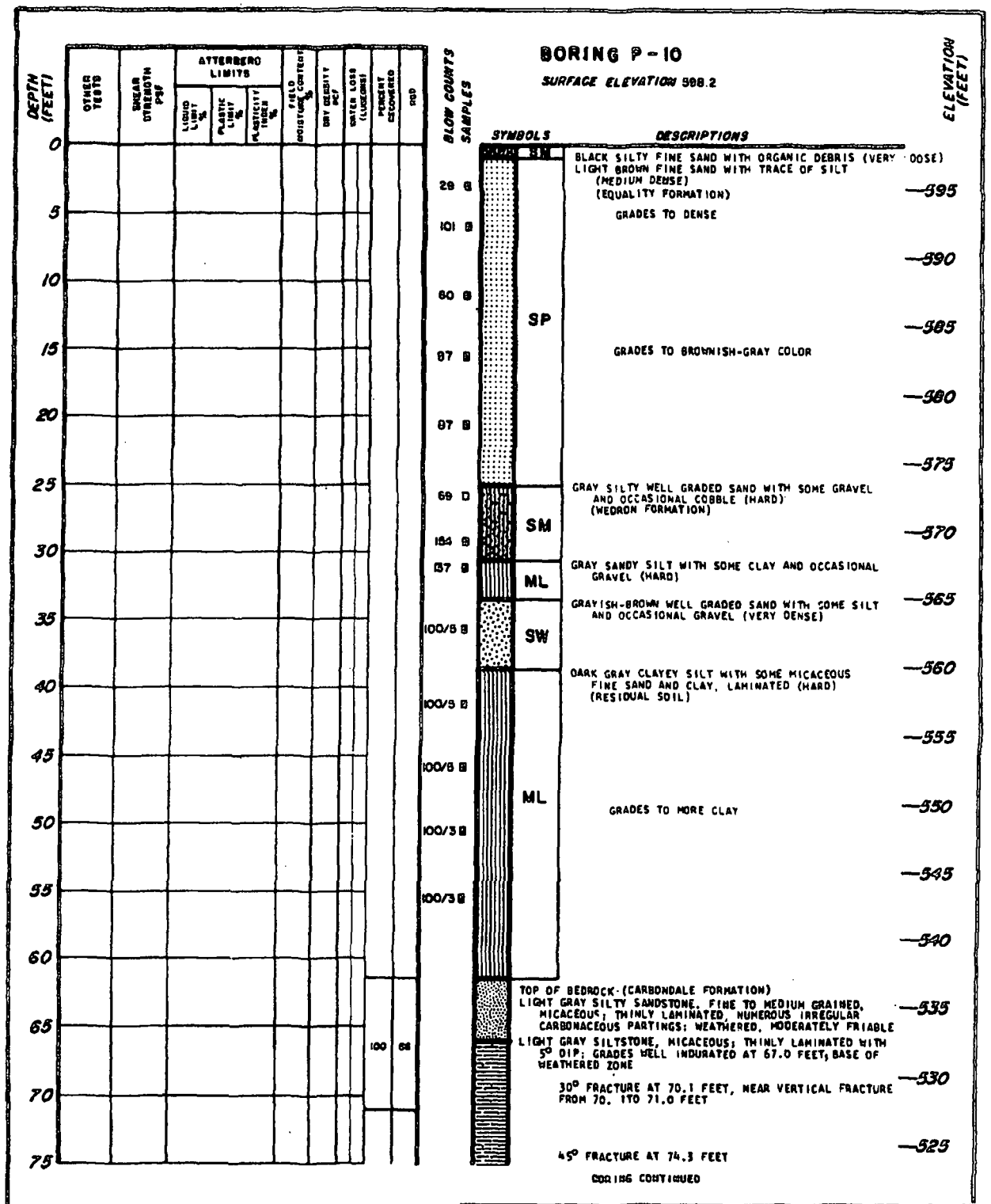

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FIGURE 2.5-149

LOG OF BORING P-10
(SHEET 1 OF 3)

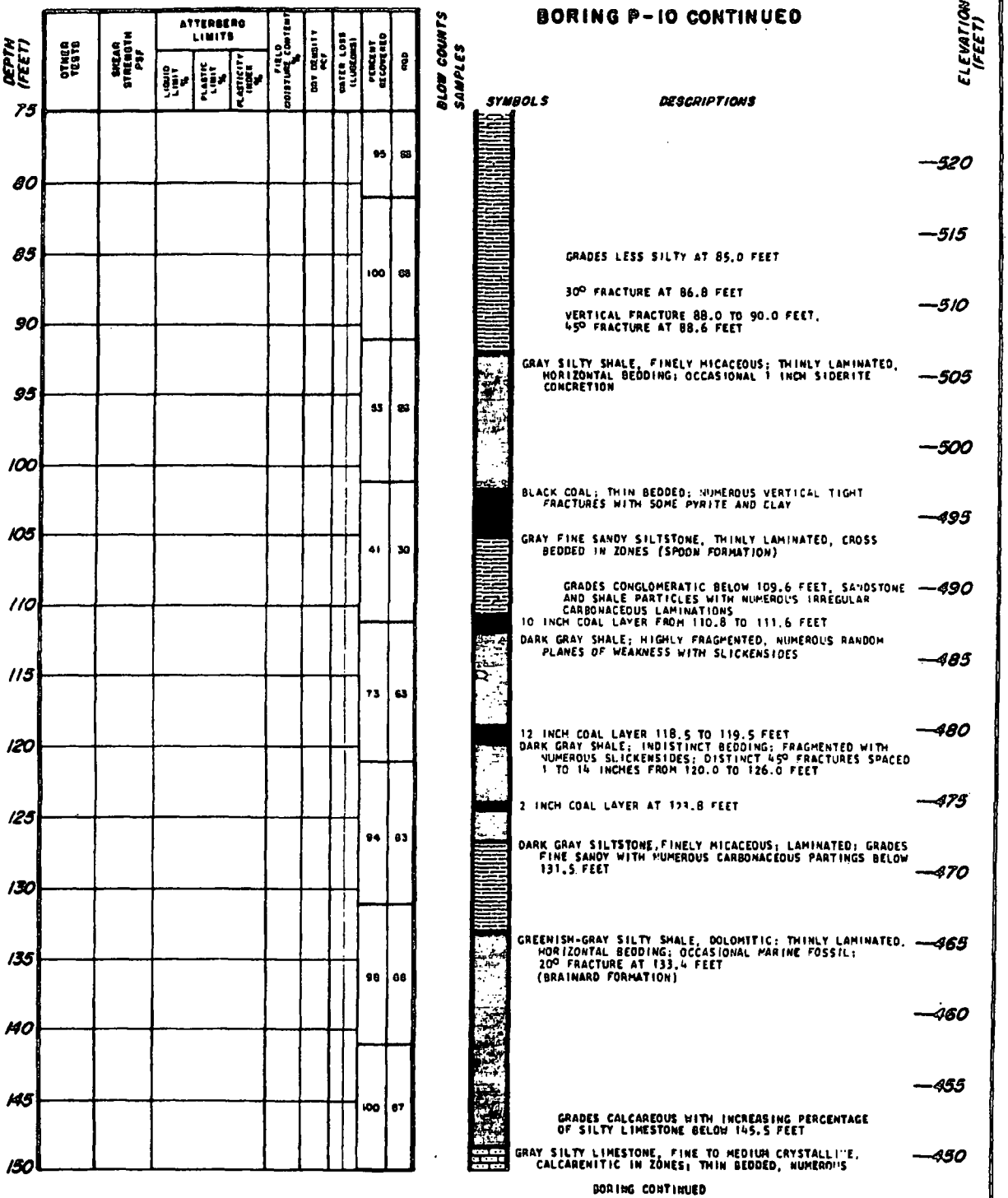

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FIGURE 2.5-149

LOG OF BORING P-10
(SHEET 2 OF 3)

BORING P-10 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155									99	98
160										
165									100	100
170										
175									100	100
180										

BLOW COUNTS SAMPLES

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

IRREGULAR PARTINGS AND GRADATIONAL ZONES OF CALCAREOUS SHALE 1/4 TO 2 INCH THICK SPACED 1/4 TO 6 INCH; FOSSILIFEROUS (FORT ATKINSON FORMATION)

1/2 INCH OPEN VUGS AT 149.4 FEET, OIL STAINED — 445

— 440

3 INCH OPEN VUG WITH CALCITE CRYSTALS AND TRACE OF OIL AT 164.2 FEET — 435

VERTICAL FRACTURE 167.4 TO 167.9 FEET, TIGHT, OIL STAINED

LIGHT GRAY TO BUFF PURE LIMESTONE, COARSELY CALCARENITIC, FOSSILIFEROUS; MEDIUM BEDDED, HAIRLINE SHALE PARTINGS AND STYOLITES SPACED 1 TO 16 INCHES — 430

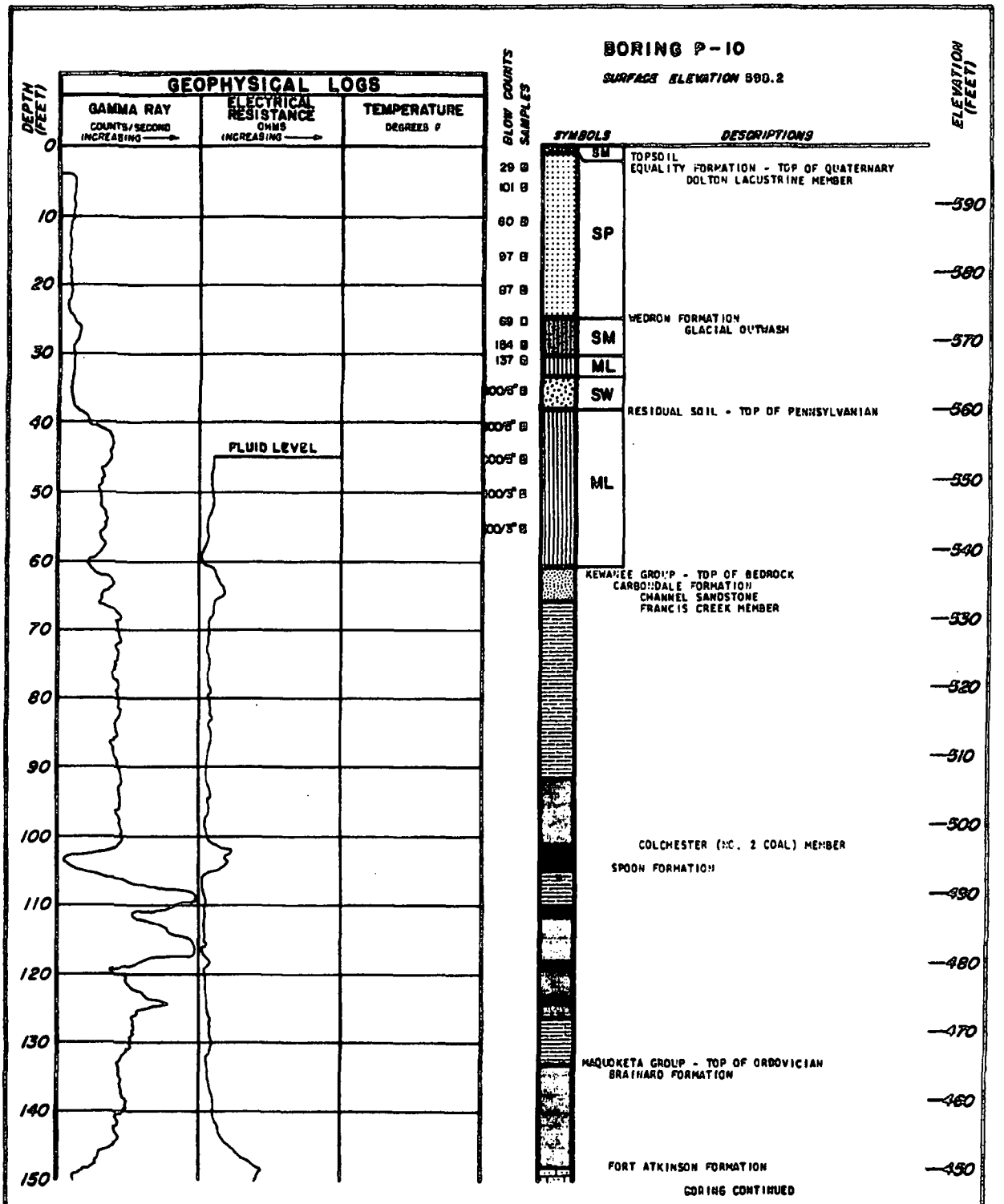
— 425

BORING COMPLETED AT 178.0 FEET ON 8-31-72 140 POUND HAMMER FALLING 30 INCHES — 420

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-149

LOG OF BORING P-10
(SHEET 3 OF 3)



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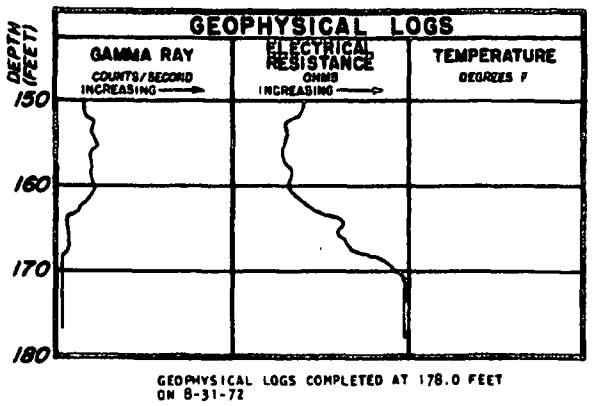
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-150

LOG OF BORING P-10 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)

BORING P-10 CONTINUED



GEOPHYSICAL LOGS COMPLETED AT 178.0 FEET ON 8-31-72

SYMBOLS

DESCRIPTIONS

BORING COMPLETED AT 178.0 FEET ON 8-31-72

ELEVATION (FEET)

440

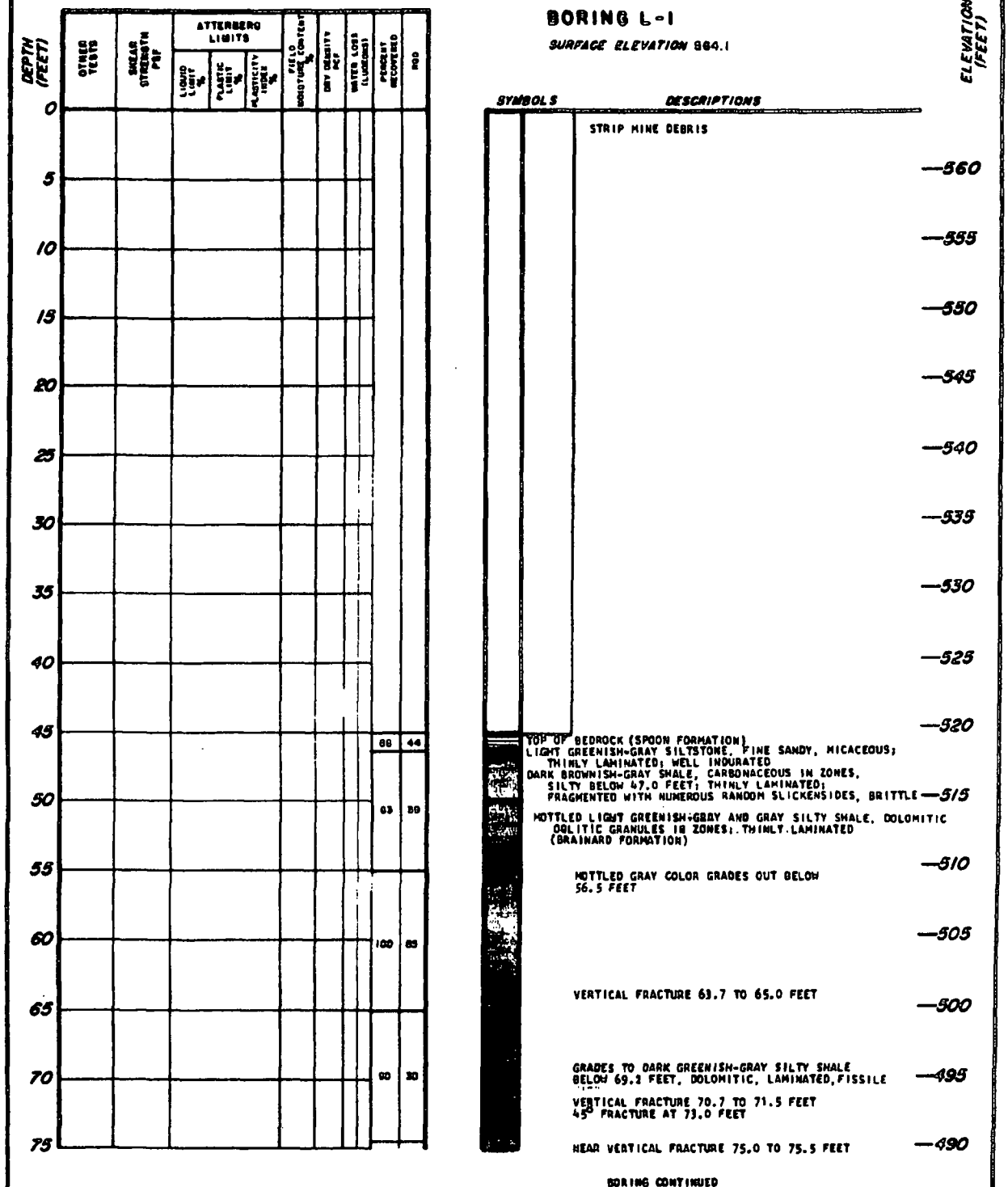
430

420

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-150

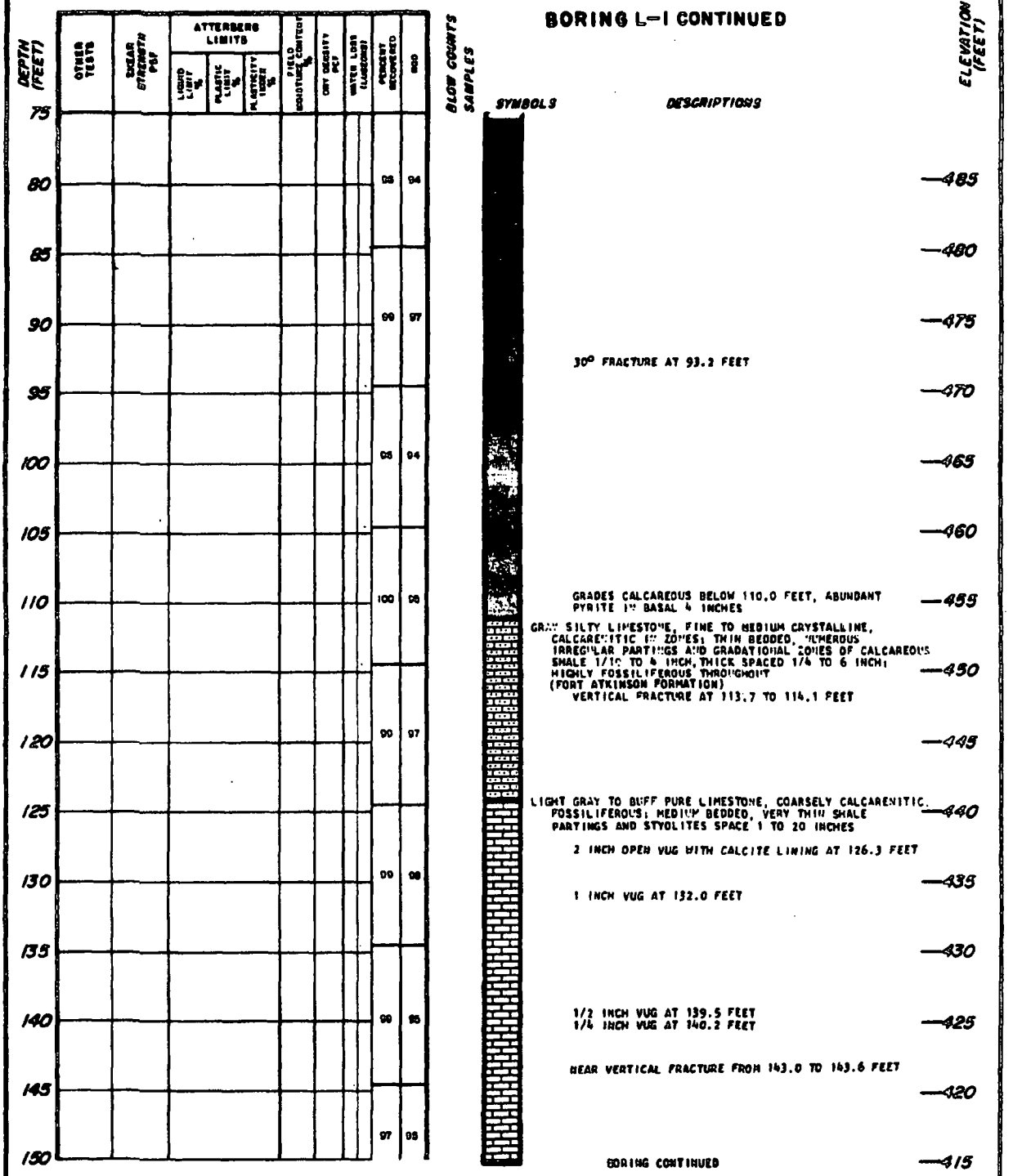
LOG OF BORING P-10 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-151

LOG OF BORING L-1
(SHEET 1 OF 4)



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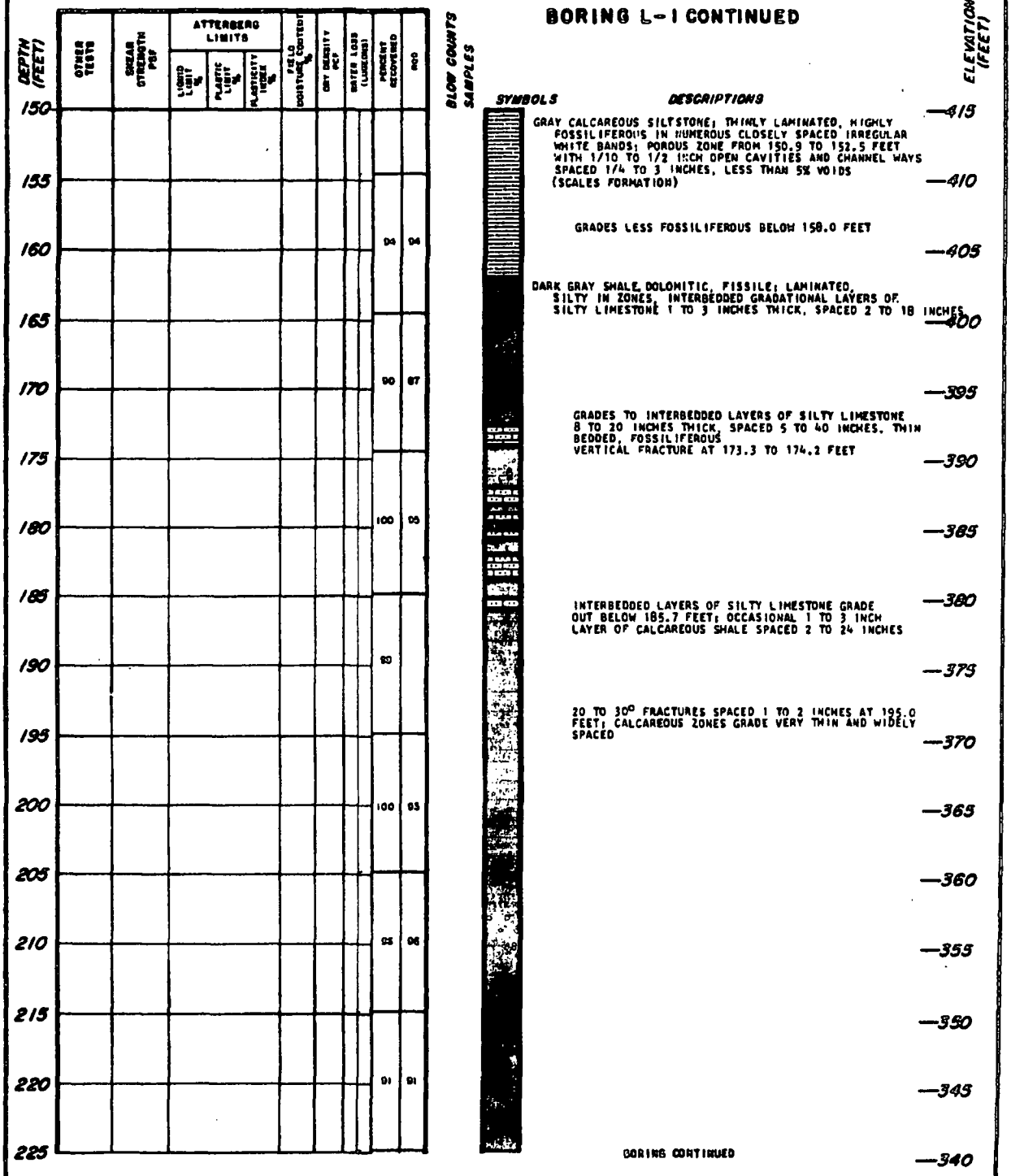
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-151

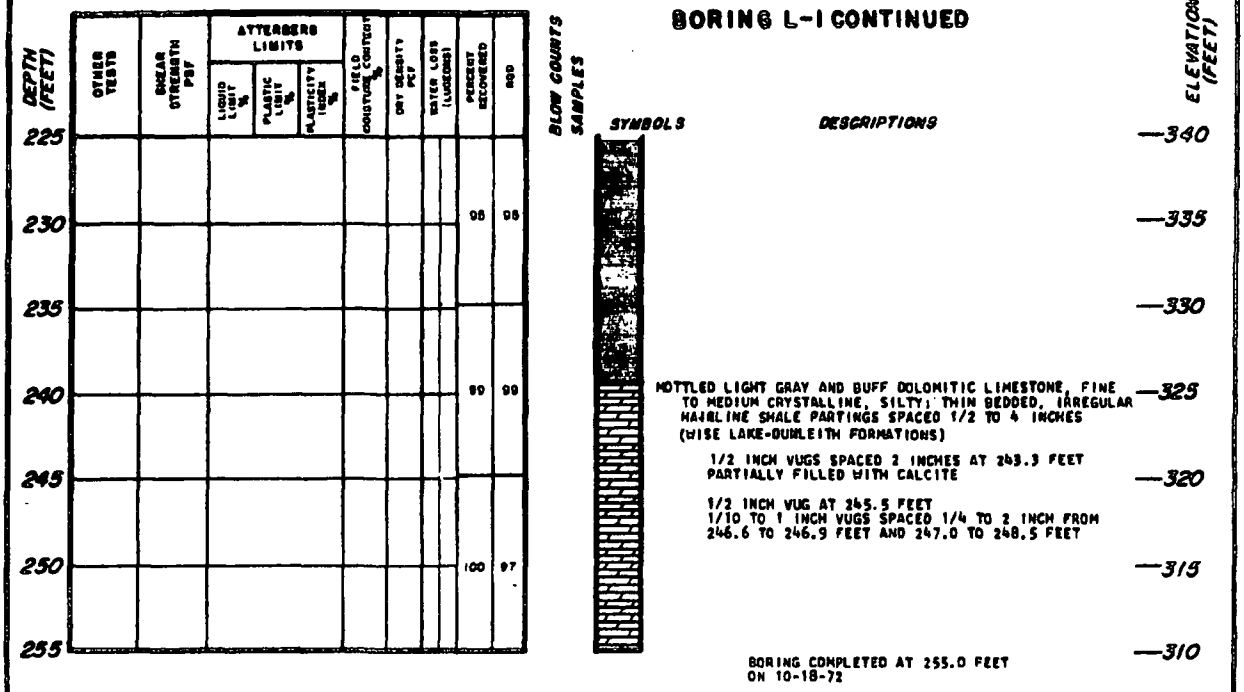
LOG OF BORING L-1
(SHEET 2 OF 4)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-151

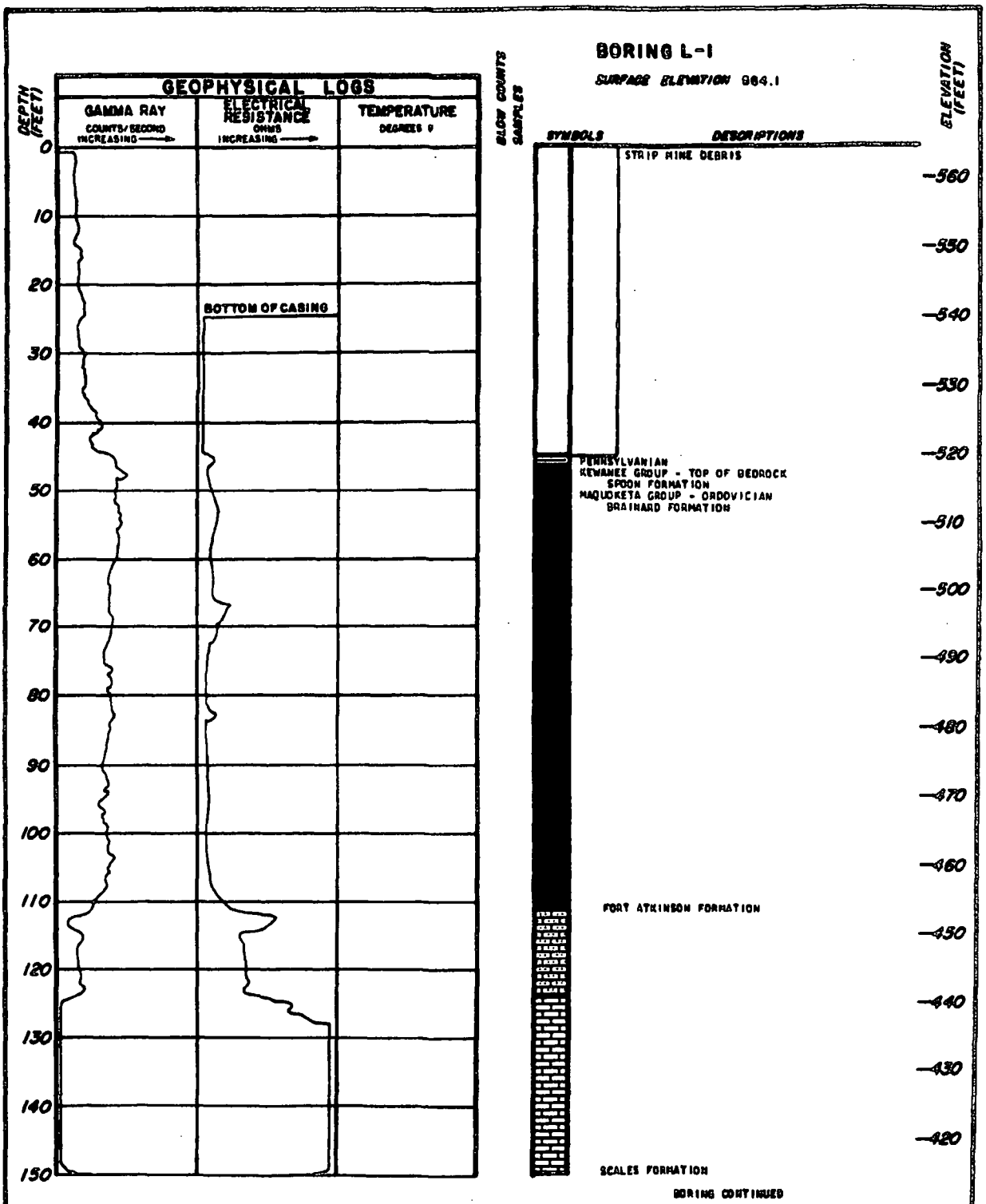
LOG OF BORING L-1
(SHEET 3 OF 4)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-151

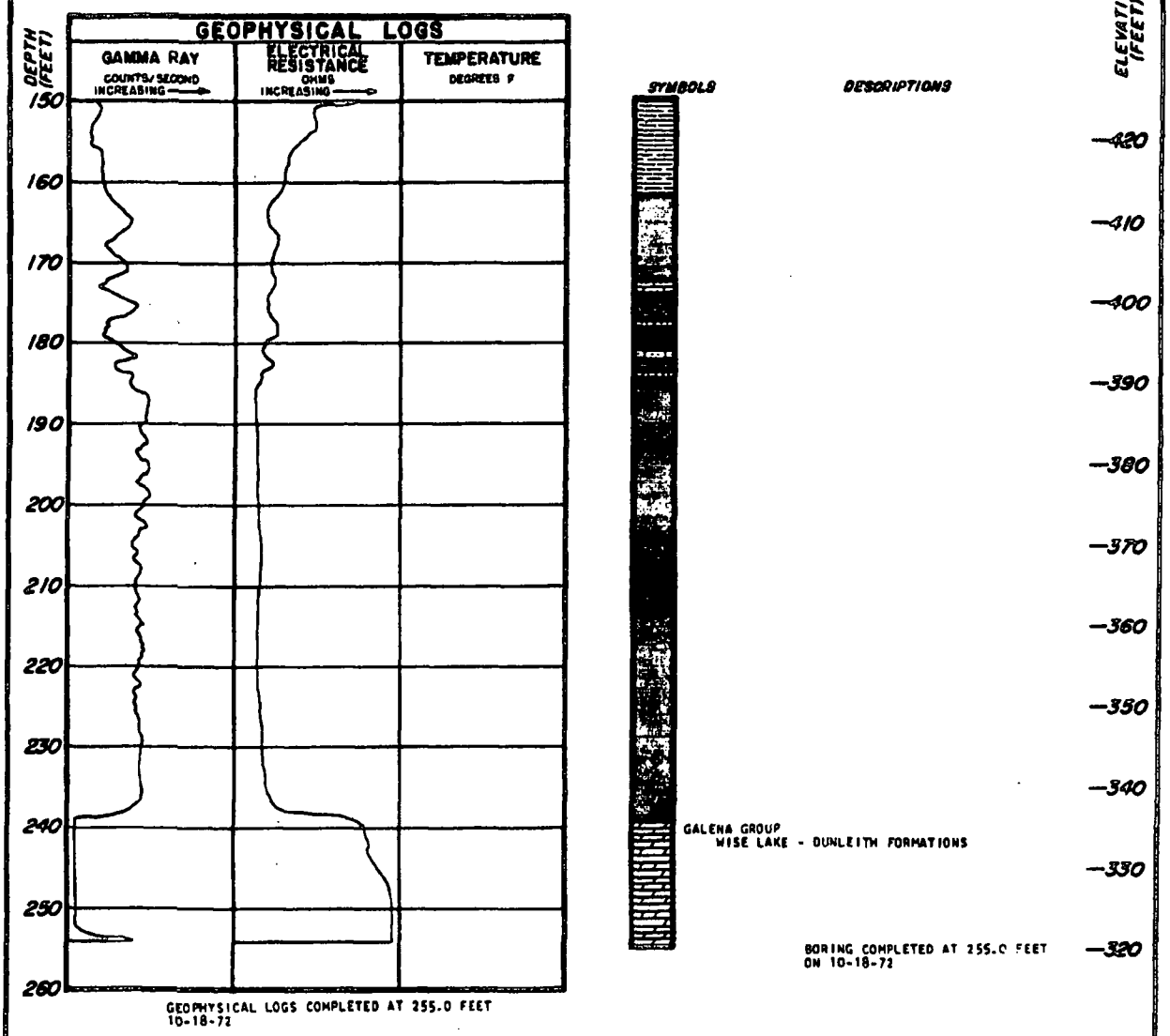
LOG OF BORING L-1
(SHEET 4 OF 4)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-152

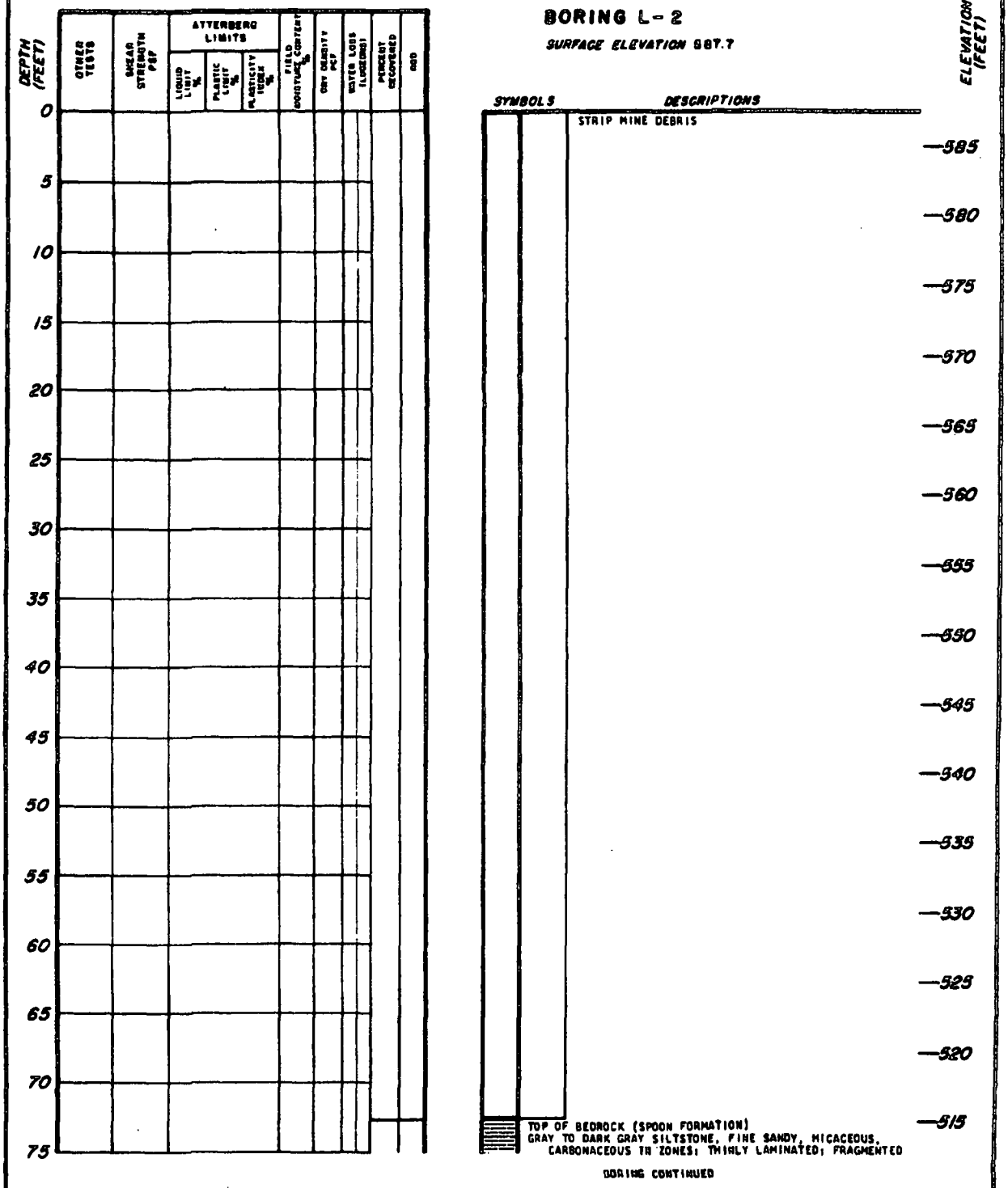
LOG OF BORING L-1 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-152

LOG OF BORING L-1 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)

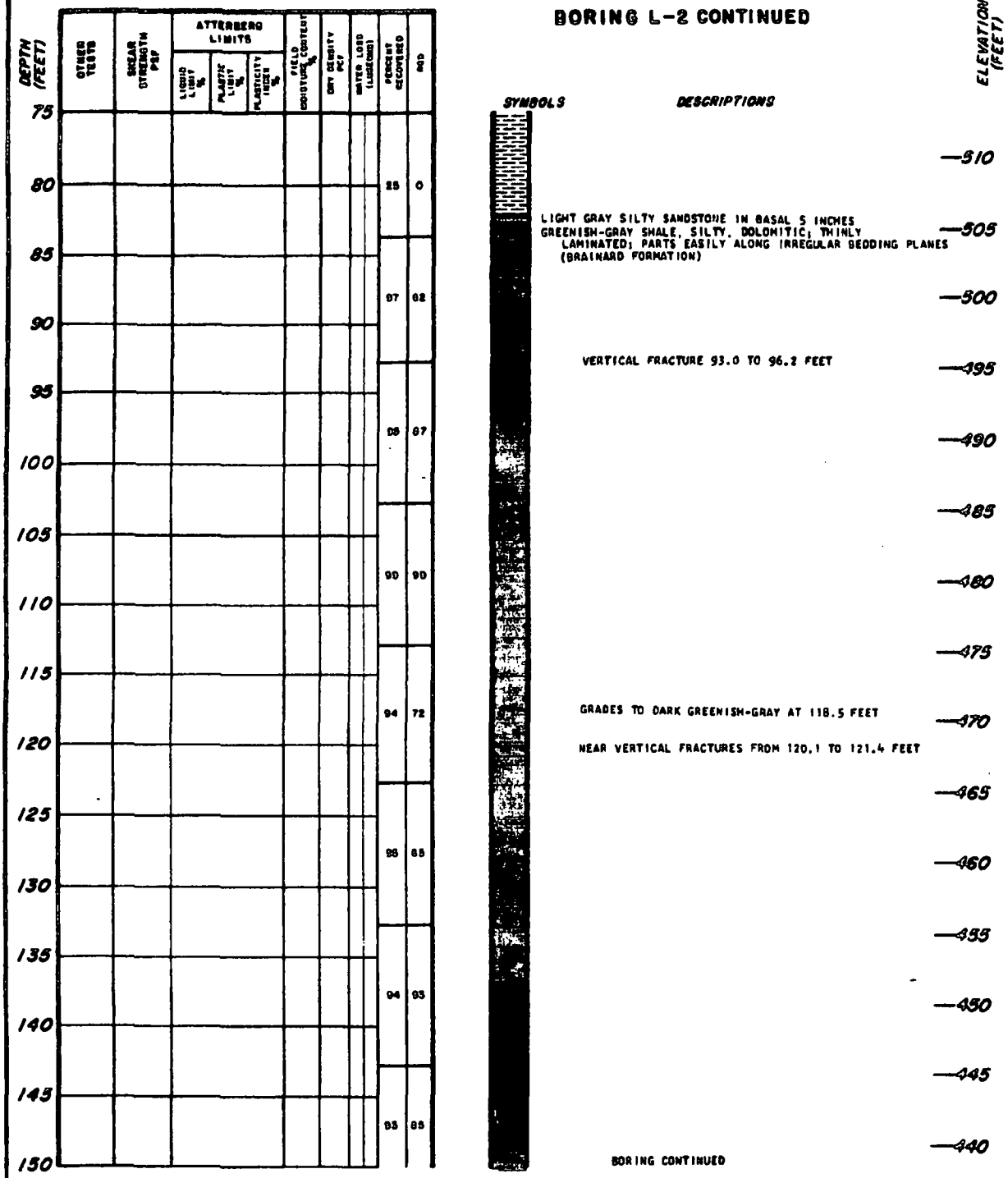


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-153

LOG OF BORING L-2
(SHEET 1 OF 5)

BORING L-2 CONTINUED

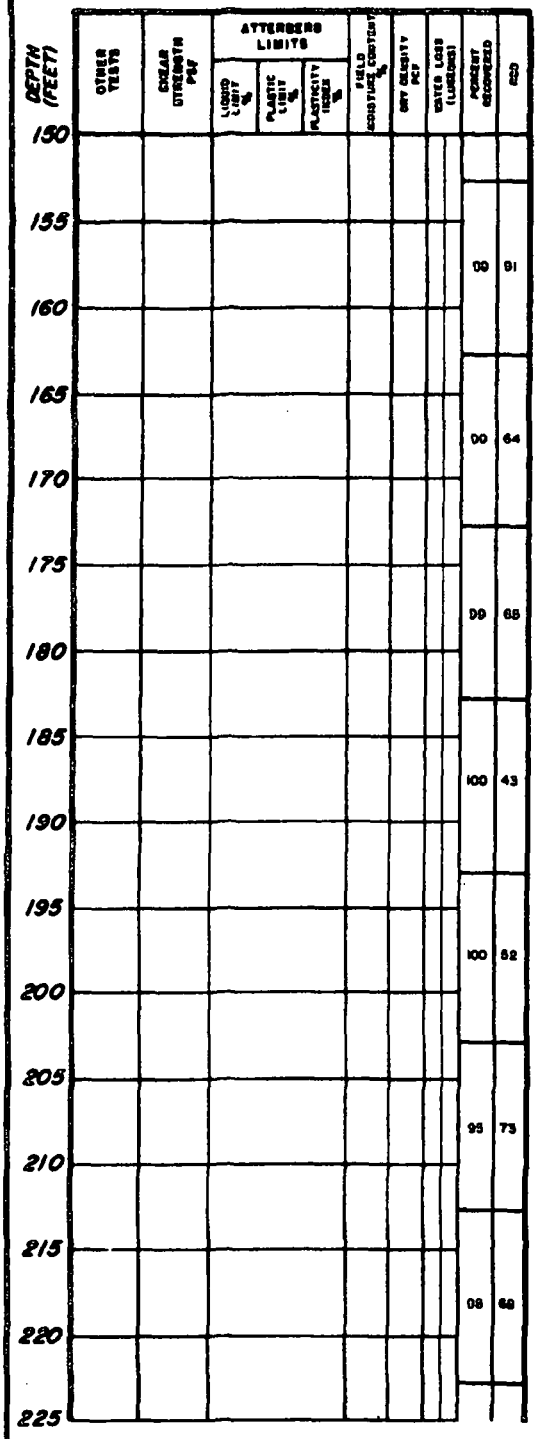


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-153

LOG OF BORING L-2
(SHEET 2 OF 5)

BORING L-2 CONTINUED



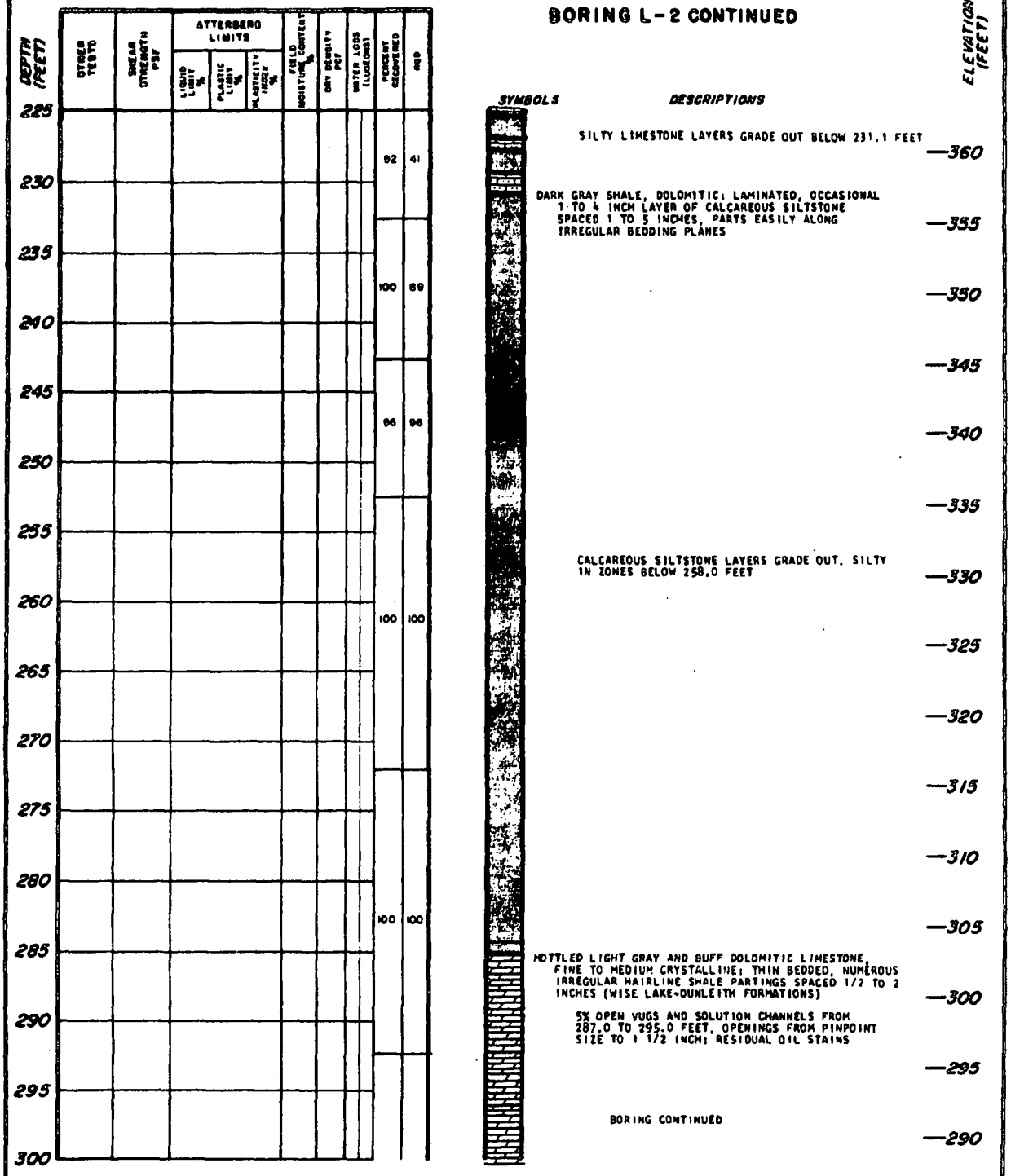
ELEVATION (FEET)	DESCRIPTIONS
	GRADES TO FORE SILT BELOW 153.0 FEET
435	
430	
	GRADES CALCAREOUS AT 160.0 FEET
425	LIGHT GRAY VERY SILTY LIMESTONE, FOSSILIFEROUS; LAMINATED TO THINLY BEDDED, NUMEROUS IRREGULAR PARTINGS AND GRADATIONAL ZONES OF CALCAREOUS SHALE (FORT ATKINSON FORMATION)
420	1/4 TO 2 INCH CAVITIES AND IRREGULAR CHANNELS SPACED 2 TO 6 INCHES FROM 166.0 TO 169.2 FEET DRUSY CRYSTAL DEPOSITS THROUGHOUT; LESS THAN 2% VOIDS
415	POROUS ZONE 173.2 TO 174.0 FEET WITH CLOSELY SPACED PINPOINT OPENINGS, LESS THAN 1% VOIDS
	GRADES LESS SILTY AND COARSELY CALCARENITIC BELOW 174.0 FEET, NUMEROUS THIN IRREGULAR SHALE PARTINGS IN 1 TO 2 INCH ZONES
410	
	1 INCH OPEN VUG AT 180.5 FEET
405	LIGHT GRAY TO BUFF LIMESTONE, VERY PURE, COARSELY CALCARENITIC; MEDIUM BEDDED, HAIRLINE SHALE PARTINGS AND STYOLITES SPACED 1 TO 6 INCHES 1/4 INCH SOLUTION CHANNEL AT 182.0 FEET
	POROUS ZONE 183.2 TO 183.6 FEET WITH 5% OPEN VOIDS 1/4 INCH AND SMALLER
400	
	VERTICAL FRACTURE 190.9 TO 191.7 FEET
395	
390	BROWNISH-GRAY SILTSTONE, CALCAREOUS, THINLY LAMINATED; NUMEROUS WHITE FOSSILIFEROUS BANDS IN ZONES, SOME PYRITE THROUGHOUT; OCCASIONAL PINPOINT TO 1/4 INCH VOIDS ASSOCIATED WITH SOLUTION OF FOSSIL FRAGMENTS SPACED 1 TO 11 INCHES. (SCALES FORMATION)
	2 INCH CALCITE FILLED VUG AT 202.5 FEET
385	1 INCH OPEN SOLUTION CHANNEL AT 204.0 FEET, MINERALIZED
380	GRAY SHALE, SILTY, DOLOMITIC; THINLY LAMINATED, INTERBEDDED 1 TO 6 INCH LAYERS OF SILTY LIMESTONE SPACED 3 TO 30 INCHES.
375	GRADES LESS SILTY BELOW 213.0 FEET, PARTS EASILY ALONG BEDDING PLANES
370	
365	GRADES TO INTERBEDDED LAYERS OF GRAY SILTY LIMESTONE 6 TO 24 INCHES THICK SPACED 16 TO 23 INCHES, FOSSILIFEROUS; LAMINATED TO THINLY BEDDED

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-153

LOG OF BORING L-2
(SHEET 3 OF 5)

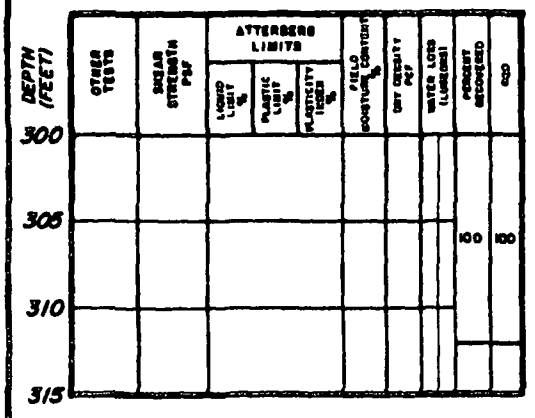


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-153

LOG OF BORING L-2
(SHEET 4 OF 5)

BORING L-2 CONTINUED



SYMBOLS | DESCRIPTIONS | ELEVATION (FEET)

—285

—280

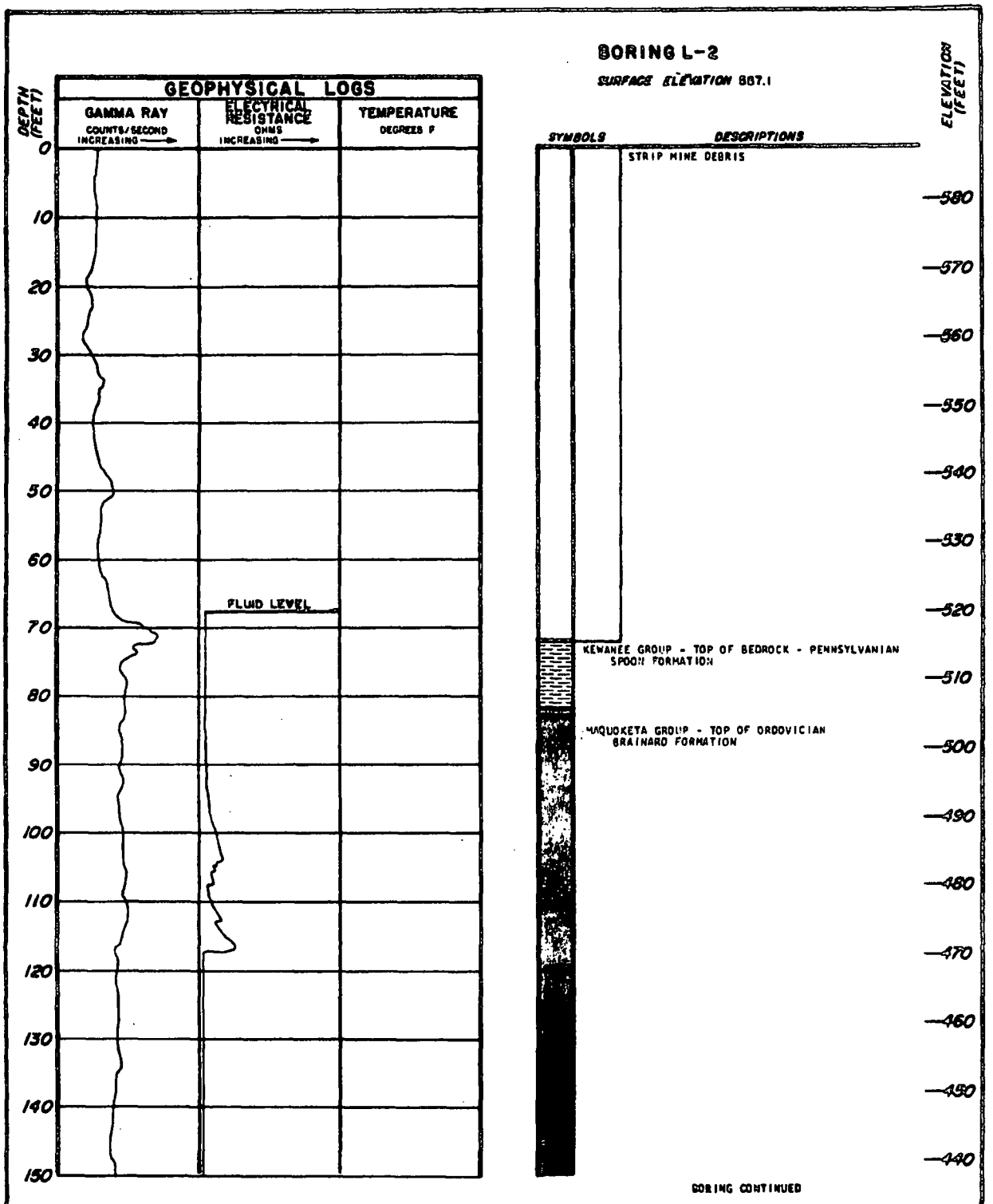
BORING COMPLETED AT 312.0 FEET ON 10-27-72

—275

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-153

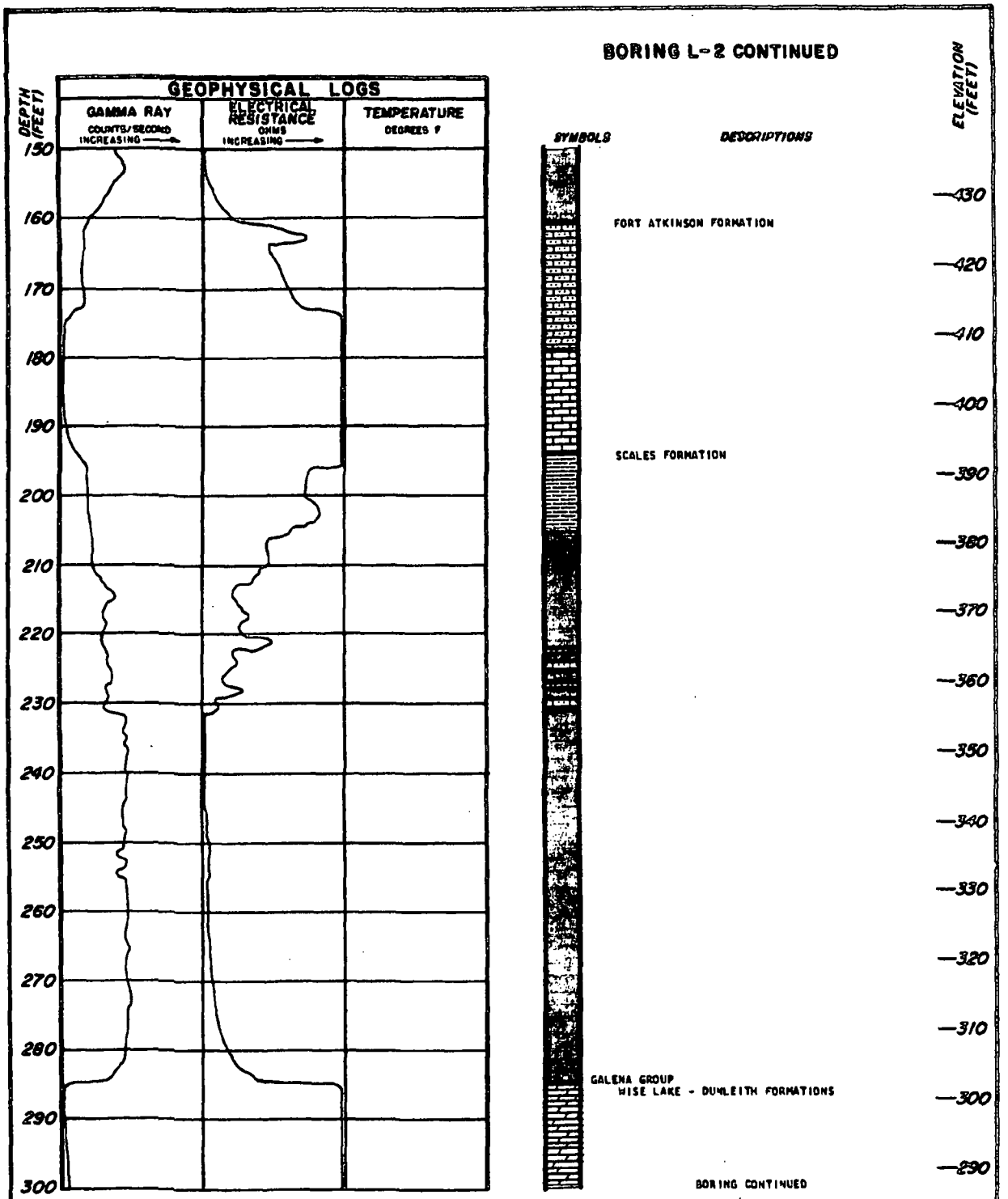
LOG OF BORING L-2
(SHEET 5 OF 5)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-154

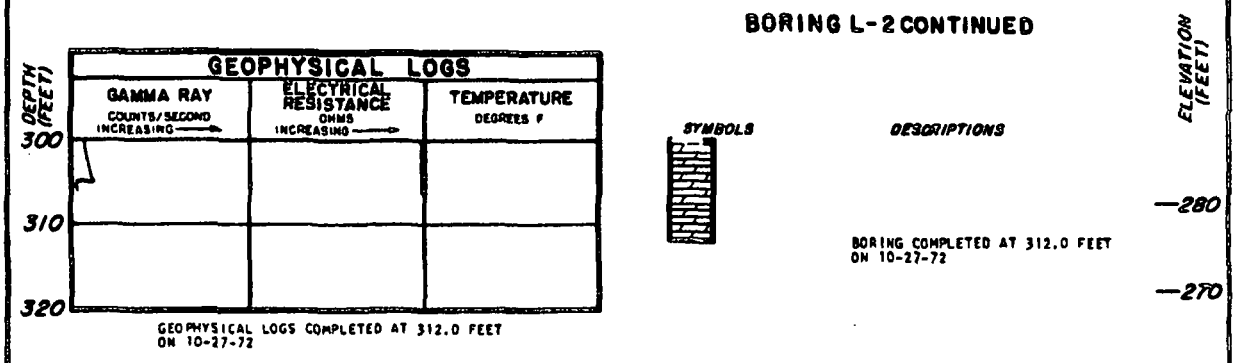
LOG OF BORING L-2 (GEOPHYSICAL LOG)
(SHEET 1 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-154

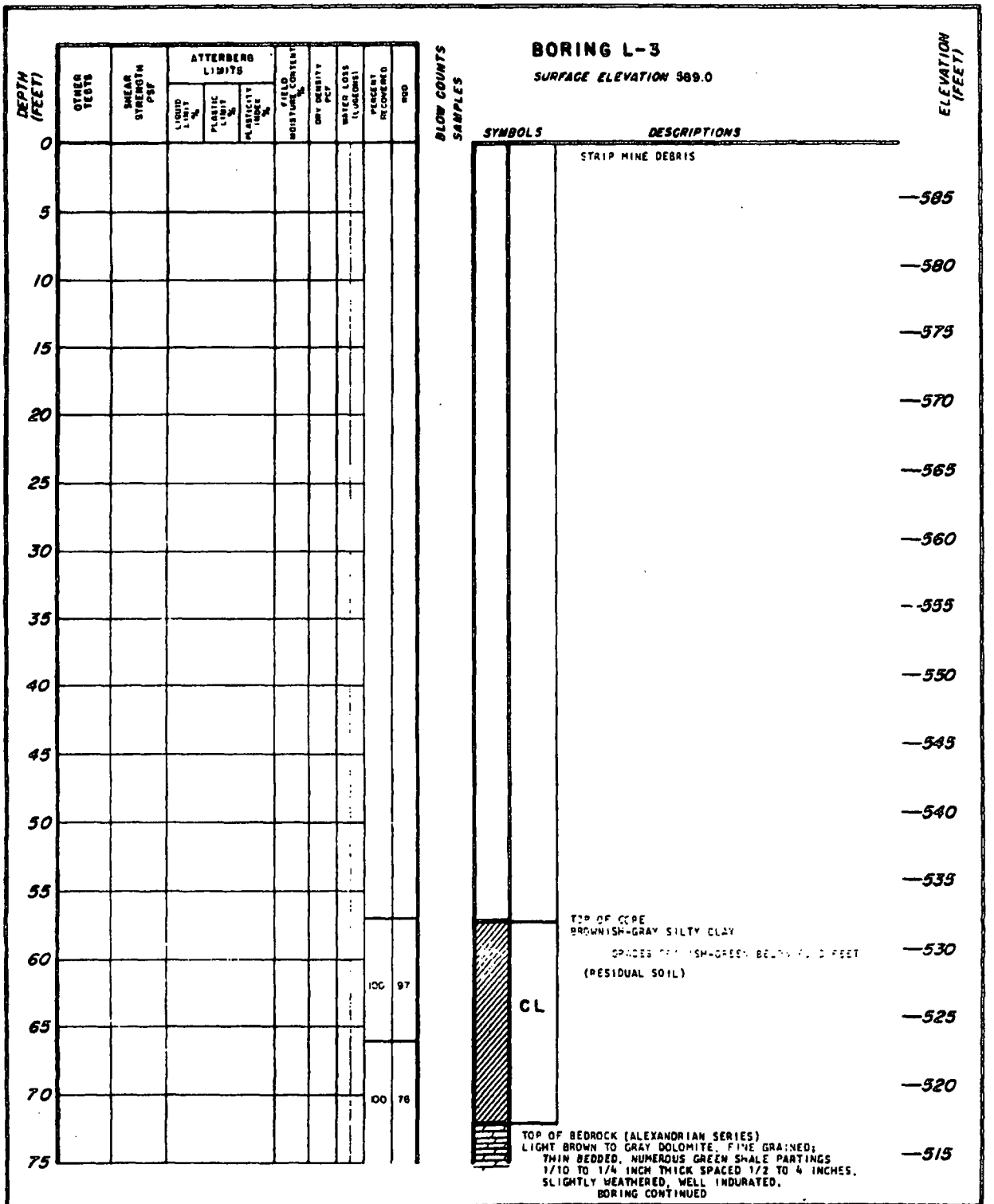
LOG OF BORING L-2 (GEOPHYSICAL LOG)
(SHEET 2 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-154

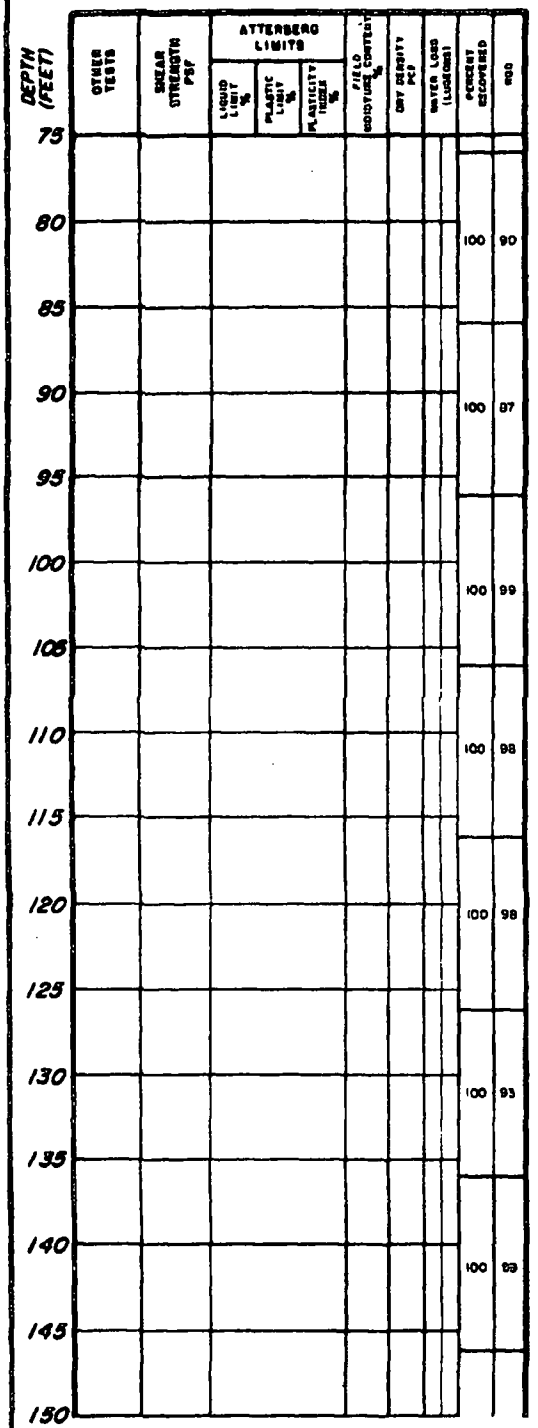
LOG OF BORING L-2 (GEOPHYSICAL LOG)
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-155

LOG OF BORING L-3
(SHEET 1 OF 4)



BORING L-3 CONTINUED

ELEVATION (FEET)

SYMBOLS

DESCRIPTIONS

GRAYISH-GREEN SILTY CLAY

POROUS ZONE WITH NUMEROUS PINPOINT TO 1/10 INCH OPENINGS FROM 77.6 TO 78.8 FEET, LESS THAN 1% VOIDS

—510

1/2 TO 1 INCH SOLUTION CAVITIES SPACED 3 TO 6 INCHES FROM 78.0 TO 79.2 FEET, APPROXIMATELY 5% VOIDS

GRADES TO GREENISH-GRAY COLOR BELOW 79.5 FEET, MASSIVE BEDDING

BROWNISH-GRAY SILTSTONE, DOLOMITIC, WELL INDURATED; THINLY LAMINATED

—505

INTERBEDDED 1 TO 7 INCH ZONES OF DARK GRAY SHALE SPACED 1 TO 3 INCHES BELOW 88.5 FEET

—500

DARK GREENISH-GRAY SHALE, SILTY, DOLOMITIC; LAMINATED; PARTS EASILY ALONG BEDDING PLANES; FINE SANDY IN ZONES WITH IRREGULAR BEDDING (BRAINARD FORMATION)

—495

—490

OCCASIONAL 1 TO 3 INCH ZONE OF SILTY DOLOMITE SPACED 2 TO 18 INCHES FROM 105.8 TO 109.3 FEET

—485

VERTICAL FRACTURE FROM 109.3 TO 110.0 FEET

—480

—475

—470

—465

—460

1 TO 6 INCH DOLOMITIC ZONES SPACED 18 TO 30 INCHES, FROM 134.0 TO 148.0 FEET

—455

—450

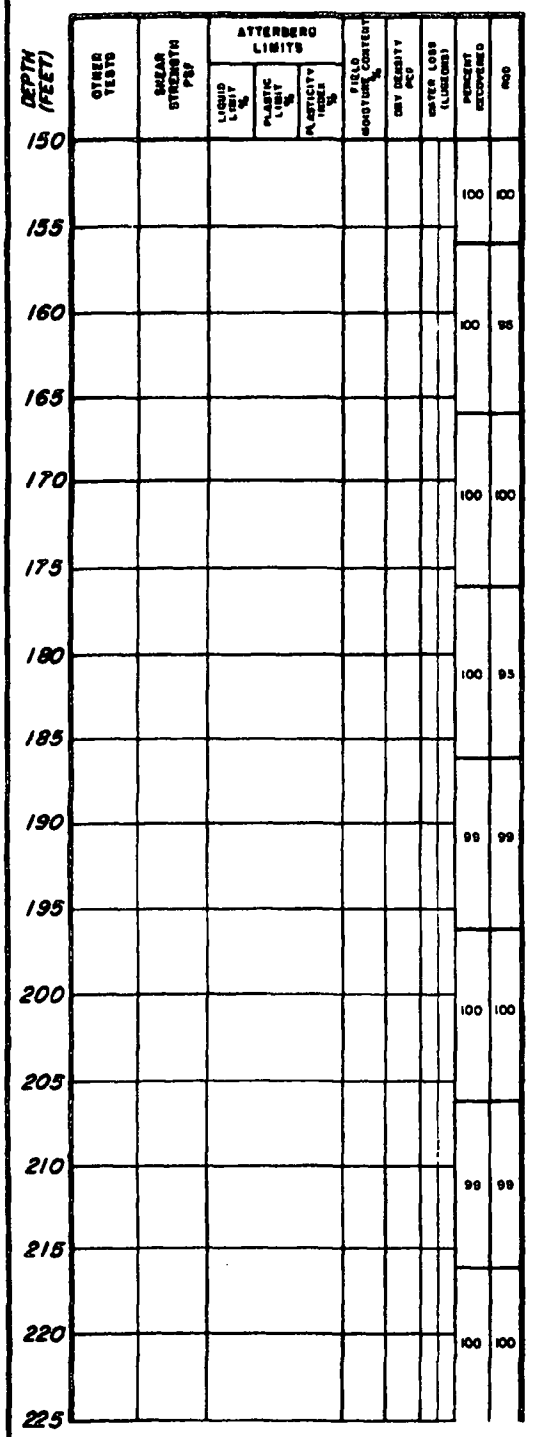
—445

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-155

LOG OF BORING L-3
(SHEET 2 OF 4)



BORING L-3 CONTINUED

ELEVATION (FEET)

SYMBOLS

DESCRIPTIONS

—440

GRAY SILTY LIMESTONE, FOSSILIFEROUS; LAMINATED TO THIN BEDDED, NUMEROUS IRREGULAR PARTINGS AND GRADATIONAL ZONES OF CALCAREOUS SHALE 1/4 TO 2 INCHES THICK AND SPACED 1/4 TO 4 INCHES. (FORT ATKINSON FORMATION)

—435

VERTICAL FRACTURE FROM 163.0 TO 164.7 FEET, TIGHT

—430

—425

GRADES LESS SILTY AND COARSELY CALCARENITIC AT 169.7 FEET, THIN BEDDED, NUMEROUS VERY THIN SHALE PARTINGS IN 1 TO 2 INCH ZONES SPACED 3 TO 8 INCHES

—420

1/2 INCH VUG WITH MINERAL DEPOSITS AT 172.5 FEET

—415

POROUS ZONE FROM 180.0 TO 181.7 FEET, NUMEROUS PINPOINT TO 1/4 INCH OPENINGS, 2 INCH VOID AT 181.5 FEET MINERALIZED THROUGHOUT; APPROXIMATELY 5% VOIDS

—410

LIGHT GRAY TO BUFF LIMESTONE, PURE, COARSELY, CALCARENITIC, MEDIUM BEDDED, IRREGULAR SHALE PARTINGS AND STYLOLITES SPACED 1 TO 8 INCHES; POROUS ZONE FROM 183.7 TO 185.6 FEET, NUMEROUS PINPOINT TO 1/2 INCH OPENINGS WITH OIL STAIN, LESS THAN 5% VOIDS

—405

GRAY CALCAREOUS SILTSTONE; THINLY LAMINATED, HIGHLY FOSSILIFEROUS, 1 INCH VOID AT 188.3 FEET, MINERIZED (SCALES FORMATION)

—400

GRAY SILTY SHALE, CALCAREOUS; LAMINATED, INTERBEDDED GRADATIONAL 1 TO 4 INCH ZONES OF SILTY LIMESTONE SPACED 2 TO 9 INCHES

—395

—390

—385

GRADES TO INTERBEDDED LAYERS OF SILTY LIMESTONE 7 TO 24 INCHES THICK SPACED 6 TO 27 INCHES, LAMINATED, FOSSILIFEROUS

—380

—375

SILTY LIMESTONE LAYERS GRADE OUT BELOW 219.4 FEET

DARK GRAY SHALE, DOLOMITIC; LAMINATED, PARTS EASILY ALONG BEDDING PLANES; INTERBEDDED 1/2 TO 4 INCH ZONES OF CALCAREOUS SILTSTONE SPACED 1 TO 4 INCHES

—370

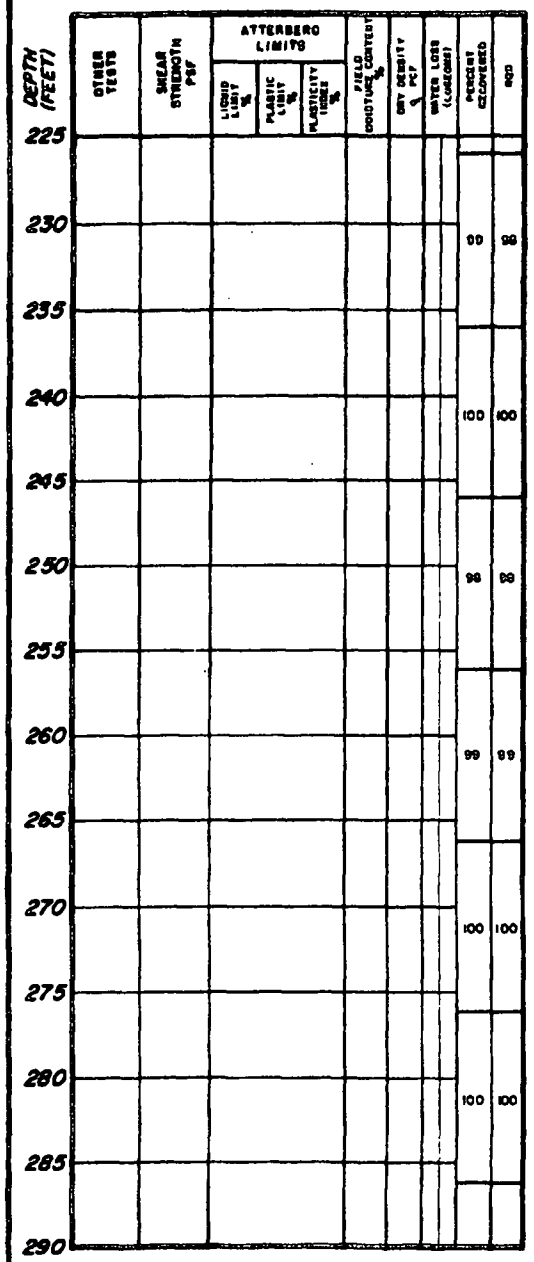
BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-155

LOG OF BORING L-3
(SHEET 3 OF 4)

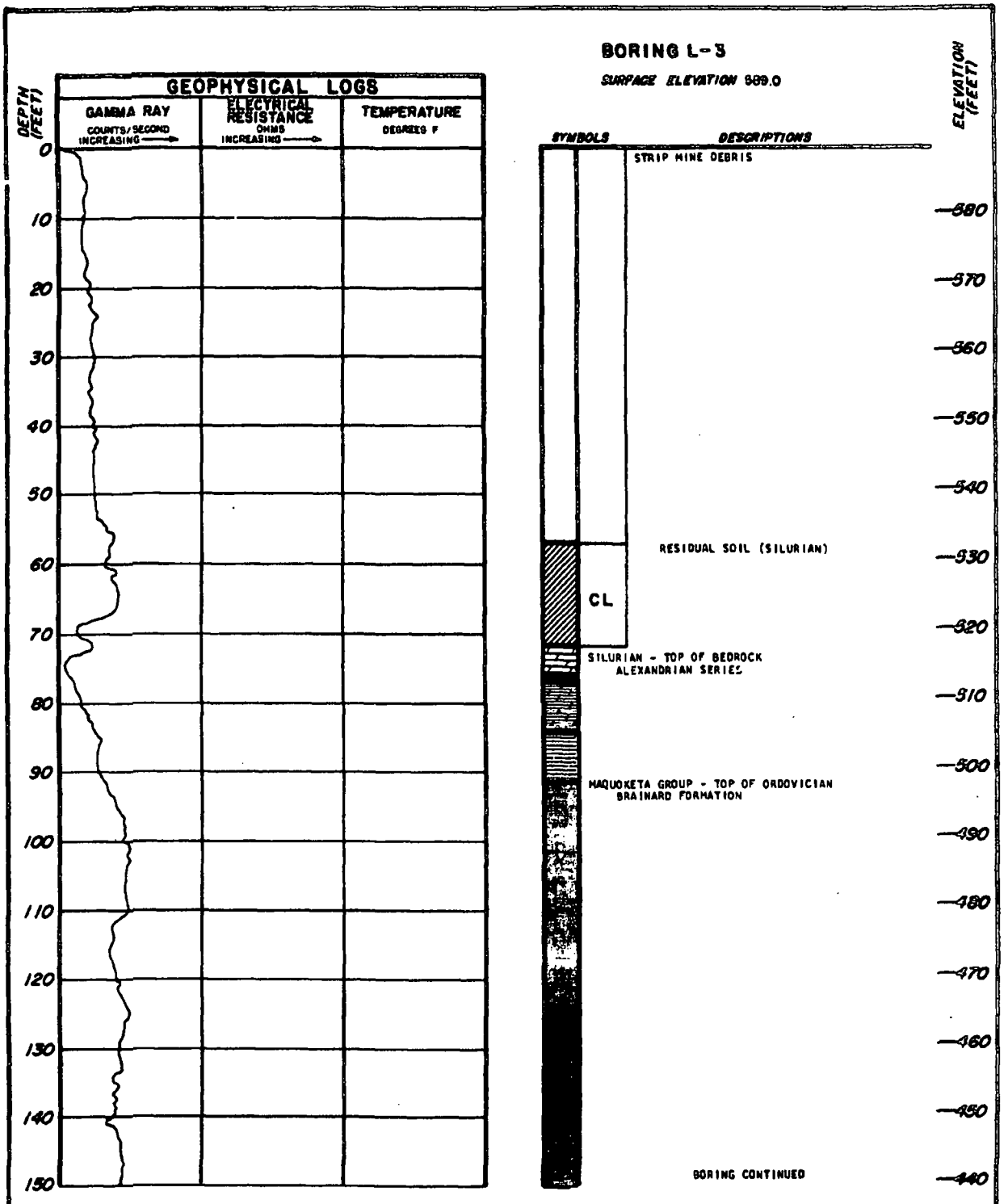
BORING L-3 CONTINUED



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-155

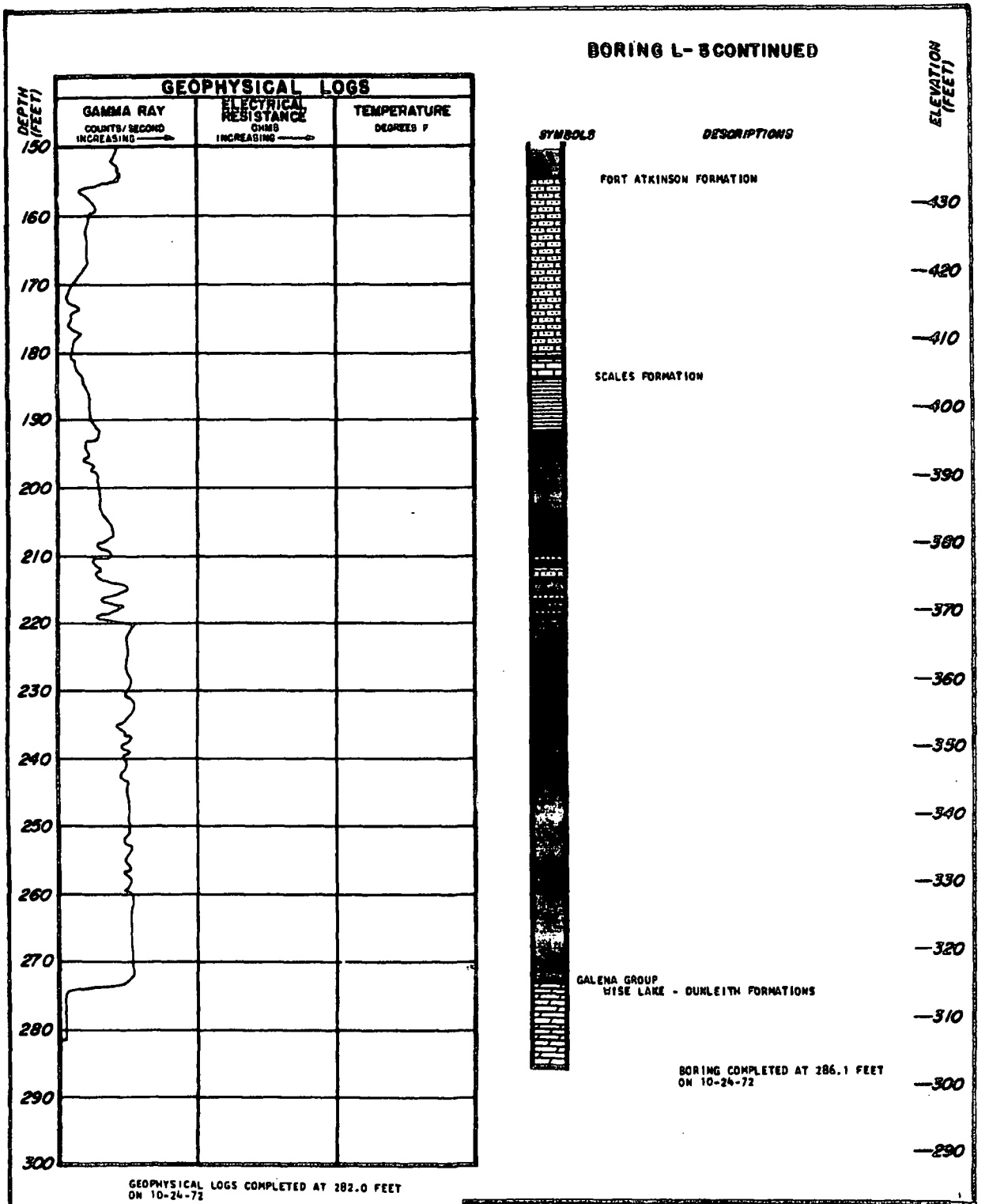
LOG OF BORING L-3
(SHEET 4 OF 4)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-156

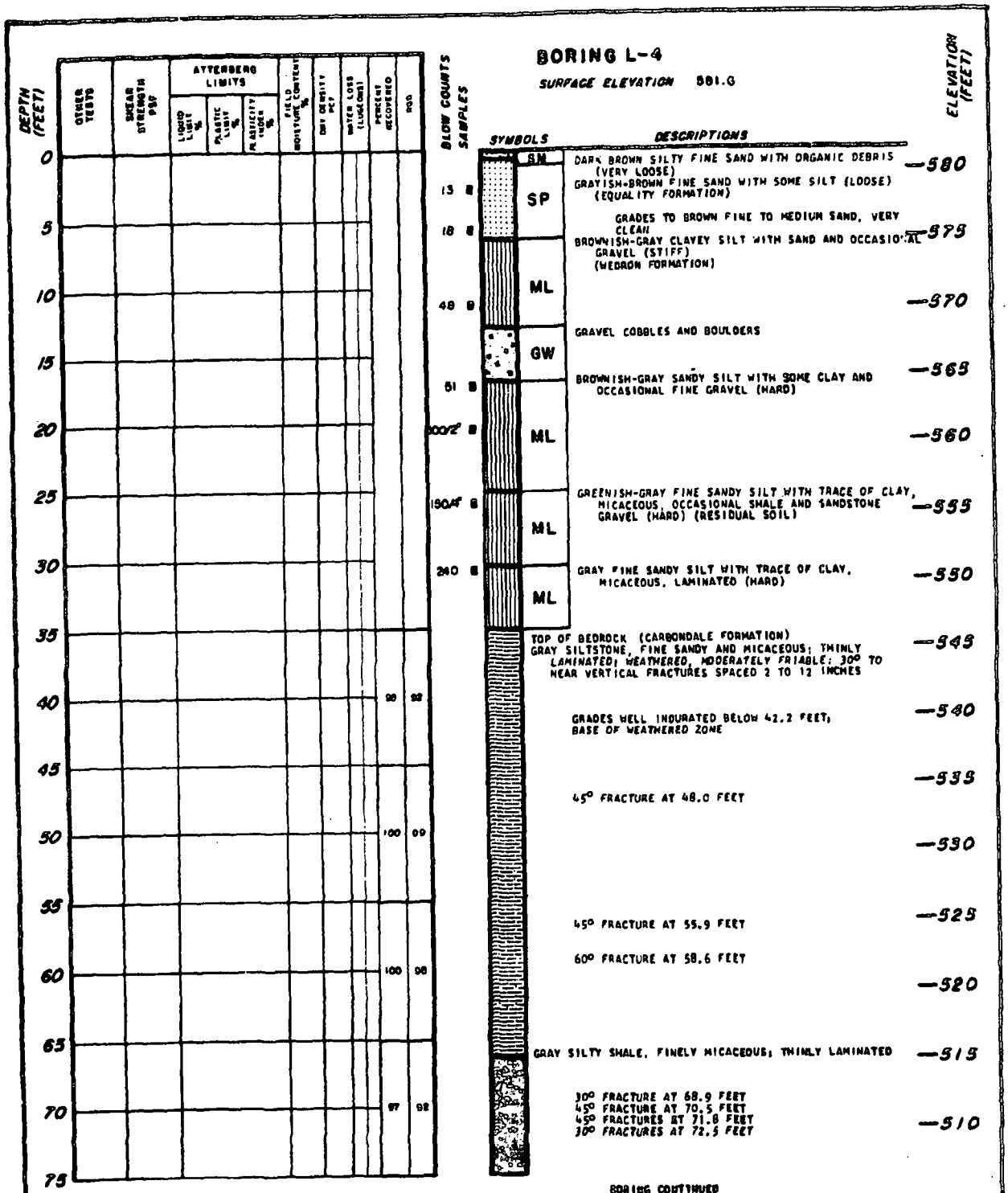
LOG OF BORING L-3 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-156

LOG OF BORING L-3 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-157

LOG OF BORING L-4
(SHEET 1 OF 5)

BORING L-4 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (ILLUSIONS)	PERCENT RECOVERED	RQD
75										
80									96	70
85										
90									99	88
95										
100									95	81
105										
110									98	86
115										
120									100	80
125										
130									100	100
135										
140									98	92
145										
150									100	93

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	BLACK COAL; THINLY LAMINATED TO THIN BEDDED; NUMEROUS VERTICAL TIGHT FRACTURES WITH SOME PYRITE AND CLAY	—505
	DARK BROWNISH-GRAY SILTY SHALE, CARBONACEOUS; THINLY LAMINATED; NEAR VERTICAL FRACTURE 79.4 TO 80.0 FEET LIGHT GRAY SILTSTONE, FINE SANDY IN ZONES, MICACEOUS; THINLY LAMINATED, INDISTINCT IRREGULAR BEDDING (SPOON FORMATION)	—500
		—495
	DARK BROWNISH-GRAY SHALE, CARBONACEOUS; THINLY LAMINATED; FRAGMENTED WITH SLICKENSIDES LIGHT GRAY VERY SILTY SANDSTONE, FINE GRAINED, MICACEOUS; THINLY BEDDED.	—490
	LIGHT GRAY FINE SANDY SILTSTONE, MICACEOUS; THINLY LAMINATED, IRREGULAR	—485
	LIGHT TO DARK BROWNISH-GRAY CLAYEY SHALE; INDISTINCTLY LAMINATED; FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES	
	GRADES MOTTLED RED AND GREEN COLOR AT 103.5 FEET	—480
	BROWN SILTY SANDSTONE WITH OOLITIC IRON GRANULES LIGHT BROWN TO GREENISH-GRAY DOLOMITE, FINE TO MEDIUM CRYSTALLINE, SILTY; THIN BEDDED, NUMEROUS THIN IRREGULAR GREEN SHALE PARTINGS SPACED 1/2 TO 5 INCHES (ALEXANDRIAN SERIES)	—475
		—470
	VERTICAL FRACTURE WITH DRUSY CRYSTALLINE SURFACE FROM 113.1 TO 114.1 FEET	
	VERTICAL FRACTURES SPACED 1/2 INCH FROM 115.0 TO 117.7 FEET, TIGHT TO WELL HEALED	—465
		—460
		—455
	LIGHT GREENISH-GRAY TO DARK GRAY SILTSTONE, DOLOMITIC; THINLY LAMINATED (BRAINARD FORMATION)	—450
		—445
	DARK GREENISH-GRAY SHALE, SILTY, DOLOMITIC; THINLY LAMINATED, PARTS EASILY ALONG BEDDING PLANES	
		—440
	45° FRACTURE AT 149.2 FEET	—435

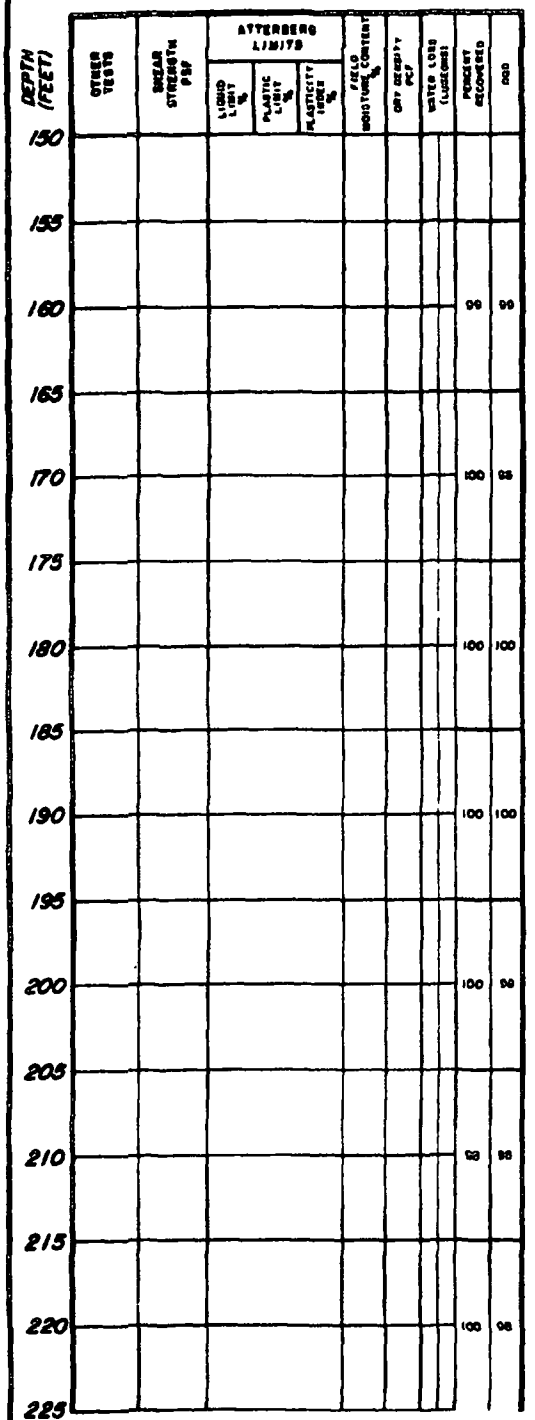
BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-157

LOG OF BORING L-4
(SHEET 2 OF 5)

BORING L-4 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

430

425

420

415

410

405

400

395

390

GRADES CALCAREOUS AT 195.0 FEET

385

GRAY SILTY LIMESTONE; THIN BEDDED, NUMEROUS IRREGULAR PARTINGS AND GRADATIONAL ZONES OF DARK GRAY CALCAREOUS SILTSTONE 1/4 TO 6 INCHES THICK SPACED 1/2 TO 4 INCHES (FORT ATKINSON FORMATION)

380

375

370

LIGHT GRAY LIMESTONE WITH SOME SILT, VERY COARSELY CALCARENITIC; MEDIUM BEDDED, NUMEROUS BLACK CLOSELY SPACED SHALE PARTINGS IN ZONES; HIGHLY FOSSILIFEROUS

1/2 IN VUG AT 214.5 FEET

365

LIGHT GRAY TO BUFF LIMESTONE, PURE, COARSELY CALCARENITIC; MEDIUM BEDDED, IRREGULAR THIN SHALE PARTINGS AND STYOLITES SPACED 2 TO 8 INCHES

360

POROUS ZONES FROM 220.8 TO 221.8 AND 222.9 TO 223.2 FEET WITH 1/4 TO 1/10 INCH OPENINGS SPACED 1/4 TO 2 INCHES

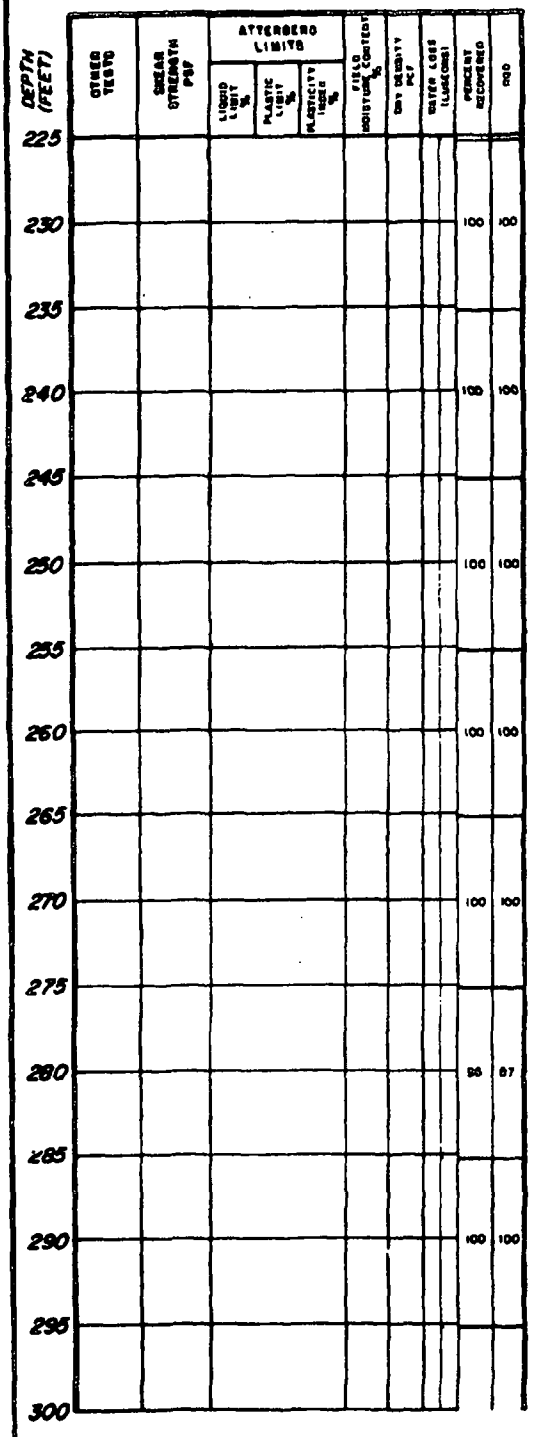
BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-157

LOG OF BORING L-4
(SHEET 3 OF 5)

BORING L-4 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

GRAY CALCAREOUS SILTSTONE, FINE SANDY, LAMINATED, HIGHLY FOSSILIFEROUS IN ZONES WITH NUMEROUS VERY THIN IRREGULAR WHITE BANDS, INTERBEDDED GRADATIONAL LAYERS OF SILTY LIMESTONE 1 TO 6 INCHES THICK, SPACED 1 TO 12 INCHES; PINPOINT POROSITY AND 1/4 INCH OPEN VUGS SPACED 1/2 TO 2 INCHES FROM 233.3 TO 233.7 FEET (SCALES FORMATION)

1 INCH OPEN VUG AT 237.2 FEET, MINERAL DEPOSITS

GRAY SILTY SHALE, CALCAREOUS; THINLY LAMINATED; INTERBEDDED GRADATIONAL ZONES OF SILTY LIMESTONE 1 TO 6 INCHES THICK, SPACED 4 TO 16 INCHES

GRADES TO INTERBEDDED LAYERS OF LIGHT GRAY SILTY LIMESTONE 6 TO 16 INCHES THICK, SPACED 7 TO 32 INCHES

DARK GRAY SHALE, DOLOMITIC; THICKLY LAMINATED, OCCASIONAL INTERBEDDED ZONES OF LIGHT GRAY CALCAREOUS SILTSTONE OR VERY SILTY LIMESTONE 2 TO 6 INCHES THICK, SPACED 2 TO 4 FEET

CALCAREOUS SILTSTONE LAYERS GRADE OUT BELOW 290.0 FEET

355
350
345
340
335
330
325
320
315
310
305
300
295
290
285

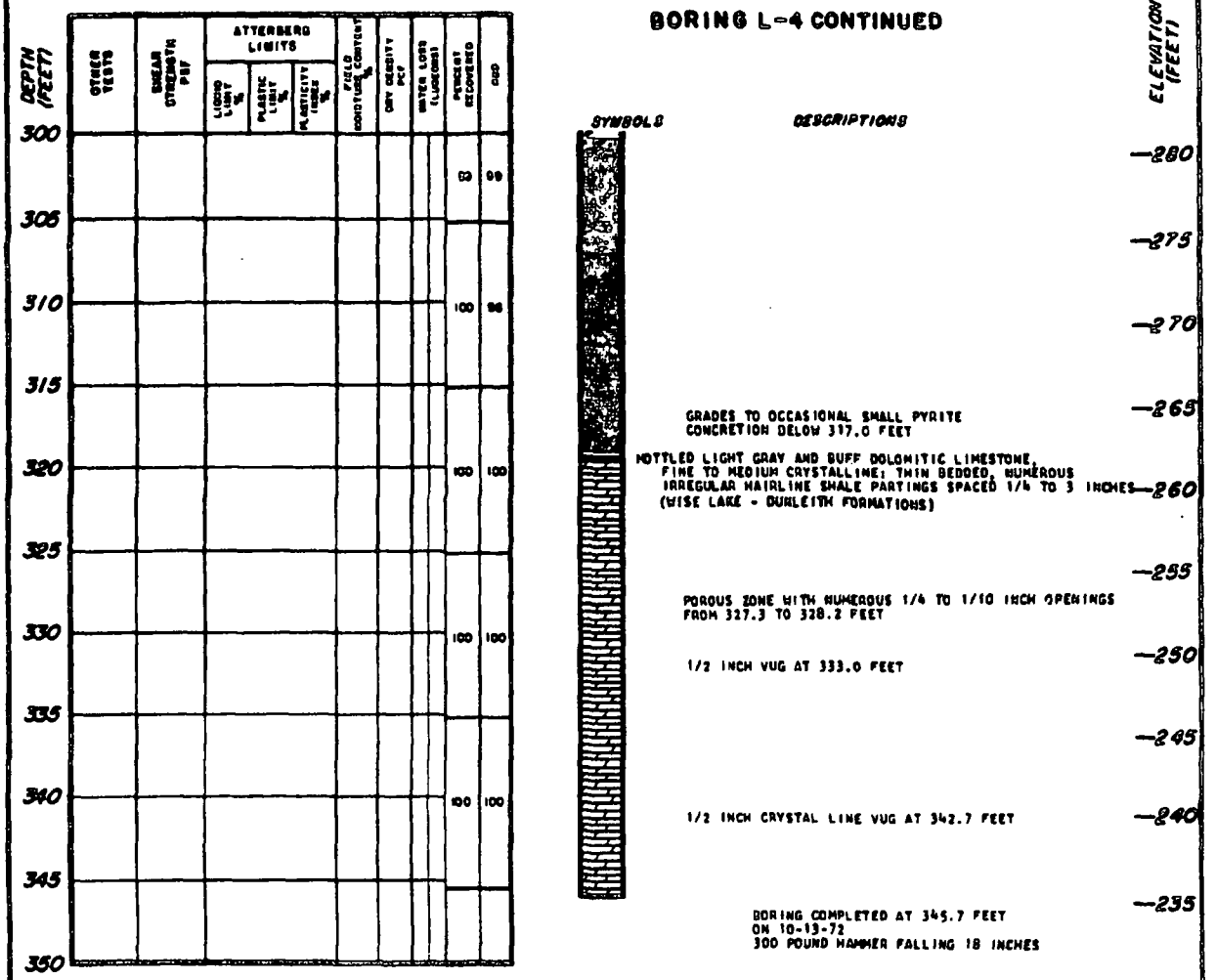
BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-157

LOG OF BORING L-4
(SHEET 4 OF 5)

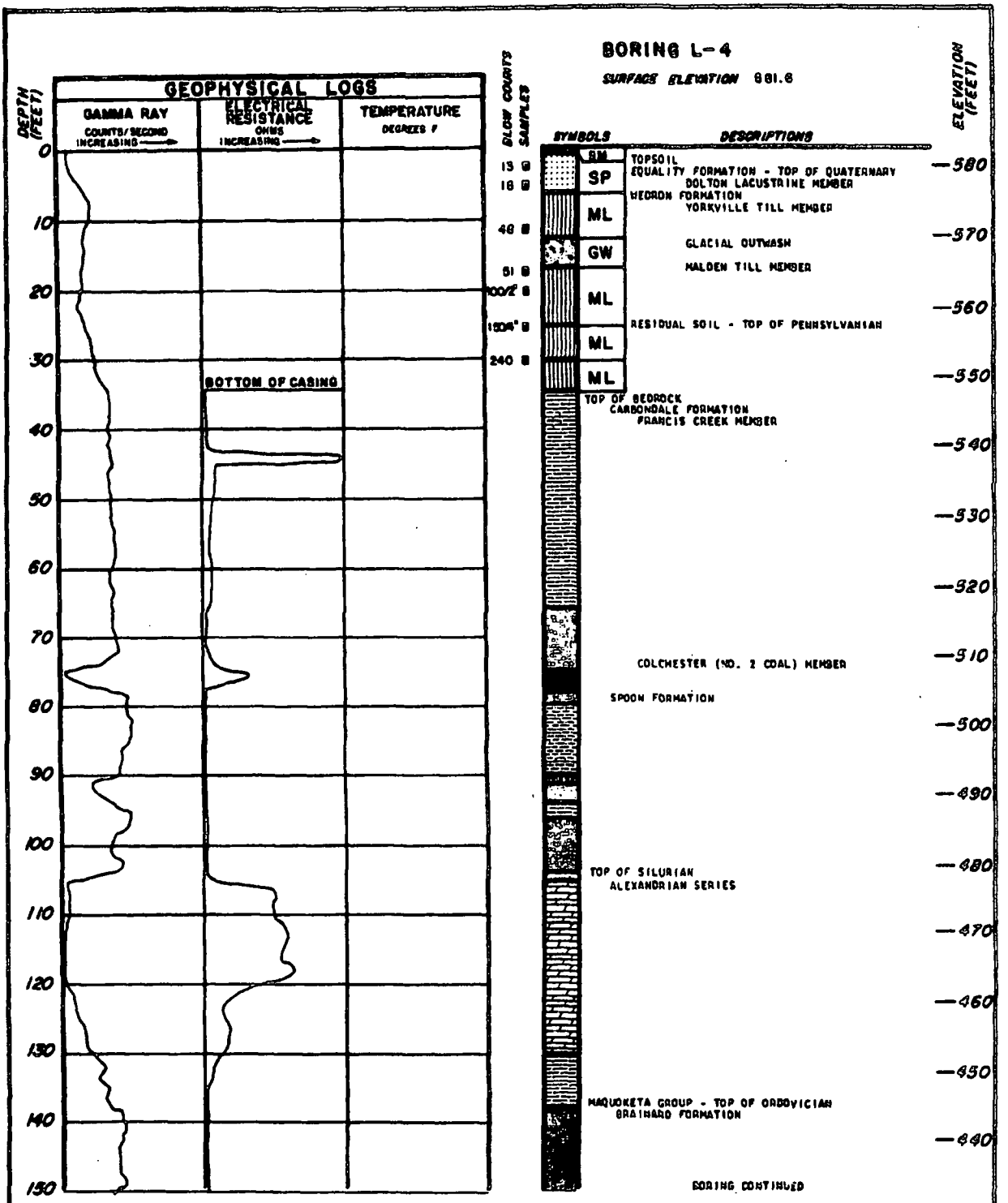
BORING L-4 CONTINUED



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-157

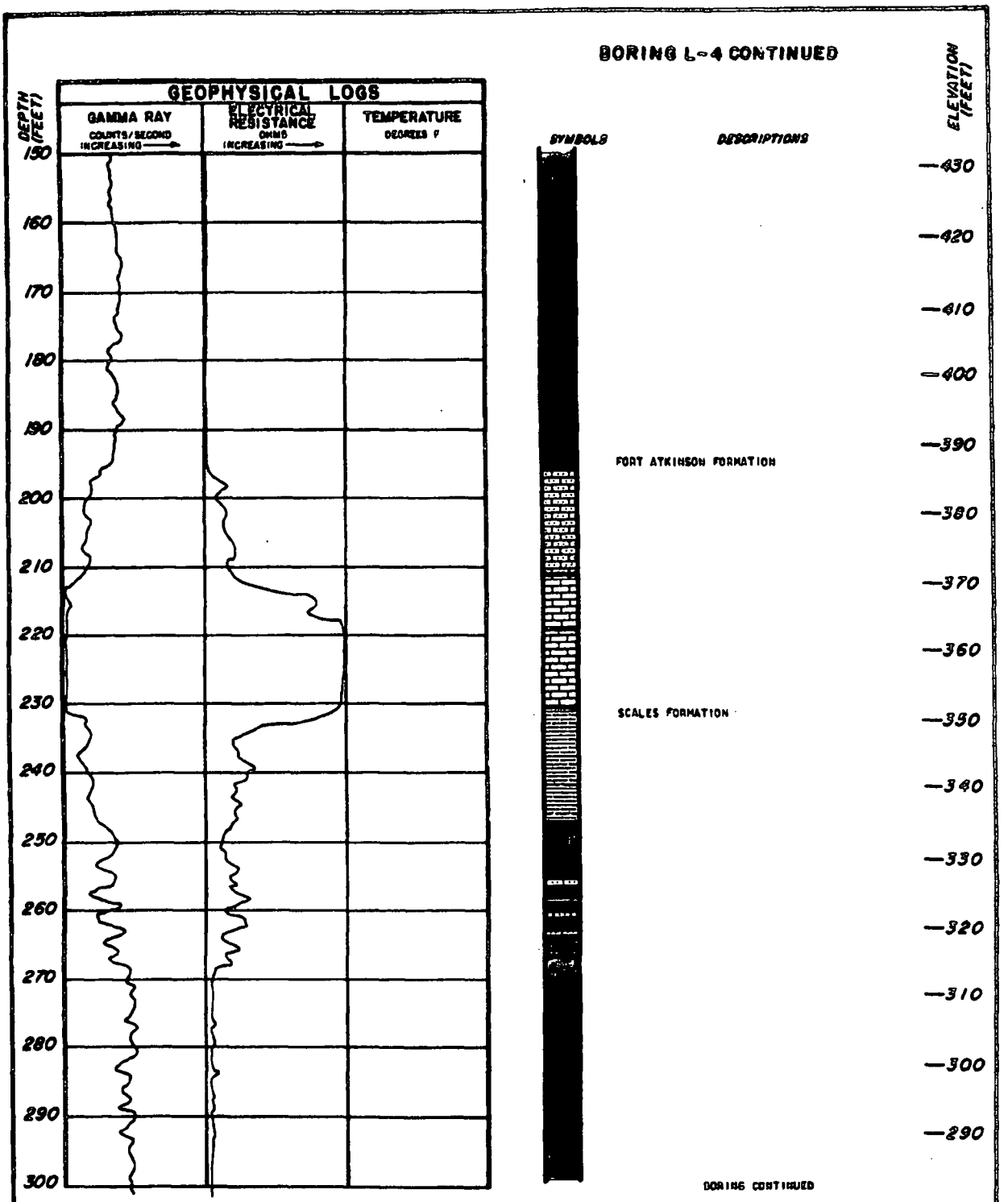
LOG OF BORING L-4
(SHEET 5 OF 5)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-158

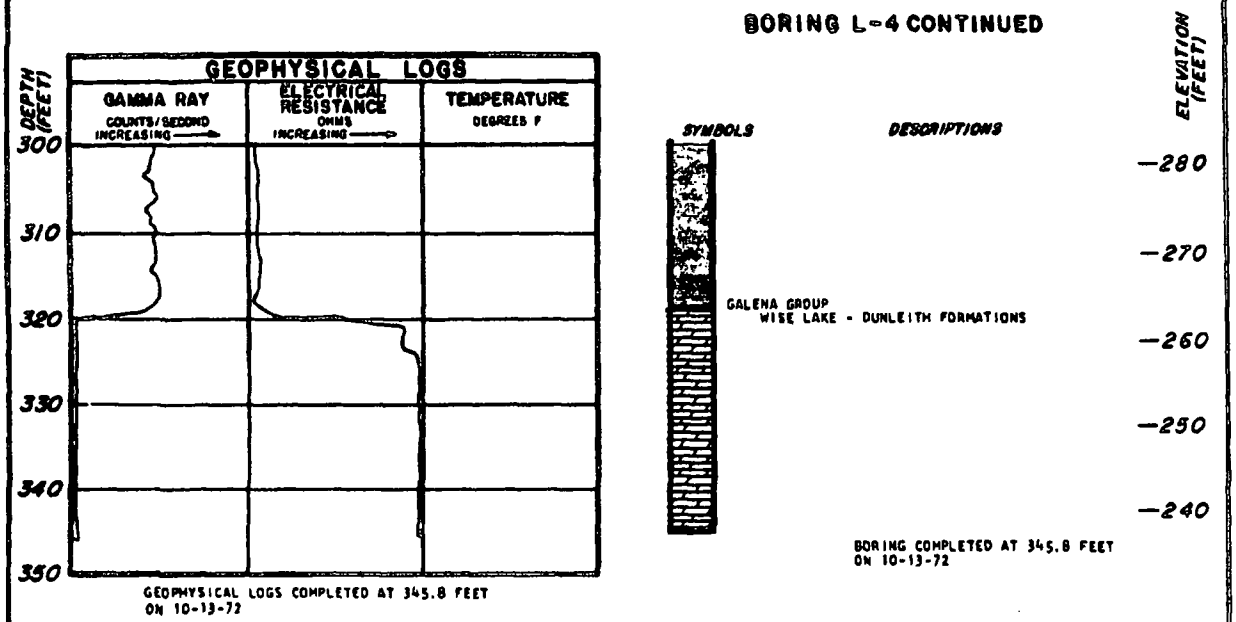
LOG OF BORING L-4 (GEOPHYSICAL LOG)
(SHEET 1 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-158

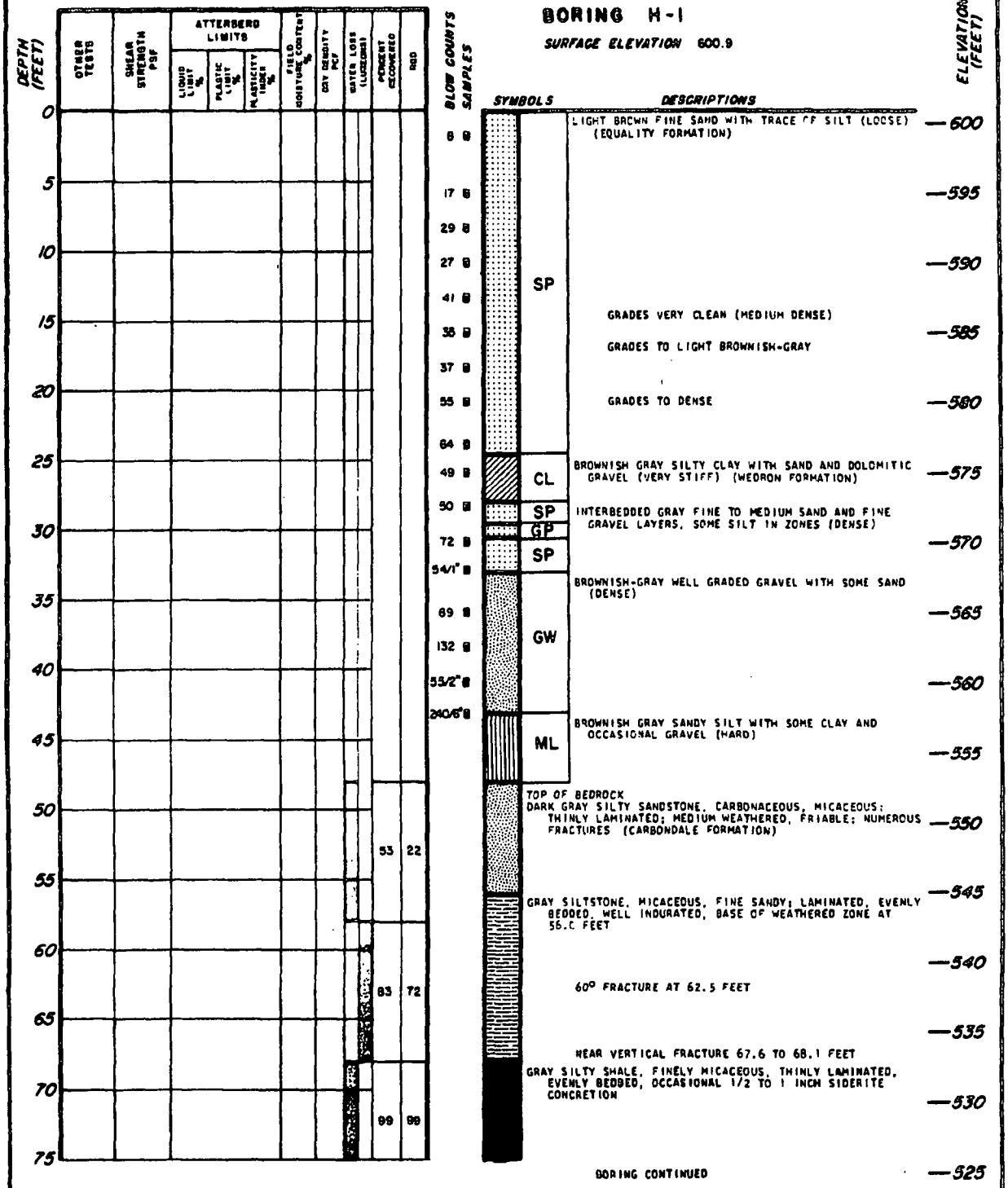
LOG OF BORING L-4 (GEOPHYSICAL LOG)
(SHEET 2 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-158

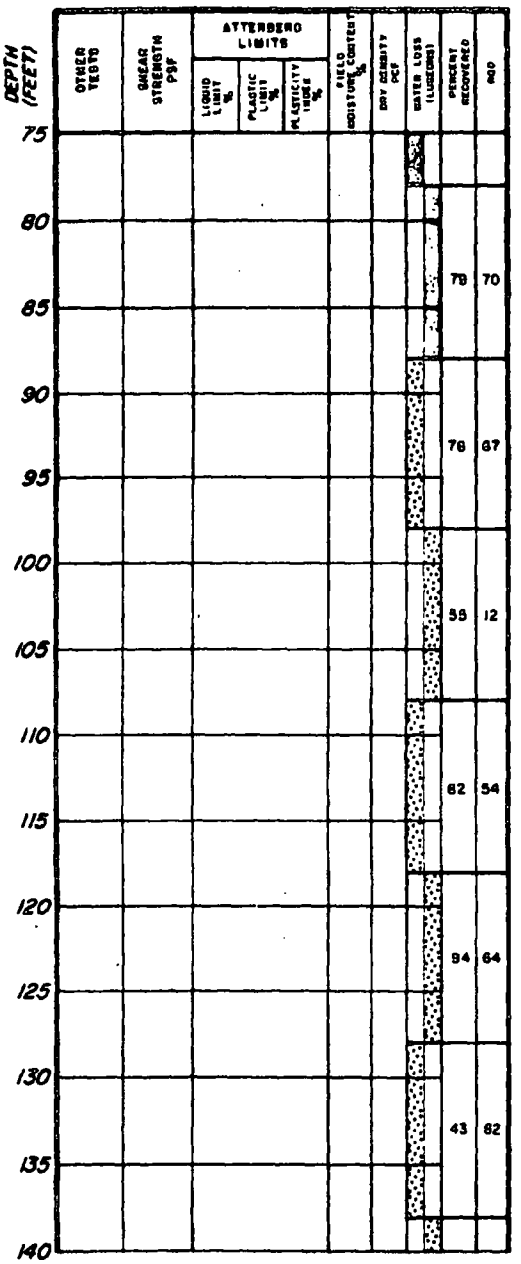
LOG OF BORING L-4 (GEOPHYSICAL LOG)
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 1 OF 22)



BORING H-1 CONTINUED

ELEVATION (FEET)

SYMBOLS

DESCRIPTIONS

525

520

BLACK COAL; LAMINATED TO THINLY BEDDED; NUMEROUS VERTICAL FRACTURES WITH VEINLETS OF PYRITE AND CLAY — 515

DARK GRAY TO BROWNISH-GRAY CLAYEY SHALE; THINLY LAMINATED, CARBONACEOUS IN ZONES; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES (SPOON FORMATION) — 510

LIGHT GREENISH-GRAY FINE SANDY SILTSTONE, MICACEOUS, LAMINATED

DARK BROWNISH GRAY SILTY SHALE, CLAYEY AND CARBONACEOUS IN ZONES; THINLY LAMINATED; FRAGMENTED WITH SLICKENSIDES — 505

LIGHT GREENISH-GRAY SANDY SILTSTONE, MICACEOUS; INDISTINCTLY BEDDED TO LAMINATED — 500

BROWNISH-GRAY TO GRAY SILTY SHALE, CLAYEY IN ZONES, BRITTLE; THINLY LAMINATED, CARBONACEOUS PARTINGS IN ZONES; FRAGMENTED WITH SLICKENSIDES — 495

— 490

GRADES MORE SILTY BELOW 113.7 FEET, LESS FRAGMENTED

45° FRACTURES AT 115.2 AND 116.0 FEET — 485

DARK GRAY SILTSTONE; THINLY LAMINATED, NUMEROUS CARBONACEOUS PARTINGS
45° FRACTURE AT 119.0 FEET

DARK GREENISH-GRAY SHALE, DOLOMITIC, THINLY LAMINATED (BRAINARD FORMATION) — 480

45° FRACTURE AT 121.3 FEET
70° FRACTURES 123.3 TO 124.4 FEET

GRADES CALCAREOUS BELOW 125.5 FEET — 475

GRAY SILTY LIMESTONE, FOSSILIFEROUS; THIN BEDDED TO LAMINATED, NUMEROUS DARK GRAY IRREGULAR PARTINGS AND GRADATIONAL ZONES OF CALCAREOUS SHALE (FORT ATKINSON FORMATION) — 470

— 465

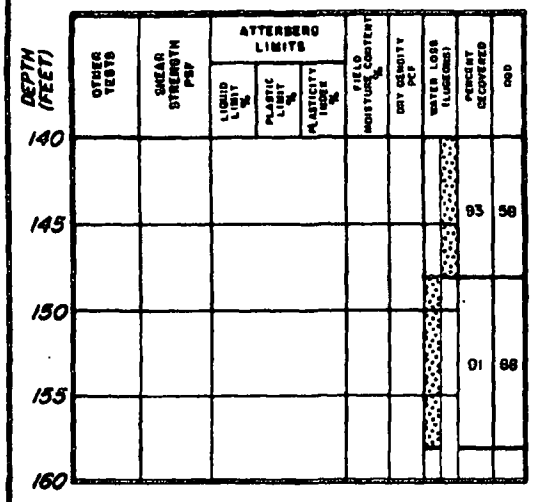
BORING CONTINUED — 460

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 2 OF 22)

BORING H-1 CONTINUED



SYMBOLS

DESCRIPTIONS

GRADES LESS SILTY AND COARSELY CALCARENITIC BELOW 144.6 FEET

LIGHT GRAY TO BUFF LIMESTONE, VERY PURE, COARSELY CALCARENITIC; MEDIUM BEDDED, VERY THIN SHALE PARTINGS AND STYOLITES SPACED 1/2 TO 8 INCHES; OCCASIONAL 1 TO 3 INCH OIL STAINED ZONES WITH POORLY DEVELOPED POROSITY

BORING COMPLETED AT 158.0 FEET ON 10-24-72

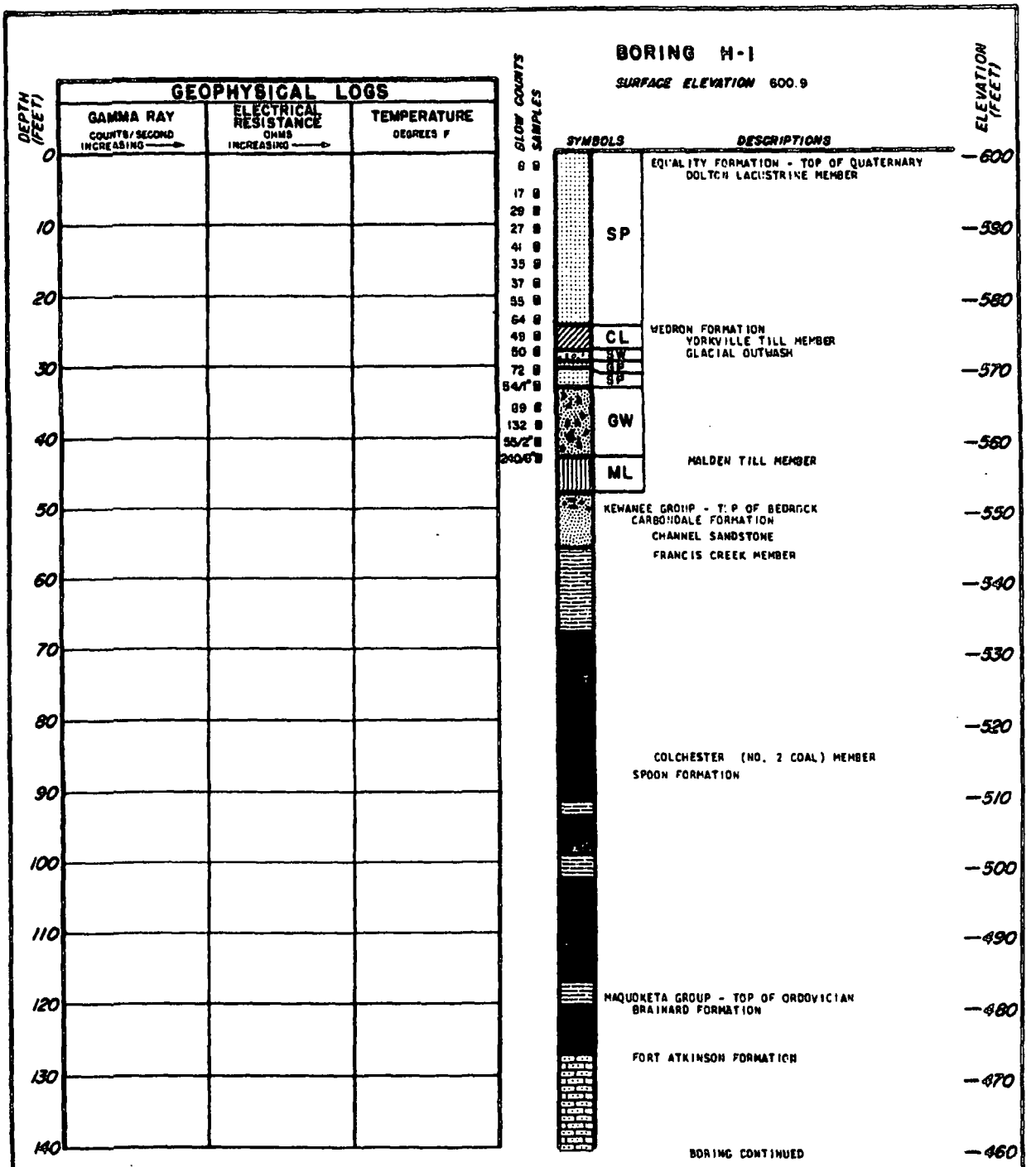
ELEVATION (FEET)

460
455
450
445
440

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 3 OF 22)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 4 OF 22)

BORING H-1 CONTINUED

DEPTH (FEET)	GEOPHYSICAL LOGS		
	GAMMA RAY COUNTS/SECOND INCREASING →	ELECTRICAL RESISTANCE OHMS INCREASING →	TEMPERATURE DEGREES F
140			
150			
160			

SYMBOLS

DESCRIPTIONS

BORING COMPLETED AT 158.0 FEET ON 10-11-72

ELEVATION (FEET)

460

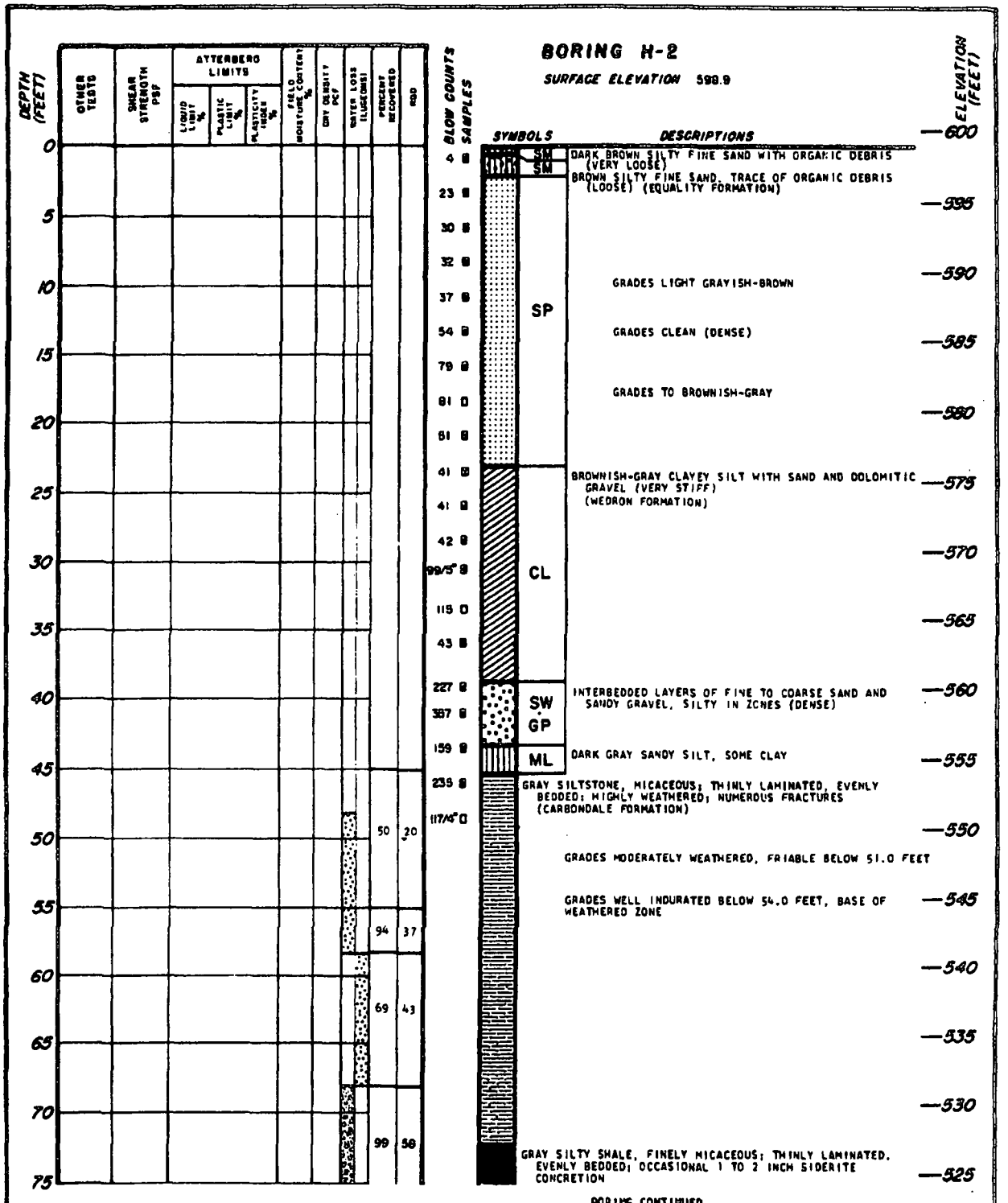
450

440

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

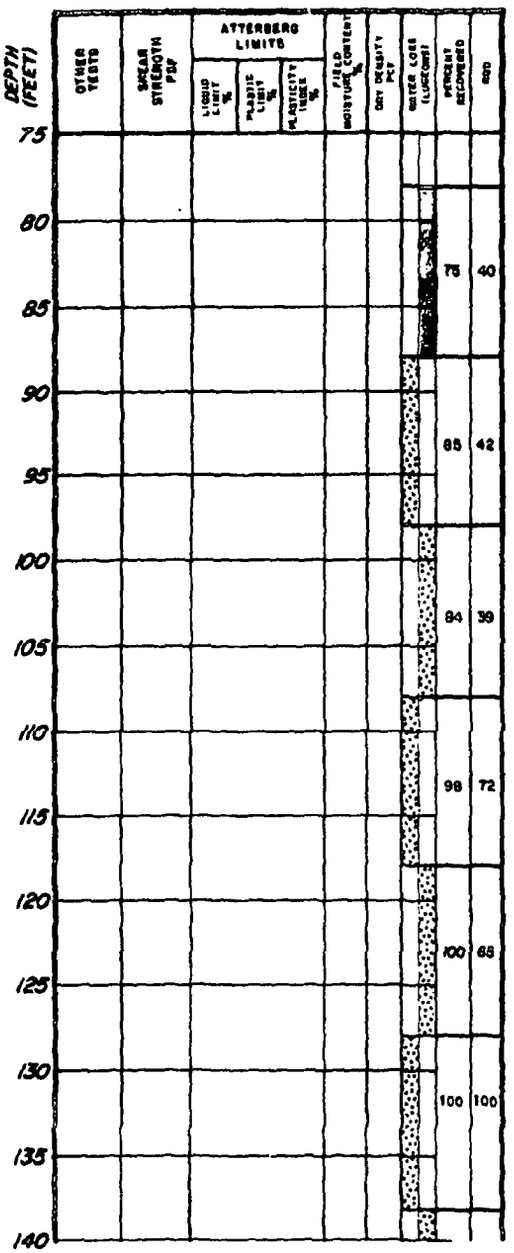
LOGS OF "H" BORINGS
(SHEET 5 OF 22)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 6 OF 22)



BORING H-2 CONTINUED

ELEVATION (FEET)

SYMBOLS

DESCRIPTIONS

—525

—520

BLACK COAL; LAMINATED TO THINLY BEDDED; NUMEROUS VERTICAL TIGHT FRACTURES WITH SOME PYRITE AND CLAY —515

LIGHT TO DARK BROWNISH-GRAY CLAYEY SHALE, CARBONACEOUS IN ZONES; THINLY LAMINATED; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES (SPOON FORMATION)

—510

GRADES LIGHT BROWNISH-GRAY BELOW 90.8 FEET

LIGHT GREENISH-GRAY SILTSTONE, MICACEOUS, FINE SANDY IN ZONES; THINLY LAMINATED —505

DARK BROWNISH-GRAY TO BLACK CLAYEY SHALE; THINLY LAMINATED, CARBONACEOUS IN ZONES, BRITTLE; FRAGMENTED, SLICKENSIDES

—500

LIGHT GREENISH-GRAY SANDY SILTSTONE, MICACEOUS; INDISTINCTLY LAMINATED

DARK BROWNISH-GRAY TO BLACK CLAYEY SHALE; INDISTINCT BEDDING IN ZONES, BRITTLE; CARBONACEOUS IN ZONES, FRAGMENTED, SLICKENSIDES —495

—490

BROWNISH-GRAY SILTSTONE, FINELY MICACEOUS, FINELY LAMINATED, WELL INDURATED

—485

GRADES INCREASINGLY CARBONACEOUS BELOW 118.5 FEET —480

DARK GREENISH-GRAY SHALE, SILTY, OOLOMITIC; THINLY LAMINATED, PARTS EASILY ALONG BEDDING PLANES
GRADES CALCAREOUS BELOW 122.3 FEET
(BRAINARD FORMATION) —475
GRAY SILTY LIMESTONE, FOSSILIFEROUS; LAMINATED TO THINLY BEDDED, NUMEROUS IRREGULAR PARTINGS AND GRADATIONAL ZONES OF CALCAREOUS SHALE (FORT ATKINSON FORMATION)
2 INCH VUG WITH MINERAL DEPOSITS AT 124.8 FEET

—470

45° FRACTURE WITH SLICKENSIDES AT 132.5 FEET

—465

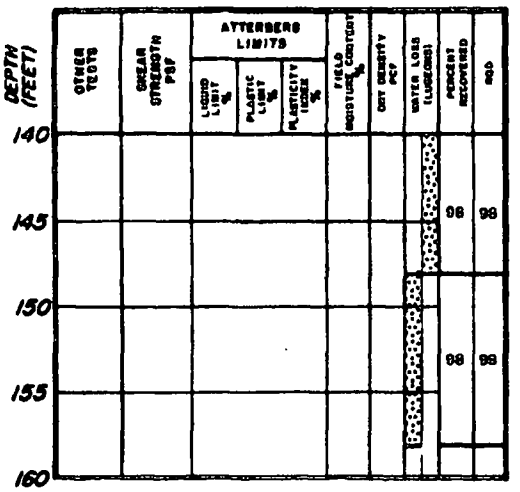
—460

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 7 OF 22)



BORING H-2 CONTINUED

ELEVATION (FEET)

SYMBOLS | DESCRIPTIONS

460

GRADES LESS SILTY, COARSE CALCARENITIC AT 141.7 FEET

455

LIGHT GRAY TO BUFF LIMESTONE, VERY PURE, COARSELY CALCARENITIC; MEDIUM BEDDED, OCCASIONAL VERY THIN SHALE PARTING AND STYOLITE SPACED 1 TO 8 INCHES

450

2 TO 4 INCH OIL STAINED ZONES WITH MINOR POROSITY AT 151.7, 154.0, AND 157.0 FEET

445

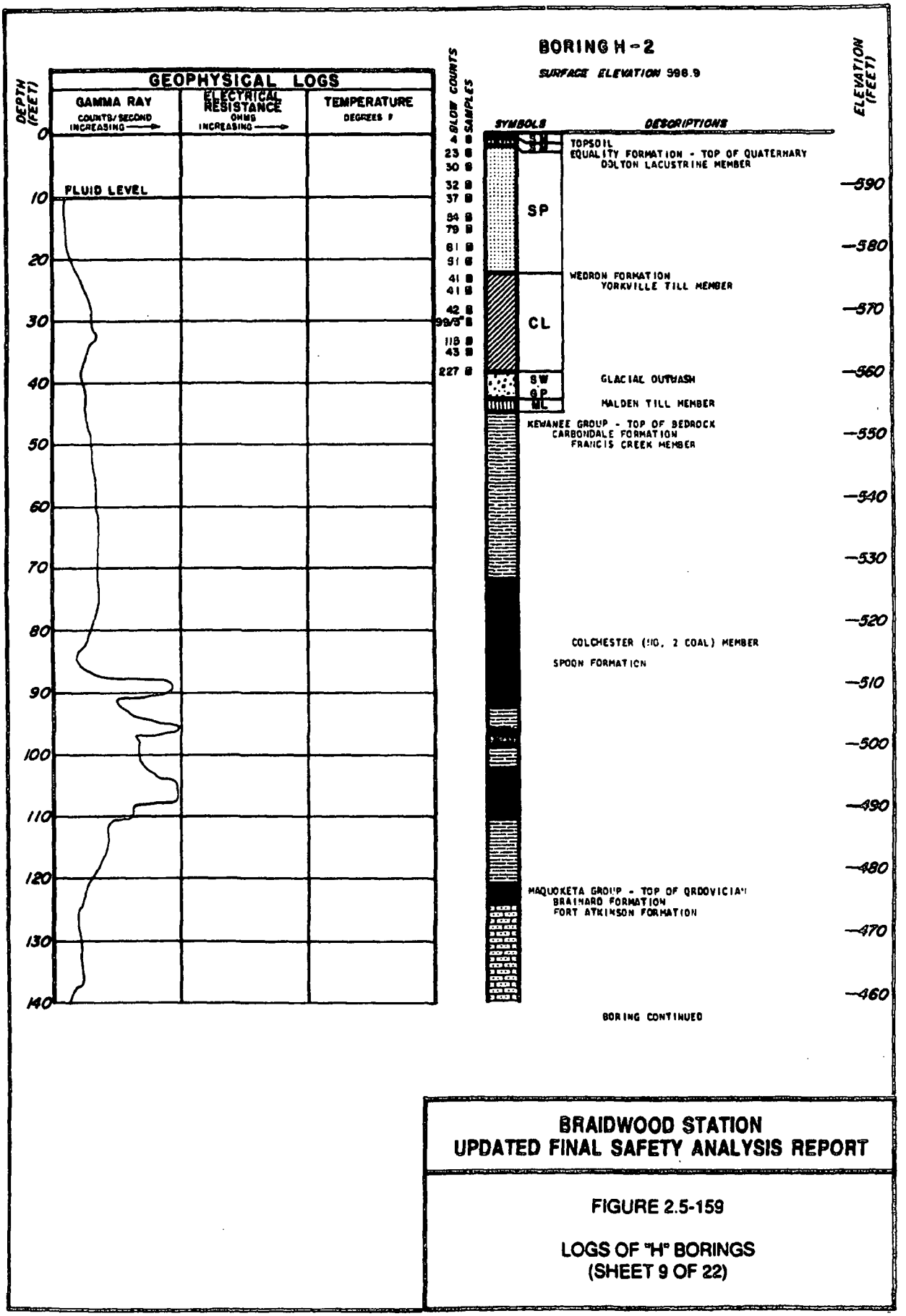
BORING COMPLETED AT 158.0 FEET ON 10-31-72

440

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 8 OF 22)

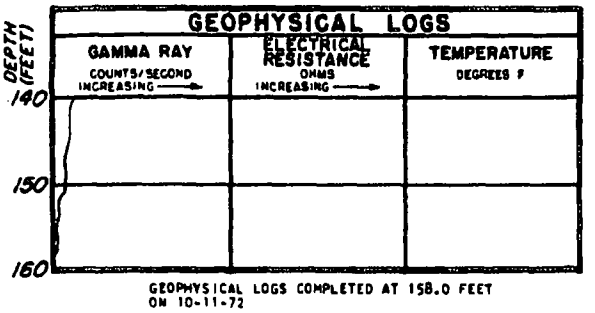


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 9 OF 22)

BORING H-2 CONTINUED



GEOPHYSICAL LOGS COMPLETED AT 158.0 FEET ON 10-11-72

SYMBOLS

DESCRIPTIONS

BORING COMPLETED AT 158.0 FEET ON 10-11-72

ELEVATION (FEET)

460

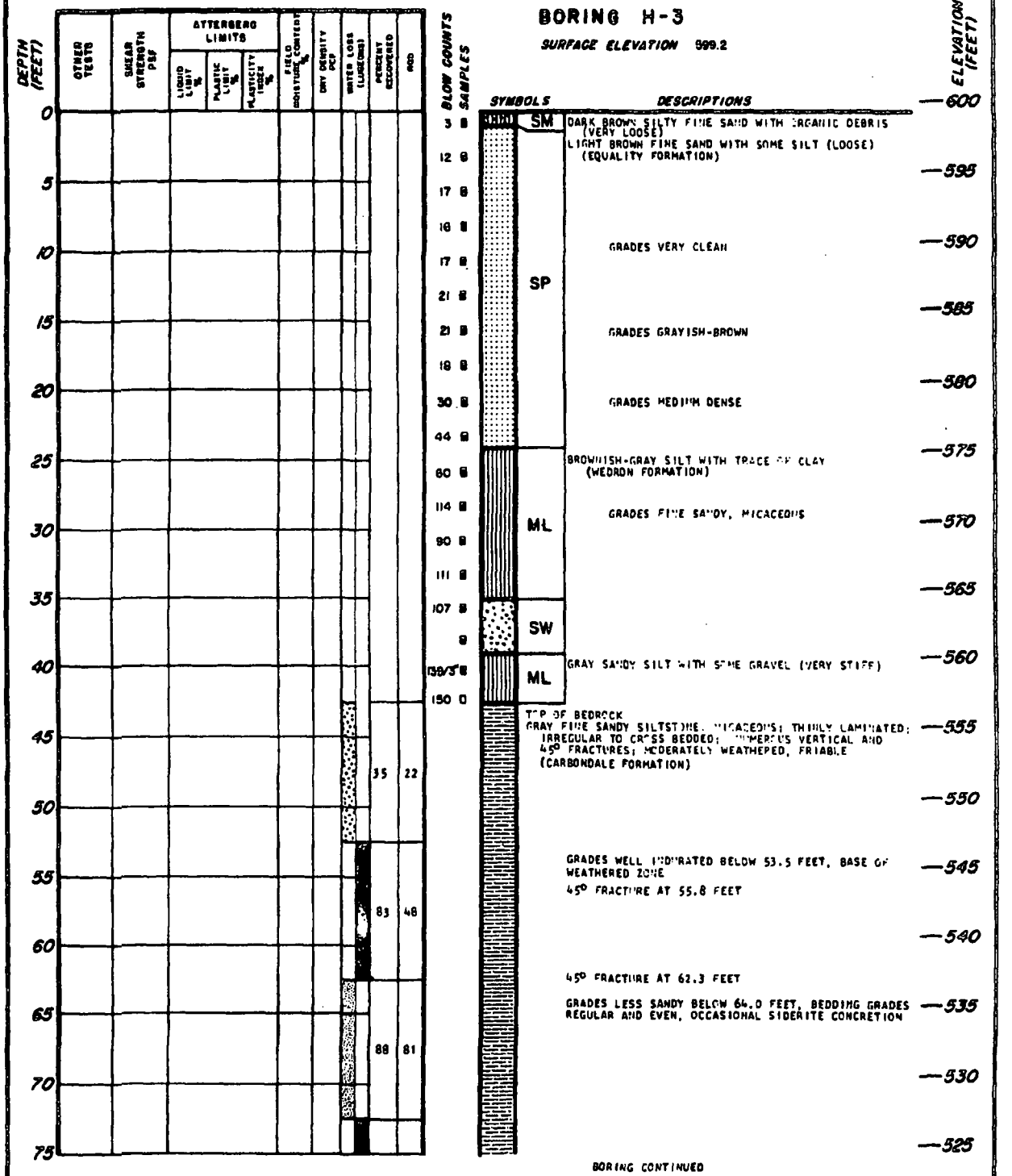
450

440

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 10 OF 22)

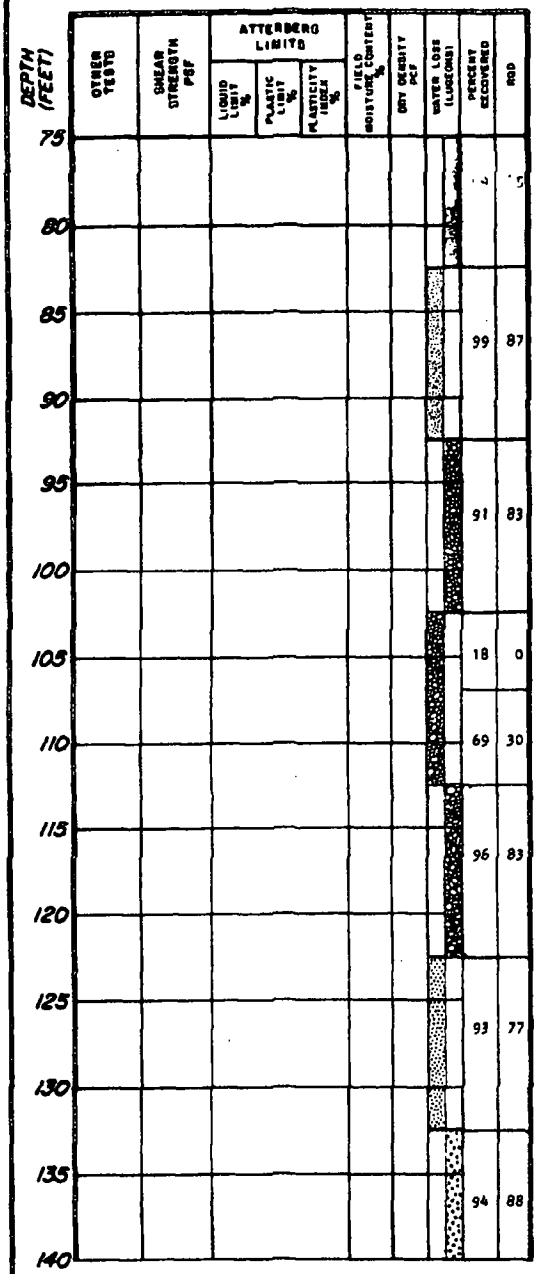


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 11 OF 22)

BORING H-3 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

525

VERTICAL FRACTURE 86.7 TO 87.5 FEET

520

515

510

45° FRACTURE AT 92.5 FEET

GRAY SILTY SHALE, MICACEOUS, THINLY LAMINATED, EVENLY BEDDED

505

NEAR VERTICAL FRACTURE 96.5 TO 97.5 FEET

30° FRACTURE AT 97.8 FEET

500

BLACK COAL, THINLY LAMINATED TO THIN BEDDED; NUMEROUS VERTICAL FRACTURES WITH SOME PYRITE AND CLAY

DARK GRAY TO BLACK CLAYEY SHALE, HIGHLY CARBONACEOUS IN ZONES; THINLY LAMINATED; FRAGMENTED WITH NUMEROUS SLICKENSIDES (SPOON FORMATION)

495

BLACK COAL, THINLY LAMINATED TO THIN BEDDED; NUMEROUS VERTICAL FRACTURES WITH SOME PYRITE AND CLAY

DARK GRAY TO BLACK CLAYEY SHALE, HIGHLY CARBONACEOUS IN ZONES; THINLY LAMINATED; FRAGMENTED WITH NUMEROUS SLICKENSIDES

490

BLACK COAL, THINLY LAMINATED TO THIN BEDDED; NUMEROUS VERTICAL FRACTURES WITH SOME PYRITE AND CLAY

DARK GRAY SILTSTONE, FINE SANDY, MICACEOUS, CARBONACEOUS; THINLY LAMINATED

485

480

GRADES CONGLOMERATIC FROM 120.8 TO 121.0 FEET

GREENISH-GRAY SHALE, SILTY, DOLOMITIC; THINLY LAMINATED, GRADES CALCAREOUS BELOW 123.0 FEET (BRAINARD FORMATION)

475

GRAY SILTY LIMESTONE, FOSSILIFEROUS; THIN BEDDED TO LAMINATED, NUMEROUS IRREGULAR PARTINGS AND GRADATIONAL ZONES OF DARK GRAY CALCAREOUS SHALE (FORT ATKINSON FORMATION)

470

465

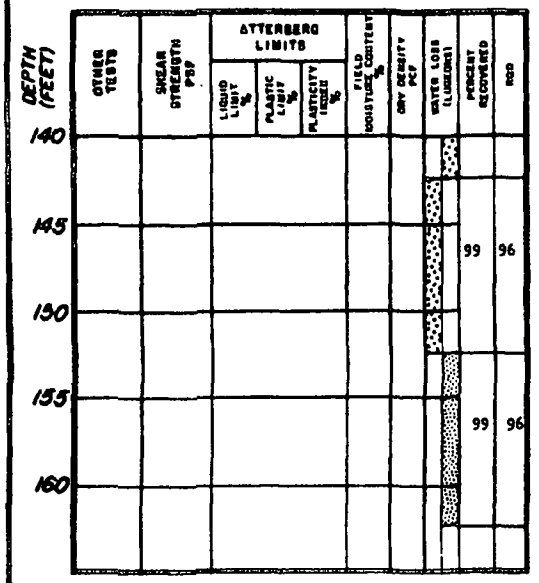
460

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 12 OF 22)



BORING H-3 CONTINUED

ELEVATION (FEET)

SYMBOLS

DESCRIPTIONS

460

455

450

445

440

GRADES LESS SILTY AND COARSELY CALCARENITIC BELOW 145.0 FEET

TWO 1/2 TO 1 INCH VUGS WITH MINERAL DEPOSITS AT 146.3 FEET

1 FEET CRYSTAL LINE VUG AT 149.0 FEET

3 INCH POROUS ZONE WITH OIL STAINS AT 150.4 FEET

MINOR OIL STAINS AT 151.5 FEET

LIGHT GRAY TO BUFF LIMESTONE, VERY PURE, COARSELY CALCARENITIC; MEDIUM BEDDED, OCCASIONAL VERY THIN SHALE PARTING OR STYOLITE SPACED 1 TO 8 INCHES

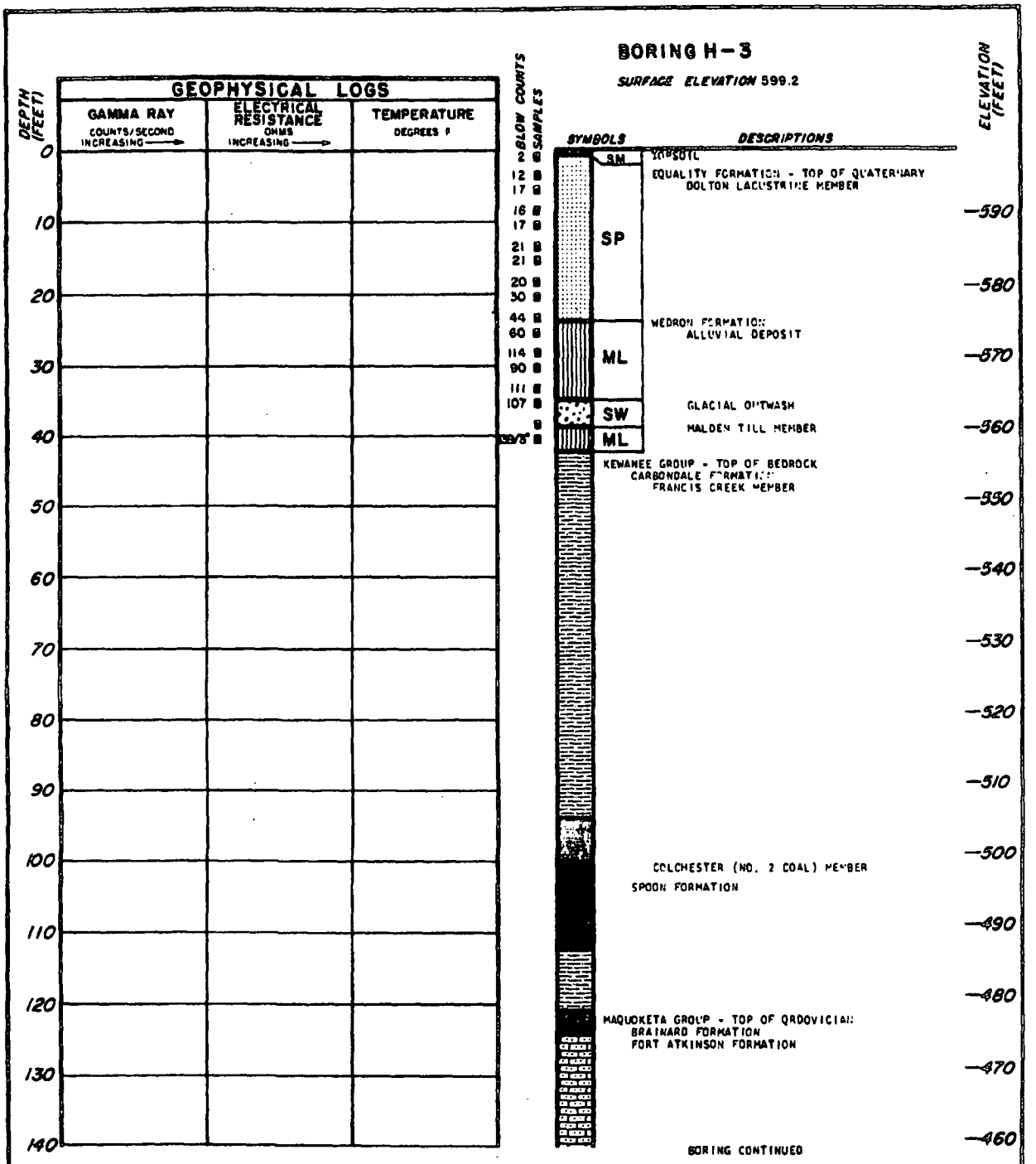
2 INCH CRYSTAL LINED VUG AT 156.7 FEET

BORING COMPLETED AT 162.5 ON 10-20-72

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 13 OF 22)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 14 OF 22)

BORING H-3 CONTINUED

DEPTH (FEET)	GEOPHYSICAL LOGS		
	GAMMA RAY COUNTS/SECOND INCREASING →	ELECTRICAL RESISTANCE OHMS INCREASING →	TEMPERATURE DEGREES F
140			
150			
160			
170			

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

450

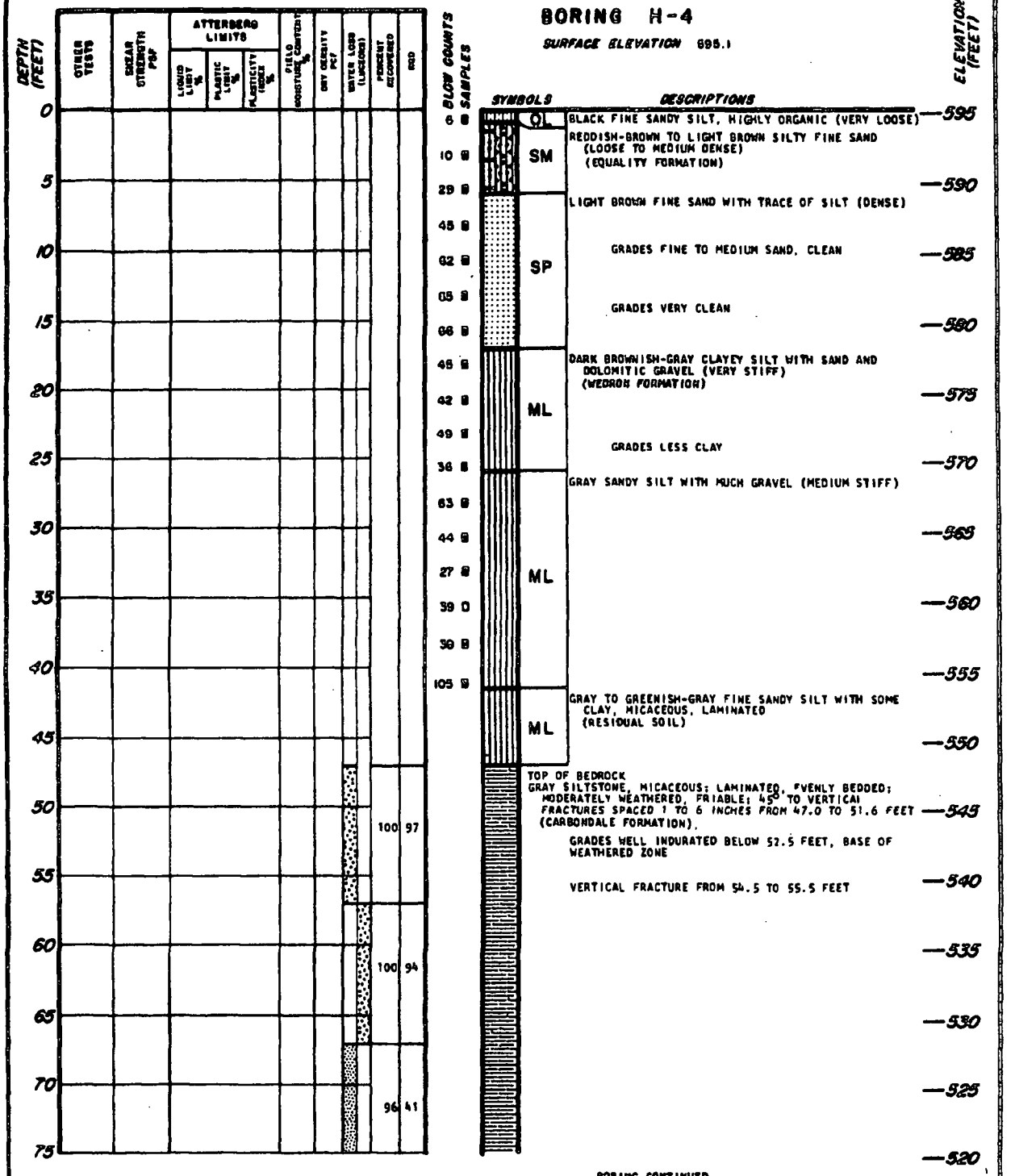
440

BORING COMPLETED AT 162.5 FEET
ON 10-12-72

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

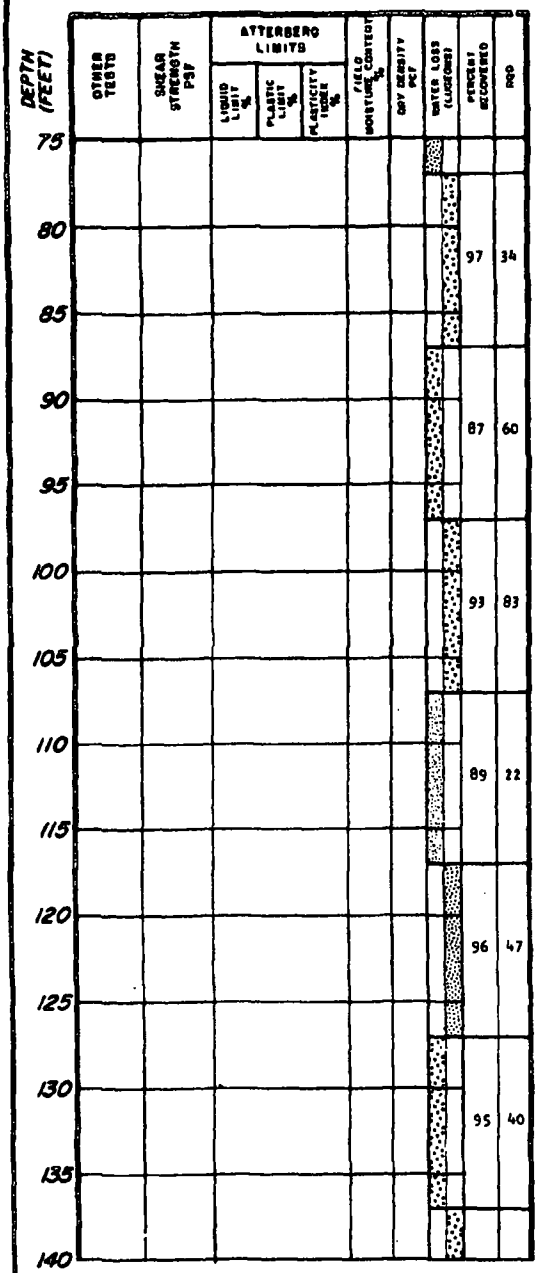
LOGS OF "H" BORINGS
(SHEET 15 OF 22)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 16 OF 22)



BORING H-4 CONTINUED

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

520

GRAY SILTY SHALE, FINELY MICACEOUS; THINLY LAMINATED, EVENLY BEDDED; OCCASIONAL SIDERITE CONCRETION

515

GRADES CARBONACEOUS BELOW 84.5 FEET

510

BLACK COAL; LAMINATED TO THINLY BEDDED; NUMEROUS VERTICAL FRACTURES WITH VEINLETS OF PYRITE AND CLAY

DARK GRAY TO BLACK CLAYEY SHALE, CARBONACEOUS; THINLY LAMINATED; FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES (SPOON FORMATION)
GRADES LIGHT GRAY BELOW 90.7 FEET

505

LIGHT GREENISH-GRAY SILTSTONE, MICACEOUS, FINE SANDY, INDISTINCTLY LAMINATED; VERTICAL FRACTURES 93.4 TO 93.6 FEET AND 94.7 TO 95.5 FEET
GRAY TO DARK GRAY CLAYEY SHALE, CARBONACEOUS; THINLY LAMINATED, BRITTLE; FRAGMENTED WITH SLICKENSIDES

500

LIGHT GREENISH-GRAY SILTSTONE, MICACEOUS, FINE SANDY, BEDDING IS INDISTINCT TO THINLY LAMINATED

495

BLACK TO BROWNISH-GRAY CLAYEY SHALE, BRITTLE; CARBONACEOUS IN ZONES WITH NUMEROUS PLANT IMPRESSIONS; BEDDING IS INDISTINCT TO THINLY LAMINATED; FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES

490

485

480

DARK BROWNISH-GRAY SILTSTONE, MICACEOUS, THINLY LAMINATED, NUMEROUS CARBONACEOUS PARTINGS BELOW 118.5 FEET

DARK GREENISH-GRAY SHALE, SILTY, DOLOMITIC; LAMINATED, IRREGULAR BEDDING, GRADES CALCAREOUS BELOW 121.0 FEET (BRAINARD FORMATION)
GRAY SILTY LIMESTONE, FOSSILIFEROUS; LAMINATED TO THINLY BEDDED, NUMEROUS IRREGULAR PARTINGS AND GRADATIONAL ZONES OF CALCAREOUS SHALE (FORT ATKINSON FORMATION)
45° FRACTURE AT 125.7 FEET, SLICKENSIDES

475

470

465

GRADES LESS SILTY BELOW 136.0 FEET, CALCARENITIC

460

LIGHT GRAY TO BUFF LIMESTONE, PURE, COARSELY CALCARENITIC; MEDIUM BEDDED, OCCASIONAL VERY THIN IRREGULAR SHALE PARTINGS AND STYLOLITES SPACED 1 TO 11 INCHES

455

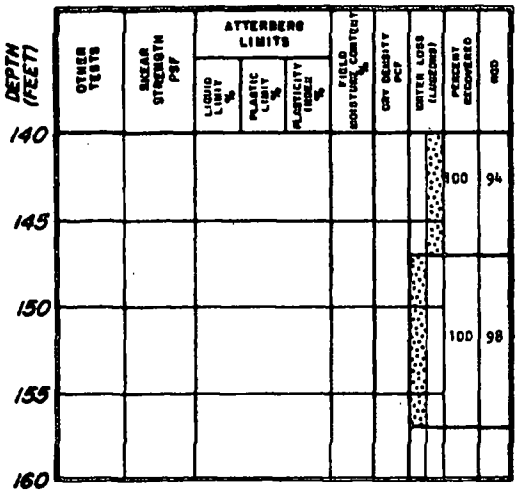
BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5 -159

LOGS OF "H" BORINGS
(SHEET 17 OF 22)

BORING H-4 CONTINUED



SYMBOLS

DESCRIPTIONS

OIL STAINS FROM 141.0 TO 144.2 FEET, FINELY POROUS, NO DISTINCT VOIDS

60° FRACTURE AT 143.3 FEET, MINERALIZED

VERTICAL FRACTURE 149.3 TO 149.7 FEET

OIL STAINS FROM 153.4 TO 154.7 FEET, FINELY POROUS

BORING COMPLETED AT 157.0 FEET ON 10-13-72

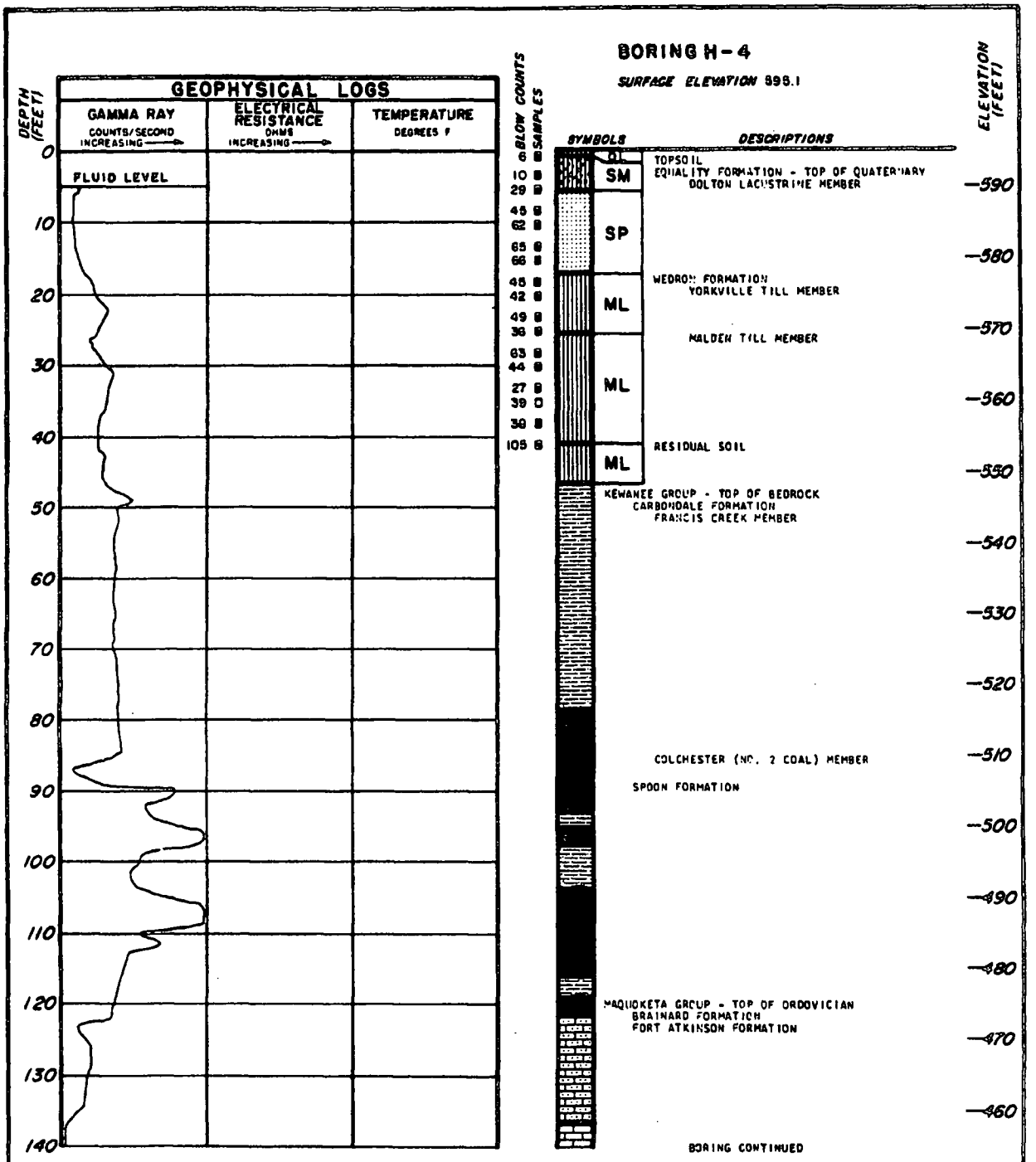
ELEVATION (FEET)

455
450
445
440
435

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 18 OF 22)

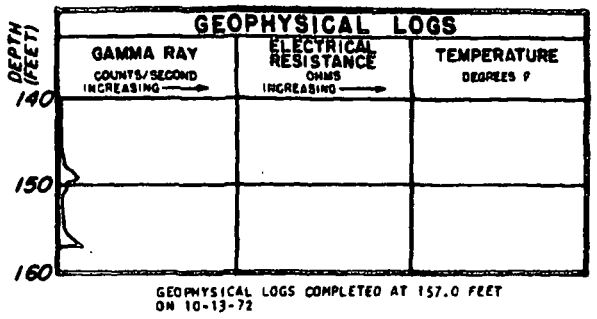


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 19 OF 22)

BORING H-4 CONTINUED



GEOPHYSICAL LOGS COMPLETED AT 157.0 FEET ON 10-13-72

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

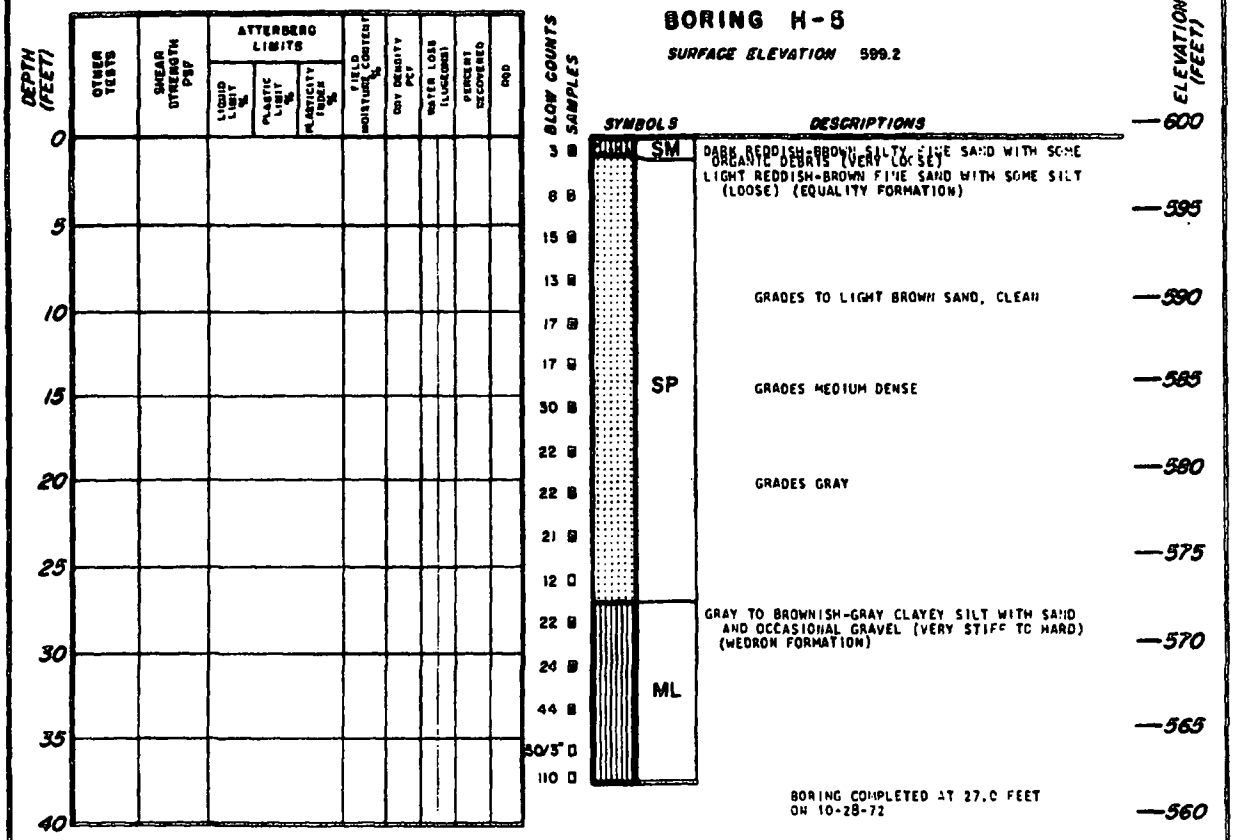
450

BORING COMPLETED AT 157.0 FEET ON 10-13-72

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

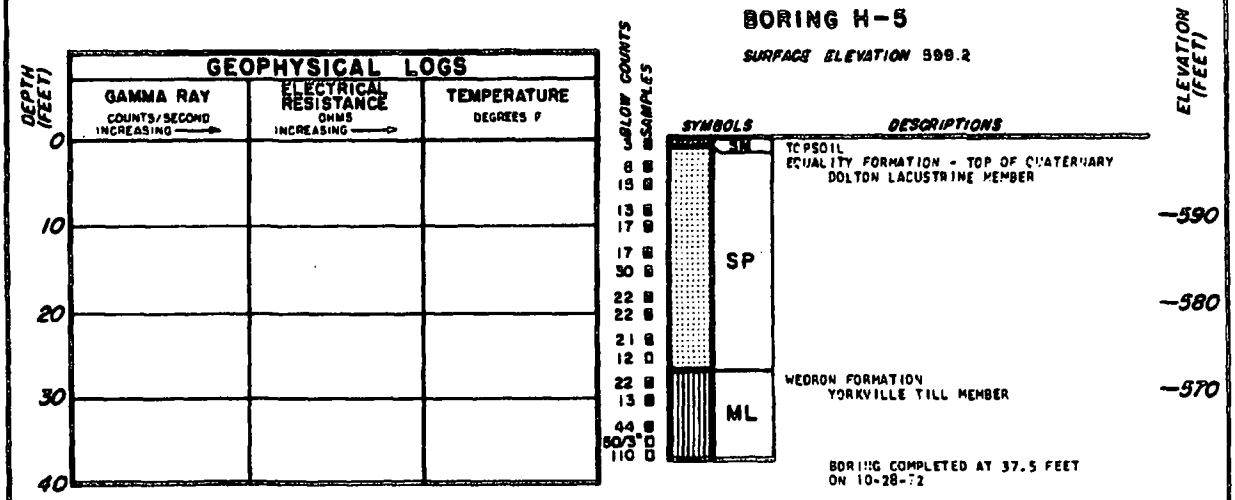
LOGS OF "H" BORINGS
(SHEET 20 OF 22)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

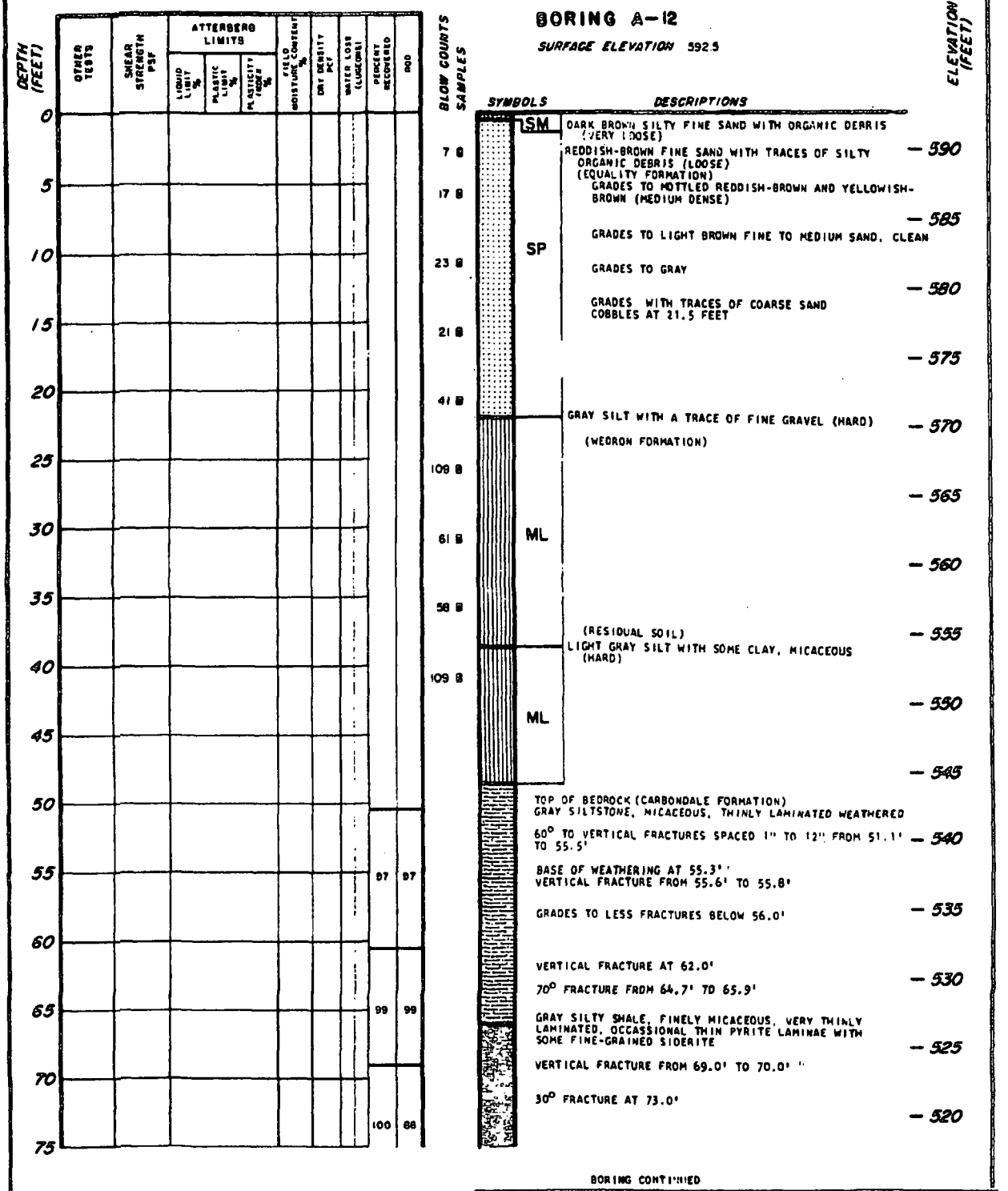
LOGS OF "H" BORINGS
(SHEET 21 OF 22)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 22 OF 22)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-160

LOG OF BORING A-12
(SHEET 1 OF 5)

BORING A-12 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	84
85										
90									89	90
95										
100									100	90
105										
110									100	97
115										
120									100	98
125										
130									100	97
135										
140									100	94
145										
150										

SYMBOLS

DESCRIPTIONS

70° FRACTURE AT 76.0' TO 76.7'
ZONE OF DISTORTED LAMINATIONS WITH NUMEROUS 45° FRACTURES 77.5 TO 79.0'; GRADING CARBONACEOUS — 515

BLACK COAL; THIN-BEDDED; NUMEROUS VERTICAL TIGHT FRACTURES WITH SOME PYRITE AND CLAY; GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 3 INCHES. (SPOON FORMATION)

DARK GRAY CLAYEY SHALE, CARBONACEOUS, HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES — 510

GRADES LESS CARBONACEOUS, LIGHT BROWN TO GRAY COLOR BELOW 85.8'

— 505

GRADES LESS CARBONACEOUS AT 88.5'

LIGHT GRAY, FINE SANDY SILTSTONE, MICACEOUS, INDISTINCTLY LAMINATED, WITH SOME FINE-GRAINED SIDERITE. — 500

GRADES TO THINLY LAMINATED BELOW 93.7'

DARK BROWNISH-GRAY CLAYEY SHALE, CARBONACEOUS IN ZONES, FRAGMENTED WITH NUMEROUS SLICKENSIDES

MOTTLED BROWNISH-RED TO GREEN SHALE, MASSIVE, SIDERITIC, FRACTURES WITH NUMEROUS SLICKENSIDES. — 495

GRADES TO GREEN SHALE WITH A HIGHLY WEATHERED ZONE AT 99.9'

DARK GREENISH-GRAY SHALE, DOLOMITIC, LAMINATED, WELL INDURATED — 490

(BRAINARD FORMATION)

VERTICAL FRACTURE AT 104.6'

VERTICAL FRACTURE AT 107.6' — 485

80° FRACTURE AT 109.1' WITH CALCITE FILLED VUG
30° FRACTURE AT 111.4'

— 480

VERTICAL FRACTURE AT 115.7' — 475

GRADES FOSSILIFEROUS AT ABOUT 119'

GRADES CALCAREOUS AT 123.7'

(FORT ATKINSON FORMATION) — 470

GRAY SILTY LIMESTONE, FINE TO MEDIUM GRAINED FOSSILIFEROUS, THIN-BEDDED WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 2" ZONES OF CALCAREOUS SHALES SPACED 1/4" TO 10". — 465

— 460

— 455

— 450

LIGHT GRAY COARSE-GRAINED LIMESTONE, WITH SOME SILT, CALCARENITIC, THIN-BEDDED, IRREGULAR HAIR-LINE PARTINGS AND STYLOLITES SPACED 1/2" TO 8". — 445

GRADES TO LIGHT BUFF IN COLOR WITH NUMEROUS SMALL OPEN VUGS. OIL STAINED THROUGHOUT BELOW 149'

ELEVATION (FEET)

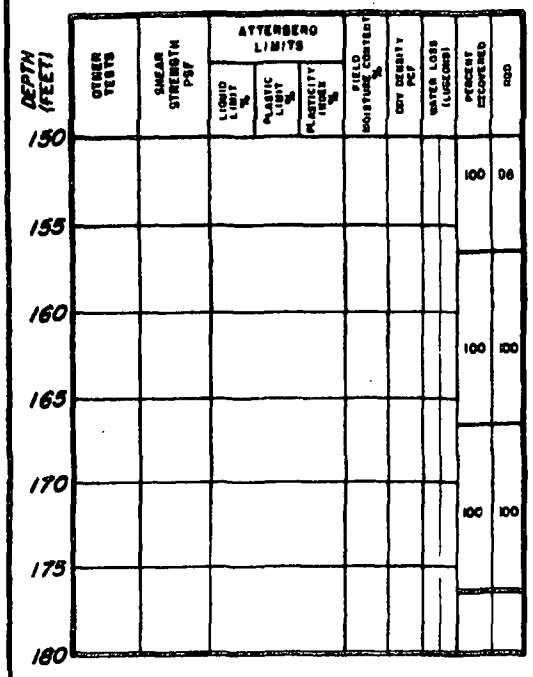
BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-160

LOG OF BORING A-12
(SHEET 2 OF 5)

BORING A-12 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

— 440

— 435

(SCALES FORMATION)

— 430

DARK GRAY CALCAREOUS SILTSTONE; LAMINATED EXTREMELY ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS; INTERBEDDED GRADATIONAL 1/2" TO 2" ZONES OF GRAY SILTY LIMESTONE SPACED 1" TO 6"

— 425

DARK GRAY SILTY SHALE, DOLOMITIC; LAMINATED 1" TO 6"
CALCAREOUS AND FOSSILIFEROUS ZONES SPACED 1" TO 8"; FISSILE IN SHALEY ZONES.

— 420

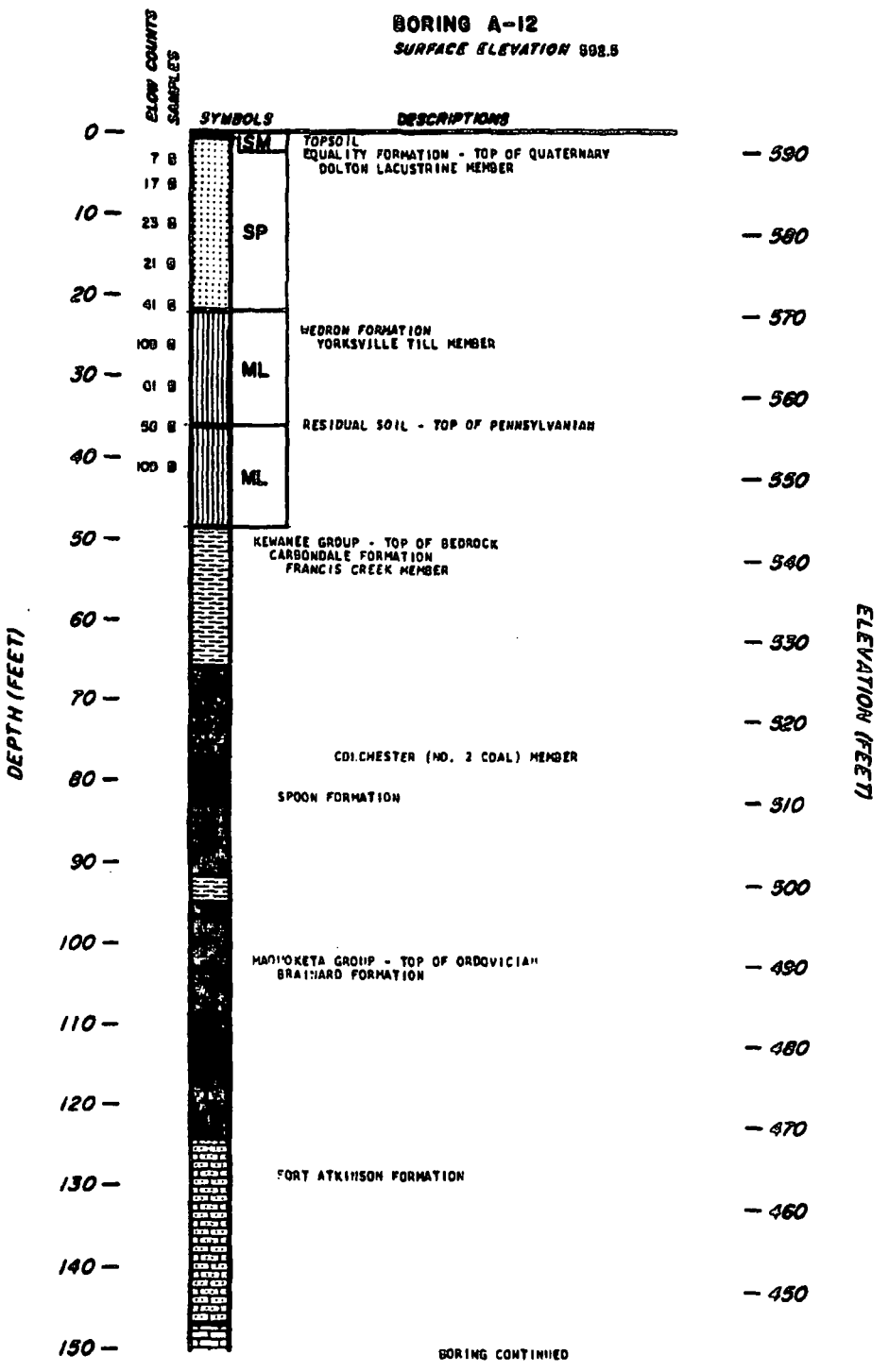
BORING COMPLETED AT 176.5' ON 12-4-72.

— 415

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-160

LOG OF BORING A-12
(SHEET 3 OF 5)

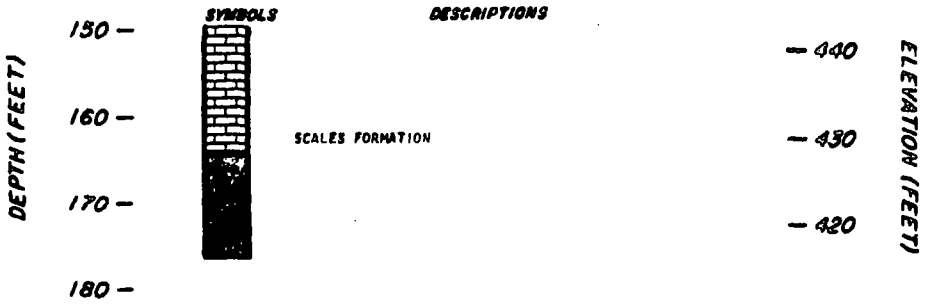


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-160

LOG OF BORING A-12
(SHEET 4 OF 5)

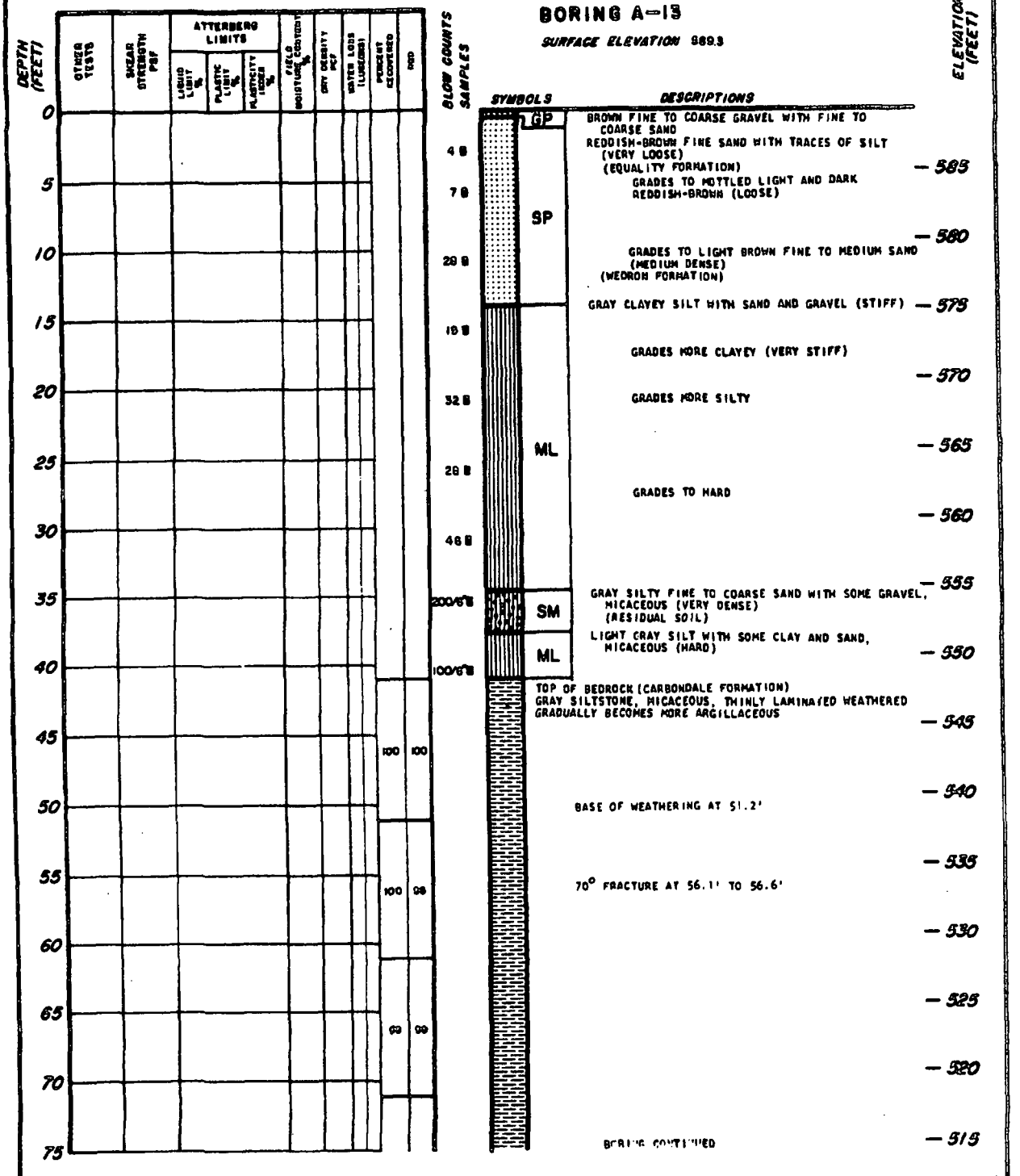
BORING A-12 CONTINUED



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-160

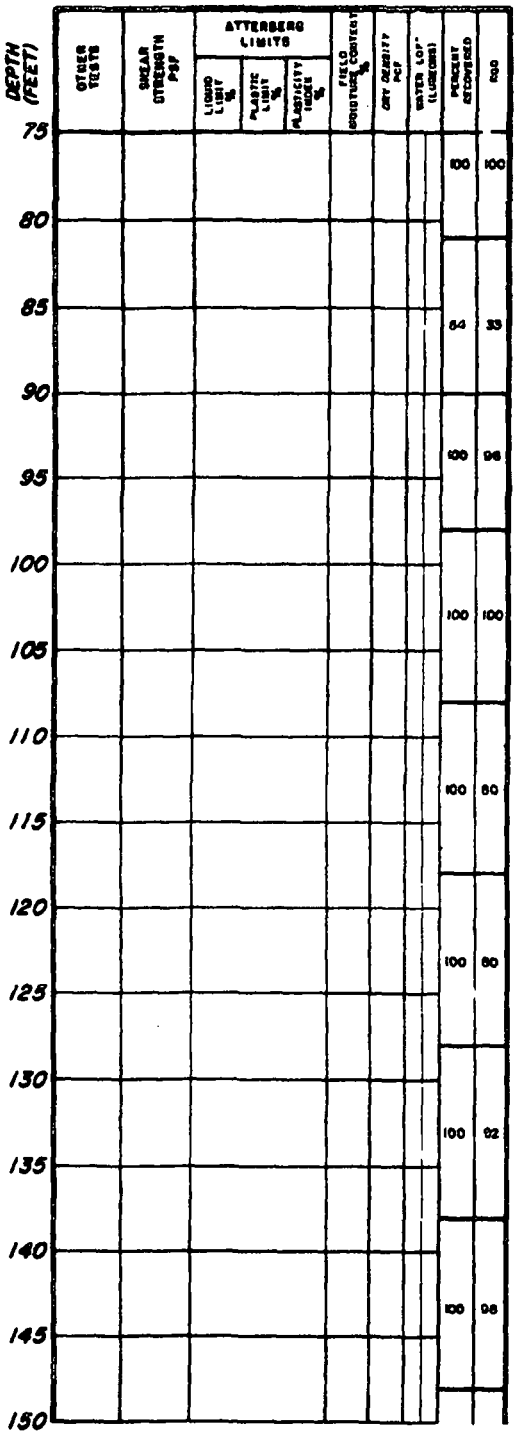
LOG OF BORING A-12
(SHEET 5 OF 5)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-161

LOG OF BORING A-13
(SHEET 1 OF 5)



BORING A-13 CONTINUED

ELEVATION (FEET)

SYMBOLS

DESCRIPTIONS

— 510

GRAY SILTY SHALE, FINELY MICACEOUS, VERY THINLY HORIZONTALLY LAMINATED WITH SMALL AMOUNTS OF PYRITE AND SIDERITE
SCATTERED CONGLOMERATIC LAYERS 1/4" TO 1" SPACED 1" TO 2' BELOW 80'

— 505

GRADES HIGHLY CARBONACEOUS AT 85.6'

BLACK COAL, THIN-BEDDED, NUMEROUS TIGHT VERTICAL FRACTURES, WITH SOME PYRITE AND CLAY; GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 3"

— 500

DARK GRAY SHALE, HIGHLY CARBONACEOUS; CONGLOMERATIC IN TOP 10" TO 12"; GRADING TO SILTY SHALE HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES

— 495

GRAY SANDSTONE, FINE TO COARSE, MICACEOUS, SIDERITIC, WITH CARBONIZED PLANT FOSSILS
GRAY SHALE, CARBONACEOUS, THIN-BEDDED, WITH ABUNDANT PLANT FOSSILS

— 490

GRADES SILTY AT 104.3'

— 485

GRAY SANDSTONE, MEDIUM-GRAINED, MICACEOUS, CARBONACEOUS; WITH SOME PLANT FOSSILS
GRAY SHALE, MASSIVE, FINELY MICACEOUS, CARBONACEOUS,
GRADES SILTY BETWEEN 107.8' AND 108.0'
GRADES HIGHLY CARBONACEOUS AND THINLY LAMINATED AT 108.5'

— 480

GRADES MASSIVE AT 109.9' WITH MANY SLICKENSIDED FRACTURES
BROWN SHALE, SILTY, DENSE AND HARD, CARBONACEOUS

LIGHT BROWN SILTSTONE, COARSE, CARBONACEOUS, SIDERITIC, THIN-BEDDED, SANDY IN BASAL 1"
LIGHT BROWN SHALE, SILTY, CARBONACEOUS, THIN-BEDDED

— 475

GREEN SILTSTONE, SANDY, MASSIVE, ARGILLACEOUS

(FORT ATKINSON FORMATION)
GRADES SLIGHTLY CALCAREOUS AT 119.9'

— 470

GRAY SILTY LIMESTONE, FINE TO MEDIUM-GRAINED, FOSSILIFEROUS, THIN-BEDDED WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 3" ZONES OF CALCAREOUS SHALE SPACED 1/4" TO 6" OIL-STAINED TO 125.7'

— 465

— 460

— 455

— 450

3" DOLOMITE LINED OPEN VUG AT 144.7', OIL-STAINED
2" DOLOMITE LINED OPEN VUG AT 145.8', OIL-STAINED
1" DOLOMITE LINED OPEN VUG AT 146.7', OIL-STAINED

— 445

LIGHT BUFF PURE LIMESTONE, COARSE-GRAINED CALCARENITIC, FOSSILIFEROUS, THIN-BEDDED, IRREGULAR MARLINE SHALE PARTINGS AND STYLOLITES SPACED 1" TO 6"

— 440

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-161

LOG OF BORING A-13
(SHEET 2 OF 5)

BORING A-13 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155									100	100
160									100	98
165										
170										

SYMBOLS | DESCRIPTIONS | ELEVATION (FEET)

1/4" OPEN VUG AT 149.8'
2" DOLOMITE LINED OPEN VUG AT 152.9' OIL-STAINED
1' ZONE OF INTERBEDDED CARBONACEOUS SHALES AND LIMESTONE WITH THIN WHITE FOSSILS ABUNDANT FROM 153.8' TO 154.7'

— 435

1/4" OPEN VUG AT 146.8'

(SCALES FORMATION) — 430

DARK GRAY CALCAREOUS SILTSTONE, LAMINATED, EXTREMELY ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS, INTERBEDDED GRADATIONAL 1/2" TO 4" ZONES OF LIGHT GRAY SILTY LIMESTONE SPACED 1" TO 6"

— 425

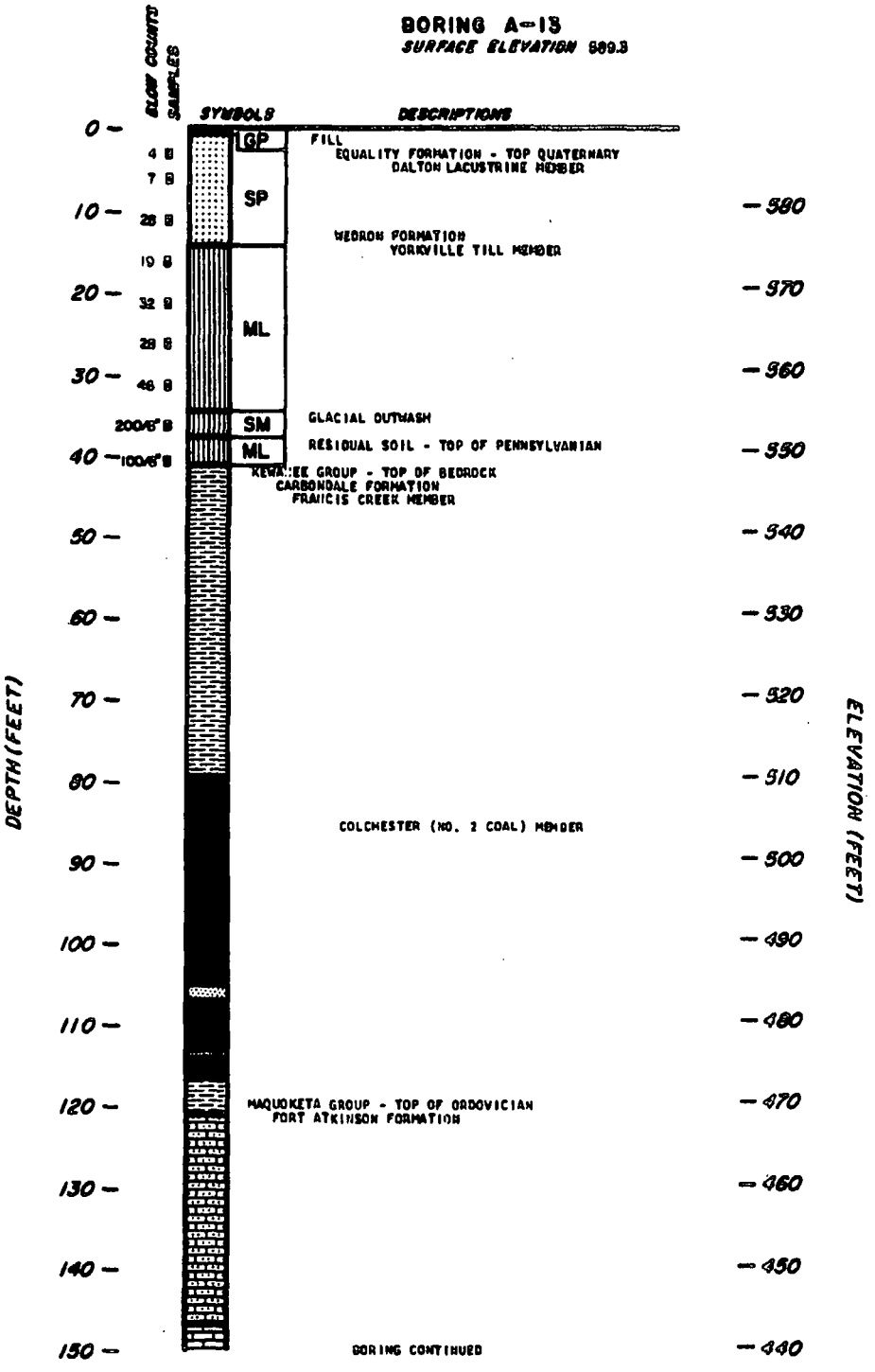
BORING COMPLETED AT 168.0 FEET

— 420

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-161

LOG OF BORING A-13
(SHEET 3 OF 5)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-161

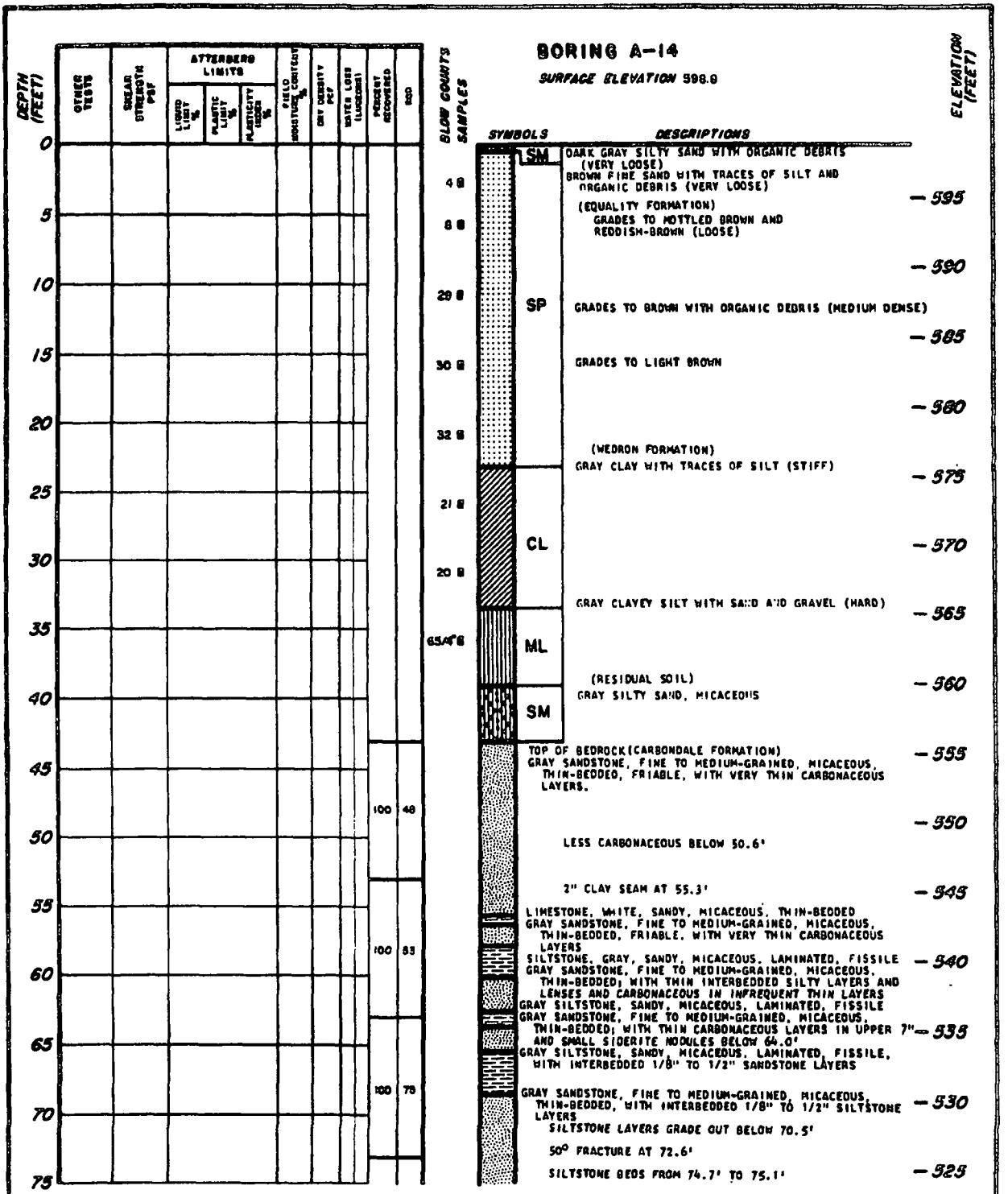
LOG OF BORING A-13
(SHEET 4 OF 5)

BORING A-13 CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-161

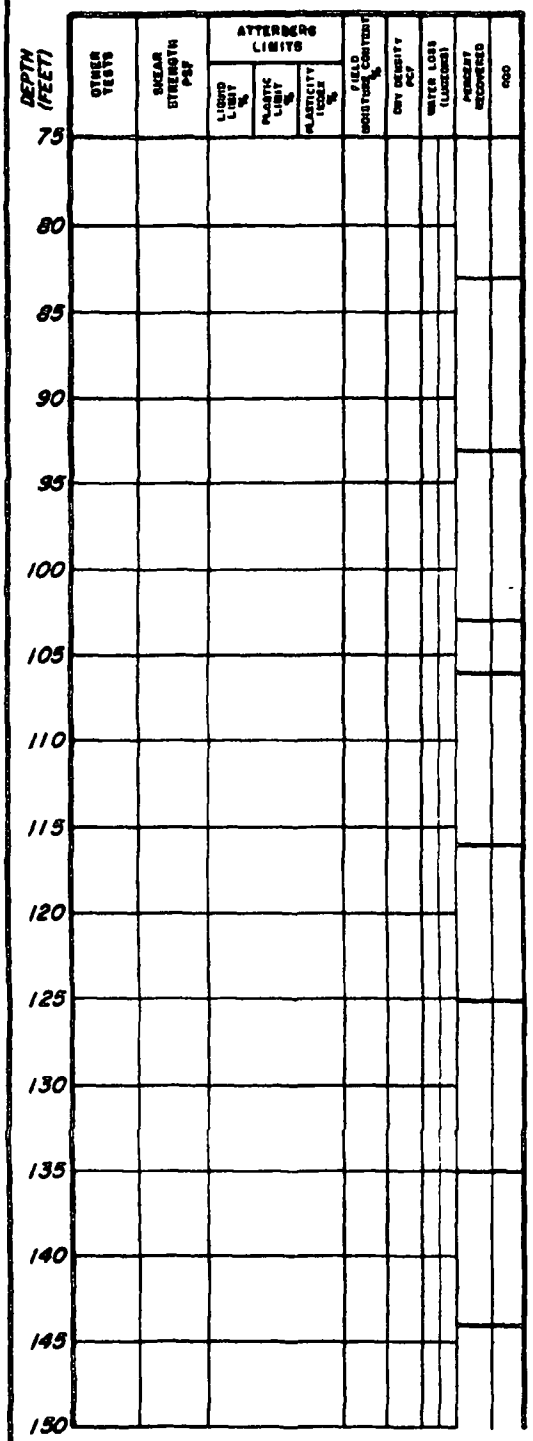
LOG OF BORING A-13
(SHEET 5 OF 5)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-162

LOG OF BORING A-14
(SHEET 1 OF 5)



BORING A-14 CONTINUED

ELEVATION (FEET)

SYMBOLS

DESCRIPTIONS

TWO 1" SIDERITE NODULES AT 78.4'
SANDSTONE BECOMES GENERALLY CROSS-BEDDED AND CARBONACEOUS IN VERY THIN BEDS BELOW 78.8'

— 520

1" SIDERITE NODULE AT 85.9' AND 86.3'

2"ø SIDERITE NODULE AT 87.7' AND 87.9'
60° FRACTURE AT 88.5'
ZONE OF 1/2" TO 1" SIDERITE NODULES FROM 88.9' TO 89.3'

— 515

— 510

SILTSTONE, GRAY, SANDY, MICACEOUS, LAMINATED, FISSILE

GRAY SANDSTONE, FINE TO MEDIUM-GRAINED, MICACEOUS, THIN-BEDDED, WITH INTERBEDDED 1/8" TO 1/2" SILTSTONE LAYERS

— 505

BECOMES HIGHLY CARBONACEOUS AT 96.8'
BLACK COAL, THIN-BEDDED, NUMEROUS VERTICAL TIGHT FRACTURES; WITH INTERBEDDED SIDERITIC LAYERS AND SOME PYRITE AND CLAY

— 500

BROWNISH-GRAY CLAYEY SHALE, HIGHLY CARBONACEOUS, MASSIVE, HIGHLY FRACTURED; WITH NUMEROUS RANDOM SLICKENSIDES

GRADES FROM BROWN TO GRAY IN COLOR BELOW 103.5'

— 495

45° FRACTURE AT 108.1'

SILTSTONE, GRAY, FINE SANDY, FINELY MICACEOUS, THIN-BEDDED

— 490

BROWNISH-GRAY CLAYEY SHALE, HIGHLY CARBONACEOUS, MASSIVE, HIGHLY FRACTURED
SILTSTONE, GRAY, FINE SANDY, FINELY MICACEOUS, THIN-BEDDED; WITH NUMEROUS CARBONIZED PLANT FOSSILS

— 485

BROWNISH-GRAY CLAYEY SHALE, CARBONACEOUS, MASSIVE, HIGHLY FRACTURED WITH NUMEROUS RANDOM SLICKENSIDES

— 480

70° FRACTURE AT 122.5'; FRACTURE AREA LIMONITE STAINED

45° FRACTURE AT 123.8'; FRACTURE AREA LIMONITE STAINED

MOTTLED RED AND GRAYISH-GREEN SHALE, MASSIVE, FRACTURE WITH NUMEROUS SLICKENSIDES, HIGHLY WEATHERED

— 475

DARK GREENISH-GRAY SHALE WITH LIMONITE STAINED ZONES, DOLOMITIC, WELL INDURATED, FISSILE; BASE OF WEATHERING AT 128.9'
(BRAINARD FORMATION)

— 470

45° FRACTURE AT 131.3'

45° FRACTURE AT 133.2'

— 465

VERTICAL FRACTURE AT 135.4'
FIRST FOSSILS BEGIN TO APPEAR AT 136.0'

— 460

— 455

GRADES CALCAREOUS AT 149'

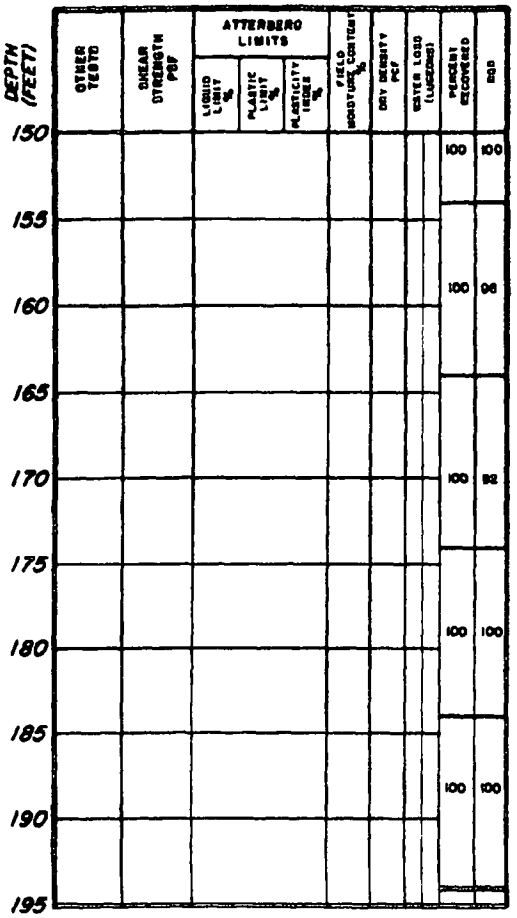
— 450

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-162

LOG OF BORING A-14
(SHEET 2 OF 5)



BORING A-14 CONTINUED

SURFACE ELEVATION

ELEVATION (FEET)

SYMBOLS

DESCRIPTIONS

GRAY SILTY LIMESTONE, MEDIUM-GRAINED, FOSSILIFEROUS, THIN-BEDDED, WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 2" ZONES OF CALCAREOUS SHALES SPACED 1/4" TO 10".

(FORT ATKINSON FORMATION) — 445

— 440

— 435

— 430

LIGHT GRAY, COARSE-GRAINED LIMESTONE WITH SOME SILT CALCARENITIC, FOSSILIFEROUS, PYRITIC, THIN-BEDDED, IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/2" TO 8" — 425

GRADES TO LIGHT BUFF, FOSSILIFEROUS, PURE LIMESTONE AT 176.9; — 420

VERTICAL FRACTURE AT 180.9'

— 415

— 410

DARK GRAY CALCAREOUS SILTSTONE, LAMINATED, EXTREMELY ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS; INTERBEDDED, GRADATIONAL 1/2" TO 2" ZONES OF LIGHT GRAY SILTY LIMESTONE SPACED 1 TO 6".

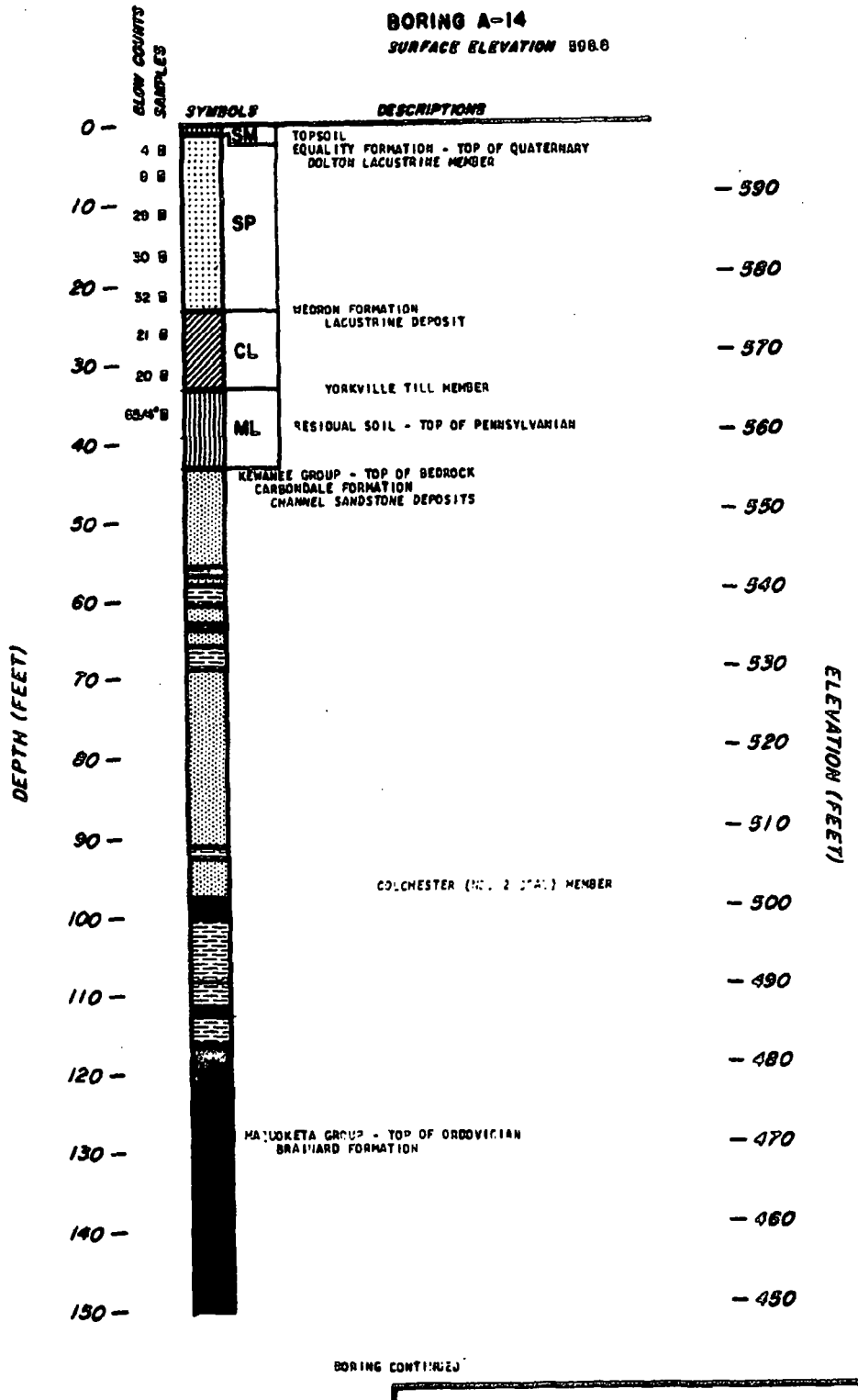
(SCALES FORMATION) — 405

BORING COMPLETED AT 194.0' ON 1-10-73.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-162

LOG OF BORING A-14
(SHEET 3 OF 5)

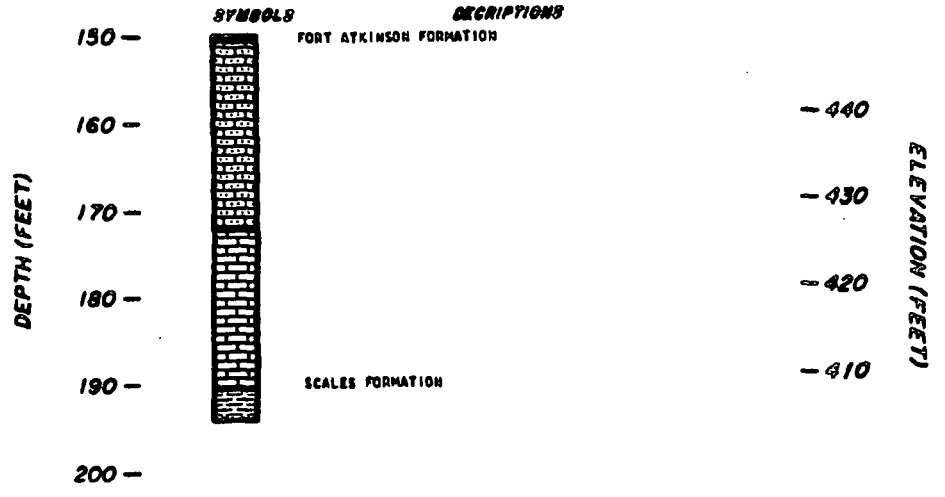


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-162

LOG OF BORING A-14
(SHEET 4 OF 5)

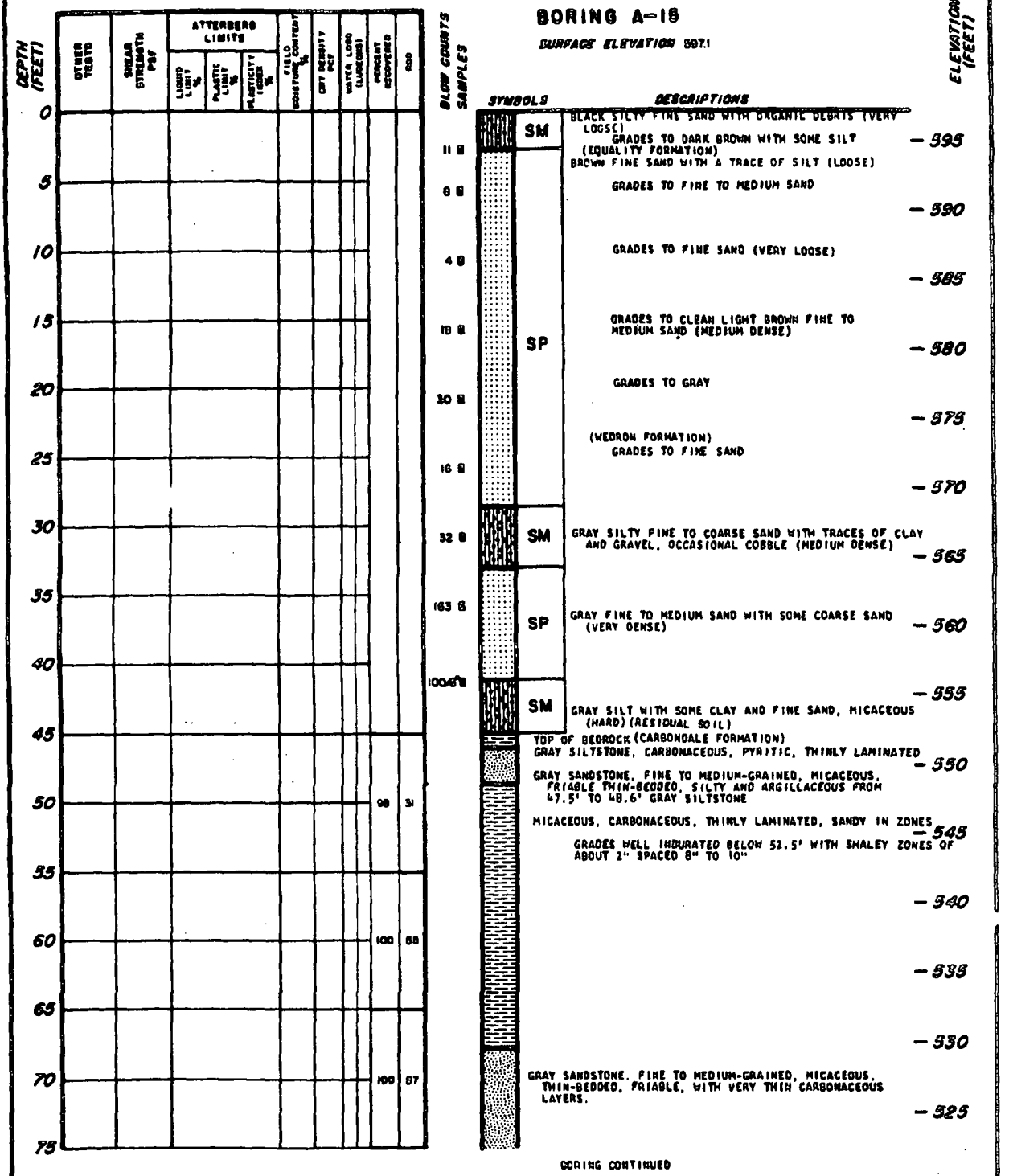
BORING A-14 CONTINUED



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-162

LOG OF BORING A-14
(SHEET 5 OF 5)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-163

LOG OF BORING A-15
(SHEET 1 OF 5)

BORING A-15 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	87
85										
90									100	93
95										
100									84	61
105										
110									70	27
115										
120									100	74
125										
130									98	34
135										
140									100	70
145										
150										

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

— 520

— 515

GRADES CONGLOMERATIC WITH COAL FRAGMENTS FROM 87.2' TO 87.9'

— 510

— 505

— 500

LIGHT GRAY TO BROWN CONGLOMERATE WITH SIDERITE AND COAL FRAGMENTS

BLACK COAL, THIN-BEDDED; NUMEROUS VERTICAL TIGHT FRACTURES WITH SOME PYRITE AND CLAY; — 495

GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 2"

LIGHT GRAY SILTY SHALE, WITH CARBONACEOUS SHALE IN ZONES (SPOON FORMATION)

GRAY SANDY SILTSTONE, THIN-BEDDED WITH A 3" HIGHLY CARBONACEOUS SHALE LAYER AT 108.6' AND A 2" SANDSTONE LAYER FROM 108.9' TO 109.3' — 490

GRAY, SILTY SHALE, CARBONACEOUS, HIGHLY FRACTURED; WITH NUMEROUS RANDOM SLICKENSIDES; GRADES LESS CARBONACEOUS AND LESS FRACTURED BELOW 110.7' 485

45° FRACTURE AT 116' (WITH SLICKENSIDES)

LIGHT GRAY SILTSTONE, FINE SANDY, MICACEOUS THIN-BEDDED WITH OCCASIONAL SANDSTONE LAYERS 1" TO 3" THICK — 480

GRAY SHALE, SILTY, THIN-BEDDED, WITH ABUNDANT CARBONIZED PLANT FOSSILS

GRADES TO A HIGHLY CARBONACEOUS ZONE 120.4' TO 121.3'

GRAY SHALE, SILTY, MASSIVE WITH NUMEROUS SLICKENSIDED FRACTURES, WITH A HIGHLY CARBONACEOUS ZONE 122.0' TO 123.8' — 475

LIGHT GRAY SILTSTONE FINE SANDY, MICACEOUS THIN-BEDDED; SOME CARBONIZED PLANT FOSSILS.

GRADES TO A CARBONACEOUS MASSIVE SHALE IN BASAL 6" — 470

COAL, DARK GRAY, VERY HIGHLY ARGILLACEOUS, THIN-BEDDED; WITH NUMEROUS SHALEY LAYERS 1 TO 2" THICK SPACED 8 TO 10"

DARK GRAY SHALE, CARBONACEOUS, THIN-BEDDED — 465

COAL, DARK GRAY, VERY HIGHLY ARGILLACEOUS, THIN-BEDDED; WITH NUMEROUS SHALEY LAYERS 1 TO 2" THICK SPACED 8 TO 10"

LIGHT GRAY SILTSTONE, FINE SANDY, MICACEOUS THIN-BEDDED

GRAY SHALE, SILTY, CARBONACEOUS, SIDERITIC, MASSIVE; GRADES TO THIN-BEDDED SILTY SHALE BELOW 137.9' WITH ABUNDANT CARBONIZED PLANT FOSSILS. — 460

GRAY SILTSTONE, THIN-BEDDED; WITH ABUNDANT CARBONIZED PLANT FOSSILS

GRAY SHALE, SILTY, MICACEOUS, CARBONACEOUS, THIN-BEDDED — 455

GRAY SILTSTONE, FINE SANDY, MICACEOUS, CARBONACEOUS, THIN-BEDDED; WITH ABUNDANT CARBONIZED PLANT FOSSILS AND FREQUENT PAPER THIN CARBONACEOUS SHALE PARTINGS — 450

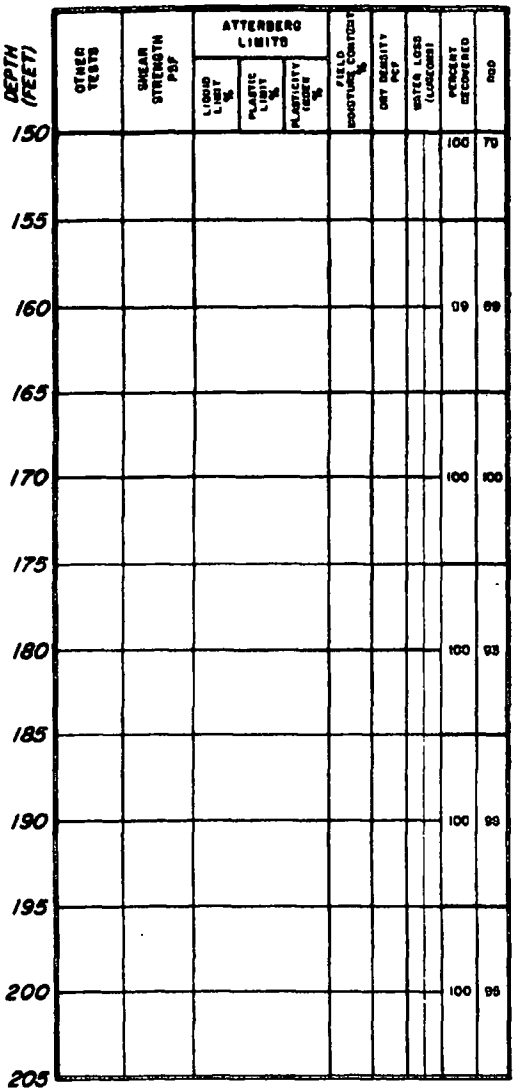
BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-183

LOG OF BORING A-15
(SHEET 2 OF 5)

BORING A-15 CONTINUED



ELEVATION (FEET)

SYMBOLS DESCRIPTIONS

GRAY SHALE, MICACEOUS, CARBONACEOUS, THINLY LAMINATED, FISSILE; WITH NUMEROUS PAPER-THIN CARBONACEOUS PARTINGS, AND CARBONIZED PLANT FOSSILS
GRADES CALCAREOUS IN BASAL 4"
(FORT ATKINSON FORMATION) — 445

GRAY LIMESTONE, SILTY, COARSE-GRAINED, FOSSILIFEROUS, THIN-BEDDED, WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4 TO 2" ZONES OF CALCAREOUS SHALES SPACED 1/4 TO 10"
TWO HALF-INCH OPEN VUGS WITH OIL-STAINING — 440

— 435

— 430

LIGHT GRAY COARSE-GRAINED LIMESTONE, FOSSILIFEROUS CALCARENITIC, THIN-BEDDED, IRREGULAR HAIRLINE TO 3" SHALE LAYERS SPACED 1/4" TO 15"; OIL-STAINED THROUGHOUT — 425
VERTICAL FRACTURE AT 174.6'
80° FRACTURE AT 175'
VERTICAL FRACTURE AT 176.6'
GRADES TO LIGHT BUFF PURE LIMESTONE WITH VERY WELL DEVELOPED STYLOLITES EVERY 1" TO 6" BELOW 176.2'. — 420
CONTINUED FOSSILIFEROUS AND OIL-STAINED

— 415

VERTICAL FRACTURE 184.9' TO 185.1'

— 410

— 405

DARK GRAY CALCAREOUS SILTSTONE, LAMINATED, ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS; INTERBEDDED GRADATIONAL 1/2 TO 2" ZONES OF LIGHT GRAY SILTY LIMESTONE SPACED 1" TO 6" — 400
(SCALES FORMATION)

FOSSILS AND CALCAREOUS ZONES END AT 200.8'

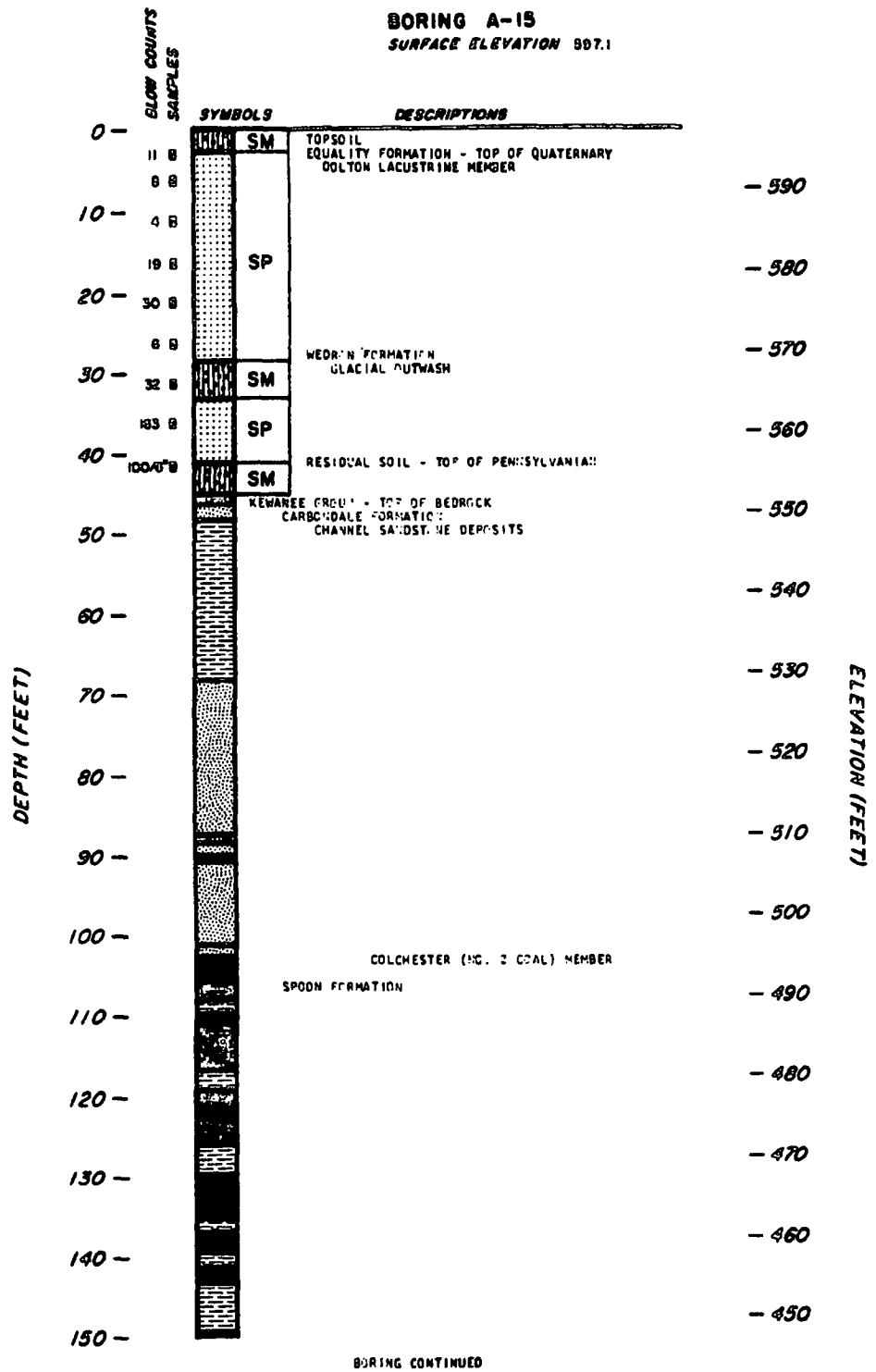
— 395

BORING COMPLETED AT 205.0' ON 1-11-73.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-163

LOG OF BORING A-15
(SHEET 3 OF 5)

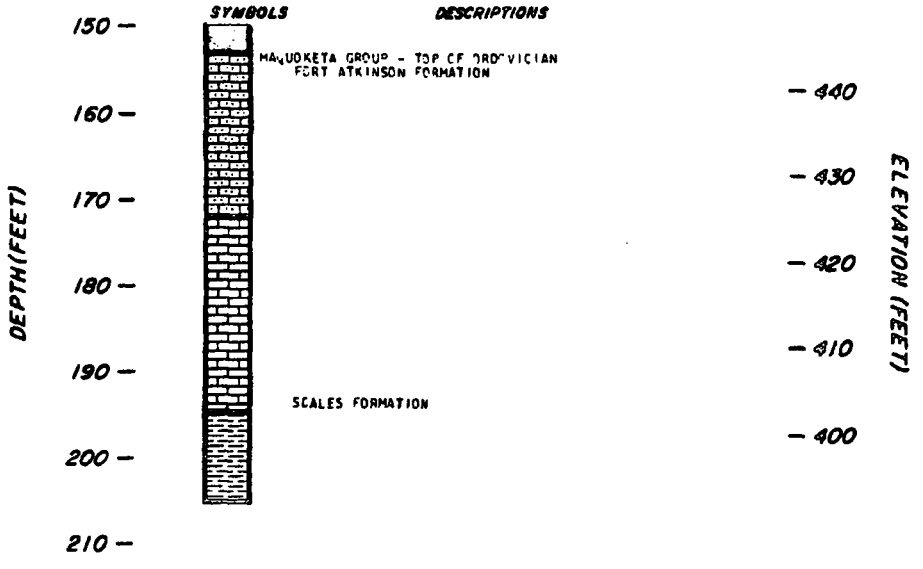


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-163

LOG OF BORING A-15
(SHEET 4 OF 5)

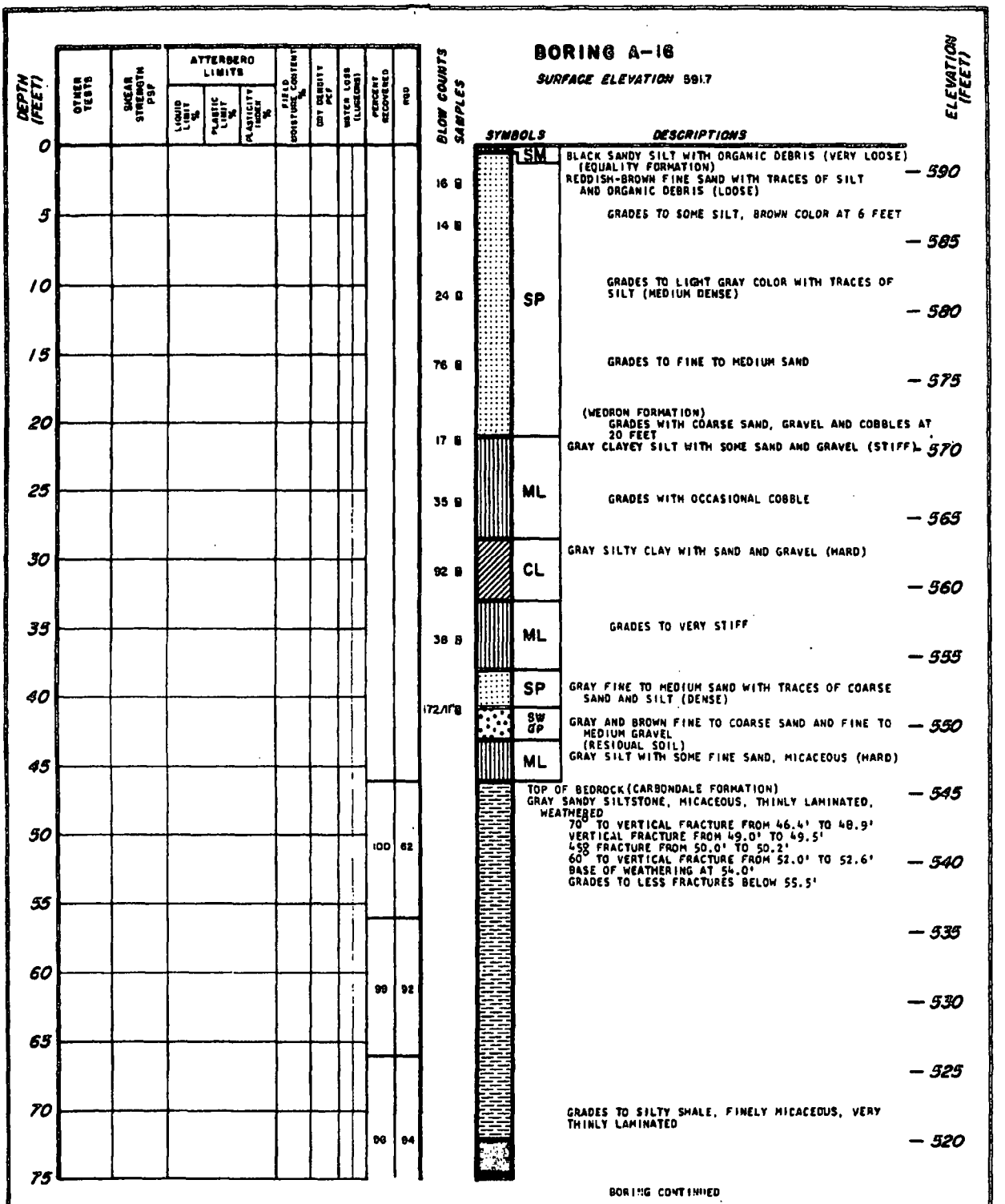
BORING A-15 CONTINUED



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-163

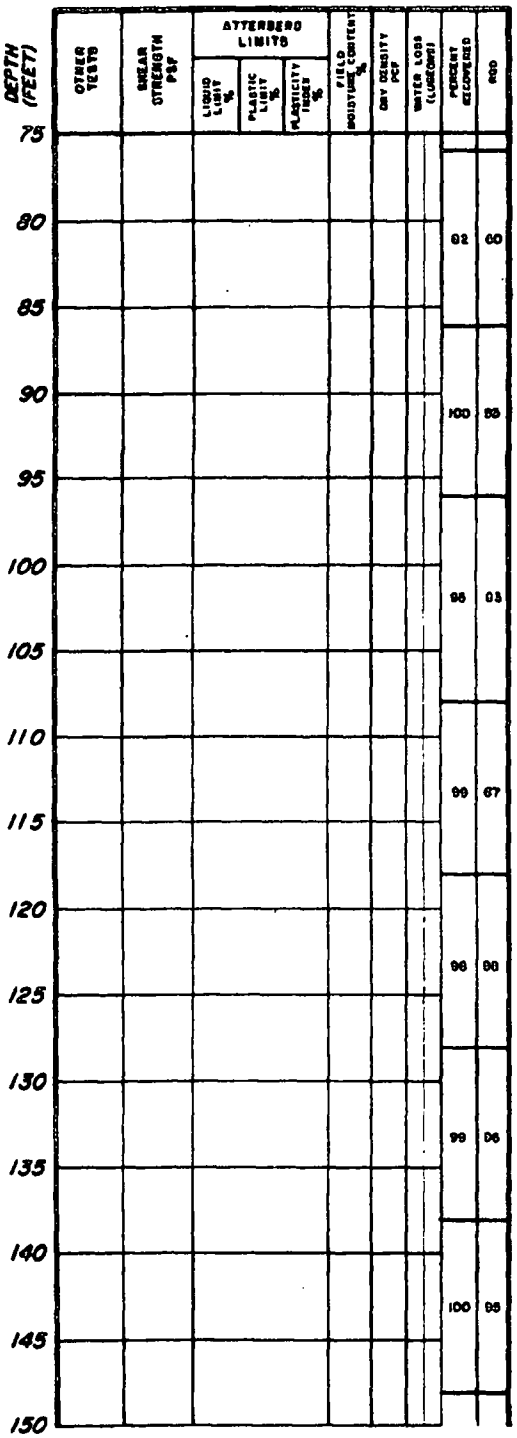
LOG OF BORING A-15
(SHEET 5 OF 5)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-164

LOG OF BORING A-16
(SHEET 1 OF 5)



BORING A-16 CONTINUED

ELEVATION (FEET)

SYMBOLS

DESCRIPTIONS

— 515

GRADES CARBONACEOUS BELOW 80.9'

BLACK COAL, THIN-BEDDED, NUMEROUS VERTICAL TIGHT FRACTURES WITH SOME PYRITE AND CLAY;
GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 7"
(SPOON FORMATION)

— 510

GRAY HIGHLY CARBONACEOUS SHALE LAYER 5" THICK
COAL LAYER 2" THICK
DARK GRAY CLAYEY SHALE; CARBONACEOUS, MASSIVE, HIGHLY FRAGMENTED, WITH NUMEROUS RANDOM SLICKENSIDES
GRADES TO LESS CARBONACEOUS, GRAY COLOR BELOW 87.5'
GRADES TO CARBONACEOUS, LIGHT BROWN TO GRAY COLOR BELOW 90.7'

— 505

— 500

LIGHT GRAY FINE SANDY SILTSTONE, INDISTINCTLY LAMINATED WITH SOME FINE-GRAINED SIDERITE
GRADES TO THINLY LAMINATED BELOW 96.4' WITH SMALL SHALEY LAYERS 1/16" TO 1/8" THICK; SPACED 1/4" TO 1/2"

— 495

DARK BROWNISH-GRAY CLAYEY SHALE, CARBONACEOUS IN ZONES, THINLY LAMINATED, GRADING TO MASSIVE BELOW 101.6'; FRAGMENTED; WITH NUMEROUS RANDOM SLICKENSIDES

— 490

MOTTLED BROWN-RED TO GREEN SHALE, MASSIVE, SIDERITIC, FRACTURED; WITH NUMEROUS SLICKENSIDES, HIGHLY WEATHERED
30° FRACTURE AT 104.8'
GRADES TO LESS WEATHERED AND GRAY COLOR BELOW 105.5'
45° FRACTURE AT 107.5'
GRADES CARBONACEOUS AND HIGHLY WEATHERED AT 109.2'
(BRAINARD FORMATION)

— 485

DARK GREEN-GRAY SHALE, LAMINATED WITH LIMONITE AND SIDERITE STAINED ZONES, DOLOMITIC, WELL INDURATED, BASE OF WEATHERING AT 112.3'
30° TO 70° FRACTURE AT 114'
80° FRACTURE 105.0' TO 105.5'

— 480

GRADES MORE DOLOMITIC BELOW 119.2'

— 475

GRADES FOSSILIFEROUS AT 120.5'
GRADES CALCAREOUS AT 122.6'
(FORT ATKINSON FORMATION)

— 470

GRAY SILTY LIMESTONE, FINE TO MEDIUM-GRAINED, FOSSILIFEROUS, THIN-BEDDED, WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 2" ZONES OF CALCAREOUS SHALES, SPACED 1/4" TO 10".
OPEN DOLOMITE LINED VUGS AT 127.6', 127.8', 128.5' IN A ZONE OF COARSE-GRAINED LIMESTONE FROM 127.0' TO 128.6'

— 465

— 460

— 455

45° FRACTURE AT 140.2'
30° FRACTURE AT 143.1'

— 450

LIGHT GRAY COARSE-GRAINED LIMESTONE WITH SOME SILT, CALCARENITIC, FOSSILIFEROUS, THIN-BEDDED, IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/2" TO 8". SOME FINE-GRAINED PYRITE

— 445

VERTICAL FRACTURE FROM 149.6' TO 151.6'

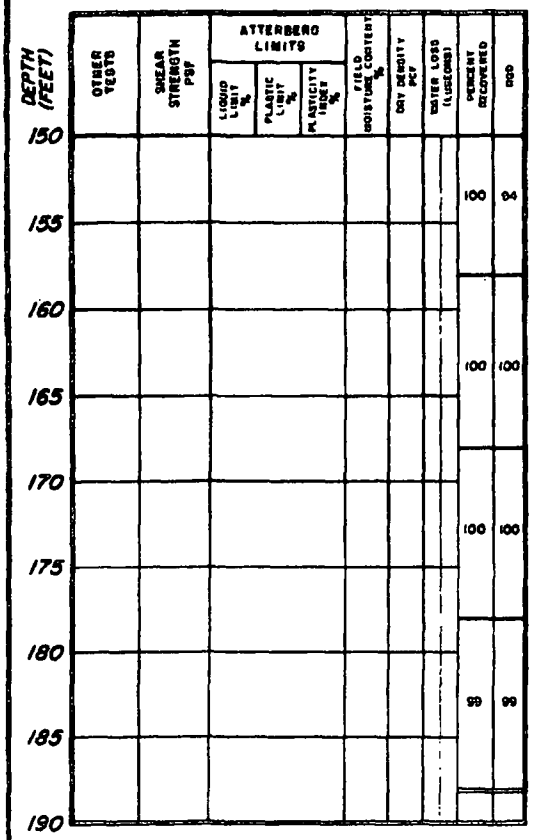
BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-164

LOG OF BORING A-16
(SHEET 2 OF 5)

BORING A-16 CONTINUED



SYMBOLS

DESCRIPTIONS

GRADES TO LIGHT BUFF FOSSILIFEROUS PURE LIMESTONE WITH NUMEROUS SMALL OPEN VUGS. OIL-STAINED THROUGHOUT, BELOW 191.1'

DARK GRAY CALCAREOUS SILTSTONE, LAMINATED, ABUNDANT FOSSILS IN THIN, WHITE, IRREGULAR BANDS; INTERBEDDED GRADATIONAL 1/2" TO 2" ZONES OF LIGHT GRAY SILTY LIMESTONE SPACED 1" TO 6" (SCALES FORMATION)

BORING COMPLETED AT 188.0' ON 12-20-72.

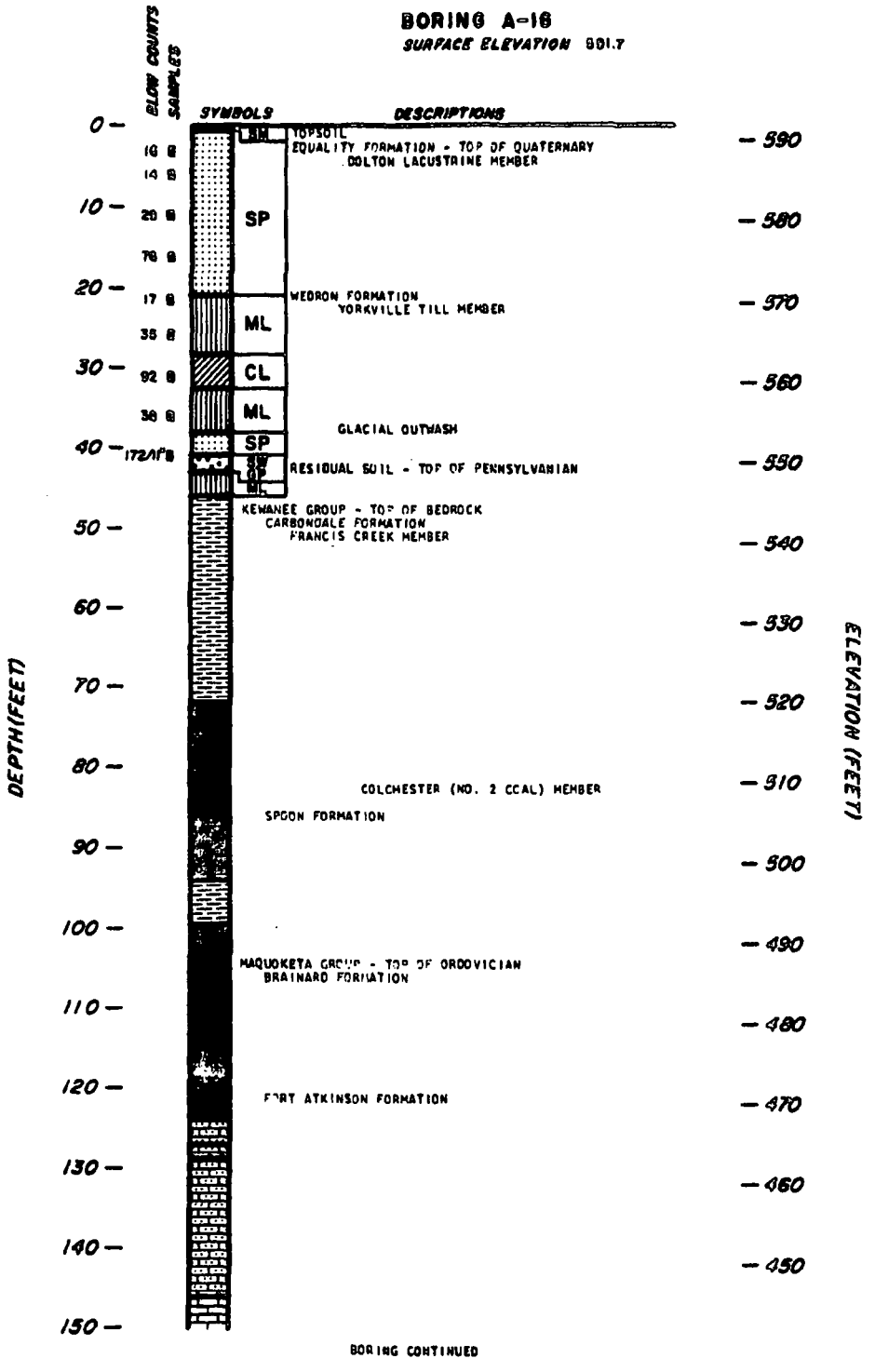
ELEVATION (FEET)

440
435
430
425
420
415
410
405

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-164

LOG OF BORING A-16
(SHEET 3 OF 5)

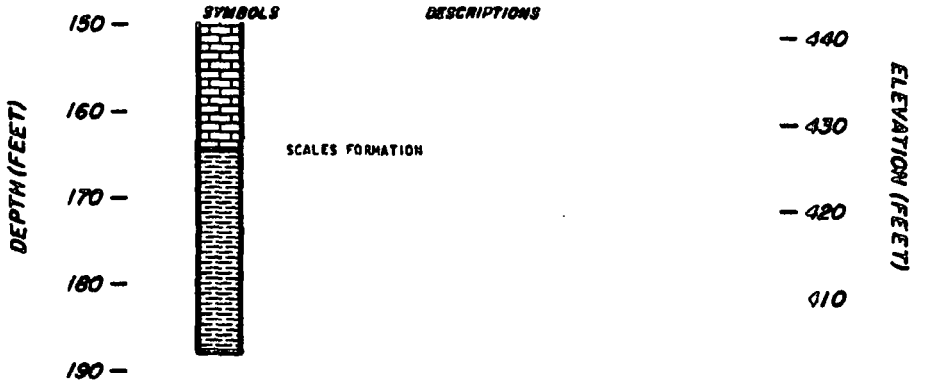


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-164

LOG OF BORING A-16
(SHEET 4 OF 5)

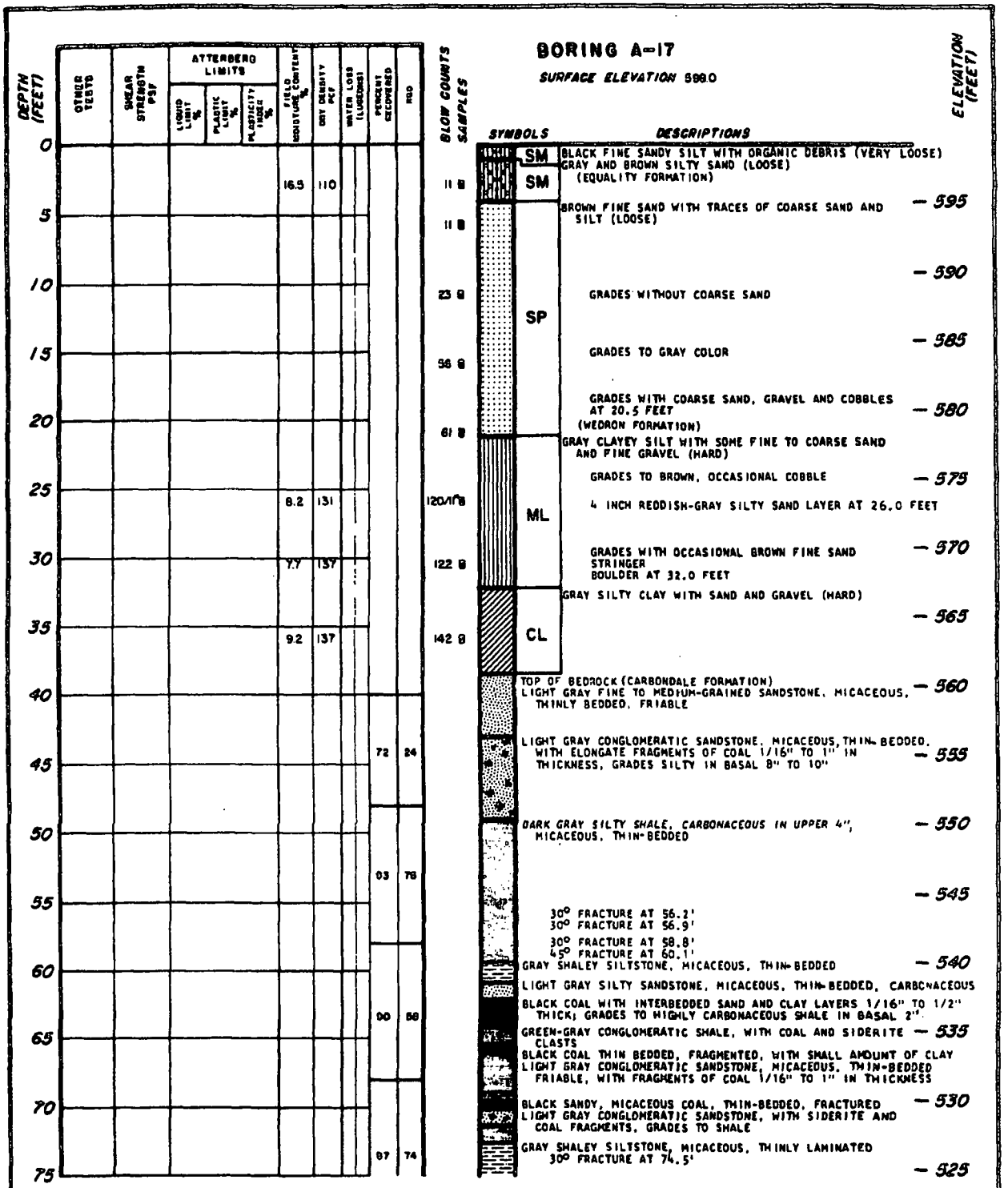
BORING A-16 CONTINUED



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-164

LOG OF BORING A-16
(SHEET 5 OF 5)

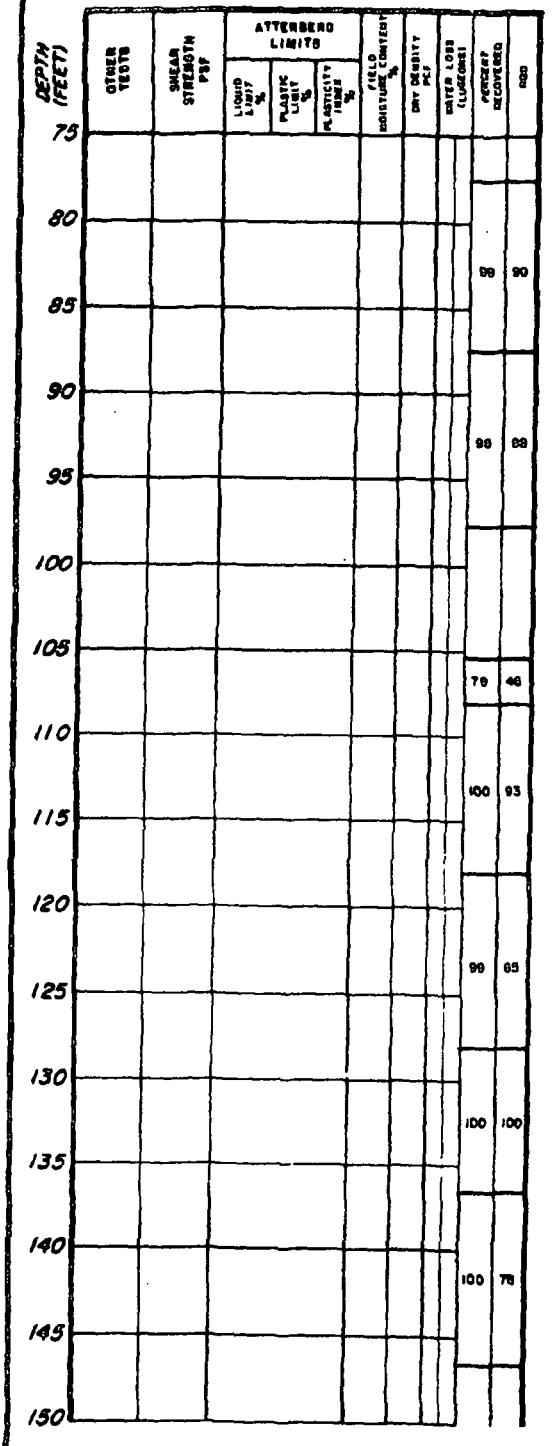


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-165

LOG OF BORING A-17
(SHEET 1 OF 5)

BORING A-17 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

— 520

— 515

GRAY SILTY SHALE, FINELY MICACEOUS, VERY THINLY LAMINATED, GRADES CARBONACEOUS IN BASAL 2"

— 510

— 505

BLACK COAL, THINLY BEDDED, NUMEROUS VERTICAL TIGHT FRACTURES, WITH SOME PYRITE AND CLAY, GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 4" (SPOON FORMATION) — 500

DARK GRAY SHALE, CARBONACEOUS, MASSIVE, HIGHLY FRAGMENTED, NUMEROUS FRACTURES WITH SLICKENSIDES

— 495

LIGHT BROWN-GRAY SILTY SHALE, FINELY MICACEOUS, MASSIVE, NUMEROUS FRACTURES WITH SLICKENSIDES

GRAY SILTSTONE, FINE SANDY, FINELY MICACEOUS, THIN-BEDDED, WITH A SANDY ZONE FROM 100.5' TO 111.1' — 490

BROWN-GRAY SILTY SHALE, CARBONACEOUS, FINELY MICACEOUS, LAMINATED IN UPPER 13"; GRADING MASSIVE WITH NUMEROUS FRACTURES WITH SLICKENSIDES

— 485

BROWN-GRAY SILTSTONE, FINE SANDY, FINELY MICACEOUS, THIN-BEDDED
OIL-STAINED ZONE 116.8' TO 117.9'
BELOW 118.9', SILTSTONE BECOMES INTERBEDDED WITH VERY THIN SHALEY LAYERS

— 480

BROWN-BLACK SHALE, VERY HIGHLY CARBONACEOUS, THIN-BEDDED NUMEROUS TIGHT VERTICAL FRACTURES, FISSILE; GRADES TO COAL WITH ARGILLACEOUS PARTINGS BELOW 124.2'

BROWN-GRAY SILTY SHALE, CARBONACEOUS, FINELY MICACEOUS MASSIVE, NUMEROUS FRACTURES WITH SLICKENSIDES, ABUNDANT CARBONIZED PLANT FOSSILS
GRADES LESS MASSIVE AND MORE SILTY, WITH LESS FRACTURES BELOW 129.3' — 475

GRAY SILTSTONE, FINE SANDY, FINELY MICACEOUS, CARBONACEOUS, THIN-BEDDED, FISSILE, NUMEROUS ZONES OF CARBONIZED PLANT FOSSILS
INCREASE IN CARBON AND FOSSIL CONTENT AND VERY FISSILE BELOW 135.0' — 470

SEVERAL 1/4" TO 1/2" COAL SEAMS 136.2' TO 136.8'
(BRAINARD FORMATION) — 465

MOTTLED GREEN SHALE, MASSIVE, HIGHLY WEATHERED; WITH NUMEROUS SLICKENSIDES, WEATHERED

DARK GRAY DOLOMITIC SHALE, THIN-BEDDED, WELL INDURATED

GRAY SILTY LIMESTONE, FINE TO MEDIUM-GRAINED, FOSSILIFEROUS, THIN-BEDDED, WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 2" ZONES OF CALCAREOUS SHALES SPACED 1/4" TO 10" — 460

— 455

— 450

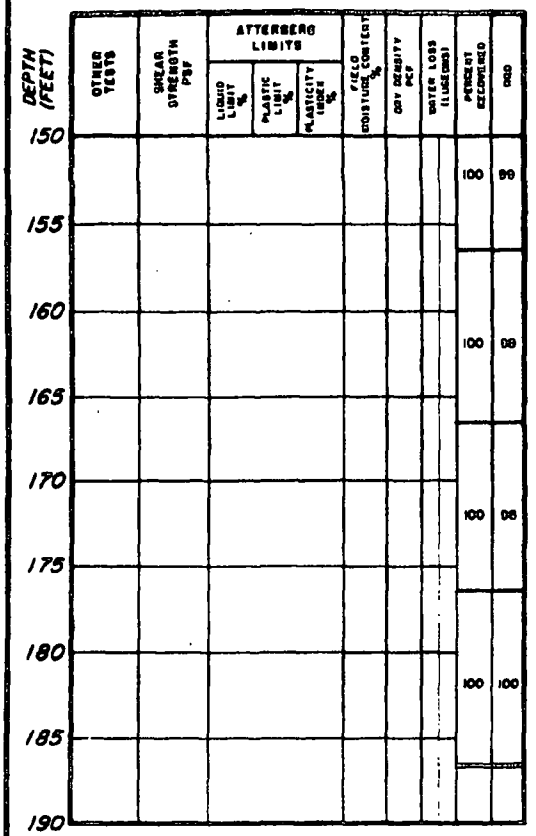
BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-165

LOG OF BORING A-17
(SHEET 2 OF 5)

BORING A-17 CONTINUED



ELEVATION (FEET)

SYMBOLS

DESCRIPTIONS

LIGHT GRAY COARSE-GRAINED LIMESTONE, FOSSILIFEROUS, CALCARENITIC, THIN-BEDDED, IRREGULAR HAIRLINE TO 2" SHALE LAYERS SPACED 1" TO 5", OIL-STAINED THROUGHOUT — 445

1" OPEN VUG AT 158.8'
GRADES TO LIGHT BUFF PURE LIMESTONE WITH VERY WELL DEVELOPED STYLOLITES EVERY 1" TO 6" BELOW 159.7', FOSSILIFEROUS AND OIL-STAINED — 440

— 435

— 430

1" DOLOMITE LINED OPEN VUG AT 173.6'

2 VERTICAL PYRITIZED FRACTURES AT 175.5' AND 176.0'

(SCALES FORMATION) — 425

DARK GRAY CALCAREOUS SILTSTONE, LAMINATED, FISSILE, EXTREMELY ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS. INTERBEDDED GRADATIONAL 1/2" TO 2" ZONES OF LIGHT GRAY, SILTY LIMESTONE SPACED 1/2" TO 6" — 420

FOSSILS AND INTERBEDDED LIMESTONES DECREASE BELOW 183.2'

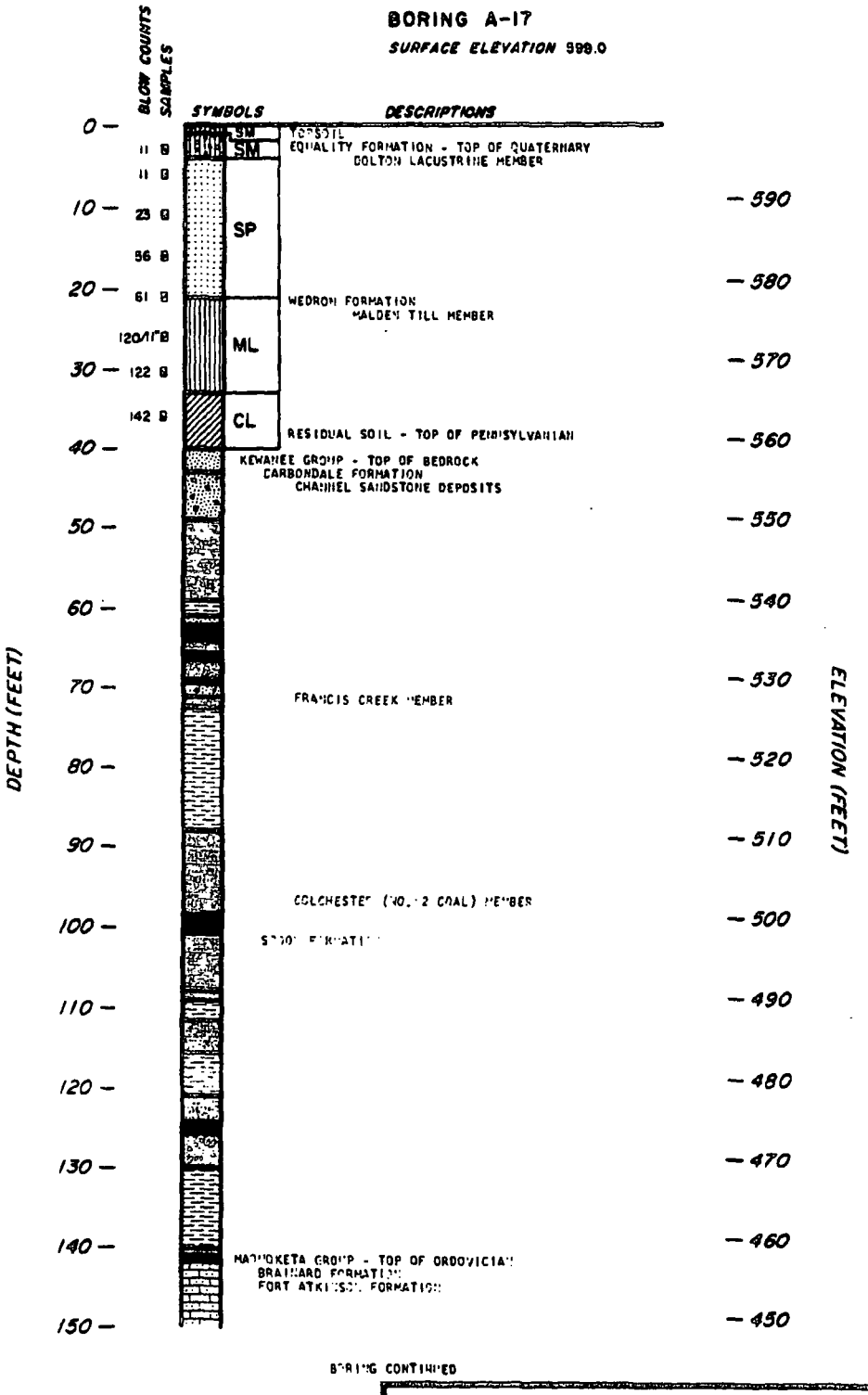
— 415

BORING COMPLETED AT 186.5'
ON 1-3-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-165

LOG OF BORING A-17
(SHEET 3 OF 5)

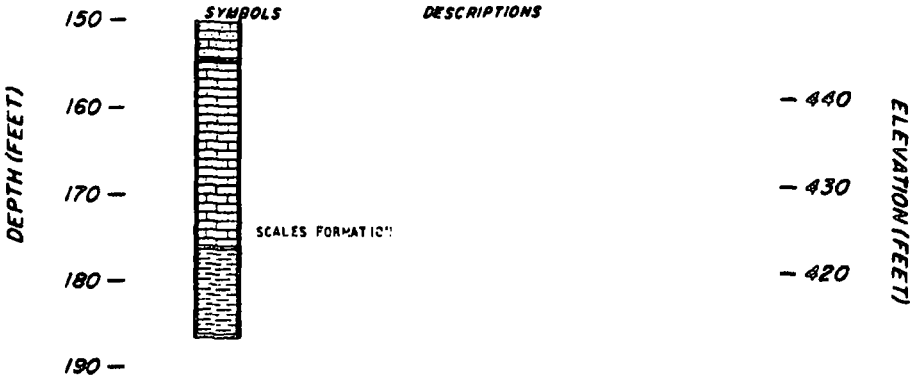


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-165

LOG OF BORING A-17
(SHEET 4 OF 5)

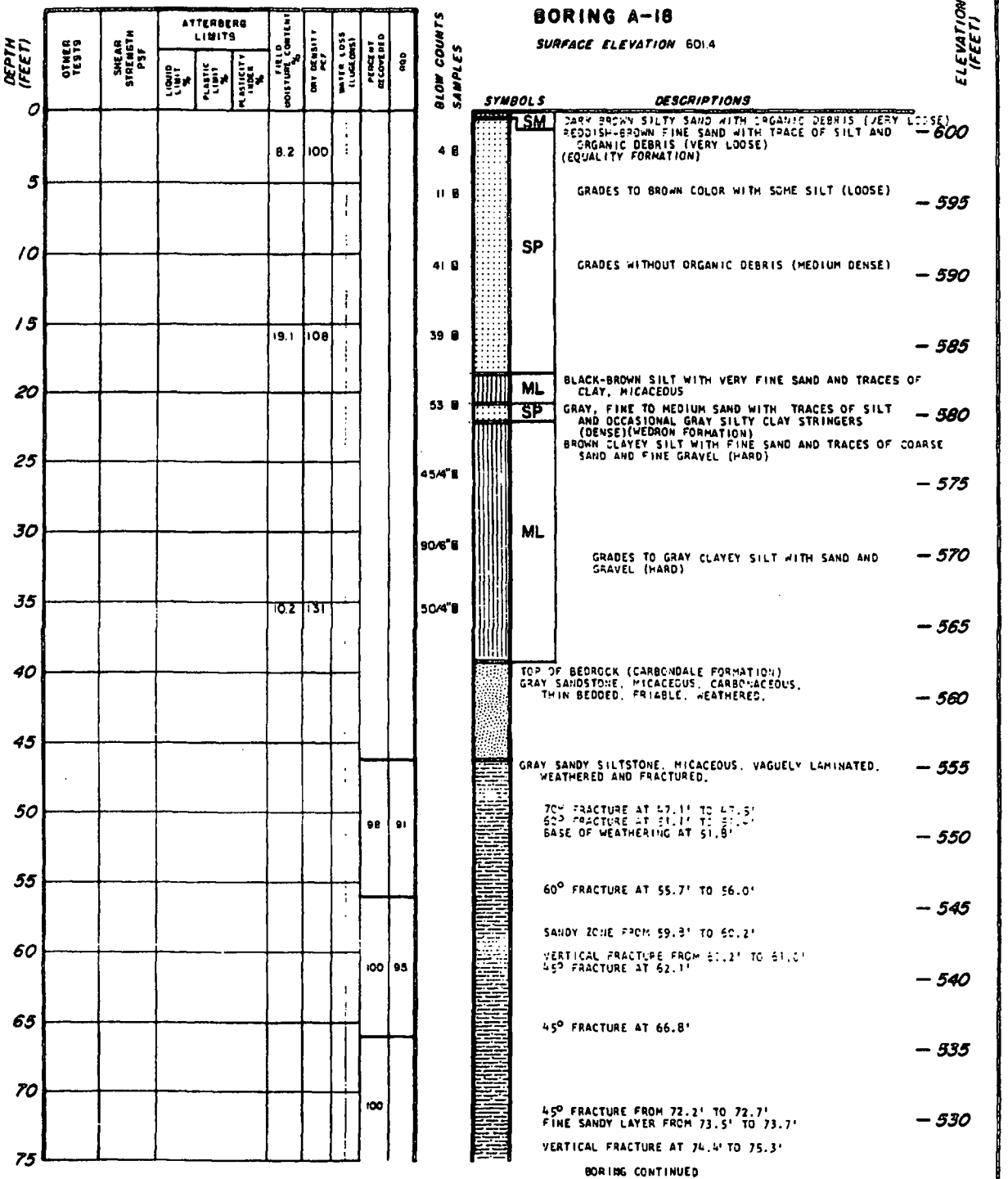
BORING A-17 CONTINUED



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-165

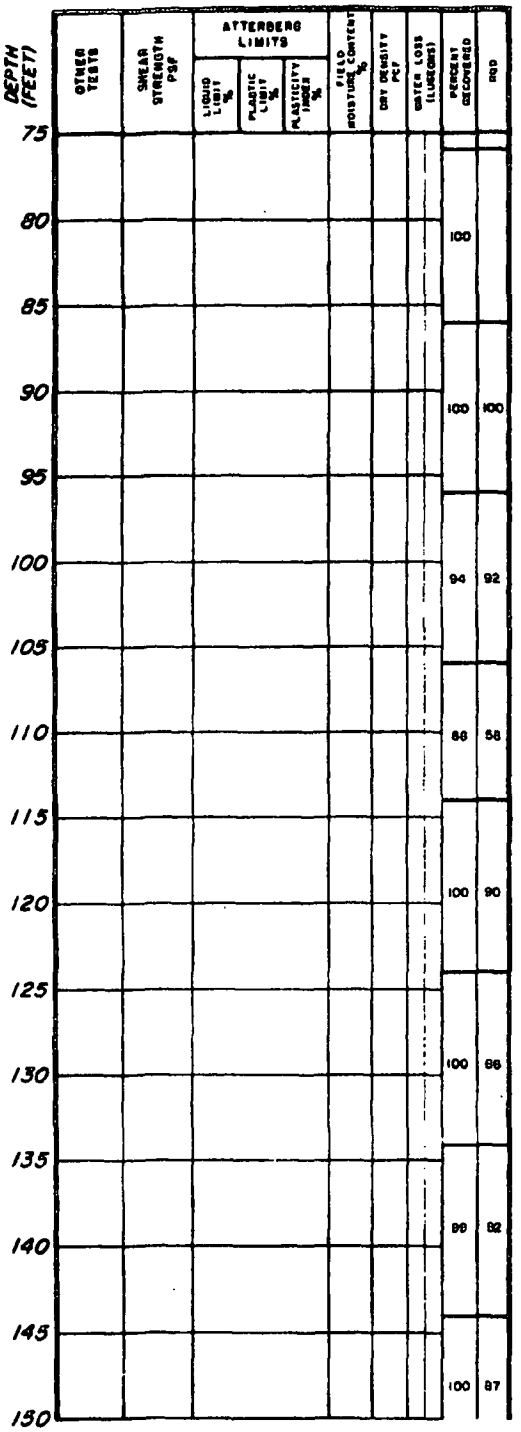
LOG OF BORING A-17
(SHEET 5 OF 5)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-166

LOG OF BORING A-18
(SHEET 1 OF 5)



BORING A-18 CONTINUED

SURFACE ELEVATION

ELEVATION (FEET)

SYMBOLS *DESCRIPTIONS*

GRAY CONGLOMERATIC SANDSTONE, FINE TO MEDIUM-GRAINED, MICACEOUS, THIN-BEDDED, FRIABLE, WITH FLATTENED COAL FRAGMENTS, BASAL 10" HAS A CALCAREOUS SANDSTONE MATRIX — 525

GRAY SANDY SILTSTONE, MICACEOUS, LAMINATED, FISSILE

— 520

80° FRACTURE FROM 87.7' TO 88.6'

— 515

— 510

— 505

GRAY SILTY SHALE, FINELY MICACEOUS, VERY THINLY LAMINATED — 500

BLACK COAL, THIN-BEDDED, NUMEROUS VERTICAL TIGHT FRACTURES WITH SOME PYRITE AND CLAY, GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 2" (SPOON FORMATION) — 495

BROWN-GRAY CLAYEY SHALE, SILTY, HIGHLY CARBONACEOUS, MASSIVE, HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES

— 490

GRAY SILTSTONE, FINE, SANDY, MICACEOUS, THIN-BEDDED

GREEN-GRAY SHALE, SILTY, MICACEOUS, THINLY LAMINATED, GRADES CARBONACEOUS IN BASAL 1" — 485

BROWN CLAYEY SHALE, SOME SILT, HIGHLY CARBONACEOUS, MICACEOUS, MASSIVE, HIGHLY FRAGMENTED WITH NUMEROUS SLICKENSIDES, GRADES LESS CARBONACEOUS AND MORE SILTY BELOW 119.6'

GRAY SANDSTONE, FINE-GRAINED, MICACEOUS, THIN-BEDDED, LIGHT GREEN-GRAY SILTSTONE, SANDY, MICACEOUS, THIN-BEDDED, INTERBEDDED WITH 1/8" TO 2" SANDSTONE LENSES — 480

DARK GRAY CARBONACEOUS SHALE; THIN-BEDDED, WITH 2" COAL SEAM AT 127.7' — 475

BROWN TO BLACK CLAY SHALE, HIGHLY CARBONACEOUS, PYRITIC, MASSIVE, HIGHLY FRAGMENTED; WITH NUMEROUS RANDOM SLICKENSIDES; GRADES TO BROWN-GRAY COLOR AND LESS CARBONACEOUS BELOW 130.4' GRADES BROWN AND HIGHLY CARBONACEOUS BELOW 133.5'

— 470

BROWN-GRAY SILTSTONE, CARBONACEOUS, MICACEOUS, THINLY LAMINATED

— 465

GRADES FISSILE WITH ABUNDANT CARBONIZED PLANT FOSSILS BELOW 141.4'

— 460

GRADES SLIGHTLY CALCAREOUS BELOW 146.0'

(FORT ATKINSON FORMATION)

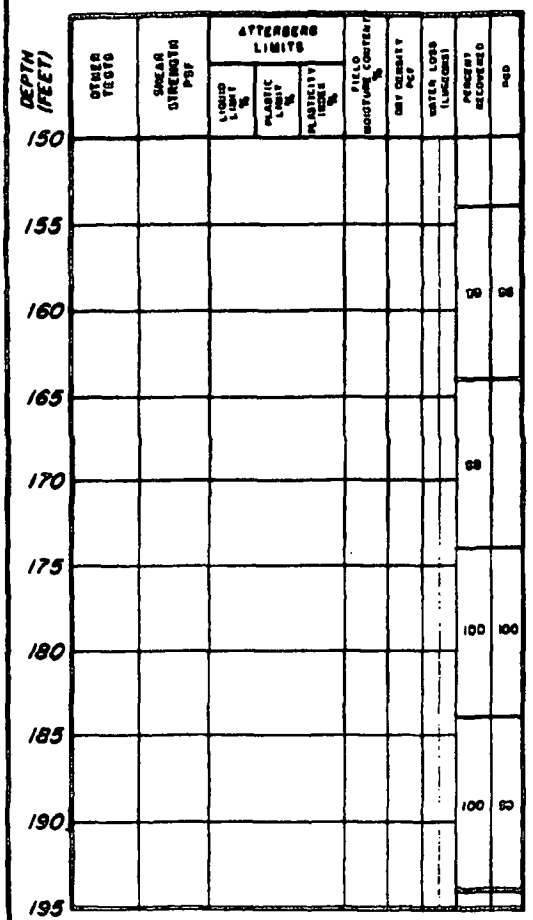
GRAY SILTY LIMESTONE, FINE TO MEDIUM-GRAINED, FOSSILIFEROUS, THIN-BEDDED, WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 3" ZONES OF CALCAREOUS SHALES SPACED 1/4" TO 6" — 455

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-166

LOG OF BORING A-18
(SHEET 2 OF 5)



BORING A-18 CONTINUED

SURFACE ELEVATION

SYMBOLS *DESCRIPTIONS* *ELEVATION (FEET)*

450

445

440

435

430

LIGHT BUFF PURE LIMESTONE, COARSE-GRAINED, CALCARENITIC, FOSSILIFEROUS, THIN-BEDDED, IRREGULAR HAIRLINE SHALE PARTINGS AND STYOLITES SPACED 1" TO 6", OIL-STAINED

425

(SCALES FORMATION)
DARK GRAY CALCAREOUS SILTSTONE, LAMINATED, ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS, INTERBEDDED GRADATIONAL 1/2" TO 4" ZONES OF LIGHT GRAY SILTY LIMESTONE SPACED 1" TO 6"

420

415

FOSSILS AND INTERBEDDED LIMESTONES DECREASE BELOW 190.1'

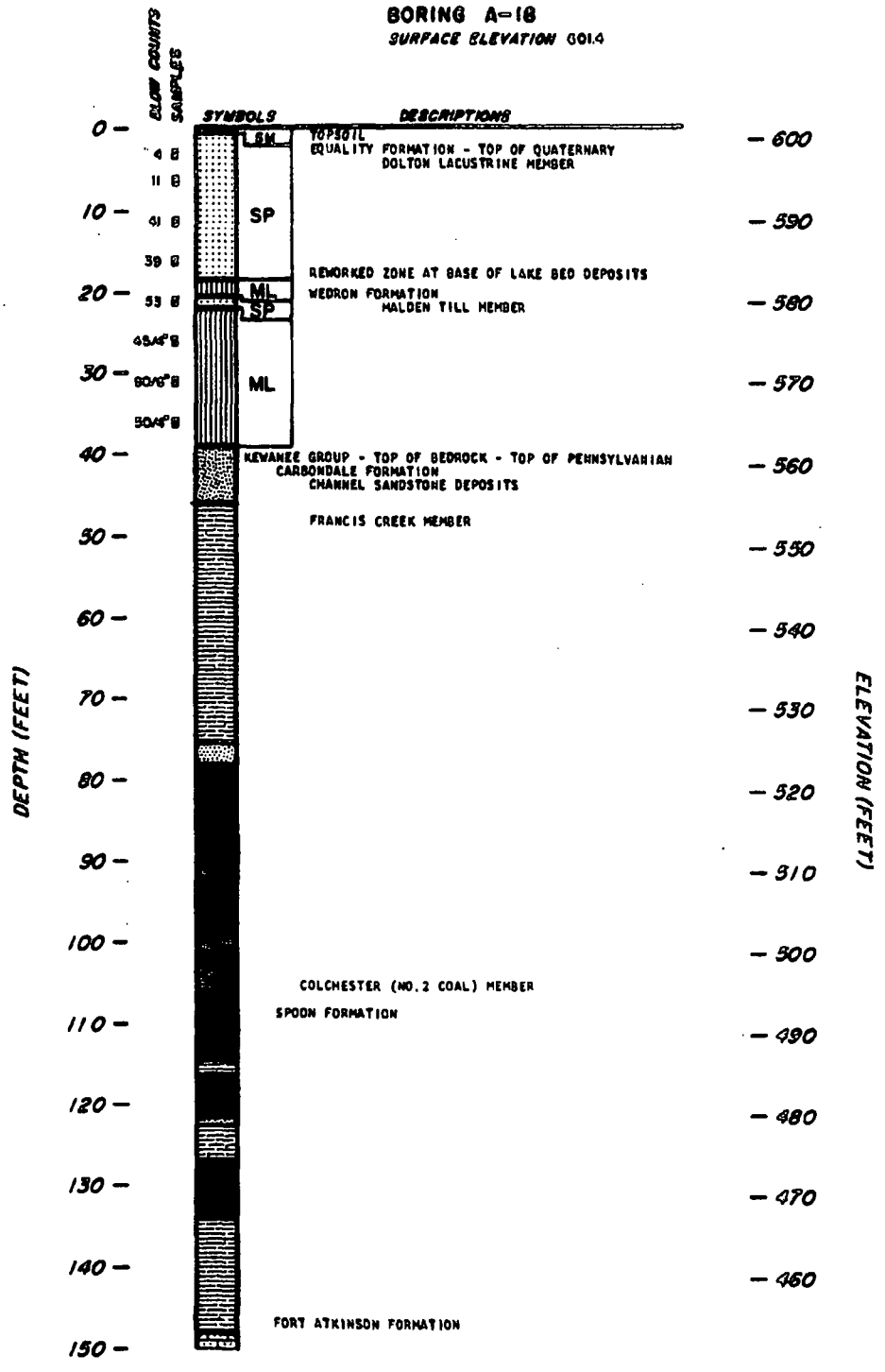
410

BORING COMPLETED AT 194.1'
ON 1-9-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-166

LOG OF BORING A-18
(SHEET 3 OF 5)

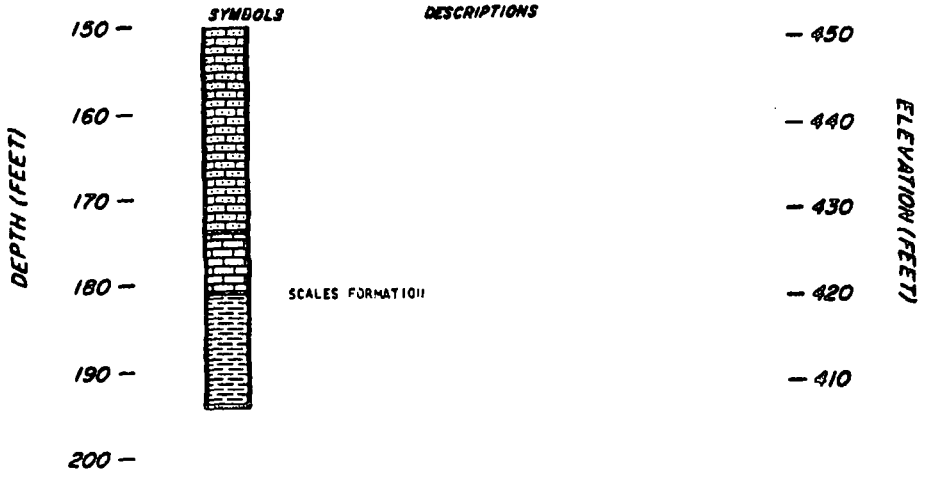


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-166

LOG OF BORING A-18
(SHEET 4 OF 5)

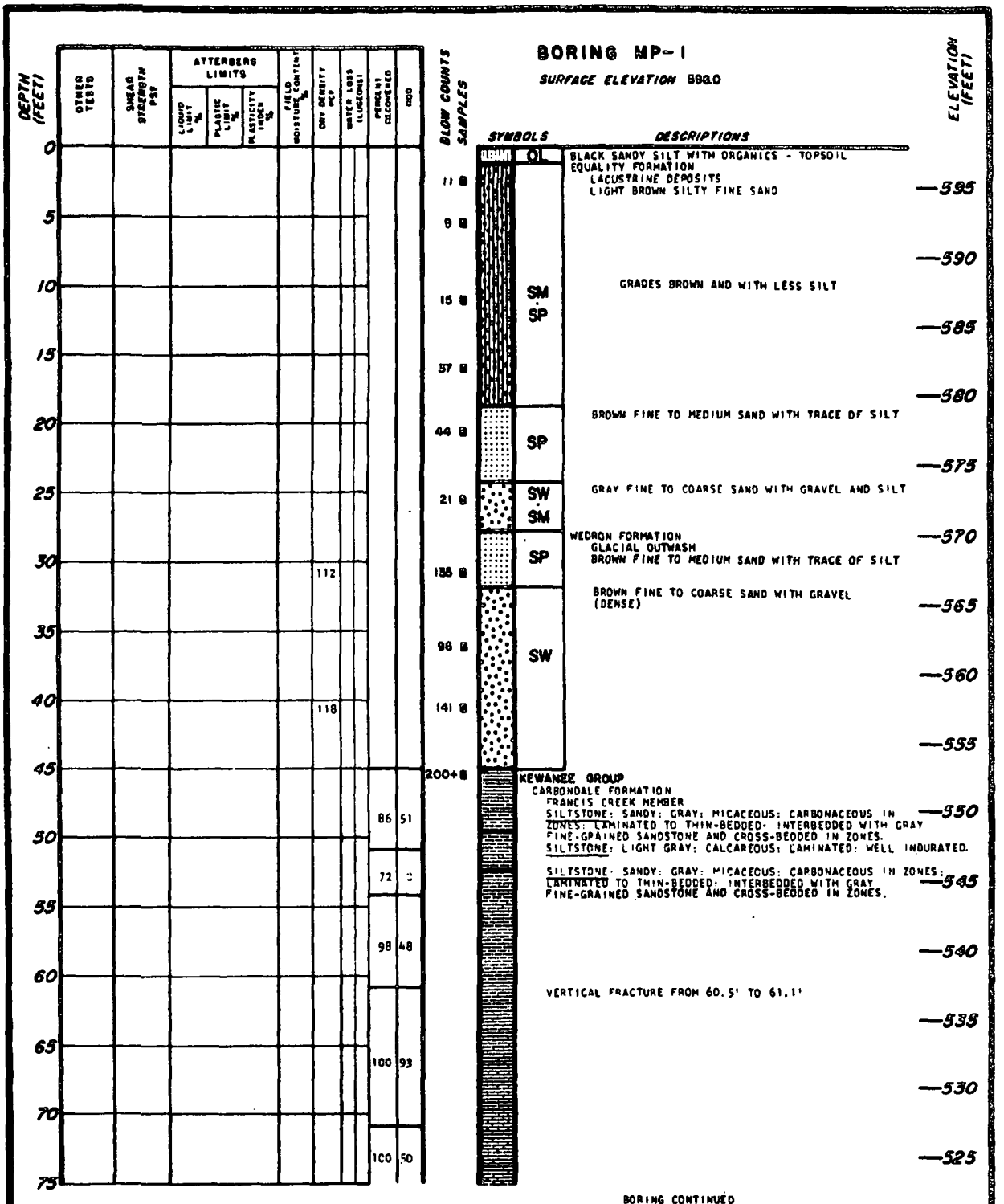
BORING A-18 CONTINUED



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-168

LOG OF BORING A-18
(SHEET 5 OF 5)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-167

LOG OF BORING MP-1
(SHEET 1 OF 3)

BORING MP-1 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									97	73
85										
90									100	88
95										
100									77	35
105									100	70
110									100	60
115										
120									81	26
125									90	68
130										
135									99	38
140										
145									99	43
150										

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

GRADES HORIZONTALLY LAMINATED BELOW 76.2'

—520

—515

—510

—505

SHALE: SILTY: GRAY: FINELY MICACEOUS: THINLY LAMINATED; FISSILE.

GRADES CARBONACEOUS BELOW 96.9'

COLCHESTER (NO. 2 COAL) MEMBER
COAL: BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.

—500

SPOON FORMATION
SHALE: CARBONACEOUS; DARK GRAY; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.
GRADES BROWNISH-GRAY AND SILTY BELOW 102.7'

—495

SILTSTONE: SANDY; LIGHT GRAY; MICACEOUS; CARBONACEOUS; THIN-BEDDED; WELL INDURATED
SHALE: SILTY; BROWNISH-GRAY; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

—490

SILTSTONE: SANDY; LIGHT GREENISH-GRAY; MICACEOUS; CARBONACEOUS; SIDERITIC; THIN-BEDDED; WELL INDURATED.

—485

SILTSTONE: SANDY; GREENISH-GRAY; MICACEOUS; CARBONACEOUS; THIN-BEDDED; INTERBEDDED WITH LIGHT GREENISH-GRAY SANDSTONE LAYERS; WELL INDURATED.
SHALE: SILTY; GRAY TO BROWNISH-GRAY; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

—480

—475

1" COAL SEAM AT 124.5'
SILTSTONE: SANDY; DARK GRAY TO BROWNISH-GRAY; MICACEOUS; CARBONACEOUS; LAMINATED TO THIN-BEDDED; WELL INDURATED.
VERTICAL FRACTURE FROM 125.4' TO 125.8'

—470

30° FRACTURES AT 131.7', 131.9' AND 132.3'

—465

GRADES FISSILE WITH ABUNDANT CARBONIZED PLANT FOSSILS BELOW 134.0'

GRADES CALCAREOUS BELOW 136.0'

—460

MAQUOKETA GROUP
FORT ATKINSON FORMATION
LIMESTONE: SILTY: GRAY; FINE-TO MEDIUM-GRAINED; FOSSILIFEROUS; THIN-BEDDED; WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 4" ZONES OF CALCAREOUS SHALE SPACED. 1/4" TO 10"
1/4" OPEN OIL-STAINED VUG AT 137.7'

—455

—450

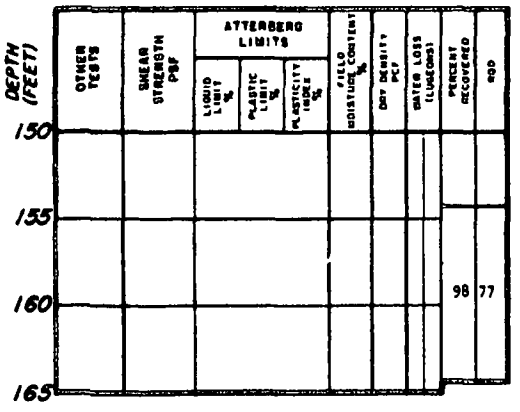
BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-167

LOG OF BORING MP-1
(SHEET 2 OF 3)

BORING MP-1 CONTINUED



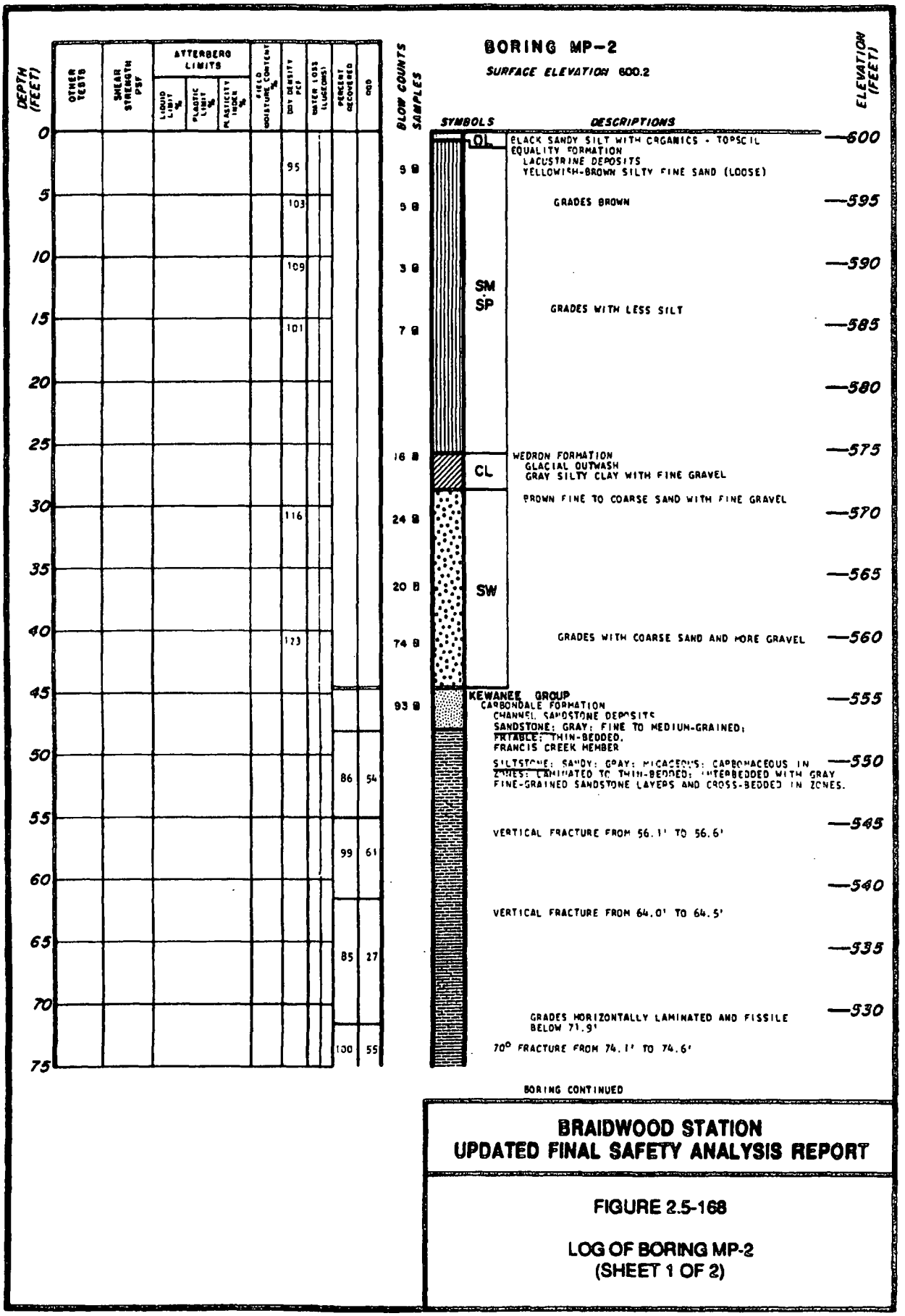
SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	VERTICAL FRACTURES FROM 151.5' TO 151.9'	
		—445
	LIMESTONE; LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED WITH IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/4" TO 10"; OIL-STAINED THROUGHOUT. TWO 1" CALCITE LINED OIL-STAINED VUGS AT 157.9' OIL-STAINED ZONES FROM 157.8' TO 158.2' AND 158.4' TO 158.6'	—440
		—435

BORING COMPLETED AT 164.2 FEET ON 3-8-73
CASING USED TO A DEPTH OF 47.0 FEET
WATER LEVEL MEASURED AT 4.5 FEET ON 3-8-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-167

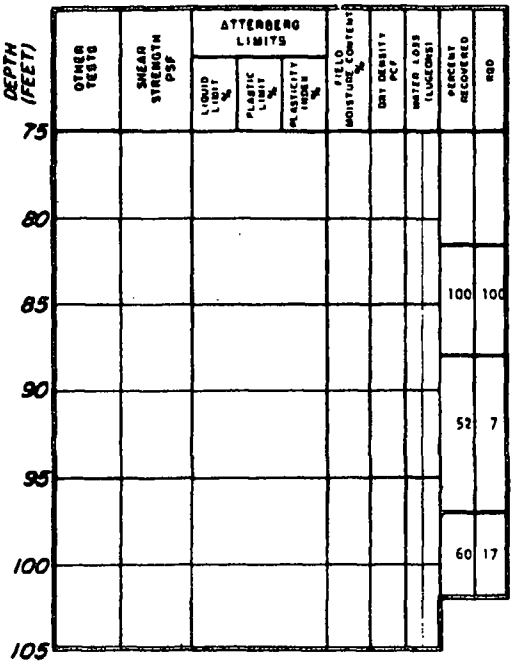
LOG OF BORING MP-1
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-168

LOG OF BORING MP-2
(SHEET 1 OF 2)



BORING MP-2 CONTINUED

ELEVATION (FEET)

SYMBOLS

DESCRIPTIONS

—525

VERTICAL FRACTURE FROM 79.3' TO 79.4'

—520

60° FRACTURE FROM 82.1' TO 82.4'

—515

—510

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.

—505

COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.

SPOON FORMATION
SHALE; CARBONACEOUS; DARK GRAY HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

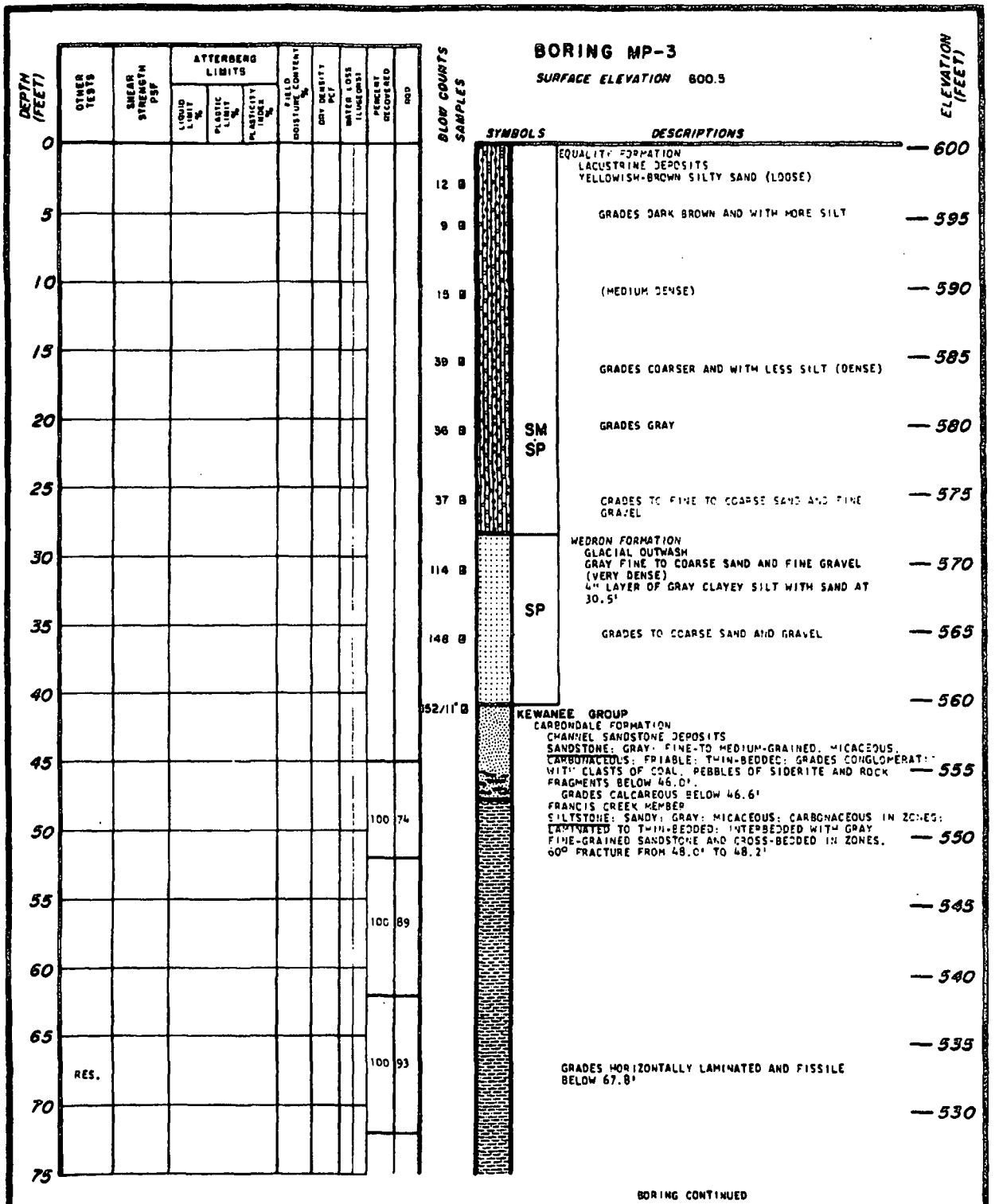
—500

BORING COMPLETED AT 102.0 FEET ON 3-14-73
CASING USED TO A DEPTH OF 47.0 FEET
WATER LEVEL MEASURED AT 6.8 FEET ON 3-13-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-168

LOG OF BORING MP-2
(SHEET 2 OF 2)

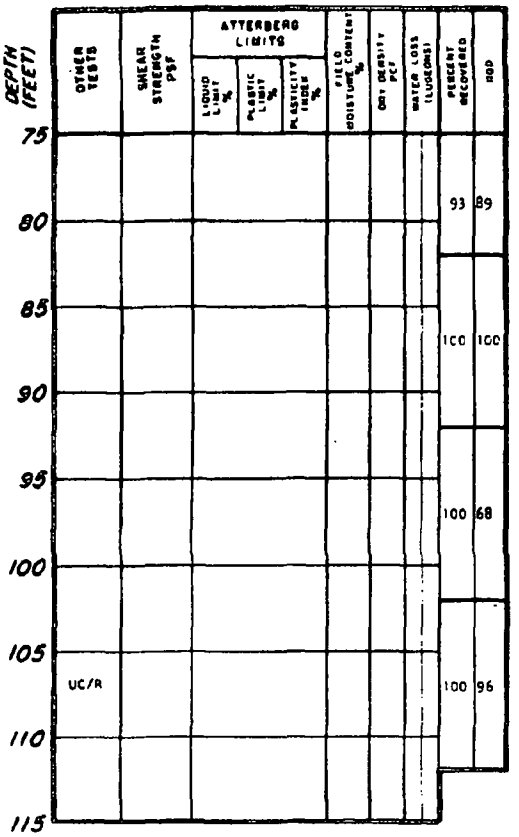


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-169

LOG OF BORING MP-3
(SHEET 1 OF 2)

BORING MP-3 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

525

520

515

510

30° FRACTURES AT 93.6' AND 93.8'

1" SIDERITE NODULE AT 94.5'

505

SHALE: SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.
COLCHESTER (NO. 2 COAL) MEMBER
COAL: BLACK; THIN-BEDDED; NUMEROUS VERTICAL TIGHT FRACTURES WITH SOME PYRITE AND CLAY.

500

SPOON FORMATION
SHALE: CARBONACEOUS; BROWNISH-GRAY TO BLACK; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

BLACK COAL BED FROM 105.1' TO 105.3'

495

SHALE: SILTY; BROWN TO GRAY; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.
SANDSTONE: SILTY; LIGHT GRAY; FINE-GRAINED; MICACEOUS; CARBONACEOUS; THIN-BEDDED; WELL INDURATED.
SHALE: SILTY; GRAY; CARBONACEOUS; MICACEOUS; THIN-BEDDED TO MASSIVE;

490

1/2" COAL SEAM AT 110.7'
SHALE: CARBONACEOUS; BROWN TO GRAY; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

485

BORING COMPLETED AT 112.0 FEET ON 3-6-73
WATER LEVEL RECORDED AT 7.0 FEET ON 3-5-73

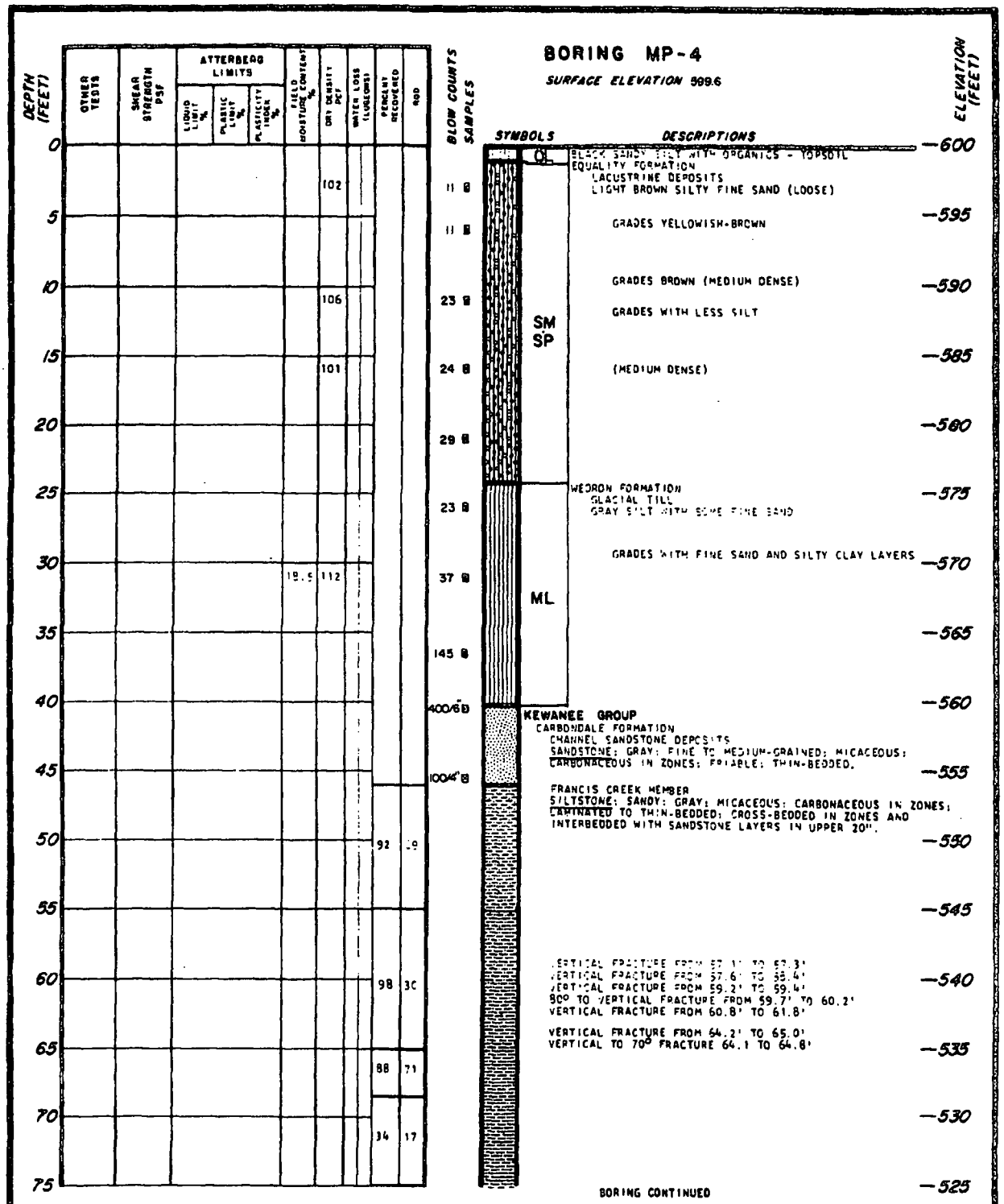
480

475

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-169

LOG OF BORING MP-3
(SHEET 2 OF 2)

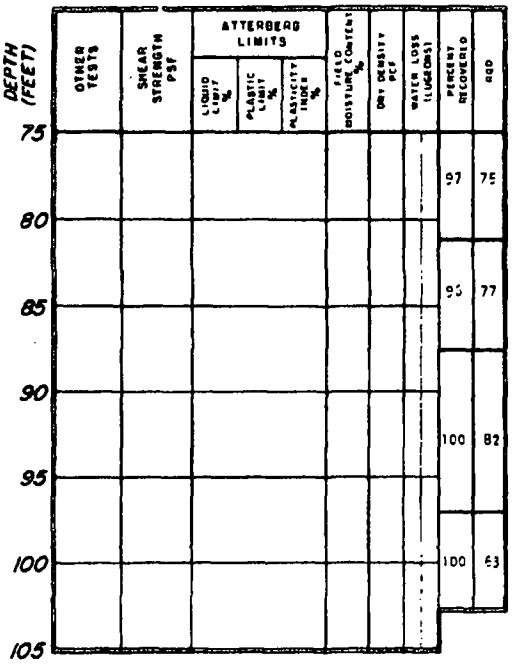


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-170

LOG OF BORING MP-4
(SHEET 1 OF 2)

BORING MP-4 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

HORIZONTALLY LAMINATED AND FISSILE BELOW 78.0'

VERTICAL FRACTURE FROM 79.5' TO 80.3' — 525

VERTICAL FRACTURE FROM 82.1' TO 82.7'

VERTICAL FRACTURE FROM 86.9' TO 87.5' — 520

VERTICAL FRACTURE FROM 99.1' TO 89.6' — 515

VERTICAL FRACTURE FROM 92.7' TO 93.3'

VERTICAL FRACTURE FROM 93.8' TO 94.5' — 510

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE. — 505

COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WIT SOME PYRITE AND CLAY. — 500

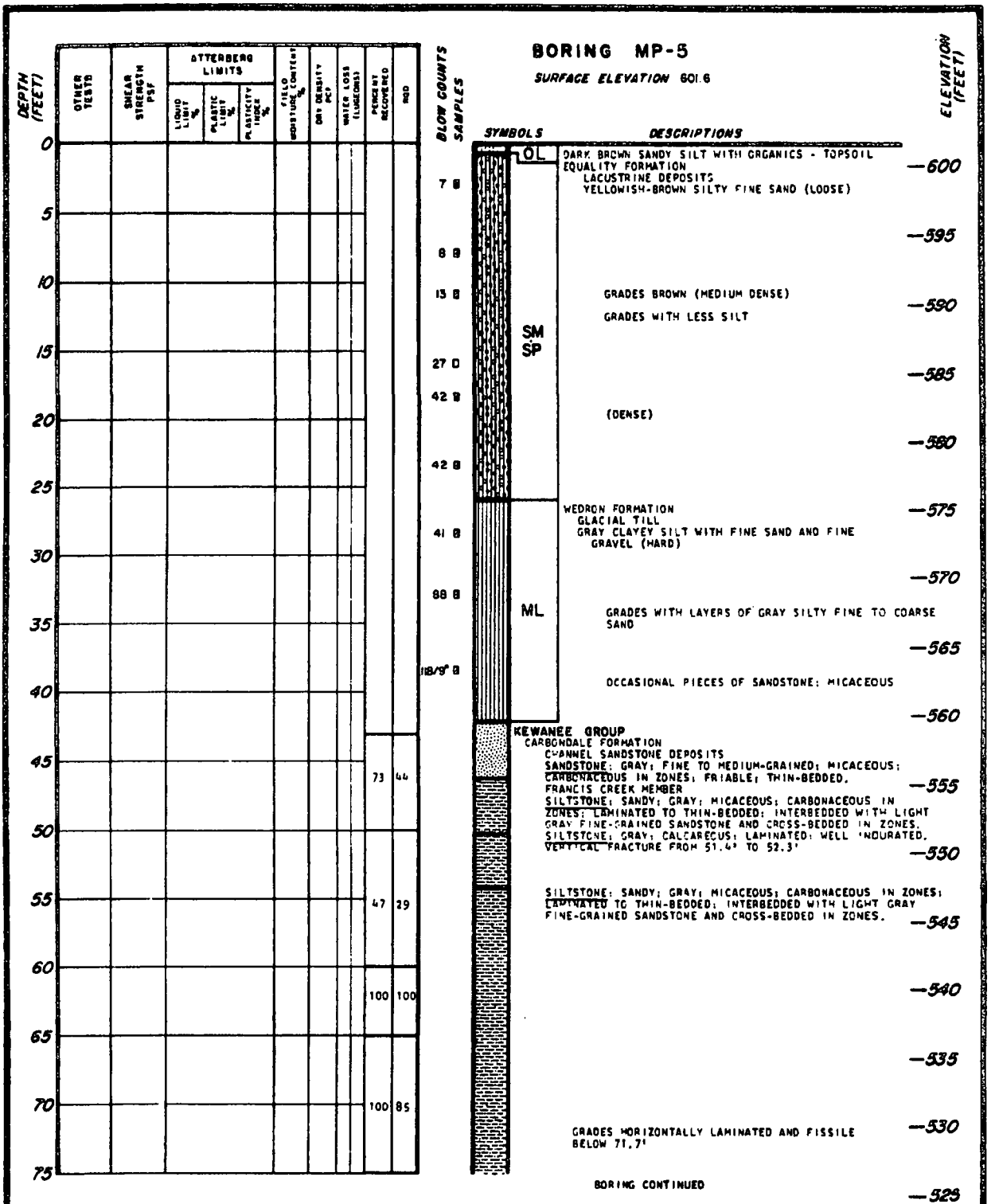
SPOON FORMATION
SHALE; CARBONACEOUS; DARK GRAY TO BROWN; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. — 495

BORING COMPLETED AT 102.5 FEET ON 3-13-73
CASING USED TO A DEPTH OF 46.0 FEET
WATER LEVEL MEASURED AT 6.5 FEET ON 3-12-73
WATER LEVEL MEASURED AT 7.2 FEET ON 3-13-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-170

LOG OF BORING MP-4
(SHEET 2 OF 2)

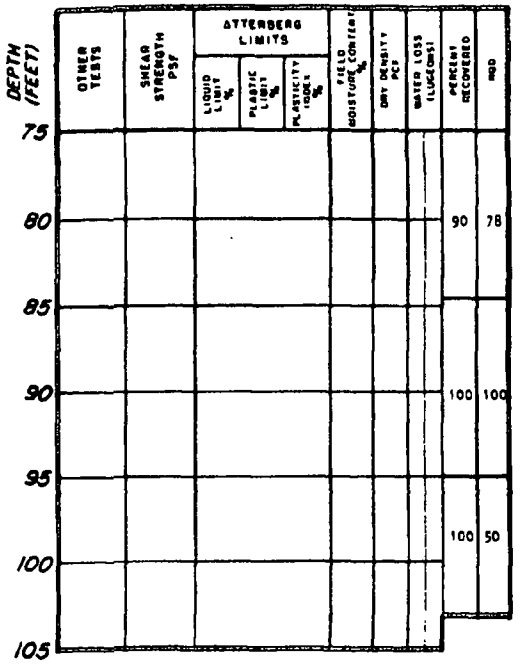


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-171

LOG OF BORING MP-5
(SHEET 1 OF 2)

BORING MP-5 CONTINUED

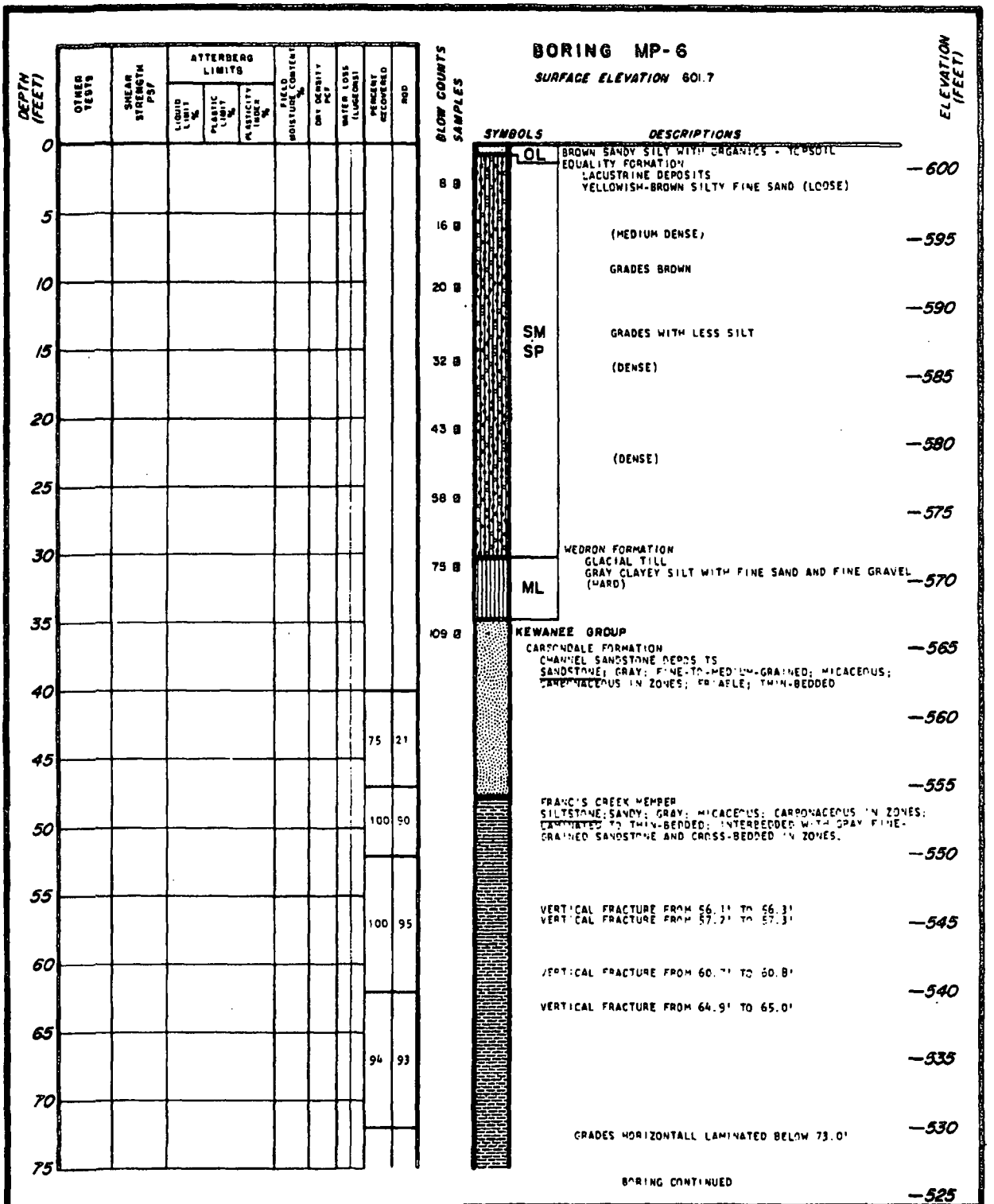


SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	VERTICAL FRACTURE FROM 76.8' TO 78.1'	—525
		—520
		—515
		—510
	SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE. 2" SIDERITE NODULE AT 94.8' 2" SIDERITE NODULE AT 95.3' 1/2" SIDERITE NODULE AT 97.4' 1/2" SIDERITE NODULE AT 97.9'	—505
	COLCHESTER (NO. 2 COAL) MEMBER COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	—500
	SPOON FORMATION SHALE; CARBONACEOUS; BROWN TO GRAY; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	
	BORING COMPLETED AT 103.0 FEET ON 3-15-73 CASING USED TO A DEPTH OF 43.0 FEET WATER LEVEL RECORDED AT 8.0 FEET ON 3-14-73	—495

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-171

LOG OF BORING MP-5
(SHEET 2 OF 2)

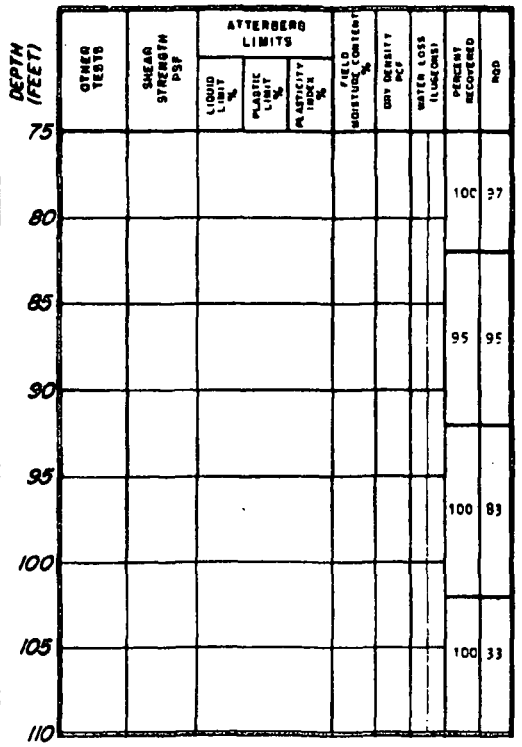


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-172

LOG OF BORING MP-6
(SHEET 1 OF 2)

BORING MP-6 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

—525

VERTICAL FRACTURE FROM 82.0' TO 82.4'

—520

—515

—510

1" SIDERITE NODULE AT 95.7'
SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.
1" SIDERITE NODULE AT 97.6'
1" SIDERITE NODULE AT 99.3' AND 99.8'

—505

COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES; GITH SOME PYRITE AND CLAY.

—500

SPOON FORMATION
SHALE; CARBONACEOUS; BROWN TO DARK GRAY; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

—495

GRADES SILTY BELOW 108.5'

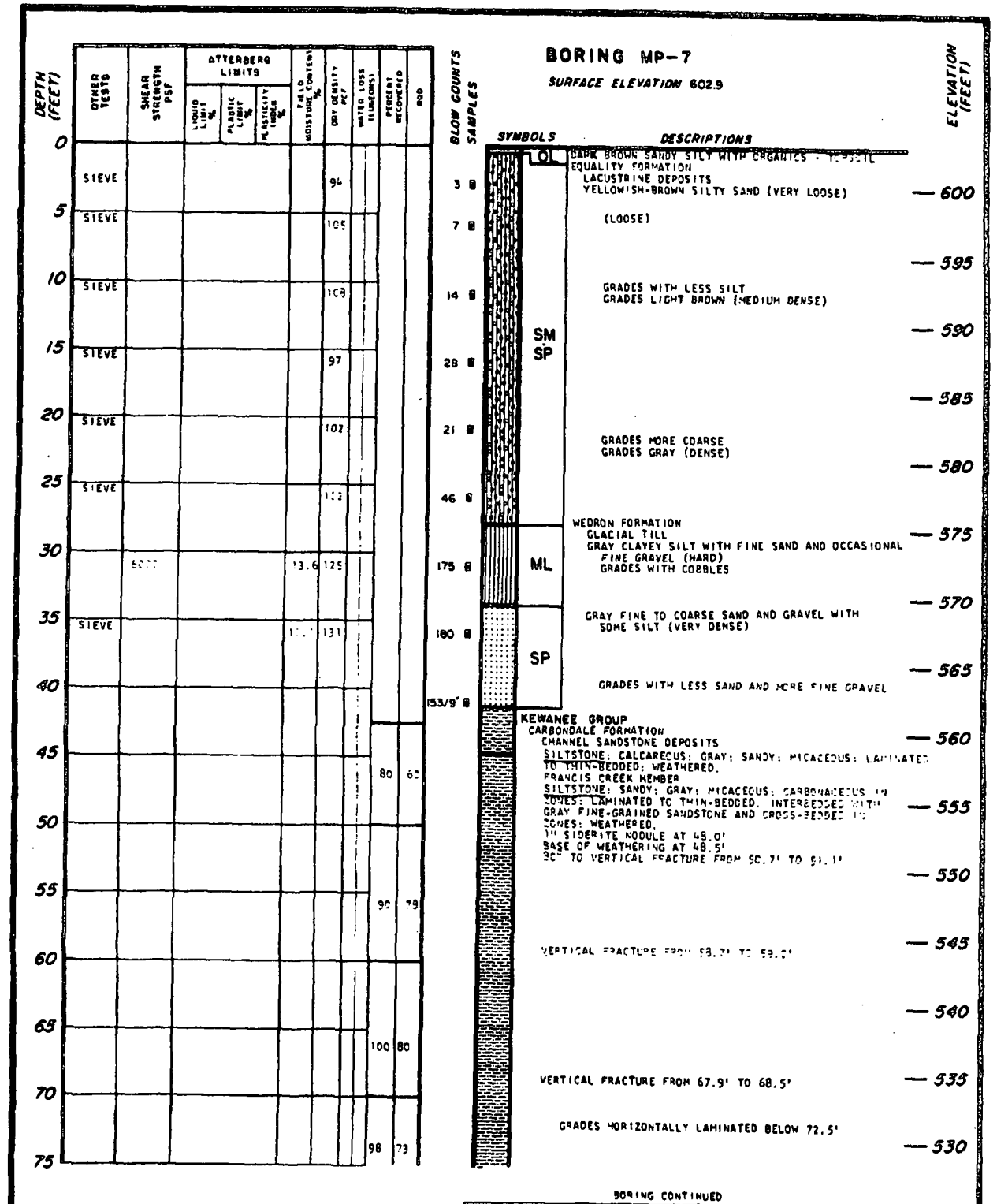
BORING COMPLETED AT 110.0 FEET ON 3-7-73
CASING USED TO A DEPTH OF 35.0 FEET
WATER LEVEL RECORDED AT 8.5 FEET ON 3-7-73

—490

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-172

LOG OF BORING MP-6
(SHEET 2 OF 2)

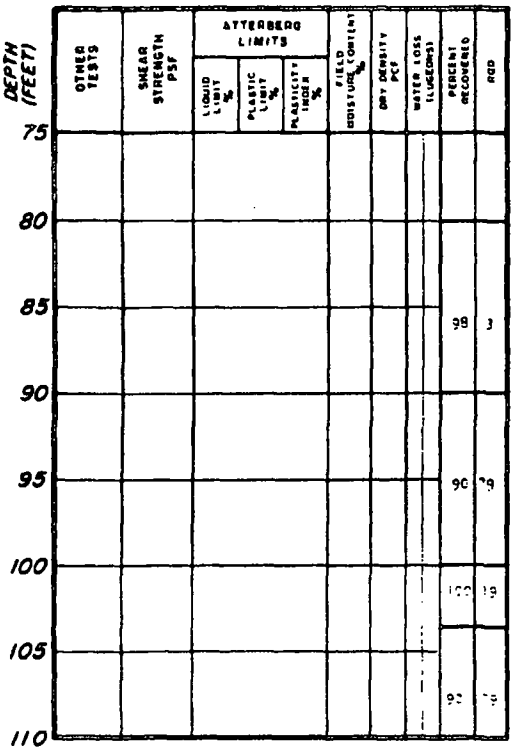


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-173

LOG OF BORING MP-7
(SHEET 1 OF 2)

BORING MP-7 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

— 525

30° FRACTURE AT 80.4'

— 520

— 515

70° FRACTURE FROM 87.3' TO 88.0'

— 510

SHALE: SILTY: GRAY: FINELY MICACEOUS: THINLY LAMINATED. — 505

1/2" SIDERITE NODULES AT 99.2' AND 99.4'
GRADES CARBONACEOUS BELOW 99.8'
COLCHESTER (NO. 2 COAL) MEMBER
COAL: BLACK: THIN BEDDED: NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY. — 500

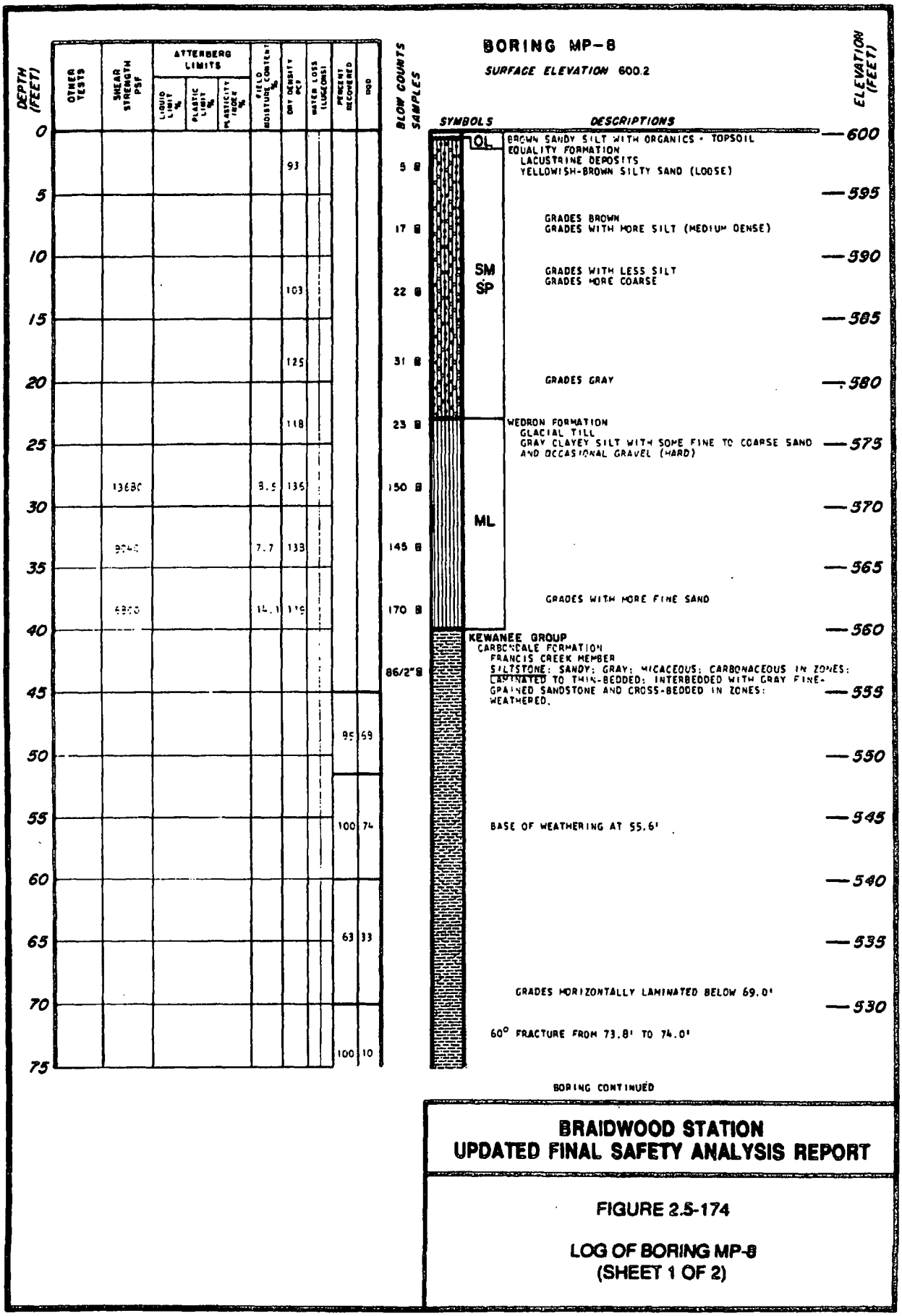
SPOON FORMATION
SHALE: DARK GRAY TO BROWN: CARBONACEOUS, MICACEOUS IN ZONES: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.
1/2" COAL SEAM AT 104.7'
1" COAL SEAM AT 107.5'
GRADES SILTY BELOW 108.1' — 495

BORING COMPLETED AT 110.0 FEET ON 3-22-73
WATER LEVEL RECORDED AT 9.0 FEET ON 3-23-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-173

LOG OF BORING MP-7
(SHEET 2 OF 2)

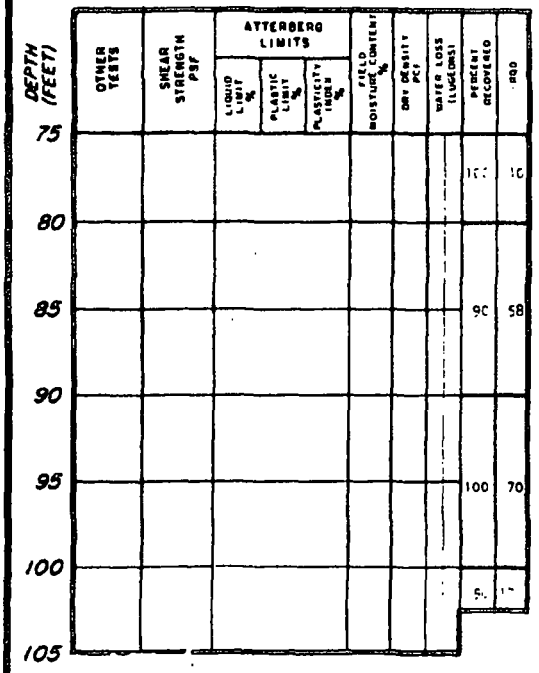


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-174

LOG OF BORING MP-8
(SHEET 1 OF 2)

BORING MP-8 CONTINUED



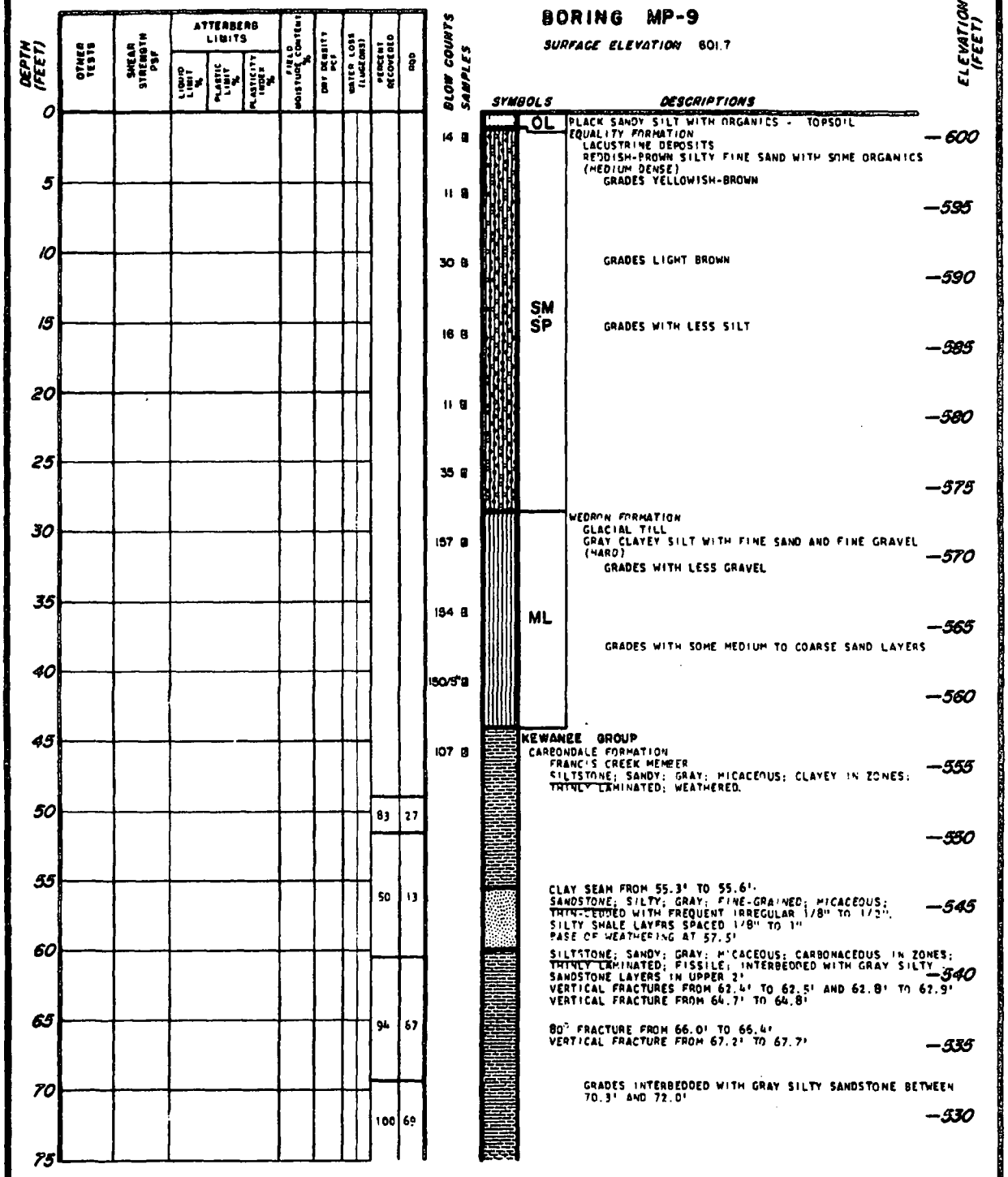
SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		525
	90° FRACTURE FROM 79.3' TO 78.7'	520
		515
		510
		505
	SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE. COLCHESTER (NO. 2 COAL) MEMBER COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	500
	SPOON FORMATION SHALE; GRAY TO BROWN; SILTY; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	

BORING COMPLETED AT 102.5 FEET ON 3-21-73
WATER LEVEL RECORDED AT 6.0 FEET ON 3-20-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-174

LOG OF BORING MP-8
(SHEET 2 OF 2)

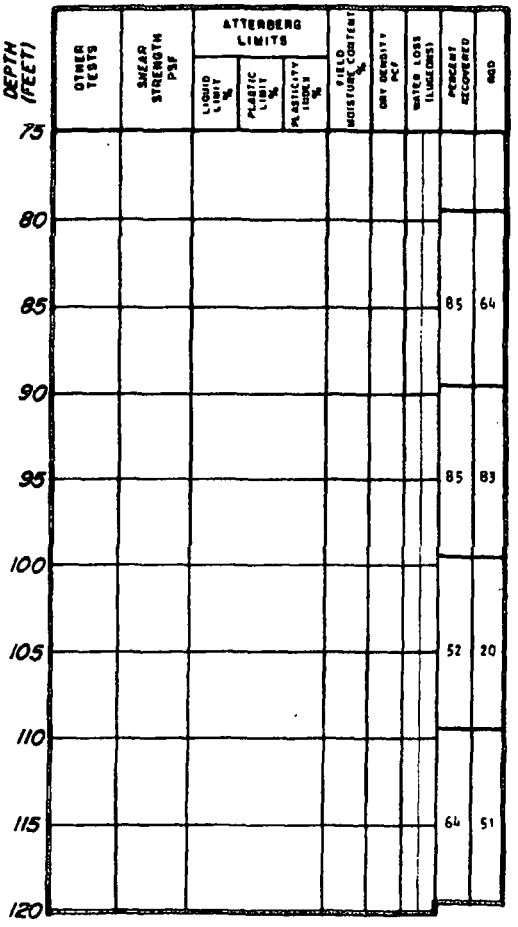


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-175

LOG OF BORING MP-9
(SHEET 1 OF 2)

BORING MP-9 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

VERTICAL FRACTURES FROM 74.8' TO 75.1' AND 75.2' TO 75.5'

—525

—520

—515

—510

—505

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.

GRADES HIGHLY CARBONACEOUS AT 103.1'

—500

COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.

SPOON FORMATION
SHALE; SILTY; CARBONACEOUS; BROWNISH-GRAY TO BROWN; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES; GRADES HIGHLY SILTY IN BASAL 18".

—495

—490

—485

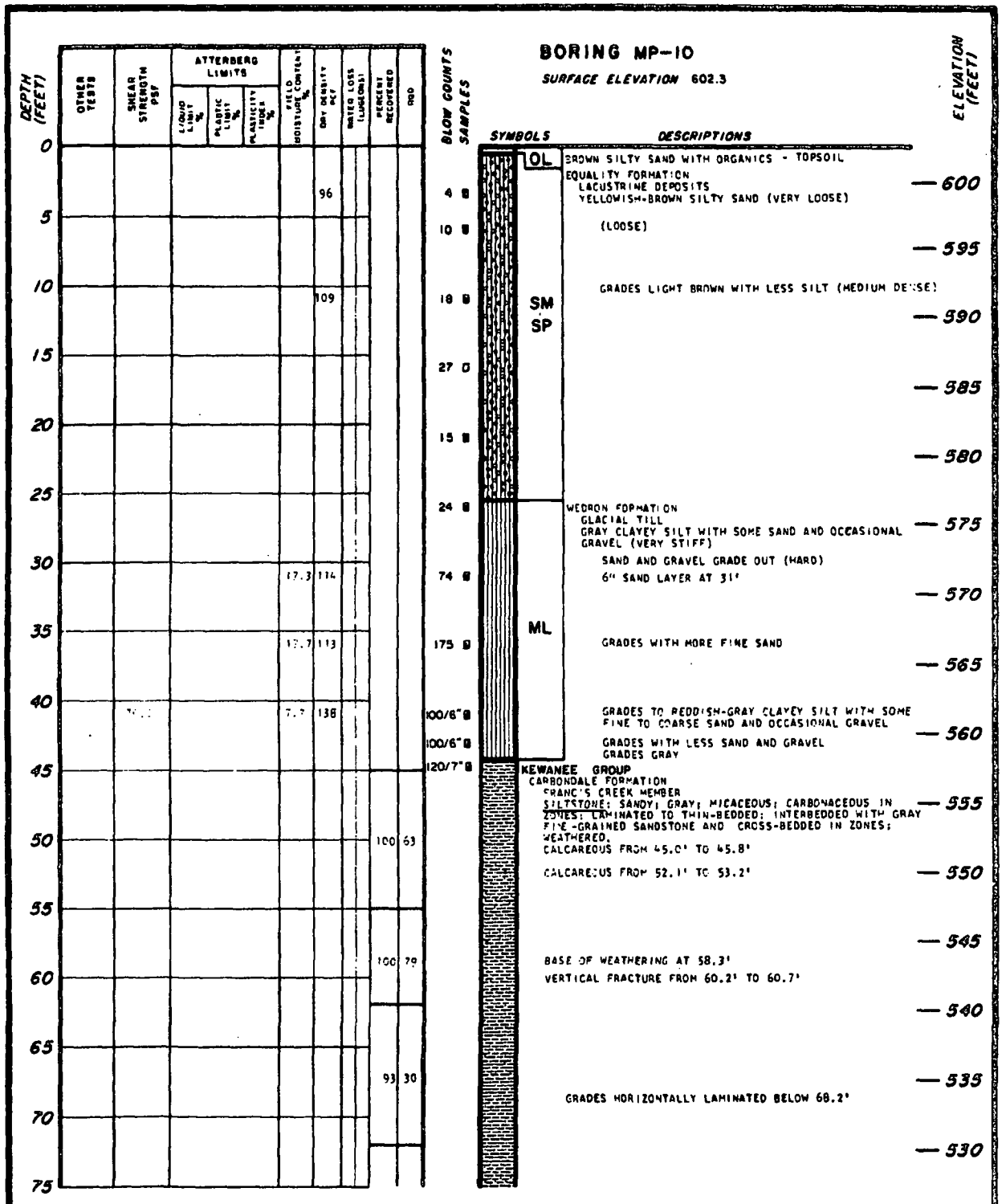
BORING COMPLETED AT 119.5 FEET ON 2-22-73
WATER LEVEL NOT RECORDED

—480

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-175

LOG OF BORING MP-9
(SHEET 2 OF 2)

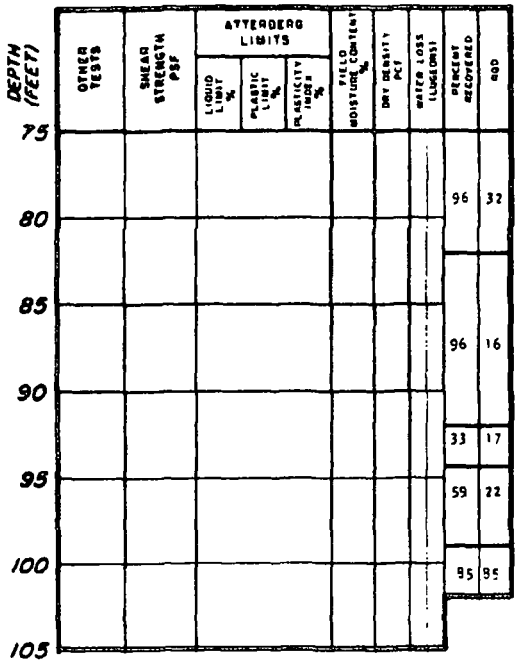


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-176

LOG OF BORING MP-10
(SHEET 1 OF 2)

BORING MP-10 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

— 525

1" SIDERITE NODULE AT 80.6'
2" SIDERITE NODULE AT 81.5'

— 520

— 515

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.

— 510

COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.

— 505

SPOON FORMATION
SHALE; DARK GRAY TO BROWN; CARBONACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

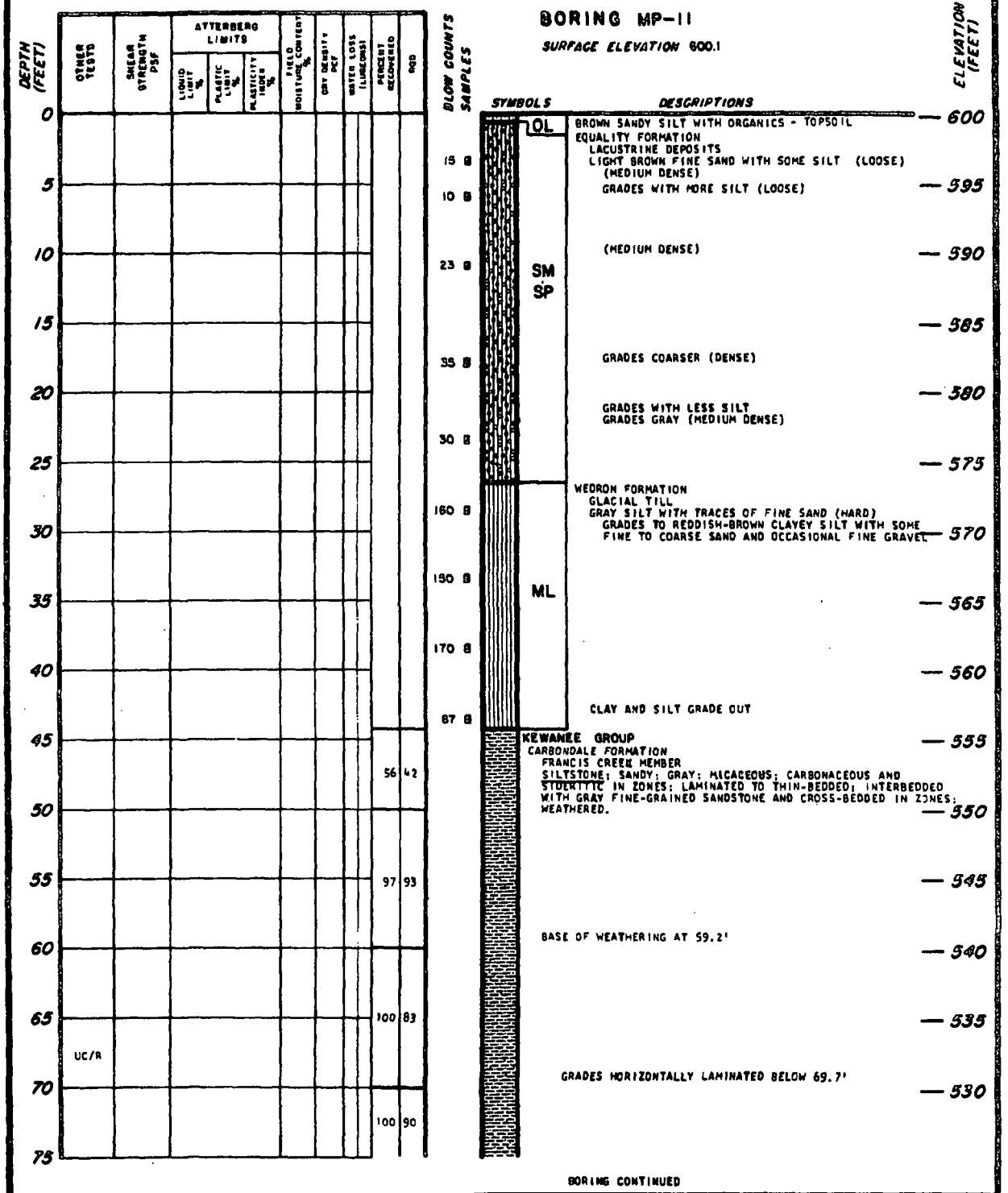
— 500

BORING COMPLETED AT 102.0 FEET ON 3-22-73
WATER LEVEL RECORDED AT 7.0 FEET ON 3-22-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-176

LOG OF BORING MP-10
(SHEET 2 OF 2)

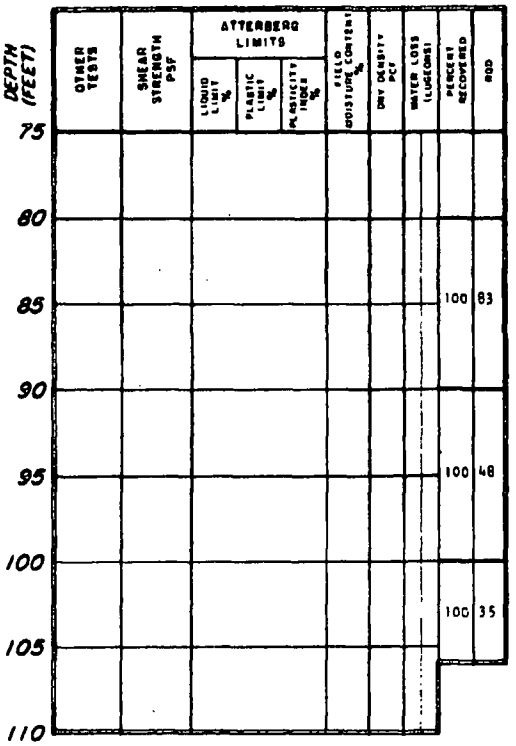


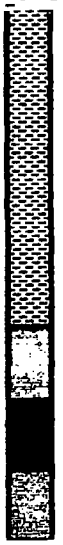
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-177

LOG OF BORING MP-11
(SHEET 1 OF 2)

BORING MP-11 CONTINUED





DESCRIPTIONS

ELEVATION (FEET)

— 525

— 520

VERTICAL FRACTURE FROM 84.8' TO 85.6'

VERTICAL FRACTURE FROM 86.1' TO 87.3'

— 515

— 510

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.

— 505

COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.

— 500

SPOON FORMATION
SHALE; GRAY TO BROWN; CARBONACEOUS; MASSIVE; HIGHLY FRACTURED WITH NUMEROUS RANDOM SLICKENSIDES.
GRADES SILTY BELOW 104.0'.

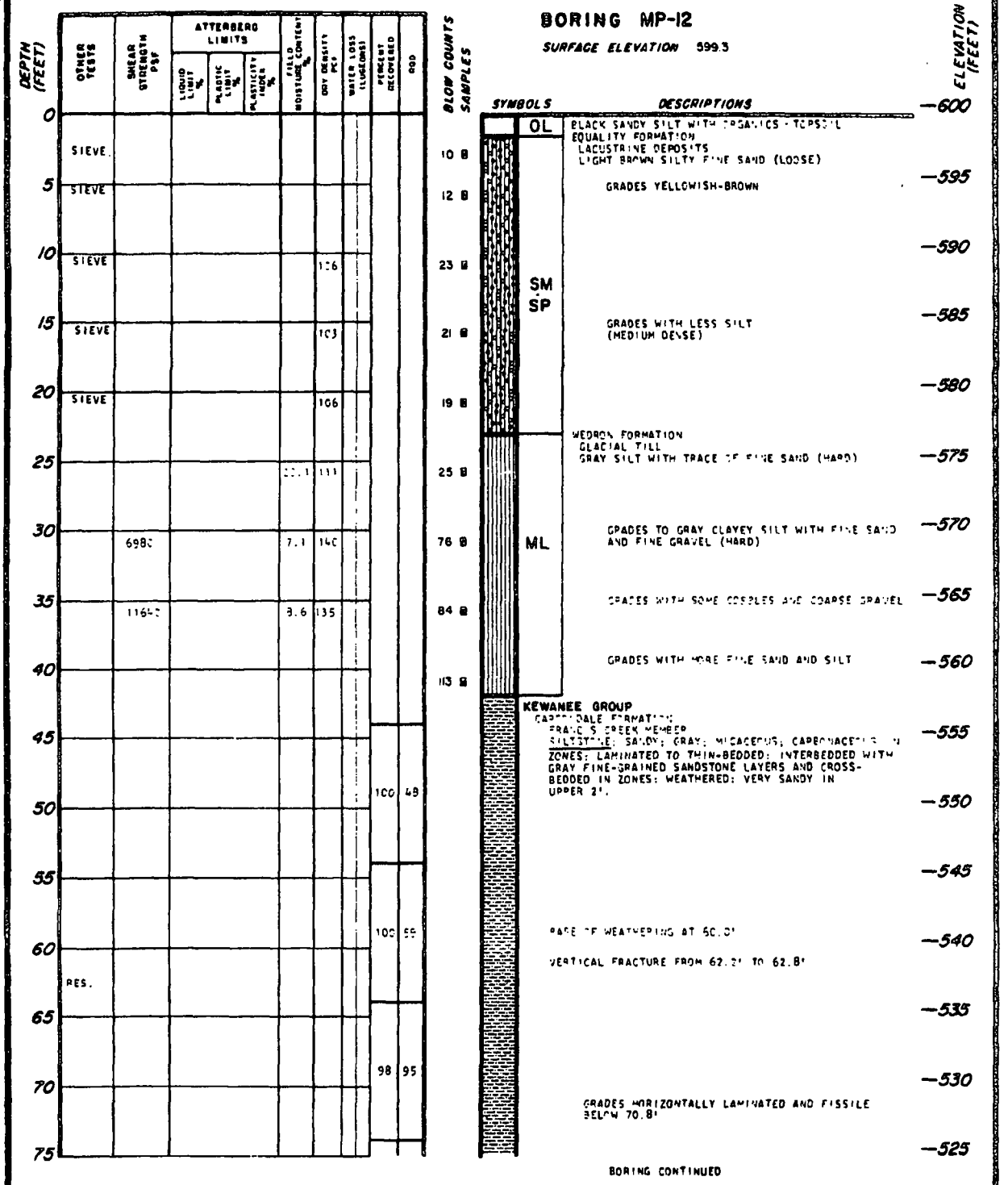
— 495

BORING COMPLETED AT 106.0 FEET ON 3-20-73
WATER LEVEL RECORDED AT 5.0 FEET ON 3-16-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-177

LOG OF BORING MP-11
(SHEET 2 OF 2)

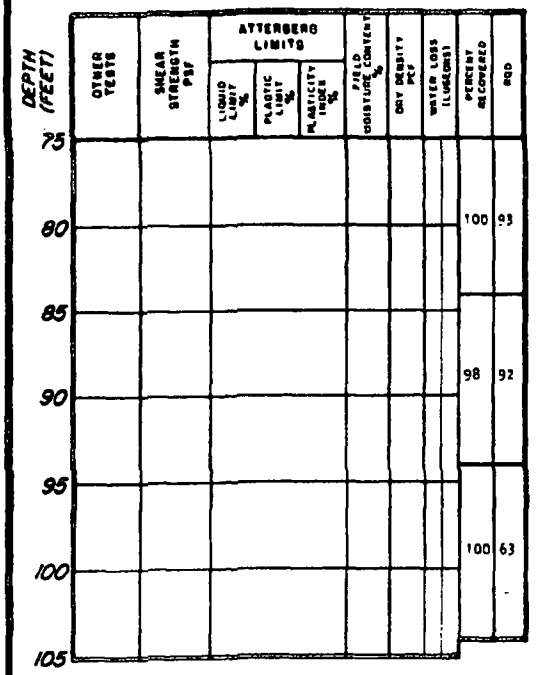


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-178

LOG OF BORING MP-12
(SHEET 1 OF 2)

BORING MP-12 CONTINUED



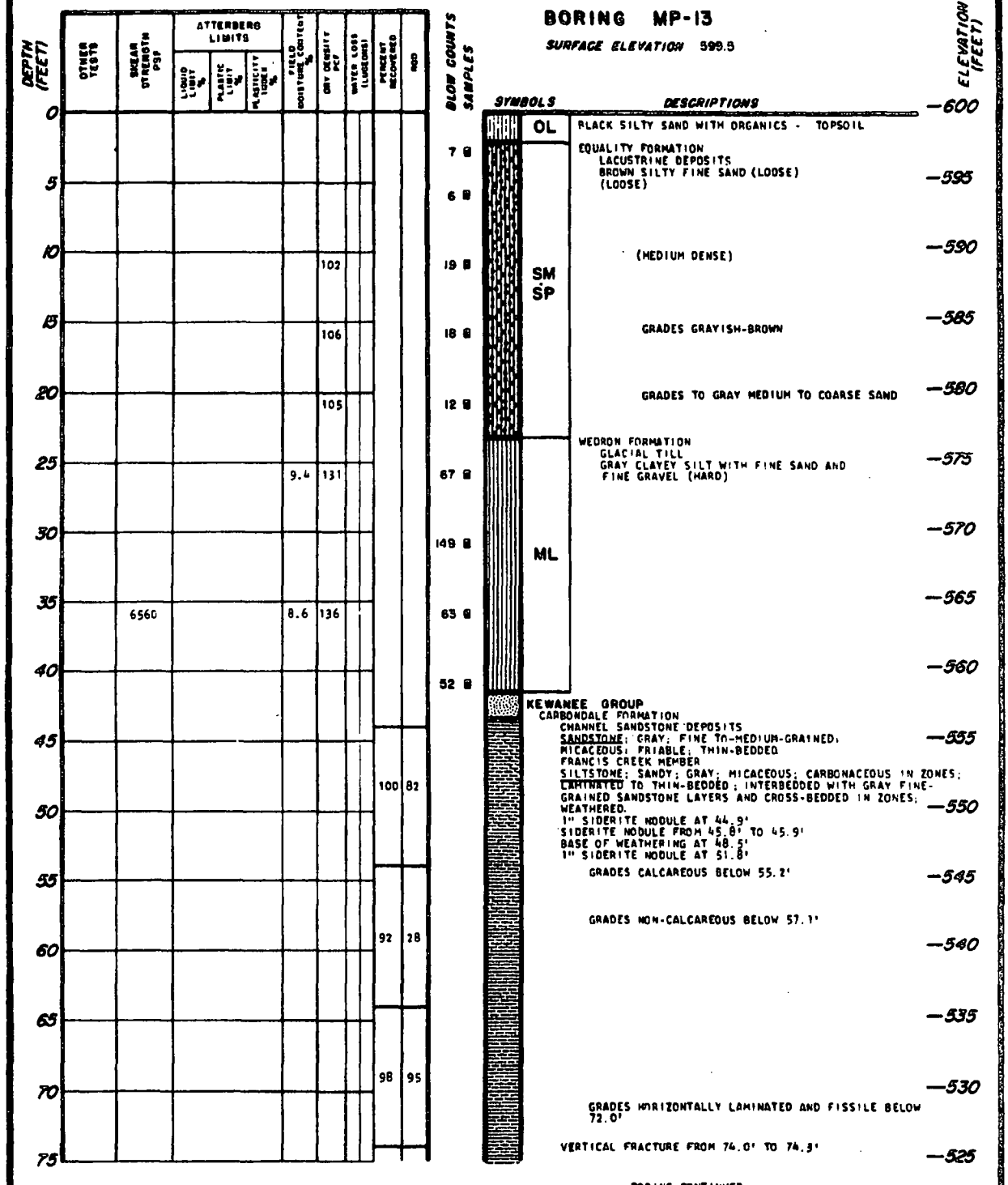
SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		—525
		—520
	VERTICAL FRACTURE FROM 84.2' TO 84.6'	—515
	VERTICAL FRACTURE FROM 88.0' TO 88.4'	—510
		—505
	SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.	
	COLCHESTER (NO. 2 COAL) MEMBER COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES; WITH SOME PYRITE AND CLAY.	—500
	SPOON FORMATION SHALE; BROWNISH-GRAY TO GRAY; SILTY; CARBONACEOUS, MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	—495

BORING COMPLETED AT 104.0 FEET ON 2-28-73
CASING USED TO A DEPTH OF 44.0 FEET
WATER LEVEL RECORDED AT 5.5 FEET ON 2-27-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-178

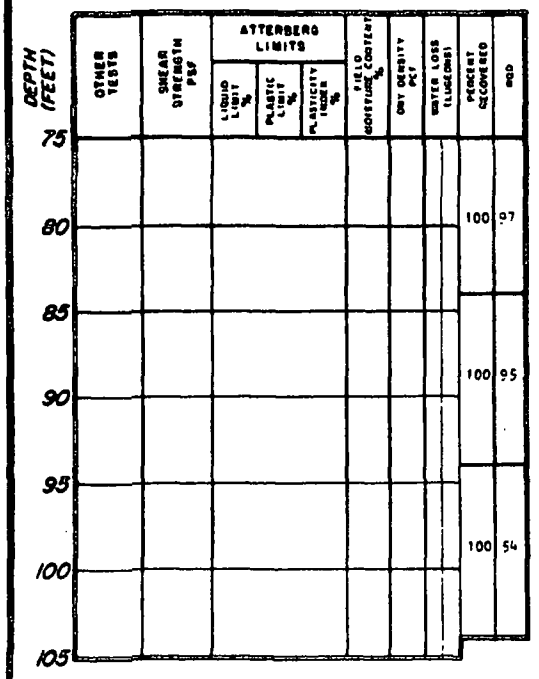
LOG OF BORING MP-12
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-179

LOG OF BORING MP-13
(SHEET 1 OF 2)



BORING MP-13 CONTINUED

ELEVATION (FEET)

SYMBOLS

DESCRIPTIONS

−525

VERTICAL FRACTURE FROM 79.3' TO 79.6'

−520

−515

−510

−505

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.

GRADES CARBONACEOUS BELOW 99.0'

−500

COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.

SPOON FORMATION
SHALE; CARBONACEOUS; BROWN TO BLACK; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

BORING COMPLETED AT 104.0 FEET ON 3-1-73
WATER LEVEL RECORDED AT 5.5 FEET ON 2-28-73

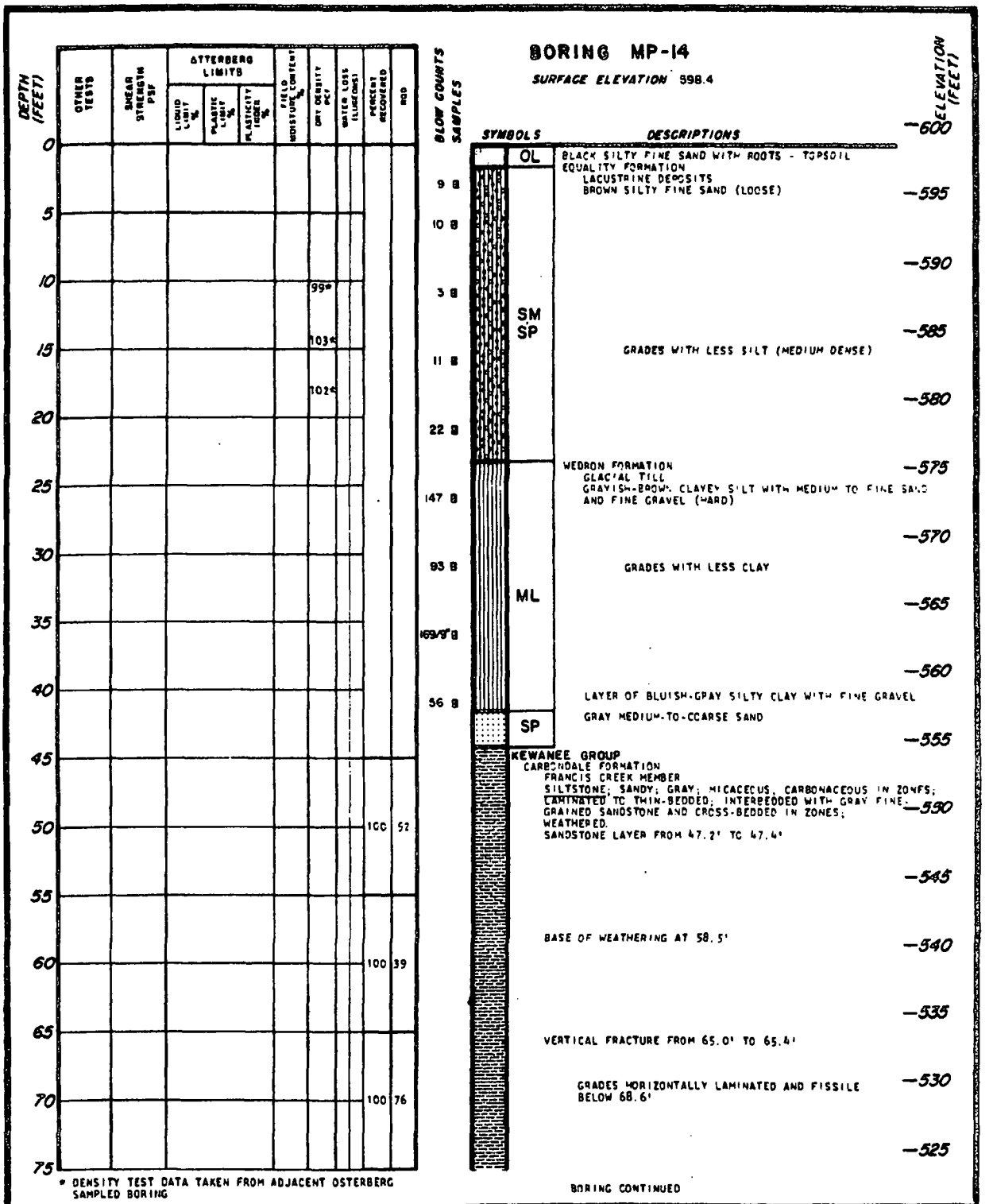
−495

−490

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-179

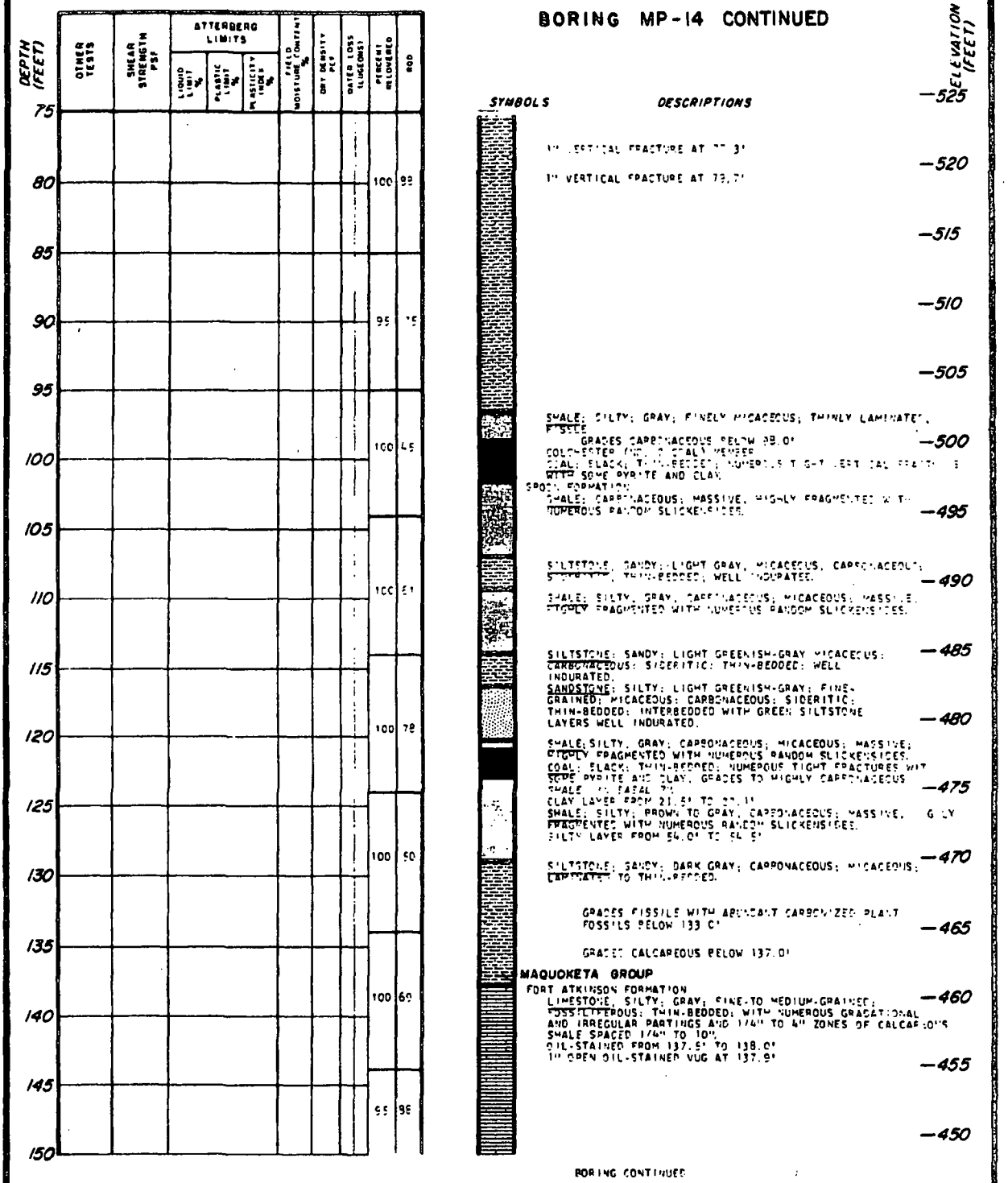
LOG OF BORING MP-13
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-180

LOG OF BORING MP-14
(SHEET 1 OF 3)

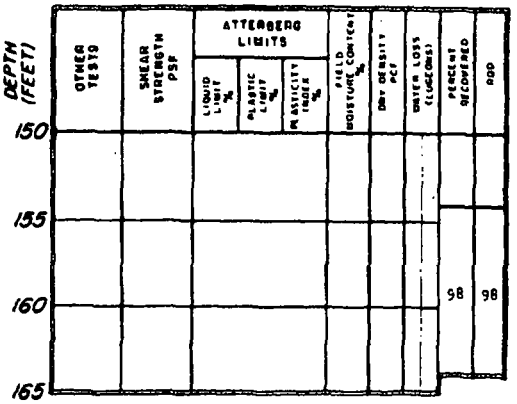


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-180

LOG OF BORING MP-14
(SHEET 2 OF 3)

BORING MP-14 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

-450

-445

-440

-435

-430

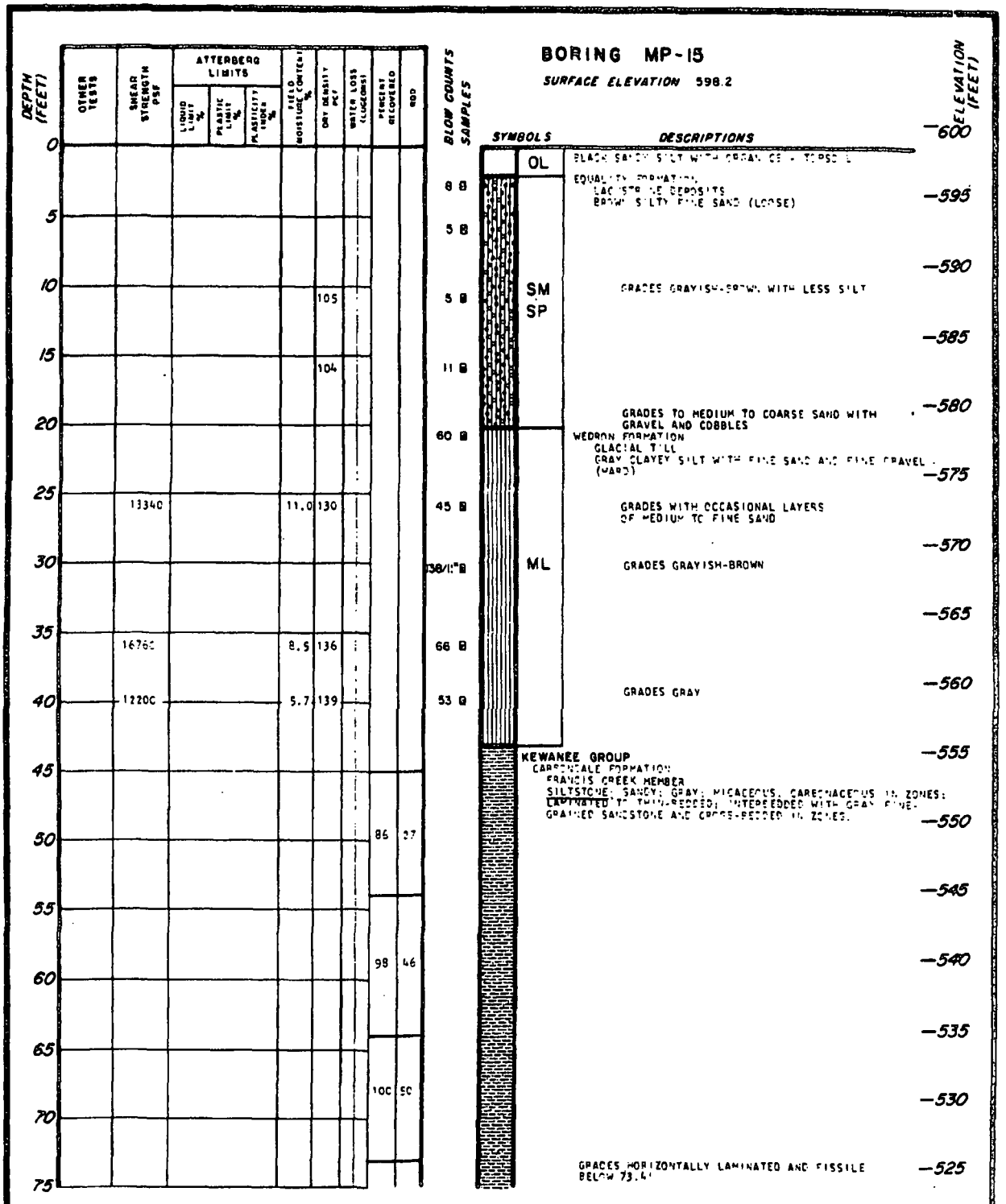
LIMESTONE; LIGHT BUFF; COARSE-GRAINED; CALCAREOUS; FOSSILIFEROUS; THIN-BEDDED WITH IRREGULAR MARLINE SHALE PARTINGS AND STYLOLITES SPACED 1/4" TO 10". OIL-STAINED ZONE FROM 160.8' TO 161.1'

BORING COMPLETED AT 164.0 FEET ON 3-3-73
CASING USED TO A DEPTH OF 44.0 FEET
WATER LEVEL NOT RECORDED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-180

LOG OF BORING MP-14
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-181

LOG OF BORING MP-15
(SHEET 1 OF 3)

BORING MP-15 CONTINUED

SURFACE ELEVATION

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	ROD
75										
80									100	49
85									98	47
90										
95									100	48
100										
105									80	22
110									100	82
115										
120									79	30
125									95	53
130										
135									100	49
140									50	21
145									98	71
150										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	60° TO VERTICAL FRACTURE FROM 76.5' TO 76.8'	—525
	30° FRACTURE AT 80.3' VERTICAL FRACTURE FROM 80.5' TO 80.7'	—520
		—515
		—510
	SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.	—505
	COLCHESTER (NO. 2 COAL) MEMBER COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY	—500
	SPOON FORMATION SHALE; CARBONACEOUS; DARK GRAY; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	—495
	SHALE; SILTY; TAN AND GRAY; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	
	SILTSTONE; SANDY; LIGHT GRAY; MICACEOUS; CARBONACEOUS; THIN-BEDDED; WELL INDURATED.	—490
	SHALE; SILTY; BROWN TO BLACK; CARBONACEOUS; MICACEOUS; FISSTVE; HIGHLY FRAGMENTED WITH NUMEROUS SLICKENSIDES.	
		—485
	SILTSTONE; SANDY; LIGHT GREENISH-GRAY; MICACEOUS; CARBONACEOUS; SIDERITIC; THIN-BEDDED; WELL-INDURATED.	
	SANDSTONE; SILTY; LIGHT GREENISH-GRAY; FINE-GRAINED; MICACEOUS; CARBONACEOUS; SIDERITIC; THIN-BEDDED; INTERBEDDED WITH GREEN SILTSTONE LAYERS; WELL INDURATED.	—480
	SHALE; SILTY; GRAY; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY. SHALE; CARBONACEOUS; BROWN TO DARK GRAY; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES; GRADES SILTY BELOW 125.0' SILTSTONE LAYER FROM 125.3' TO 125.8' 1" COAL SEAM AT 127.2'	—475
	SILTSTONE; SANDY; BROWNISH-GRAY TO DARK GRAY; MICACEOUS; CARBONACEOUS; LAMINATED TO THIN-BEDDED.	—470
	GRADES FISSILE WITH ABUNDANT CARBONIZED PLANT FOSSILS BELOW 132.2'	—465
	GRADES CALCAREOUS BELOW 138.4'	
	MAQUOKETA GROUP FORT ATKINSON FORMATION LIMESTONE; SILTY; GRAY; FINE-TO MEDIUM-GRAINED; FOSSILIFEROUS; THIN-BEDDED WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4 TO 4" ZONES OF CALCAREOUS SHALE SPACED 1/4" TO 10".	—460
		—455
		—450

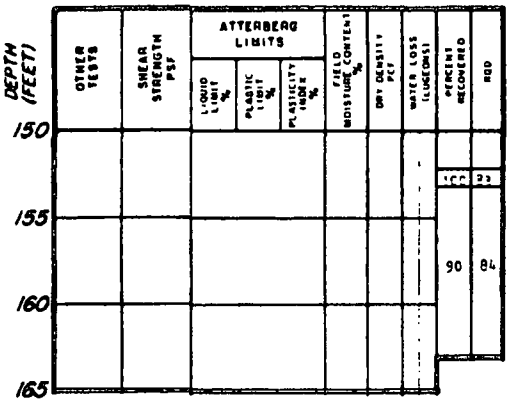
BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-181

LOG OF BORING MP-15
(SHEET 2 OF 3)

BORING MP-15 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

−450

−445

−440

−435

−430

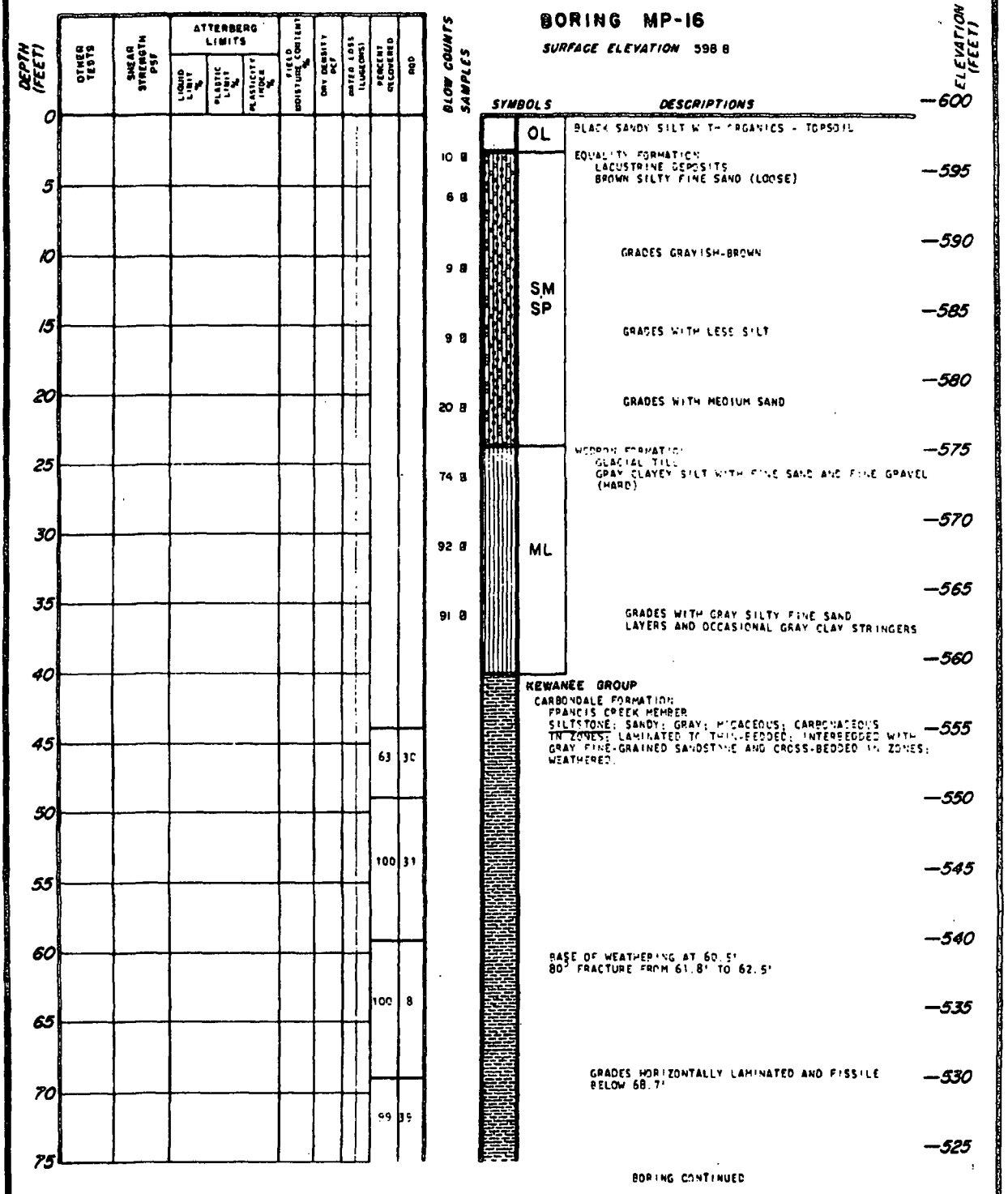
LIMESTONE; LIGHT BUFF; COARSE-GRAINED; CALCARENITIC, FOSSILIFEROUS; THIN-BEDDED WITH IRREGULAR MARLY SHALE PARTINGS AND STYLOLITES SPACED 1/4" TO 10".
OIL-STAINED ZONE FROM 159.7' TO 160.0'
OIL-STAINED ZONE FROM 161.0' TO 161.2'
OIL-STAINED BELOW 162.4'

BORING COMPLETE AT 163.0 FEET ON 3-6-73
CASING USED TO A DEPTH OF 44.0 FEET
WATER LEVEL NOT RECORDED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-181

LOG OF BORING MP-15
(SHEET 3 OF 3)

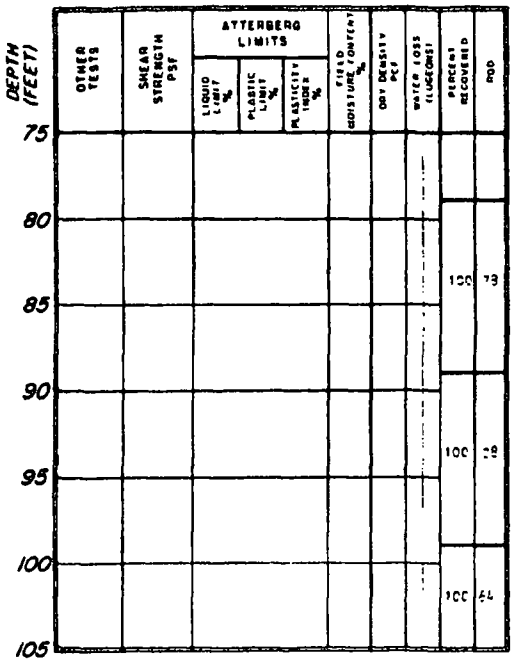


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-182

LOG OF BORING MP-16
(SHEET 1 OF 2)

BORING MP-16 CONTINUED



DESCRIPTIONS

ELEVATION (FEET)

−525

−520

−515

−510

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.

−505

COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.

−500

SPOON FORMAT ??
SHALE; CARBONACEOUS; BROWNISH-GRAY TO DARK GRAY; MASSIVE; STRONGLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

−495

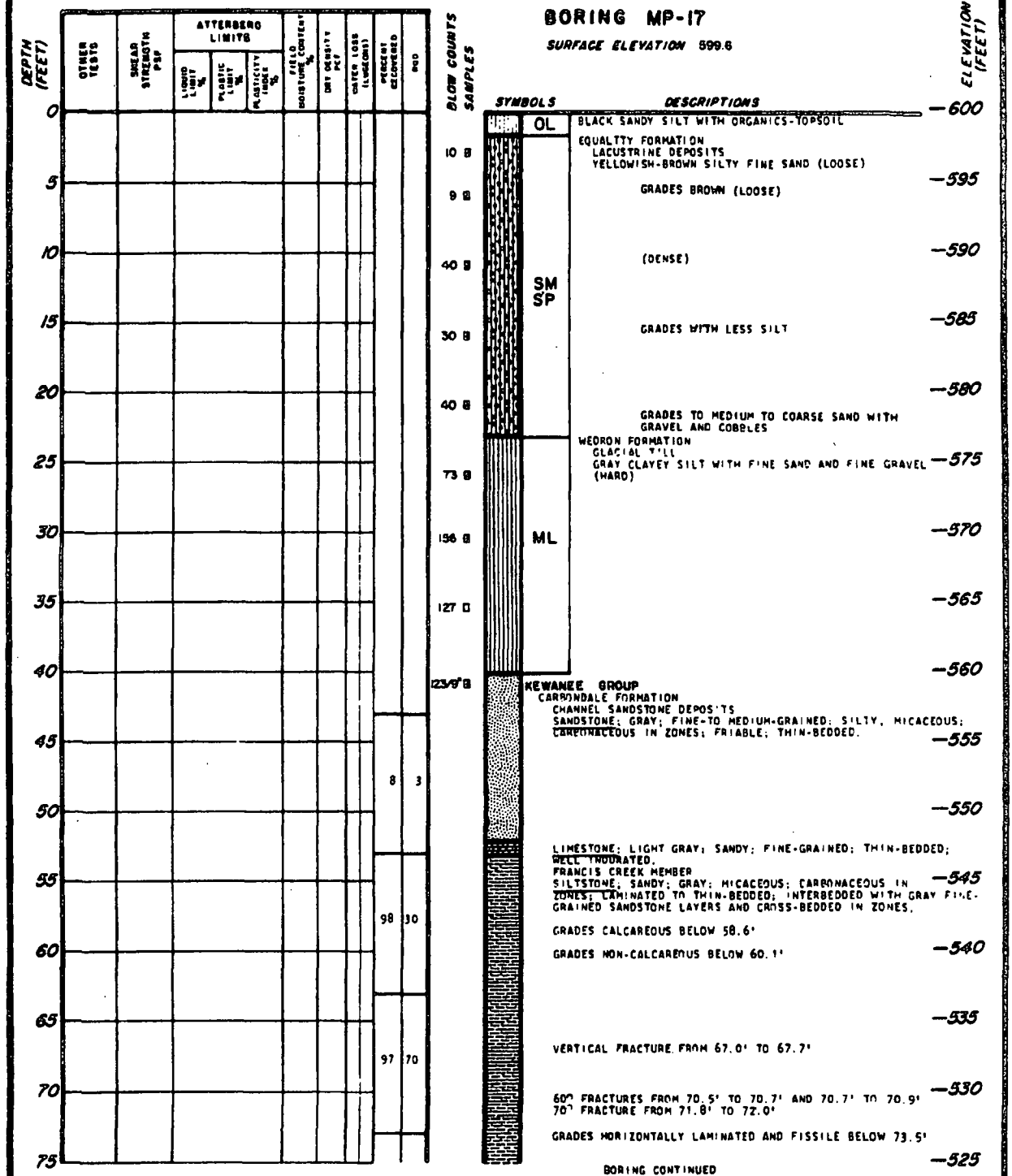
BORING COMPLETED AT 105.0 FEET ON 3-7-73
WATER LEVEL RECORDED AT 5.5 FEET ON 3-7-73

−490

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-182

LOG OF BORING MP-16
(SHEET 2 OF 2)

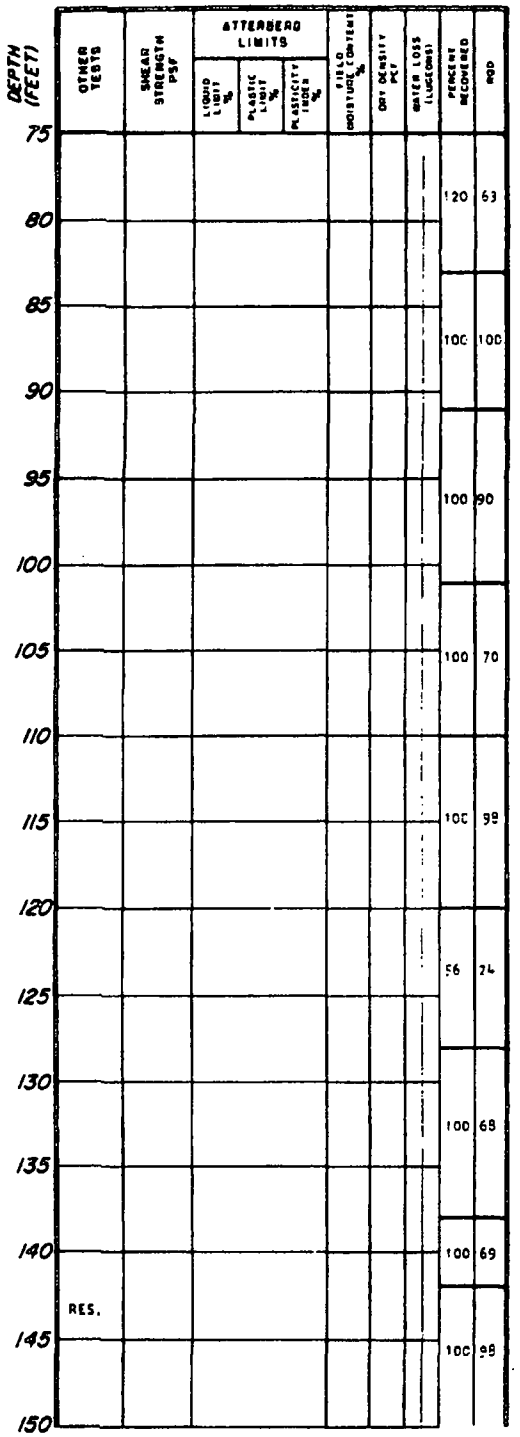


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-183

LOG OF BORING MP-17
(SHEET 1 OF 3)

BORING MP-17 CONTINUED



ELEVATION (FEET)

SYMBOLS

DESCRIPTIONS

—525

30° FRACTURE AT 79.2'

—520

—515

VERTICAL FRACTURE FROM 87.6' TO 88.4'

—510

—505

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.

—500

COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK, THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.
SPOON FORMATION
SHALE; CARBONACEOUS; BROWNISH-GRAY TO GRAY; SILTY IN ZONES; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

—495

SILTSTONE; SANDY; LIGHT GRAY; MICACEOUS; CARBONACEOUS; THIN-BEDDED.
SANDSTONE; SILTY; LIGHT GRAY; FINE-GRAINED; MICACEOUS; CARBONACEOUS; THIN-BEDDED; WELL INDURATED.
SHALE; SILTY; BROWN TO GRAY; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

—490

—485

SILTSTONE; SANDY; LIGHT GREENISH-GRAY; MICACEOUS; SIDERITIC; CARBONACEOUS; THIN-BEDDED; WELL INDURATED.
SANDSTONE; SILTY; LIGHT-GREENISH GRAY; FINE-GRAINED; MICACEOUS; SIDERITIC; CARBONACEOUS; THIN-BEDDED; INTERBEDDED WITH GREEN SILTSTONE LAYERS; WELL INDURATED.
60° FRACTURE FROM 118.8' TO 119.1'
SHALE, HIGHLY CARBONACEOUS; GRAY TO BLACK; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

—480

—475

SILTSTONE; SANDY; BROWNISH-GRAY TO DARK GRAY; MICACEOUS; CARBONACEOUS; LAMINATED TO THIN-BEDDED.

—470

GRADES FISSILE WITH ABUNDANT CARBONIZED PLANT FOSSILS BELOW 134.9'

—465

CARBONACEOUS AND PYRITIC SHALE LAYER FROM 136.8' TO 137.7'
GRADES CALCAREOUS BELOW 138.7'

MAQUOKETA GROUP
FORT ATKINSON FORMATION

—460

LIMESTONE; SILTY; GRAY; FINE TO MEDIUM-GRAINED; FOSSILIFEROUS; THIN-BEDDED WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 4" ZONES OF CALCAREOUS SHALE SPACED 1/4" TO 10".
2" DOLOMITE LINED OPEN VUG AT 141.6'
VERTICAL FRACTURE FROM 141.6' TO 141.8'
OIL-STAINED ZONE FROM 141.8' TO 142.0'
1/4" OPEN OIL-STAINED VUG AT 143.8'

—455

—450

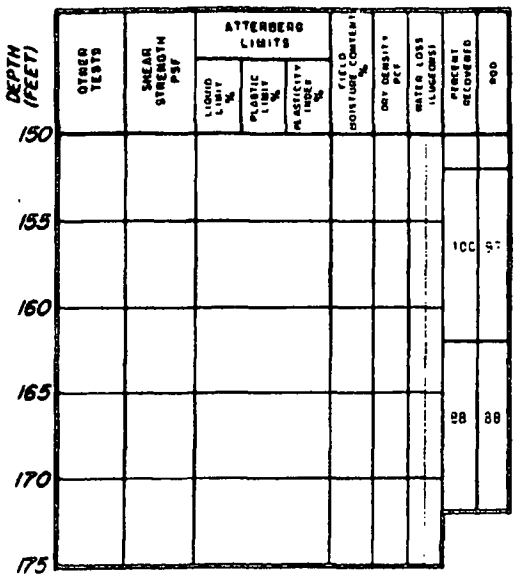
BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-183

LOG OF BORING MP-17
(SHEET 2 OF 3)

BORING MP-17 CONTINUED



SYMBOLS

DESCRIPTIONS

OIL-STAINED ZONE FROM 159.6' TO 159.2'
OIL-STAINED ZONE FROM 159.9' TO 160.0'

LIMESTONE: LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED WITH IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/4" TO 10"; OIL-STAINED THROUGHOUT.

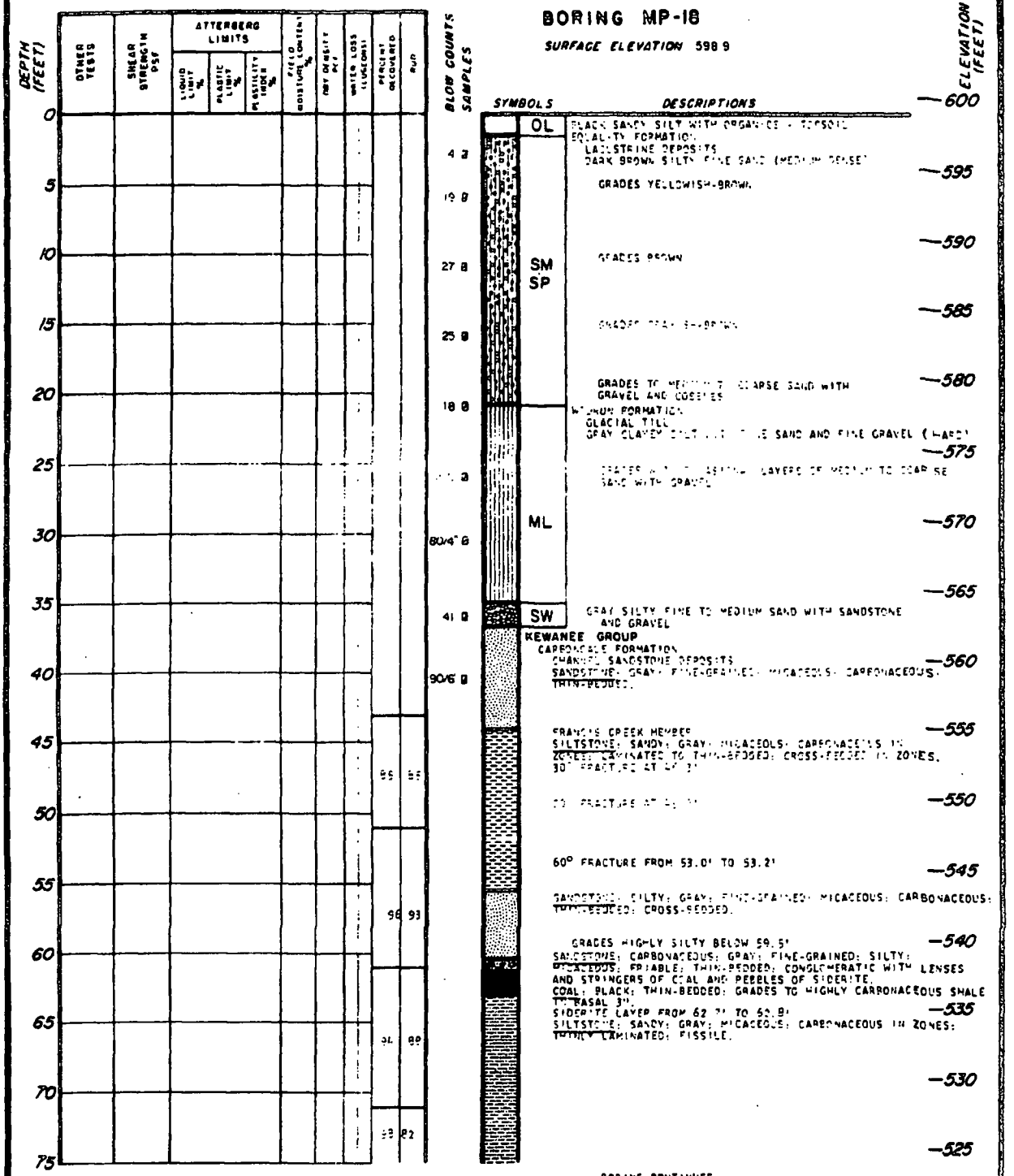
BORING COMPLETED AT 172.0 FEET ON 2-24-73
CASING USED TO A DEPTH OF 43.0 FEET
WATER LEVEL RECORDED AT 5.5 FEET ON 2-23-73

ELEVATION (FEET)
450
445
440
435
430
425

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-183

LOG OF BORING MP-17
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-184

LOG OF BORING MP-18
(SHEET 1 OF 3)

BORING MP-18 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									100	93
90										
95									100	75
100										
105									60	4
110										
115									96	60
120										
125									78	24
130										
135									100	94
140										
145	RES.								100	71
150										

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

80° FRACTURE FROM 76.2' TO 76.5'
VERTICAL FRACTURE FROM 76.7' TO 77.2'

—525

—520

VERTICAL FRACTURE FROM 80.1' TO 80.3'

—515

—510

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.

80° FRACTURE FROM 94.7' TO 95.6'

—505

—500

COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.

SPOON FORMATION
SHALE; CARBONACEOUS; BROWNISH-GRAY TO BLACK; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES; GRADES SILTY IN ZONES.

—495

—490

LIGHT GRAY SANDY SILTSTONE LAYER FROM 110.9' TO 111.5'

LIGHT GRAY SANDY SILTSTONE LAYER FROM 114.9' TO 115.1'

—485

SILTSTONE; SANDY; LIGHT GREENISH-GRAY; MICACEOUS; SIDERITIC; CARBONACEOUS; THIN-BEDDED; WELL INDURATED.

SANDSTONE; SILTY; LIGHT GREENISH-GRAY; FINE-GRAINED; MICACEOUS; SIDERITIC; CARBONACEOUS; THIN-BEDDED; WELL INDURATED.

—480

SHALE; CARBONACEOUS; DARK GRAY; THIN-BEDDED TO MASSIVE; HIGHLY FRACTURED; HIGHLY SIDERITIC IN ZONES.

—475

COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE, CLAY AND SIDERITE.
SHALE; SILTY; BROWNISH-GRAY; CARBONACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

SILTSTONE; BROWNISH-GRAY; MICACEOUS; CARBONACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.
SILTSTONE; SANDY; DARK GRAY; MICACEOUS; CARBONACEOUS; LAMINATED TO THIN-BEDDED WITH ABUNDANT CARBONIZED PLANT FOSSILS; FISSILE.

—470

—465

—460

MAQUOKETA GROUP

FORT ATKINSON FORMATION
LIMESTONE; SILTY; GRAY; FINE-TO MEDIUM-GRAINED; FOSSILIFEROUS; PYRITIC IN ZONES; THIN-BEDDED WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 5" ZONES OF CALCAREOUS SHALE SPACED 1/4" TO 8".
80° FRACTURE FROM 141.2' TO 141.4'
1" CALCITE LINED OPEN VUG AT 141.4'
OIL-STAINED ZONE FROM 142.3' TO 142.5'

—455

—450

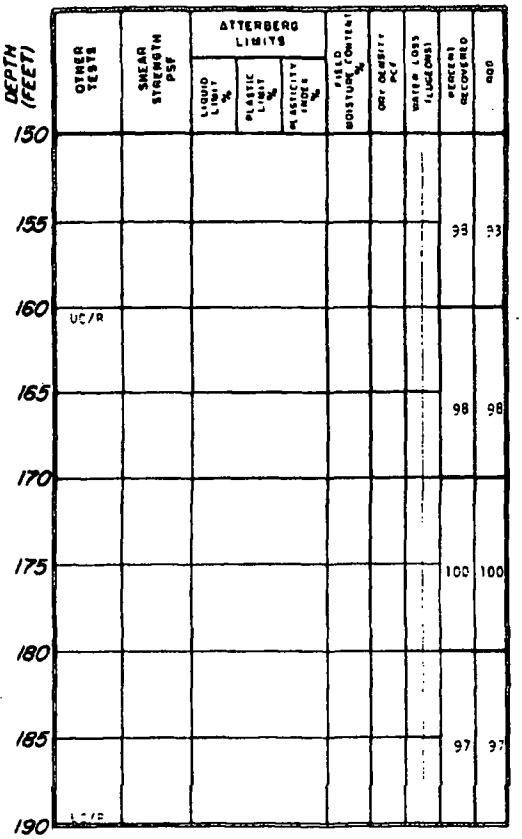
BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-184

LOG OF BORING MP-18
(SHEET 2 OF 3)

BORING MP-18 CONTINUED



DESCRIPTIONS

ELEVATION (FEET)

−450

−445

−440

−435

LIMESTONE; LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED WITH IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/4" TO 10".
ZONE OF PINPOINT OPEN VUGS; OIL-STAINED FROM 165.3' TO 165.8'
PINPOINT OPEN OIL-STAINED VUGS AT 166.4', 166.6' TO 166.7', AND 166.8' TO 167.1'

−430

1/2" DOLOMITE LINED OPEN VUG AT 173.1'
1/4" DOLOMITE LINED OPEN VUG AT 173.7'

−425

−420

SCALES FORMATION
SILTSTONE; CALCAREOUS; DARK GRAY; LAMINATED; EXTREMELY ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS; INTERBEDDED GRADATIONAL 1/2" TO 3" ZONES OF LIGHT GRAY SILTY LIMESTONE SPACE 1" TO 10".
FOSSILS GRADE OUT APPRECIABLY BELOW 182.5'

−415

−410

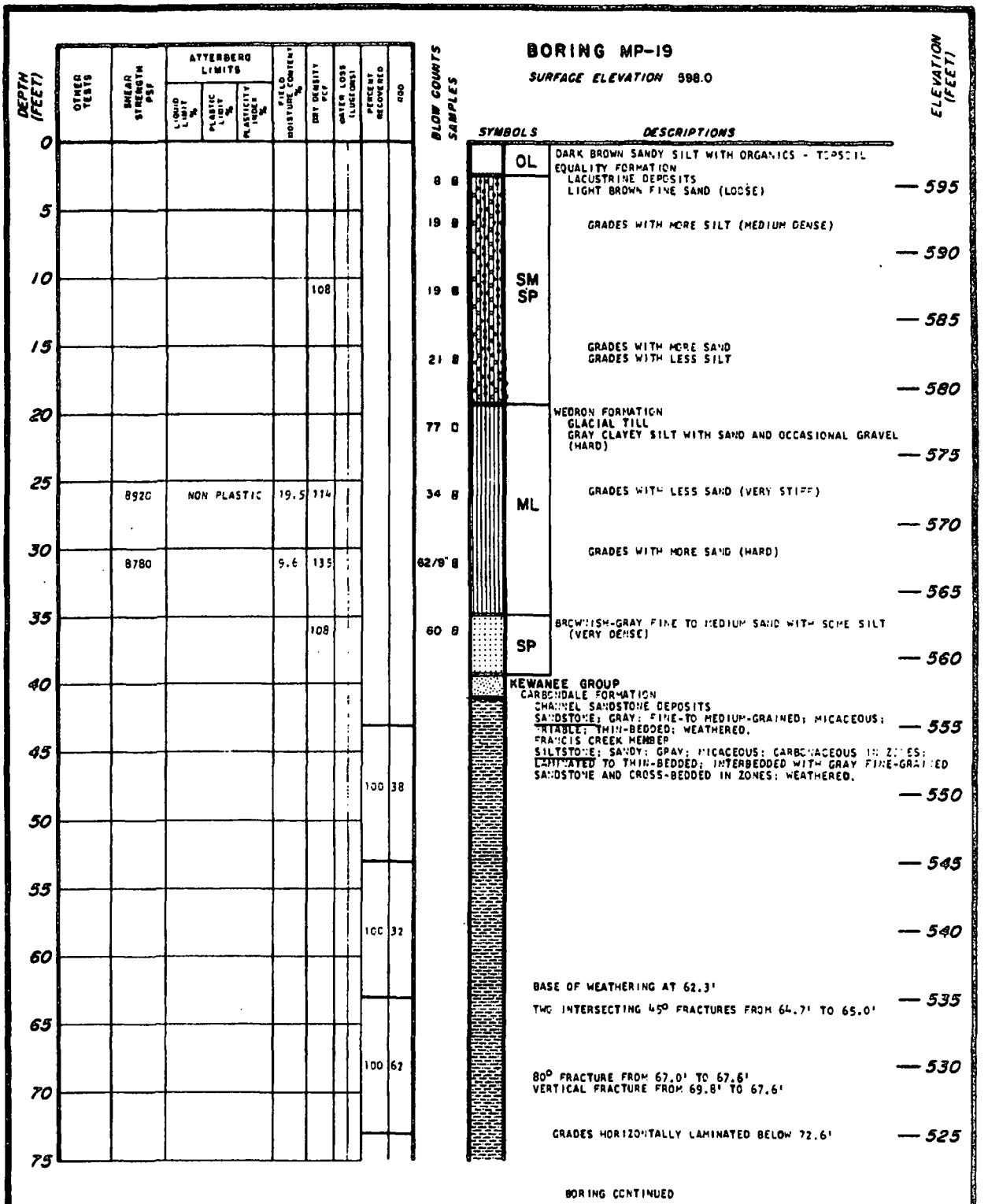
BORING COMPLETED AT 190 FEET ON 2-23-73
WATER LEVEL RECORDED AT 5.5 FEET ON 2-21-73

−405

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-184

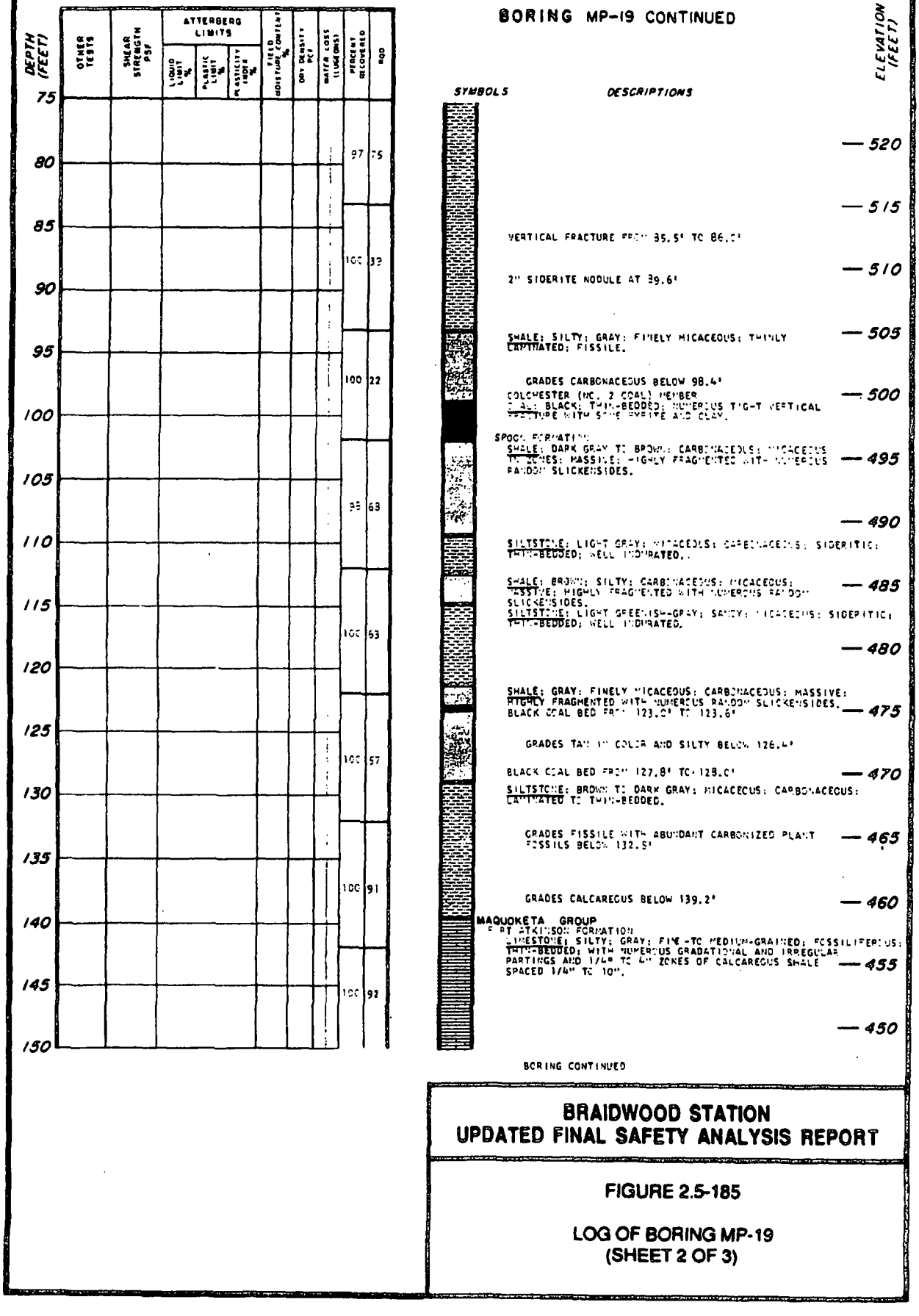
LOG OF BORING MP-18
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-185

LOG OF BORING MP-19
(SHEET 1 OF 3)

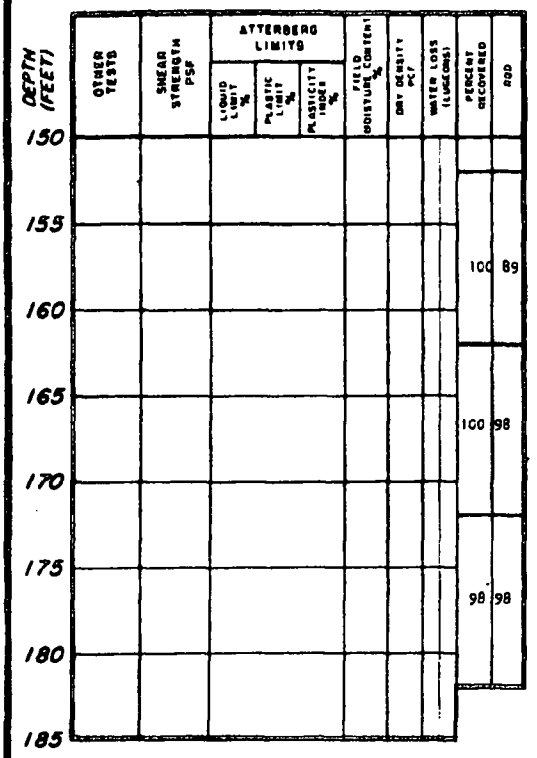


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-185

LOG OF BORING MP-19
(SHEET 2 OF 3)

BORING MP-19 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

445

LIMESTONE; LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED; WITH IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/4" TO 10"; OIL-STAINED IRREGULARLY THROUGHOUT WITH OCCASIONAL PINPOINT TO 1/8" VUGS. — 440

435

430

425

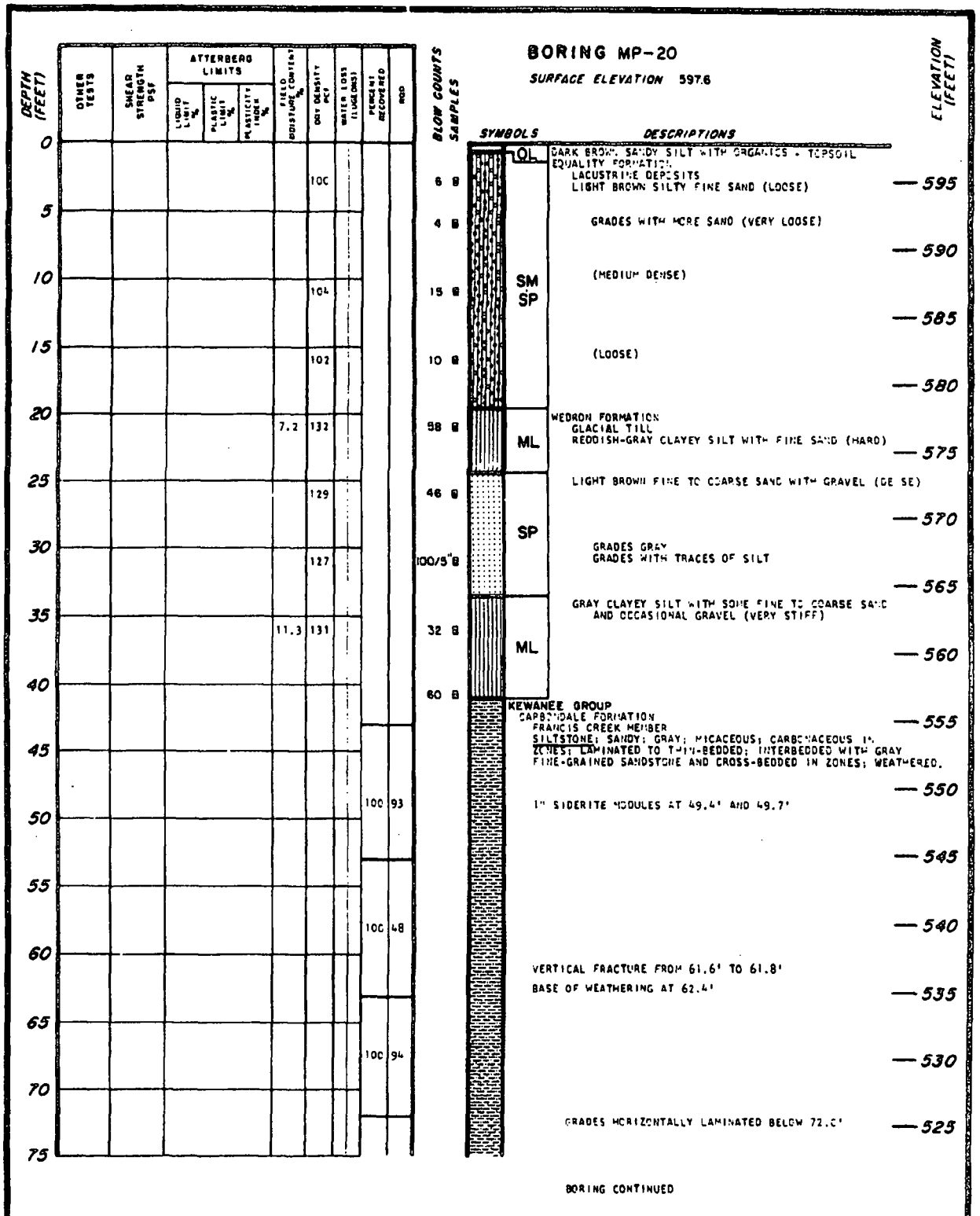
SCALES FORMATION
SILTSTONE; CALCAREOUS; DARK GRAY; LAMINATED; FISSILE; EXTREMELY ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS; INTERBEDDED GRADATIONAL; 1/2" TO 2" ZONES OF LIGHT GRAY SILTY LIMESTONE SPACED 1/2" TO 10". — 420

BORING COMPLETED AT 182.0' ON 3-26-73
WATER LEVEL NOT RECORDED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-185

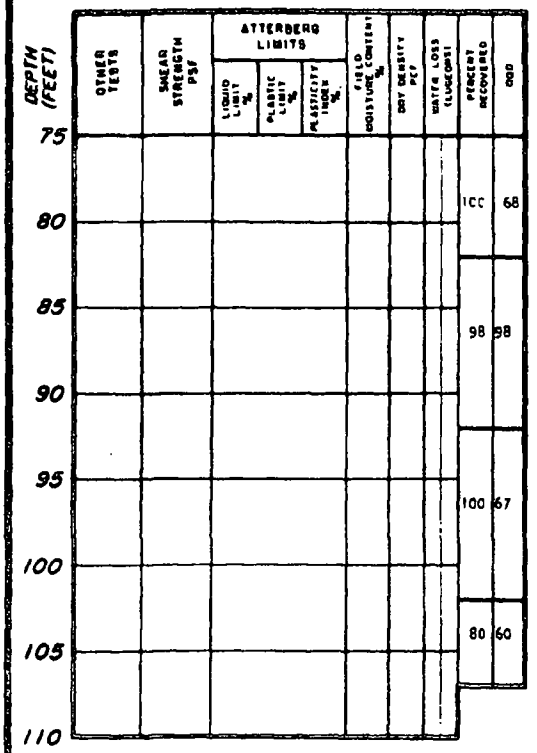
LOG OF BORING MP-19
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-186

LOG OF BORING MP-20
(SHEET 1 OF 2)



BORING MP-20 CONTINUED

ELEVATION (FEET)

SYMBOLS

DESCRIPTIONS

— 520

— 515

— 510

— 505

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.

— 500

COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.

— 495

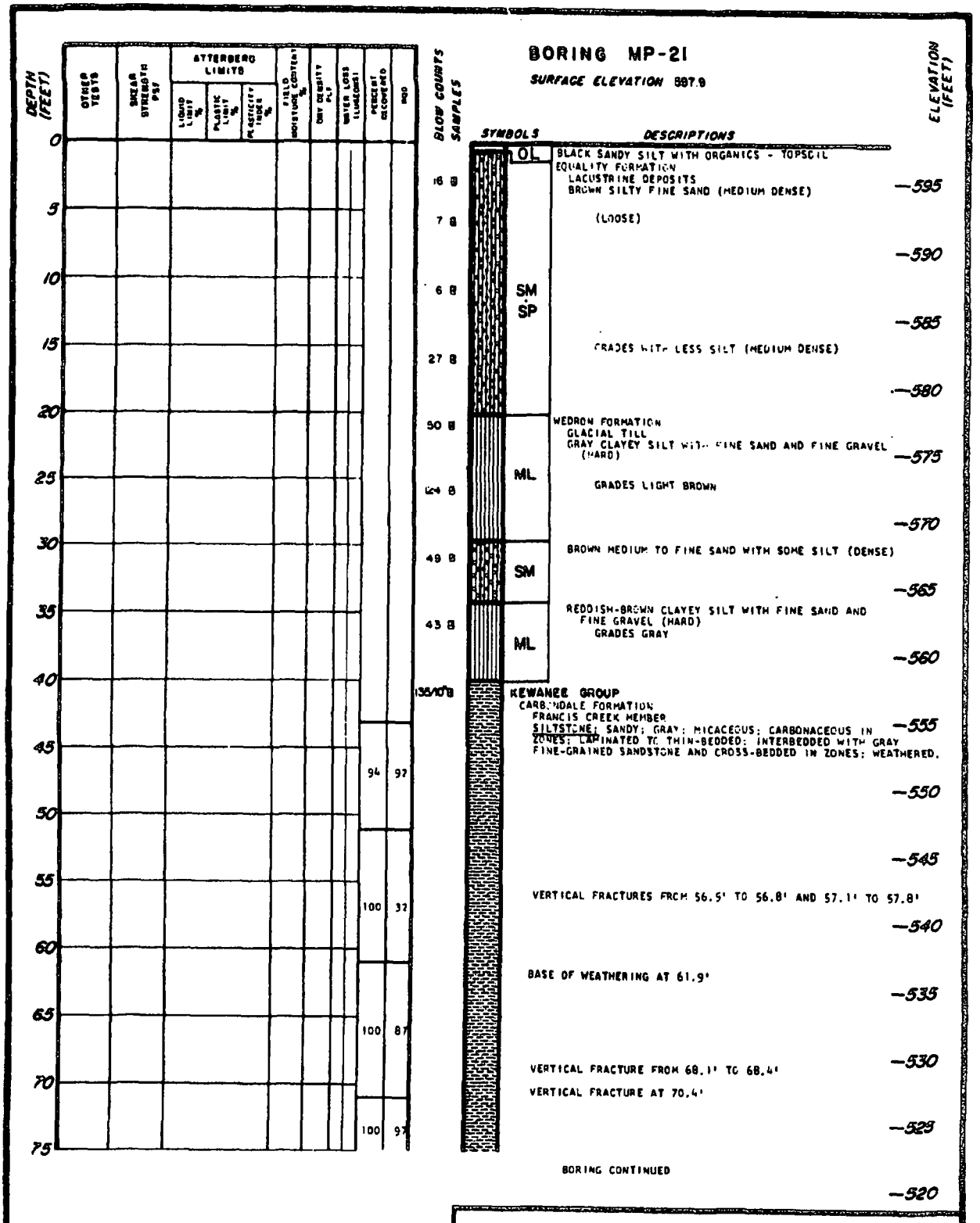
SPOON FORMATION
SHALE; GRAY; CARBONACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

BORING COMPLETED AT 107.0 FEET ON 3-27-73
WATER LEVEL RECORDED AT 3.5 FEET ON 3-27-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-186

LOG OF BORING MP-20
(SHEET 2 OF 2)

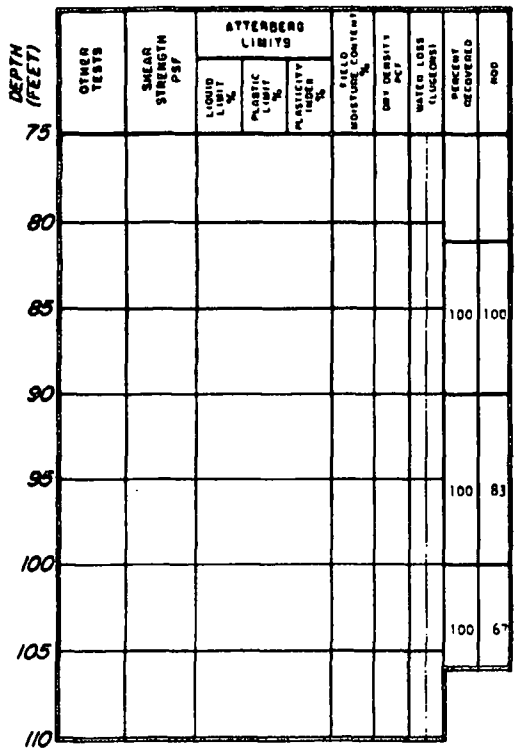


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-187

LOG OF BORING MP-21
(SHEET 1 OF 2)

BORING MP-21 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

30° FRACTURE AT 77.5'
GRADES HORIZONTALLY LAMINATED BELOW 77.6'

—520

—515

—510

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.

—505

COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.

—500

SPOON FORMATION
SHALE; CARBONACEOUS; BROWN TO GRAY; MASSIVE, HIGHLY FRACTURED WITH NUMEROUS RANDOM SLICKENSIDES.

—495

GRADES SILTY BELOW 105.3'

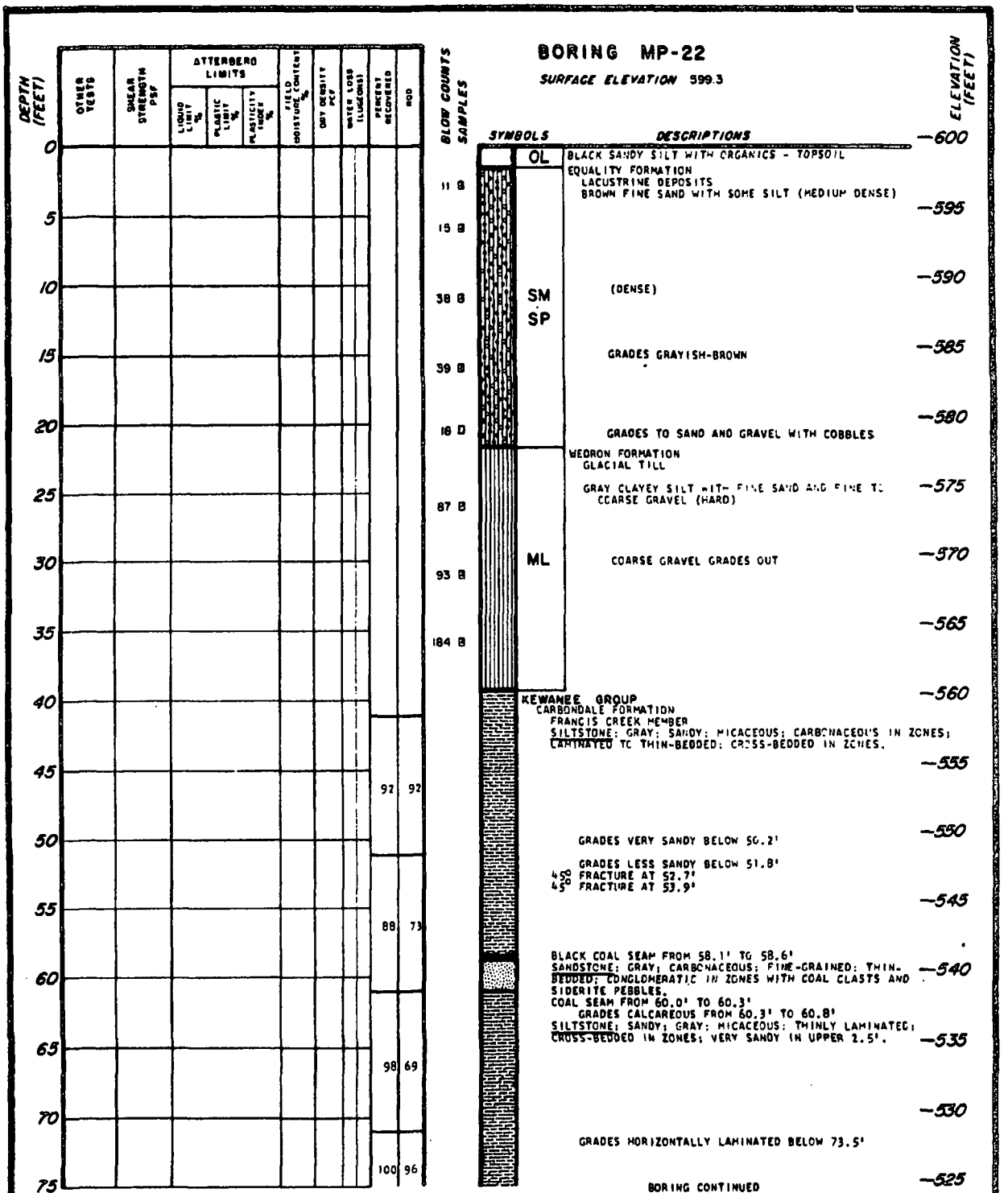
—490

BORING COMPLETED AT 106.0 FEET ON 3-14-73
WATER LEVEL RECORDED AT 3.5 FEET ON 3-13-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-187

LOG OF BORING MP-21
(SHEET 2 OF 2)

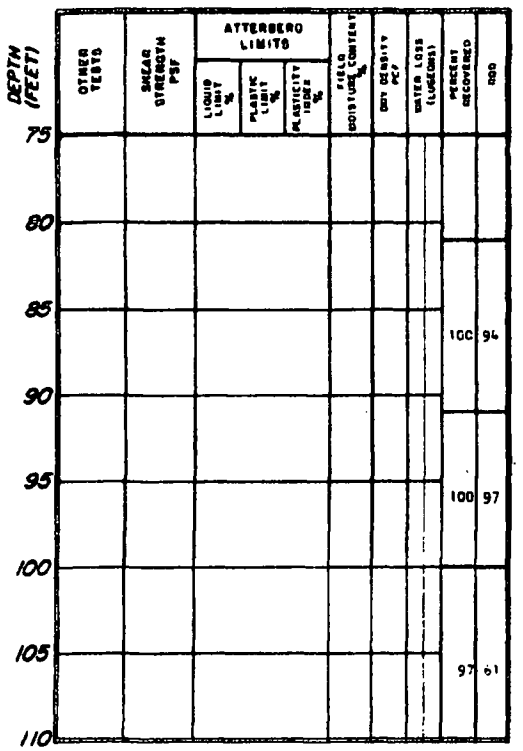


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-188

LOG OF BORING MP-22
(SHEET 1 OF 2)

BORING MP-22 CONTINUED



DESCRIPTIONS

ELEVATION (FEET)

−525

−520

SHALE; SILTY; GRAY; FINELY MICACEOUS, THINLY LAMINATED; FISSILE.

−515

−510

−505

GRADES CARBONACEOUS BELOW 100.6'

−500

COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.

SPOON FORMATION
SHALE; CARBONACEOUS; BROWNISH-GRAY TO GRAY; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS TIGHT VERTICAL FRACTURES.

−495

−490

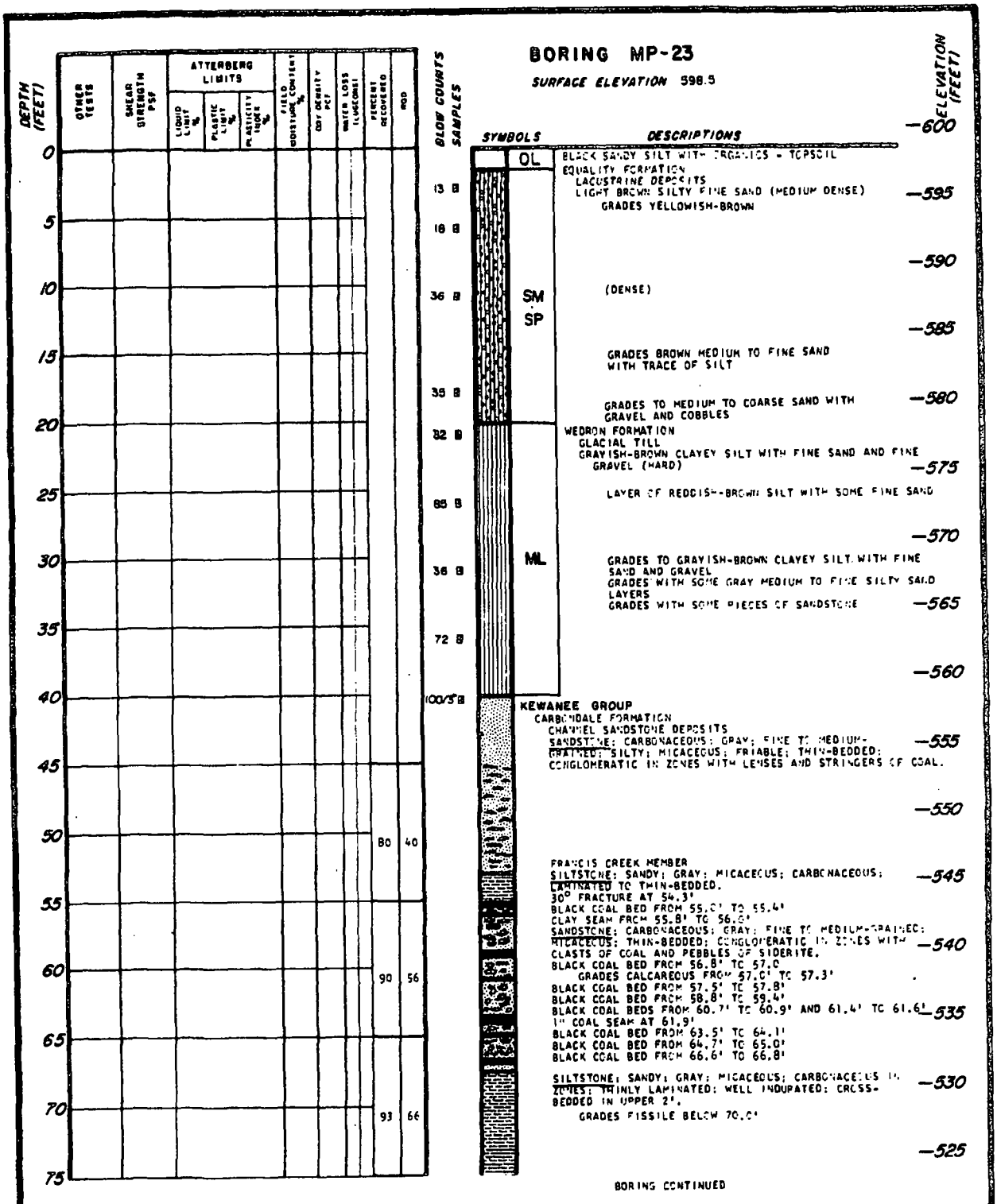
BORING COMPLETED AT 110.0 FEET ON 2-27-73
CASING USED TO A DEPTH OF 40.0 FEET
WATER LEVEL NOT RECORDED

−485

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-188

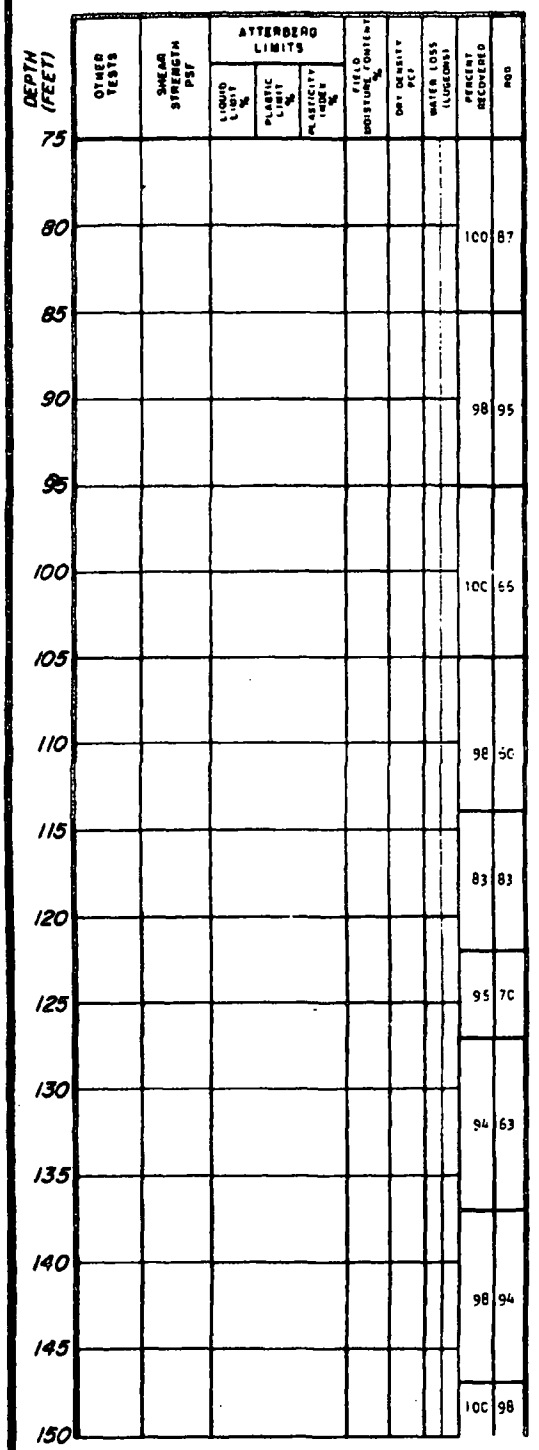
LOG OF BORING MP-22
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-189

LOG OF BORING MP-23
(SHEET 1 OF 3)



BORING MP-23 CONTINUED

ELEVATION (FEET)

SYMBOLS

DESCRIPTIONS

−525

VERTICAL FRACTURE FROM 76.4' TO 77.1'
VERTICAL FRACTURE FROM 77.2' TO 77.6'

−520

VERTICAL FRACTURE FROM 84.7' TO 85.2'

−515

−510

−505

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE IN ZONES.

GRADES CARBONACEOUS BELOW 99.2'

−500

COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY; GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 2".

SPOON FORMATION
SHALE; CARBONACEOUS; BROWNISH-GRAY TO BLACK; SILTY; PYRITIC; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES

−495

−490

SANDSTONE; SILTY; LIGHT GRAY; FINE-GRAINED; MICACEOUS; CARBONACEOUS; THIN-BEDDED; WELL INDURATED.

SHALE; SILTY; GRAY TO BROWNISH-GRAY; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

−485

SILTSTONE; SANDY; LIGHT GREENISH-GRAY; MICACEOUS; SIDERITIC; CARBONACEOUS; THIN-BEDDED; WELL INDURATED.

SANDSTONE; SILTY; LIGHT GREENISH-GRAY; FINE-GRAINED; MICACEOUS; SIDERITIC; CARBONACEOUS; THIN-BEDDED; WELL INDURATED; GRADES INTERBEDDED WITH GREEN SILTSTONE LAYERS BELOW 118.7'.

−480

SHALE; HIGHLY CARBONACEOUS; GRAY TO BLACK; MASSIVE; HIGHLY FRACTURED; PYRITIC IN ZONES.

−475

GRADES WELL INDURATED AND SIDERITIC FROM 125.8' TO 127.0'

GRADES SIDERITIC FROM 127.7' TO 128.7'

−470

SILTSTONE; BROWNISH-GRAY; MICACEOUS; CARBONACEOUS; THIN-BEDDED; HIGHLY FRACTURED.

GRADES TO DARK GRAY, SANDY, AND FISSILE, WITH ABUNDANT CARBONIZED PLANT FOSSILS BELOW 134.0'

−465

−460

GRADES CALCAREOUS BELOW 140.9'

MAQUOKETA GROUP
FORT ATKINSON FORMATION
LIMESTONE; SILTY; GRAY; FINE TO MEDIUM-GRAINED; FOSSILIFEROUS; THIN-BEDDED WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 4" ZONES OF CALCAREOUS SHALE SPACED 1/4" TO 10".
OIL-STAINED ZONE FROM 142.7' TO 142.8'

−455

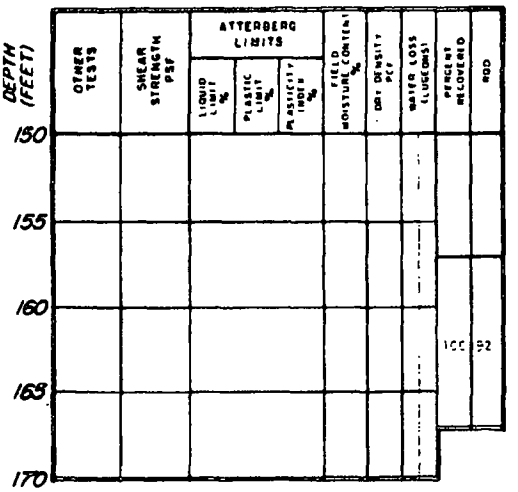
−450

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-189

LOG OF BORING MP-23
(SHEET 2 OF 3)



BORING MP-23 CONTINUED

ELEVATION (FEET)

SYMBOLS

DESCRIPTIONS

−450

−445

OIL-STAINED FROM 157.0' TO 157.5'
VERTICAL FRACTURE FROM 158.7' TO 159.9', OIL-STAINED
ZONE OF HEAVIER OIL STAINING FROM 159.7' TO 160.2'
VERTICAL FRACTURE FROM 160.3' TO 161.1', OIL-STAINED
VERTICAL FRACTURE FROM 161.4' TO 162.4'

−440

LIMESTONE; LIGHT BUFF; COARSE- GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED; WITH IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/4" TO 10"; OIL-STAINED THROUGHOUT.
VERTICAL FRACTURE FROM 163.6' TO 164.4'
VERTICAL FRACTURE FROM 164.8' TO 165.8'

−435

−430

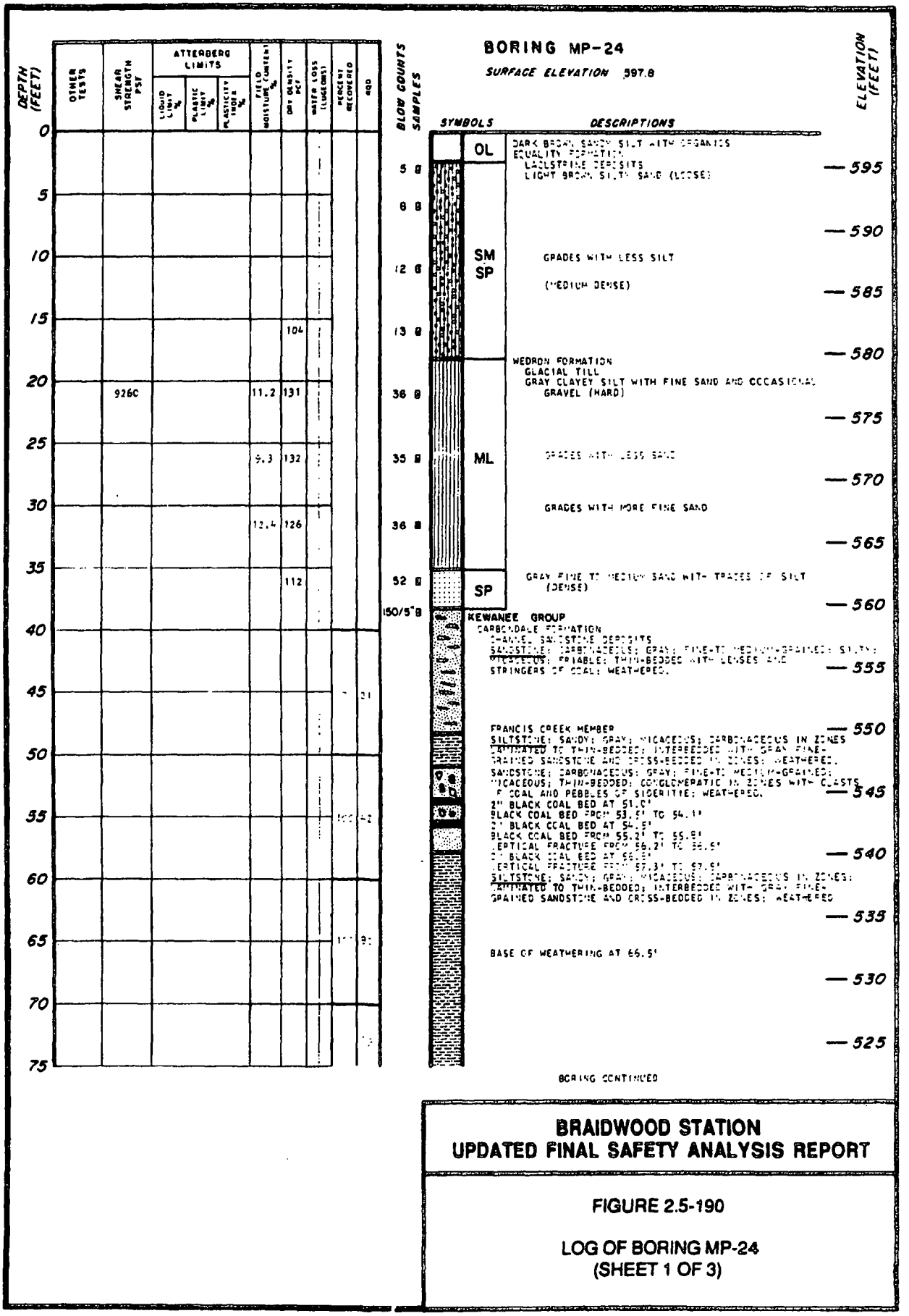
BORING COMPLETED AT 167.0 FEET ON 2-20-73
CASING USED TO A DEPTH OF 22.0 FEET
WATER LEVEL RECORDED AT 5.5 FEET ON 2-19-73

−425

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-189

LOG OF BORING MP-23
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-190

LOG OF BORING MP-24
(SHEET 1 OF 3)

BORING MP-24 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (USGS/MI)	PERCENT RECOVERED	RQD
75										
80										
85									100	94
90										
95									100	72
100										
105									100	98
110										
115									100	86
120										
125									100	73
130										
135									100	22
140										
145									100	71
150										

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

GRADES HORIZONTALLY LAMINATED BELOW 75.2'
80° FRACTURE FROM 76.1' TO 76.5'
45° FRACTURE FROM 78.8' TO 79.1'

— 520

— 515

— 510

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.

— 505

GRADES CARBONACEOUS BELOW 96.7'
COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.

— 500

SPOON FORMATION
SHALE; CARBONACEOUS; DARK GRAY TO LIGHT BROWN; SILTY AND MICACEOUS IN ZONES; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

— 495

— 490

SILTSTONE; LIGHT GRAY; MICACEOUS; CARBONACEOUS; THIN-BEDDED; WELL INDURATED.

SHALE; DARK GRAY TO BROWN; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

— 485

SILTSTONE; SANDY; LIGHT GREENISH-GRAY; MICACEOUS; CARBONACEOUS; SIDERITIC; THIN-BEDDED.

— 480

SHALE; BLACK TO BROWN; CARBONACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

— 475

1" COAL BED AT 124.5'

SHALE; SILTY; BROWN; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

— 470

SILTSTONE; DARK GRAY; CARBONACEOUS; MICACEOUS; LAMINATED TO THIN-BEDDED; FISSILE WITH ABUNDANT CARBONIZED PLANT FOSSILS.

— 465

MAQUOKETA GROUP
FORT ATKINSON FORMATION
LIMESTONE; SILTY; GRAY; FINE-TO MEDIUM-GRAINED; FOSSILIFEROUS; THIN-BEDDED; WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 8" ZONES OF CALCAREOUS SHALE SPACED 1/4" TO 10"; OIL-STAINED IN UPPER 5".
1/2" OPEN VUG AT 140.0'

— 460

— 455

— 450

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-190

LOG OF BORING MP-24
(SHEET 2 OF 3)

BORING MP-24 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155										
160										

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

— 445

LIMESTONE: LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED WITH IRREGULAR CALCITE SHALE PARTINGS AND STYLOLITES SPACED 1/4" TO 12"; CALCITE-FILLED THROUGHOUT.

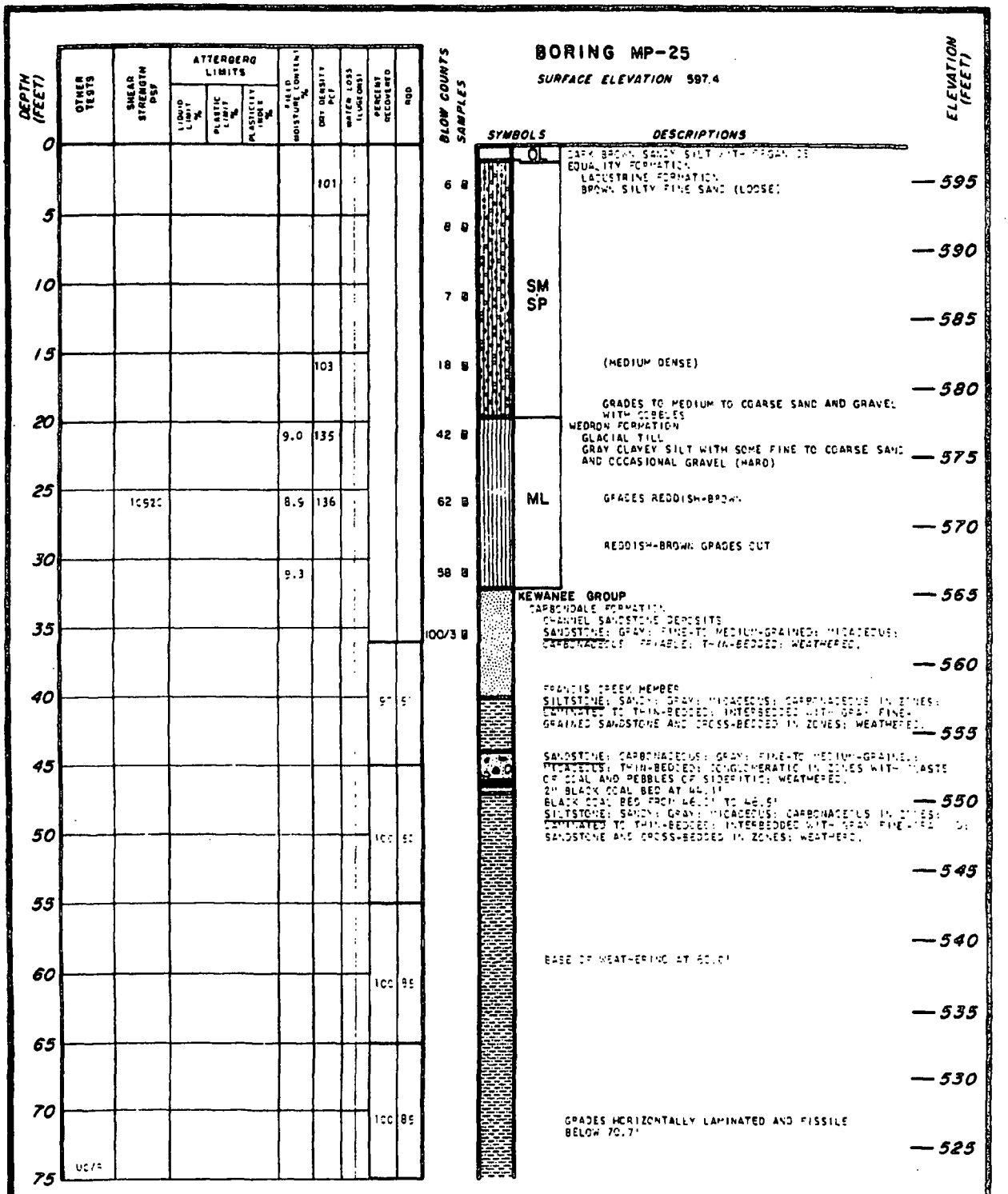
— 440

BORING COMPLETED AT 157.0 FEET ON 3-23-73
WATER LEVEL NOT RECORDED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-190

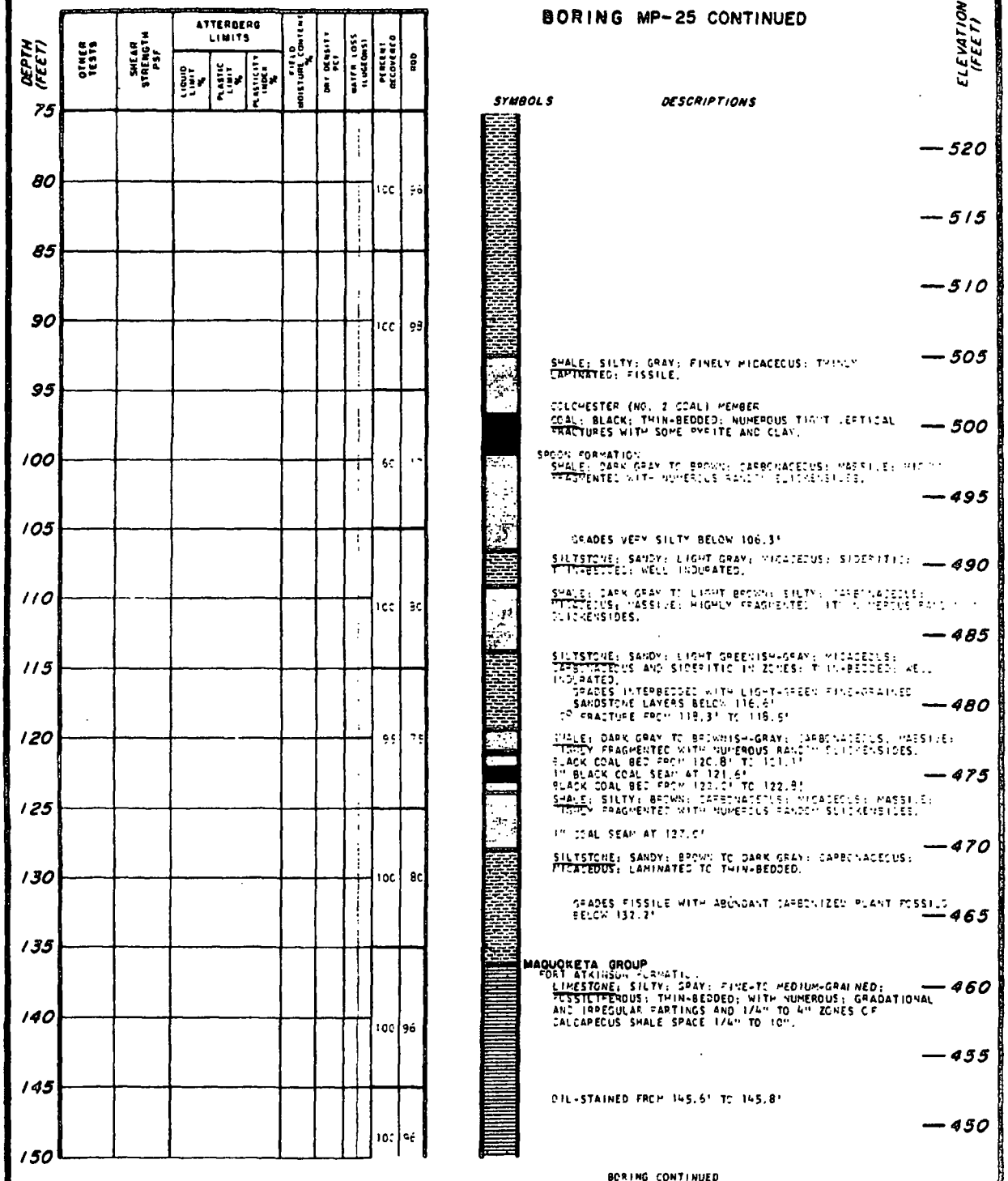
LOG OF BORING MP-24
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-191

LOG OF BORING MP-25
(SHEET 1 OF 3)

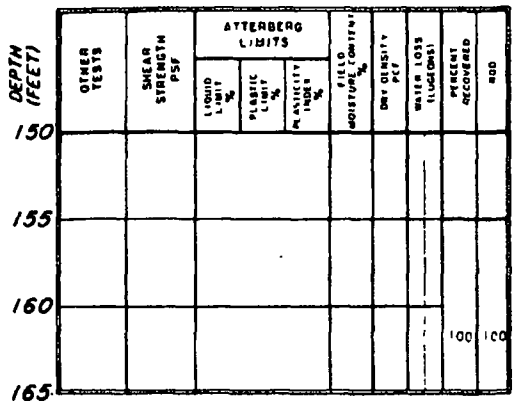


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-191

LOG OF BORING MP-25
(SHEET 2 OF 3)

BORING MP-25 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

— 445

— 440

LIMESTONE: LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED; WITH IRREGULAR FAIRLINE; SHALE PARTINGS AND STYLOLITES SPACE 1/4" TO 10". — 435

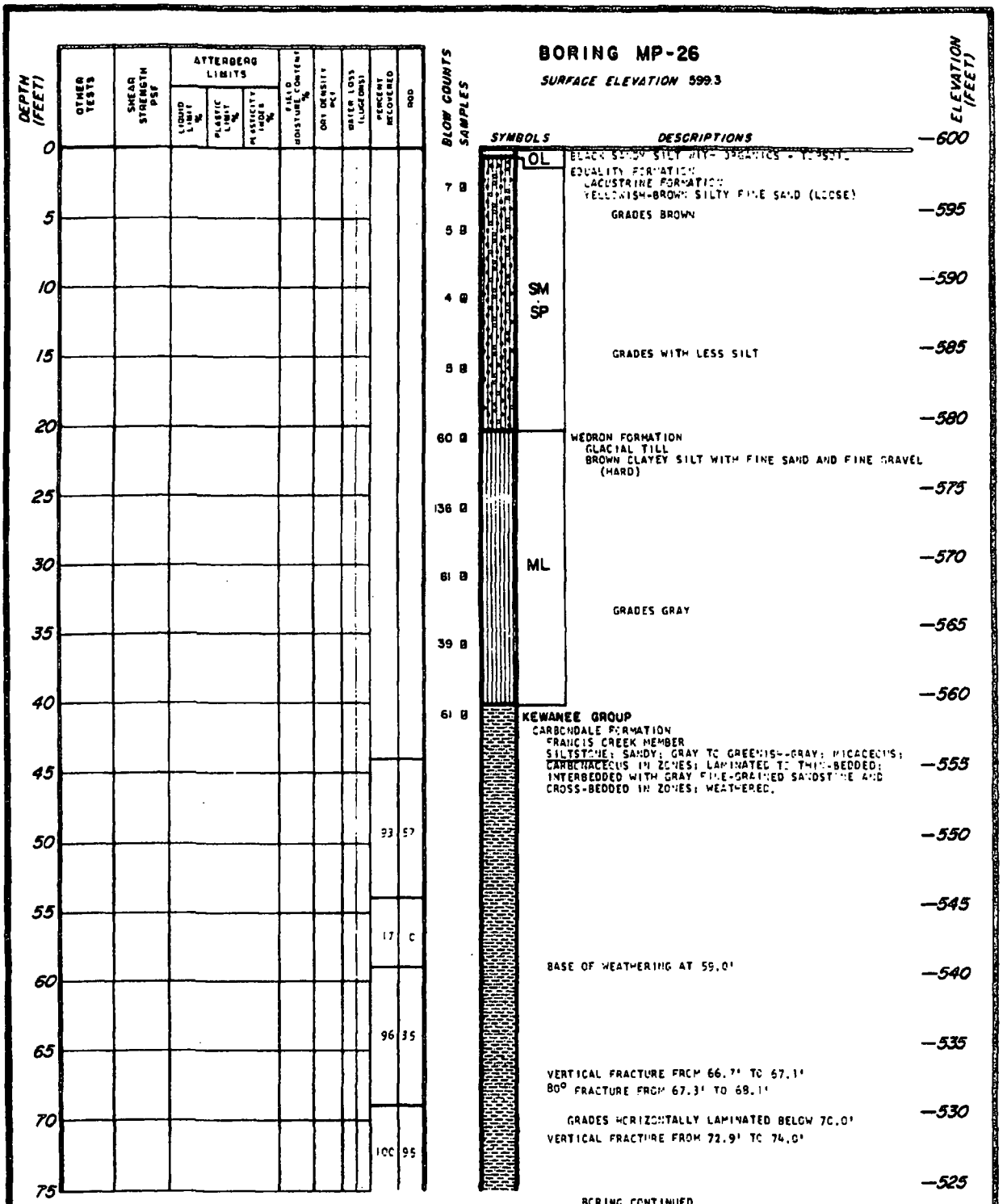
DIC-STAINED FROM 162.2' TO 163.0'

BORING COMPLETED AT 165.0 FEET ON 4-2-73
WATER LEVEL RECORDED AT 2.5 FEET ON 3-28-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-191

LOG OF BORING MP-25
(SHEET 3 OF 3)

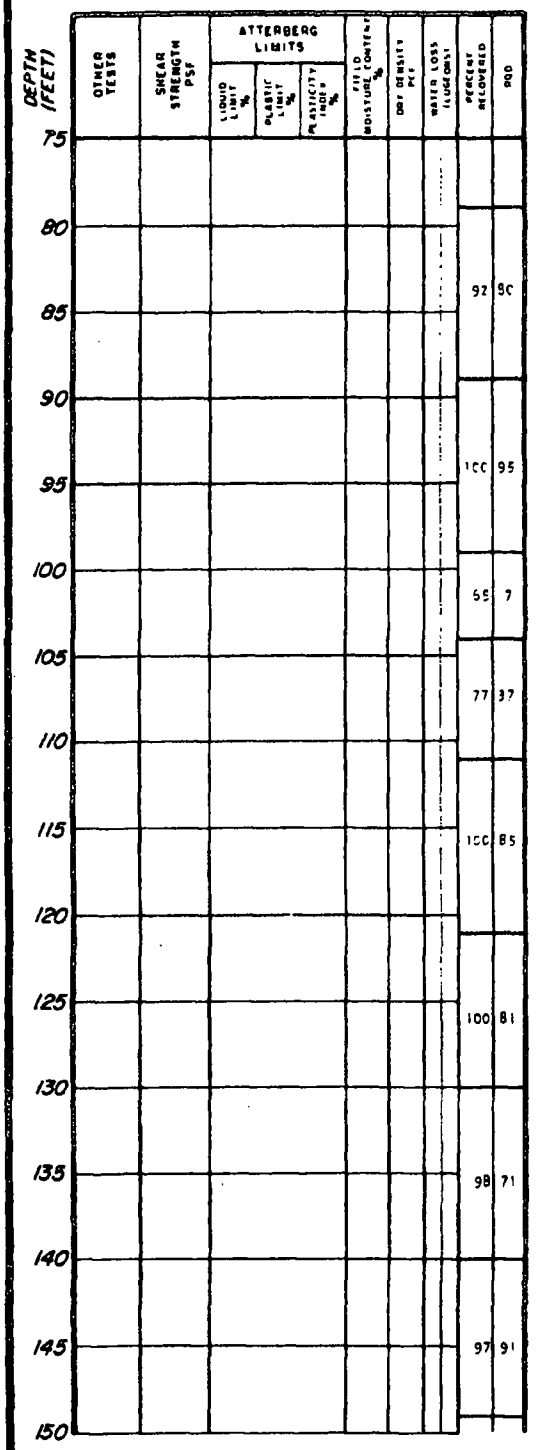


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-192

LOG OF BORING MP-26
(SHEET 1 OF 3)

BORING MP-26 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

—525

70° TO VERTICAL FRACTURES FROM 79.0' TO 79.8'

—520

30° FRACTURE AT 83.6'

—515

80° FRACTURE FROM 87.2' TO 87.6'

—510

VERTICAL FRACTURE FROM 91.5' TO 91.6'

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED FISSILE. —505

30° FRACTURE AT 96.4'
70° TO VERTICAL FRACTURE FROM 96.6' TO 97.0'

COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY. —500

SPOON FORMATION
SHALE; CARBONACEOUS; DARK GRAY TO BROWN; MASSIVE; HIGHLY FRACTURED WITH NUMEROUS RANDOM SLICKENSIDES. —495

GRADES LIGHT GRAY AND SILTY BELOW 108.5' —490

SILTSTONE; SANDY; LIGHT GRAY; MICACEOUS; CARBONACEOUS; SIDERITIC; THIN-BEDDED; WELL INDURATED.
SHALE; CARBONACEOUS; DARK BROWN TO BROWNISH-GRAY; SILTY; MICACEOUS IN ZONES; MASSIVE; HIGHLY FRACTURED WITH NUMEROUS RANDOM SLICKENSIDES. —485

SILTSTONE; SANDY; LIGHT GREENISH-GRAY; MICACEOUS; CARBONACEOUS; SIDERITIC; THIN-BEDDED; WELL INDURATED.
SANDSTONE; LIGHT GREENISH-GRAY; SILTY; FINE-GRAINED; MICACEOUS; CARBONACEOUS; SIDERITIC; THIN-BEDDED; INTERBEDDED WITH GREEN SILTSTONE LAYERS; WELL INDURATED. —480

SHALE; BROWN; SILTY; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRACTURED WITH NUMEROUS RANDOM SLICKENSIDES. —475
1/2" COAL SEAM AT 123.7'
1" COAL SEAM AT 123.9'
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURE WITH SOME PYRITE AND CLAY.
SHALE; SILTY; BROWNISH-GRAY TO TAN; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRACTURED WITH NUMEROUS RANDOM SLICKENSIDES. —470
SILTSTONE LAYER FROM 127.9' TO 128.3'

SILTSTONE; SANDY; DARK GRAY; MICACEOUS; CARBONACEOUS; LAMINATED TO THIN-BEDDED. —465

GRADES FISSILE WITH ABUNDANT CARBONIZED PLANT FOSSILS BELOW 136.6'

MAQUOKETA GROUP —460
FORT ATKINSON FORMATION
LIMESTONE; SILTY; GRAY; FINE TO MEDIUM-GRAINED; FOSSILIFEROUS; THIN-BEDDED; WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 8" ZONES OF CALCAREOUS SHALE SPACED 1/4" TO 10".
1/4" DOLOMITE LINED OPEN VUG AT 141.0' —455

—450

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-192

LOG OF BORING MP-26
(SHEET 2 OF 3)

BORING MP-26 CONTINUED

SURFACE ELEVATION

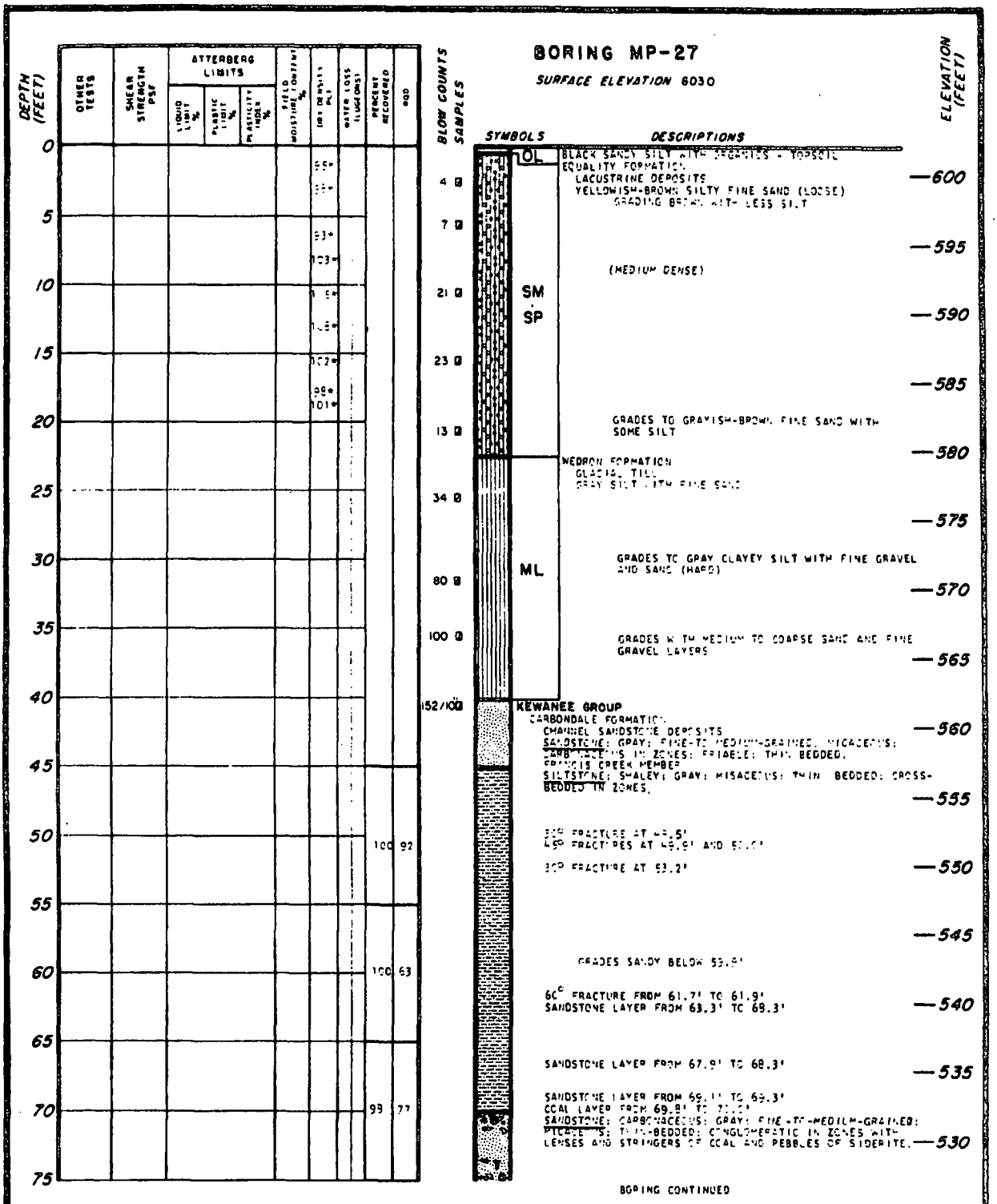
DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
150													-450
155									100	93			-445
160									100	98			-440
165												LIMESTONE; LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THICK-BEDDED WITH NUMEROUS IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/4" TO 10"; OIL-STAINED IN UPPER 3'.	-435
170												70° TO 80° FRACTURE FROM 166.4' TO 167.3'	-430

BORING COMPLETED AT 169.0 FEET ON 3-13-73
WATER LEVEL RECORDED AT 3.0 FEET ON 3-8-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-192

LOG OF BORING MP-26
(SHEET 3 OF 3)



* DENSITY TEST DATA TAKEN FROM ADJACENT OSTERBERG SAMPLED BORING

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-193

LOG OF BORING MP-27
(SHEET 1 OF 3)

BORING MP-27 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	80
85										
90									100	13
95										
100									100	27
105									93	0
110									100	100
115										
120									100	58
125										
130									100	63
135										
140									100	77
145										
150									100	92

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	GRADES HIGHLY CALCAREOUS BELOW 75.0'	
	CONGLOMERATIC NATURE GRADES OUT BELOW 77.0'	—525
	SILTSTONE; SANDY; GRAY; MICACEOUS; THINLY LAMINATED; FISSILE.	
	60° FRACTURE FROM 82.5' TO 82.8'	—520
	80° FRACTURE FROM 84.0' TO 84.3'	
		—515
	VERTICAL FRACTURE FROM 93.4' TO 93.7'	—510
	VERTICAL FRACTURE FROM 94.2' TO 94.5'	
	SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.	—505
	30° FRACTURE AT 102.8'	—500
	GRADES HIGHLY CARBONACEOUS BELOW 105.0'	
	ORCHESTER (NO. 2 COAL) MEMBER	
	COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	—495
	SPOON FORMATION	
	SHALE; CARBONACEOUS; BROWNISH-GRAY TO BLACK; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	—490
	SILTSTONE; SANDY; LIGHT GRAY; MICACEOUS; CARBONACEOUS; THIN-BEDDED; WELL INDURATED.	
	60° FRACTURE FROM 116.5' TO 116.9'	
	SHALE; SILTY; BROWN TO GRAY; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	—485
	SILTSTONE; SANDY; LIGHT GREENISH-GRAY; MICACEOUS; SIDERITIC; CARBONACEOUS; THIN-BEDDED; WELL INDURATED.	—480
	SANDSTONE; SILTY; LIGHT GREENISH-GRAY; FINE-GRAINED; MICACEOUS; SIDERITIC; CARBONACEOUS; THIN BEDDED; WELL INDURATED.	
	GRADES INTERBEDDED WITH GREEN SILTSTONE LAYERS BELOW 124.3'	
	GRADES HIGHLY SILTY BELOW 126.5'	—475
	SHALE; HIGHLY CARBONACEOUS, GRAY TO BLACK; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	
	BLACK COAL BED FROM 130.0' TO 130.6'	
		—470
	SILTSTONE; SANDY; GRAY TO DARK GRAY; MICACEOUS; CARBONACEOUS; LAMINATED TO THIN-BEDDED; ABUNDANT CARBONIZED PLANT FOSSILS; FISSILE.	
	60° TO VERTICAL FRACTURE FROM 135.3' TO 135.7'	—465
		—460
	MAQUOKETA GROUP	
	FORT ATKINSON FORMATION	—455
	LIMESTONE; SILTY; GRAY; FINE- TO MEDIUM-GRAINED; FOSSILIFEROUS; THIN BEDDED WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 4" ZONES OF CALCAREOUS SHALE SPACED 1/4" TO 10".	

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-193

LOG OF BORING MP-27
(SHEET 2 OF 3)

BORING MP-27 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155										
160									100	98
165										
170									100	93
175										
180									98	98
185										

SYMBOLS

DESCRIPTIONS

OIL STAINED FROM 147.1' TO 147.2'
VERTICAL FRACTURE, OIL STAINED FROM 147.7' TO 148.6'

LIMESTONE; LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED WITH IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/4" TO 10".

BORING COMPLETED AT 185.0 FEET ON 2-10-73
CASING USED TO A DEPTH OF 26.0 FEET
WATER LEVEL RECORDED AT 8.0 FEET ON 2-7-73

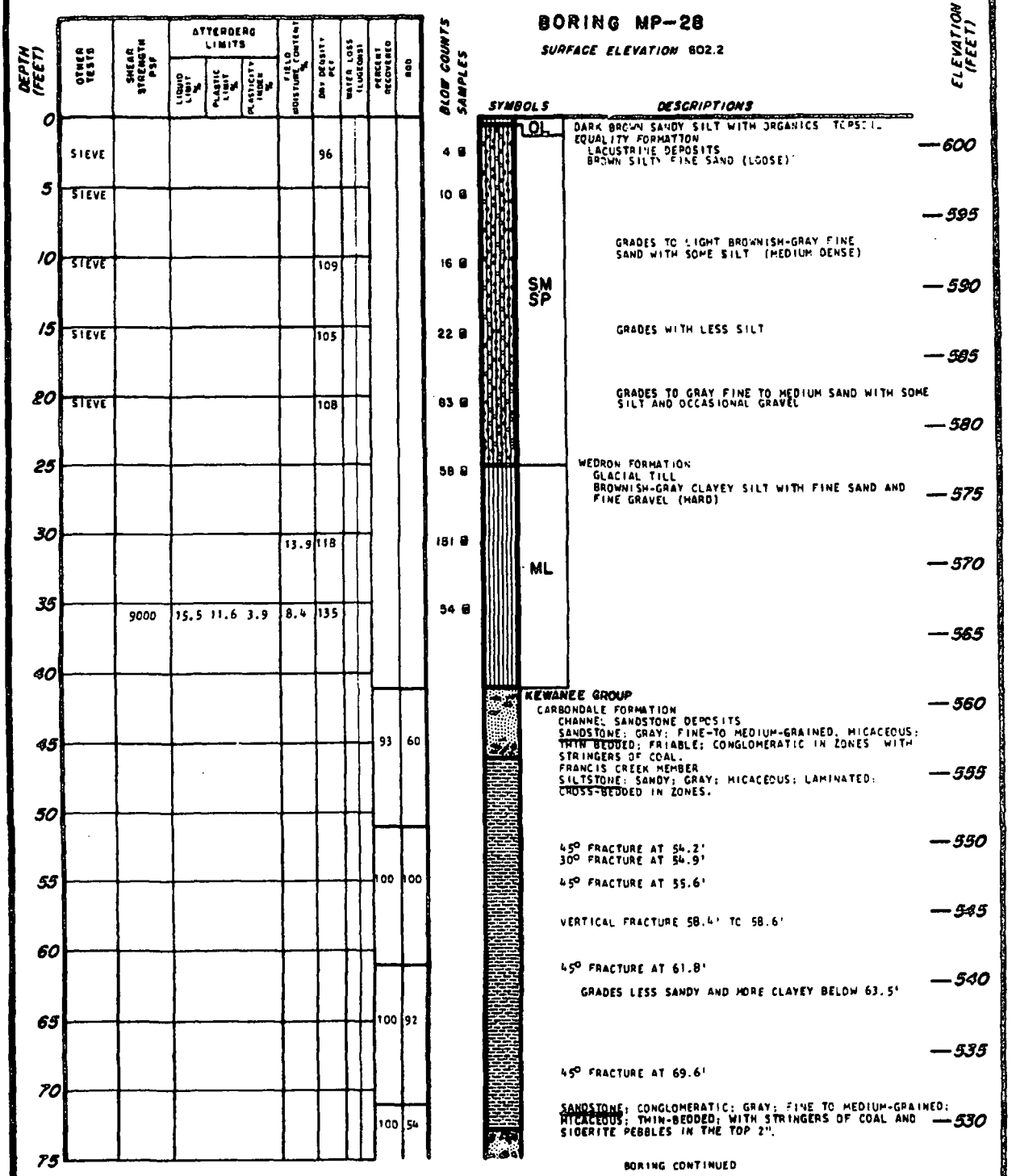
ELEVATION (FEET)

450
445
440
435
430
425
420
415

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-193

LOG OF BORING MP-27
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-194

LOG OF BORING MP-28
(SHEET 1 OF 3)

BORING MP-28 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75–150									100	100
									100	100
									68	32
									92	83
									100	69
									100	76
									100	92

SYMBOLS / DESCRIPTIONS / ELEVATION (FEET)

2" COAL SEAM AT 77.2' — 525

2" COAL SEAM AT 79.6'
SIDERITE PEBBLE CONGLOMERATE BED FROM 79.7' TO 80.1'
SHALE: SILTY; GRAY; MICACEOUS; CARBONACEOUS; THIN BEDDED
TWO 1" SIDERITE CONCRETIONS AT 81.0'.
SILTSTONE: SANDY; GRAY; MICACEOUS; THINLY LAMINATED — 520
30° FRACTURE AT 81.2'

— 515

50° FRACTURE AT 89.8'

— 510

SHALE: SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.

— 505

45° FRACTURE AT 106.4'
1" PEBBLE SEAM AT 101.7'
1" PEBBLE SEAM AT 104.3' — 500
GRADES CARBONACEOUS AT 104.8'

COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY. — 495
SPOON FORMATION
SHALE: HIGHLY CARBONACEOUS; GRAYISH-BLACK; MASSIVE; HIGHLY FRACTURED.

SHALE: SILTY; BROWNISH-GRAY; CARBONACEOUS; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.
1" COAL SEAM AT 113.0' — 490

SILTSTONE: SANDY; LIGHT BROWNISH-GRAY; CARBONACEOUS; MASSIVE; HIGHLY FRACTURED.
SANDSTONE: SILTY; LIGHT GREENISH-GRAY; FINE-GRAINED; MICACEOUS; THIN-BEDDED. — 485
SILTSTONE: BROWNISH-GRAY; CARBONACEOUS; MICACEOUS; MASSIVE.
1" COAL SEAM AT 119.7'
45° FRACTURE AT 121.6'
SANDSTONE: SILTY; LIGHT GREENISH-GRAY; MICACEOUS; THIN-BEDDED TO LAMINATED; OIL-STAINED IN ZONES. — 480

GRADES INTERLAMINATED WITH GREENISH-GRAY SILTSTONE BELOW 126.5'
— 475
GRADES SHALEY AND CARBONACEOUS BELOW 128.2'
SHALE: HIGHLY CARBONACEOUS; BROWNISH-BLACK; THIN BEDDED; HIGHLY FRACTURED.

SILTSTONE: SHALEY; DARK GRAY; CARBONACEOUS; THIN-BEDDED. — 470
SHALE: HIGHLY CARBONACEOUS; BROWNISH-BLACK; THIN-BEDDED TO MASSIVE.
SILTSTONE: SANDY; BROWN; CARBONACEOUS; MICACEOUS; THINLY LAMINATED TO LAMINATED.

GRADES DARK GRAY TO BLACK WITH ABUNDANT CARBONIZED PLANT FOSSILS BELOW 138.3' — 465

GRADES INTERBEDDED WITH SANDSTONE LAYERS BELOW 141.0'

— 460
1" PYRITE LINED OPEN VUGS AT 144.8' AND 145.0'

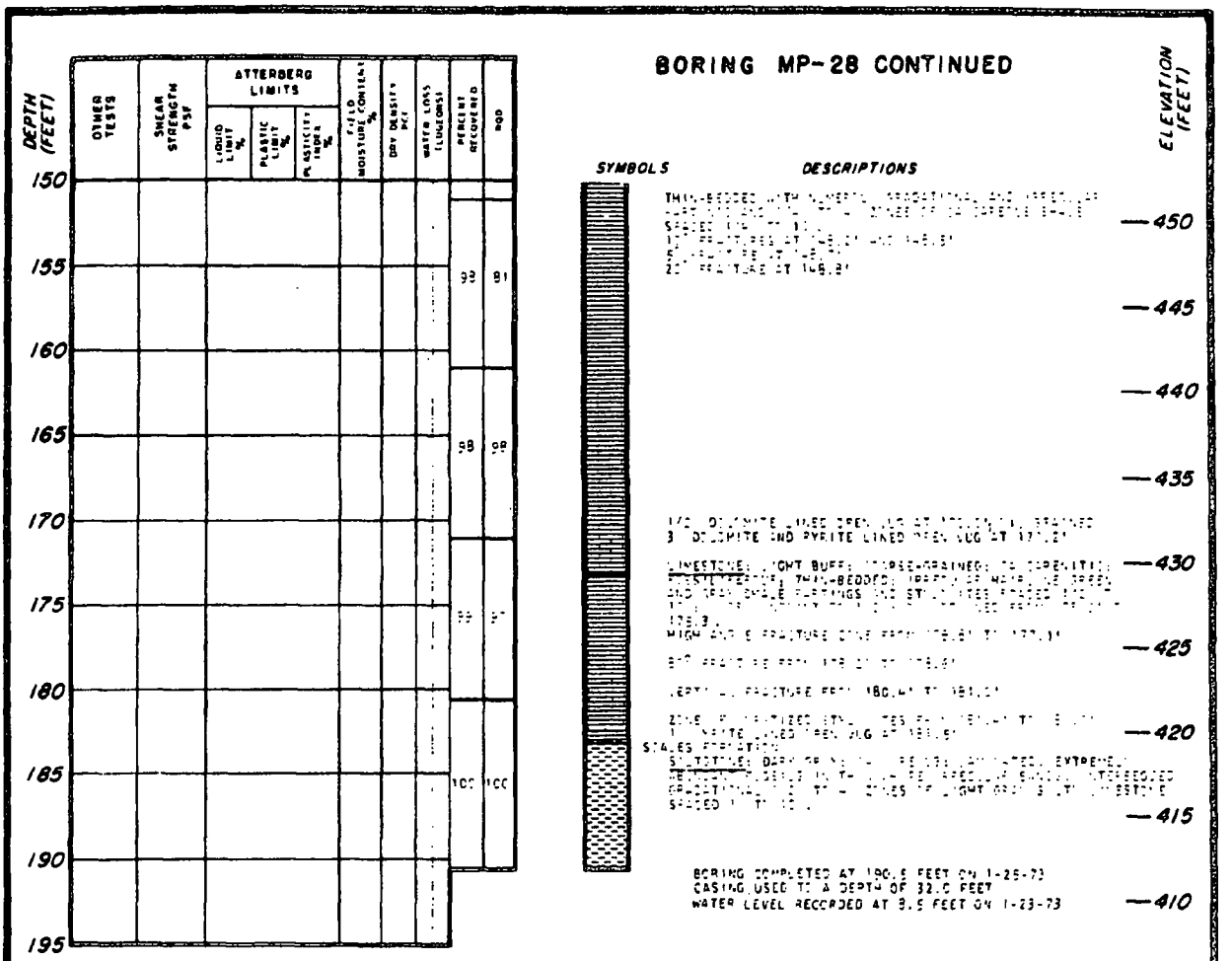
GRADES CONGLOMERATIC BELOW 146.6'
GRADES CALCAREOUS BELOW 147.1'
MAQUOKETA GROUP — 455
FORT ATKINSON FORMATION
LIMESTONE: SILTY; GRAY; FINE-TO MEDIUM-GRAINED; FOSSILIFEROUS;

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-194

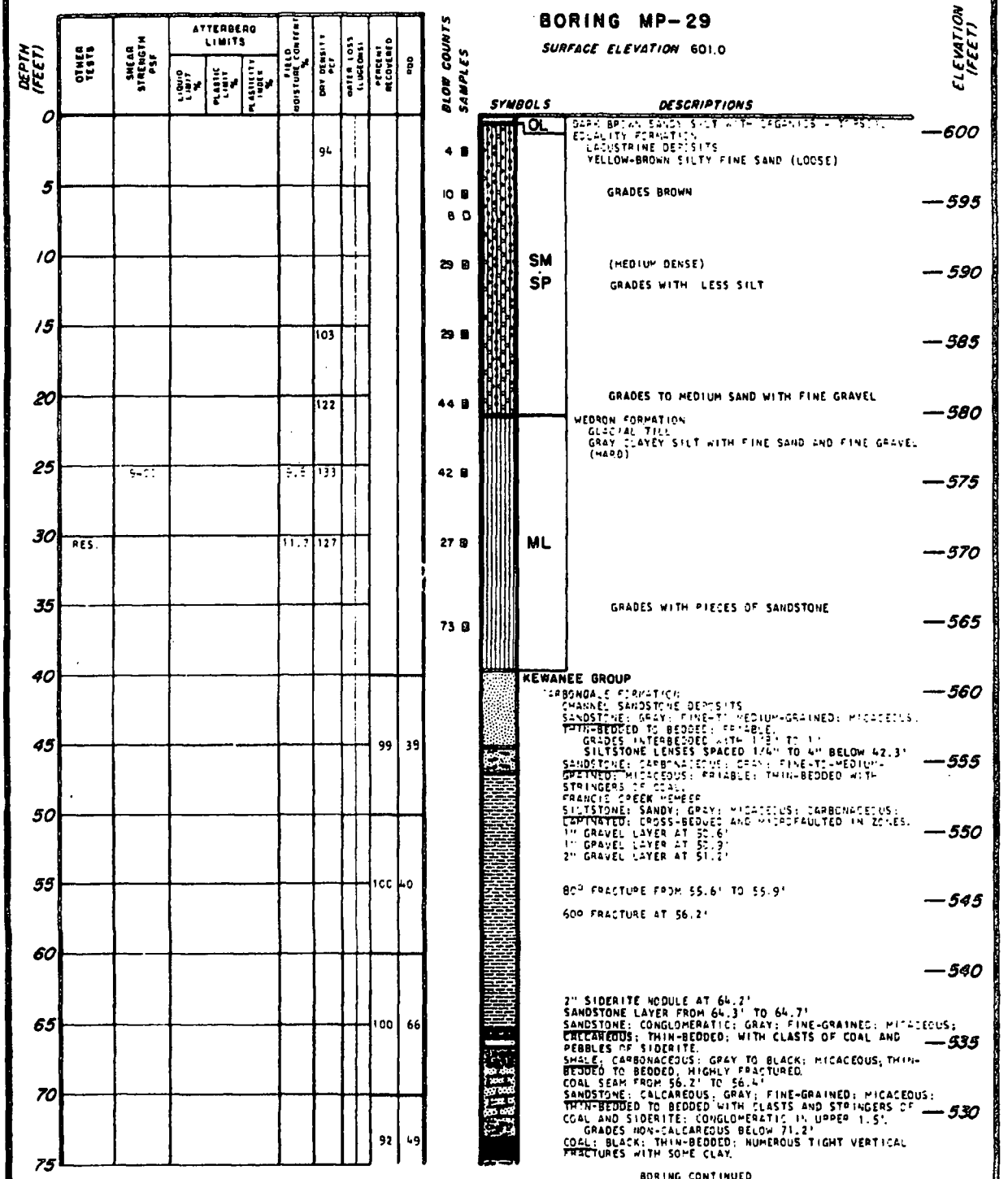
LOG OF BORING MP-28
(SHEET 2 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-194

LOG OF BORING MP-28
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-195

LOG OF BORING MP-29
(SHEET 1 OF 3)

BORING MP-29 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									100	100
90										
95									100	93
100										
105									70	25
110										
115									100	100
120										
125									95	64
130										
135									100	42
140										
145									100	77
150										

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

SANDSTONE; CONGLOMERATIC; GRAY; FINE-GRAINED; [illegible] THIN-BEDDED.
SHALE; SILTY; GRAY; MICACEOUS; LAMINATED TO THIN BEDDED.
SILTSTONE; SANDY; GRAY; MICACEOUS; THINLY LAMINATED. —525

VERTICAL FRACTURE FROM 80.0' TO 80.2' —520

—515

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED —510

—505

VERTICAL FRACTURE FROM 99.9' TO 100.0' —500

COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.
CLAY SEAM FROM 105.9' TO 106.2'
SPOON FORMATION —495
SHALE; CARBONACEOUS; BROWNISH-GRAY; SILTY; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.
2 1/2" HIGHLY CARBONACEOUS ZONE AT 110.0' —490

1" COAL SEAM AT 115.9'
GRADES VERY SILTY BELOW 116.0' —485

SILTSTONE; SANDY; LIGHT GREENISH-GRAY; MICACEOUS; THIN-BEDDED, WELL INDURATED. —480

SANDSTONE; SILTY; LIGHT GREENISH-GRAY; MICACEOUS; THIN-BEDDED.

SHALE; CARBONACEOUS; BROWNISH-GRAY TO BLACK; SILTY; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES —475
1" COAL SEAM AT 126.1'
1" COAL SEAM AT 127.7'
4" COAL SEAM FROM 128.3' TO 128.6'
4" SILTSTONE SEAM FROM 128.9' TO 130.2'

3" COAL SEAM FROM 132.3' TO 132.5' —470

SILTSTONE; SANDY; BROWNISH-GRAY TO BLACK; CARBONACEOUS; MICACEOUS; THIN-BEDDED.
VERTICAL FRACTURE FROM 135.4' TO 135.5' —465

GRADES HIGHLY CARBONACEOUS AND FISSIL WITH ABUNDANT CARBONIZED PLANT FOSSILS BELOW 138.5'

—460

MAQUOKETA GROUP
FORT ATKINSON FORMATION
LIMESTONE; SILTY; GRAY; FINE-TO-MEDIUM-GRAINED; FOSSILIFEROUS; THIN-BEDDED; WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 5" ZONES OF CARBONACEOUS SHALE SPACED 1/4" TO 6" —455

BORING CONTINUED

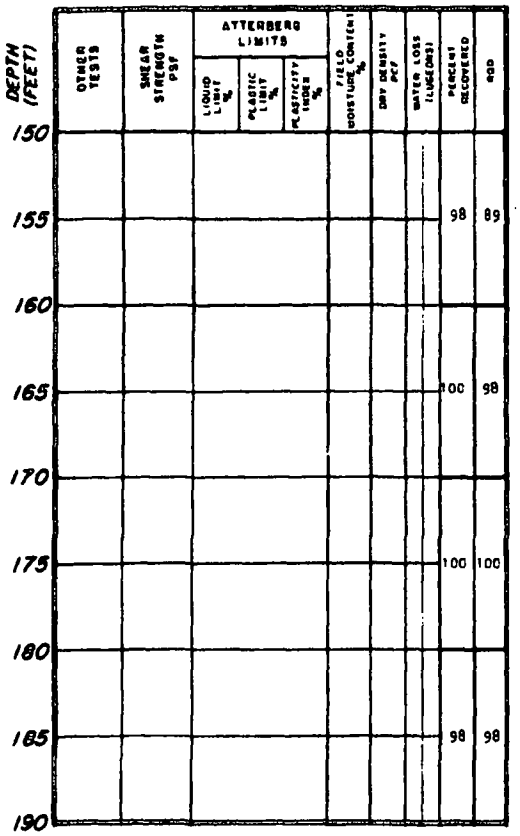
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-195

LOG OF BORING MP-29
(SHEET 2 OF 3)

BORING MP-29 CONTINUED

SURFACE ELEVATION



SYMBOLS *DESCRIPTIONS* *ELEVATION (FEET)*

30° FRACTURE AT 153.5'
VERTICAL FRACTURE FROM 153.9' TO 154.1' — 450

— 445

1" CLAY SEAM AT 160.8' — 440

GRADES LESS SILTY BELOW 166.2'
PINPOINT TO 1/4" OIL STAINED VUGS AT 166.3', 166.6', 167.2' AND 167.3' — 435
LIMESTONE: LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED; IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1" TO 6".
PINPOINT OIL STAINED VUGS AT 167.9'
PINPOINT TO 1/4" OIL STAINED VUGS FROM 169.6' TO 170.2' — 430
10° FRACTURE AT 174.7'

20° FRACTURE AT 175.1
BEDDING FRACTURE AT 176.9'
VERTICAL FRACTURE FROM 177.1' TO 177.4' — 425

SCALES FORMATION — 420
SILTSTONE: CALCAREOUS; DARK GRAY; LAMINATED; EXTREMELY ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS; INTERBEDDED GRADATIONAL 1/2" TO 4" ZONE OF LIGHT GRAY SILTY LIMESTONE SPACED 1" TO 12".

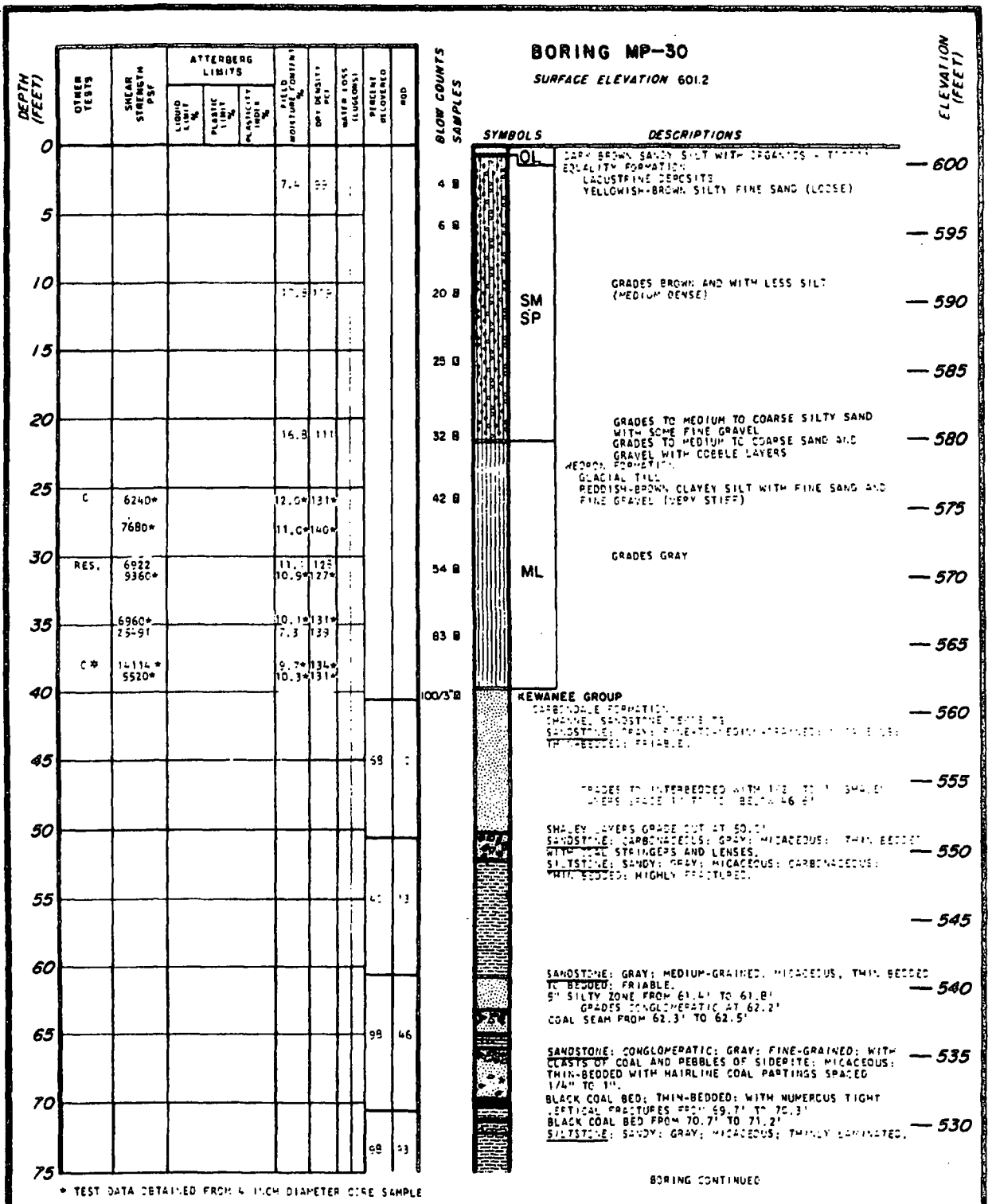
— 415

BORING COMPLETED AT 190.0 FEET ON 1-30-73
WATER LEVEL NOT RECORDED — 410

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-195

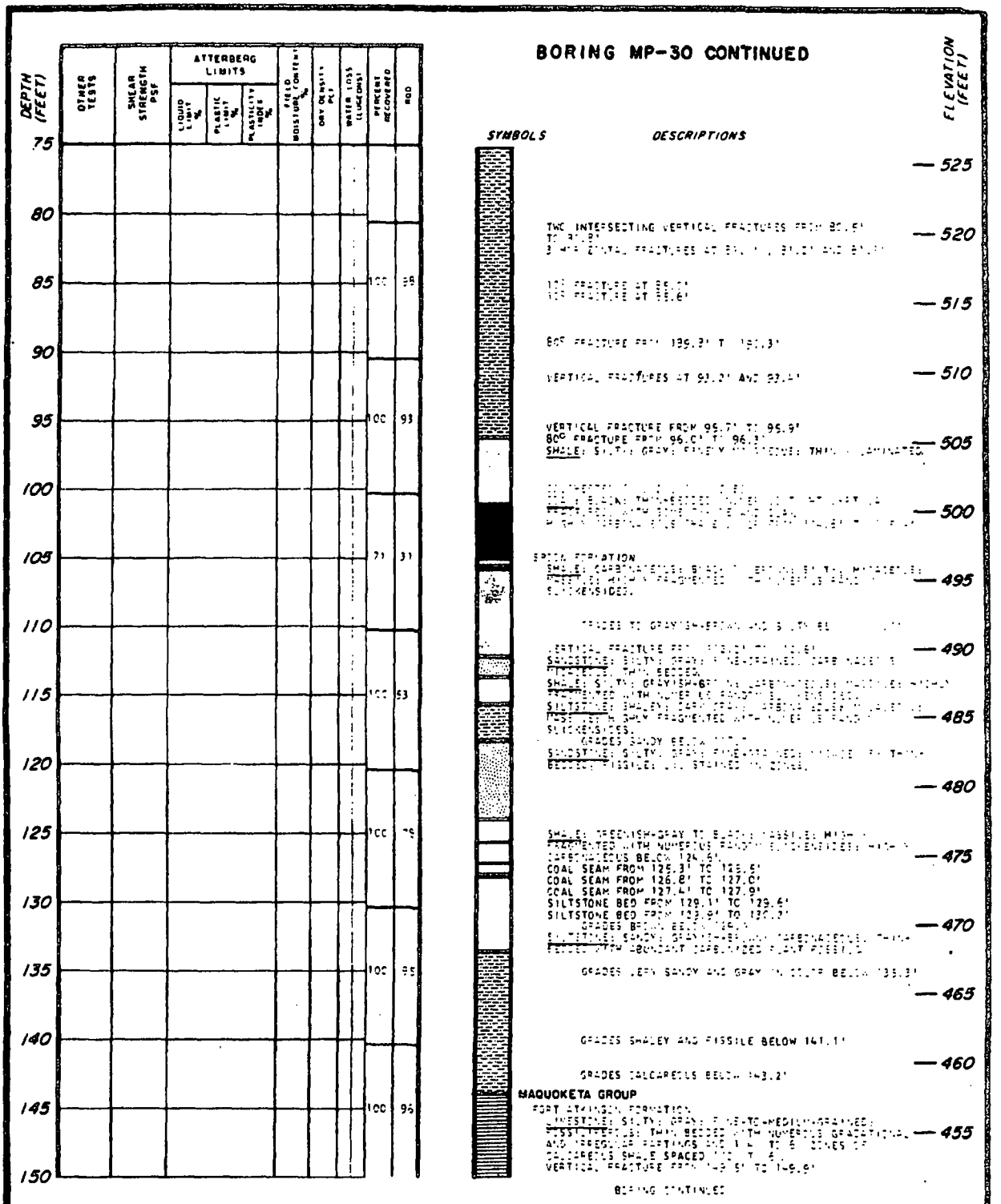
LOG OF BORING MP-29
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-196

LOG OF BORING MP-30
(SHEET 1 OF 3)

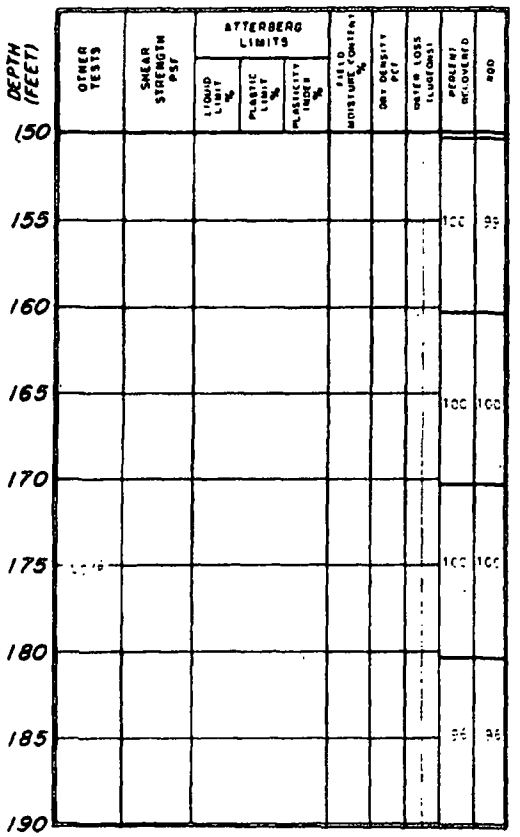


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-196

LOG OF BORING MP-30
(SHEET 2 OF 3)

BORING MP-30 CONTINUED



DESCRIPTIONS

ELEVATION (FEET)

450

80° FRACTURE 155.5' TO 155.7'

445

4" ZONE WITH PINPOINT VUGS AND OIL STAINING FROM 159.2' TO 159.5'

1/2" OIL STAINED ZONE AT 160.4'

440

OIL STAINED FROM 162.5' TO 162.8'
1" ZONE OF PINPOINT VUGS, HIGHLY OIL STAINED AT 164.2'

2 1/2" ZONE OF PINPOINT VUGS, OIL STAINED FROM 165.4' TO 166.6'
PINPOINT TO 1/2" OPEN VUGS WITH OIL STAINING FROM 166.0' TO 166.7'
LIMESTONE; LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN BEDDED; IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES AND 1% TO 2% OIL STAINED VUGS IN UPPER 3 1/2'.

435

10° FRACTURES AT 169.3', 169.6' AND 169.8'
30° TO VERTICAL FRACTURE FROM 170.2' TO 170.7'
TWO INTERSECTING VERTICAL FRACTURE FROM 174.8' TO 175.1'

430

425

SCALES FORMATION
SILTSTONE; CALCAREOUS; DARK GRAY; LAMINATED; EXTREMELY ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS, INTERBEDDED GRADATIONAL 1/2" TO 3" ZONES OF LIGHT GRAY SILTY LIMESTONE SPACED 1' TO 10'.

420

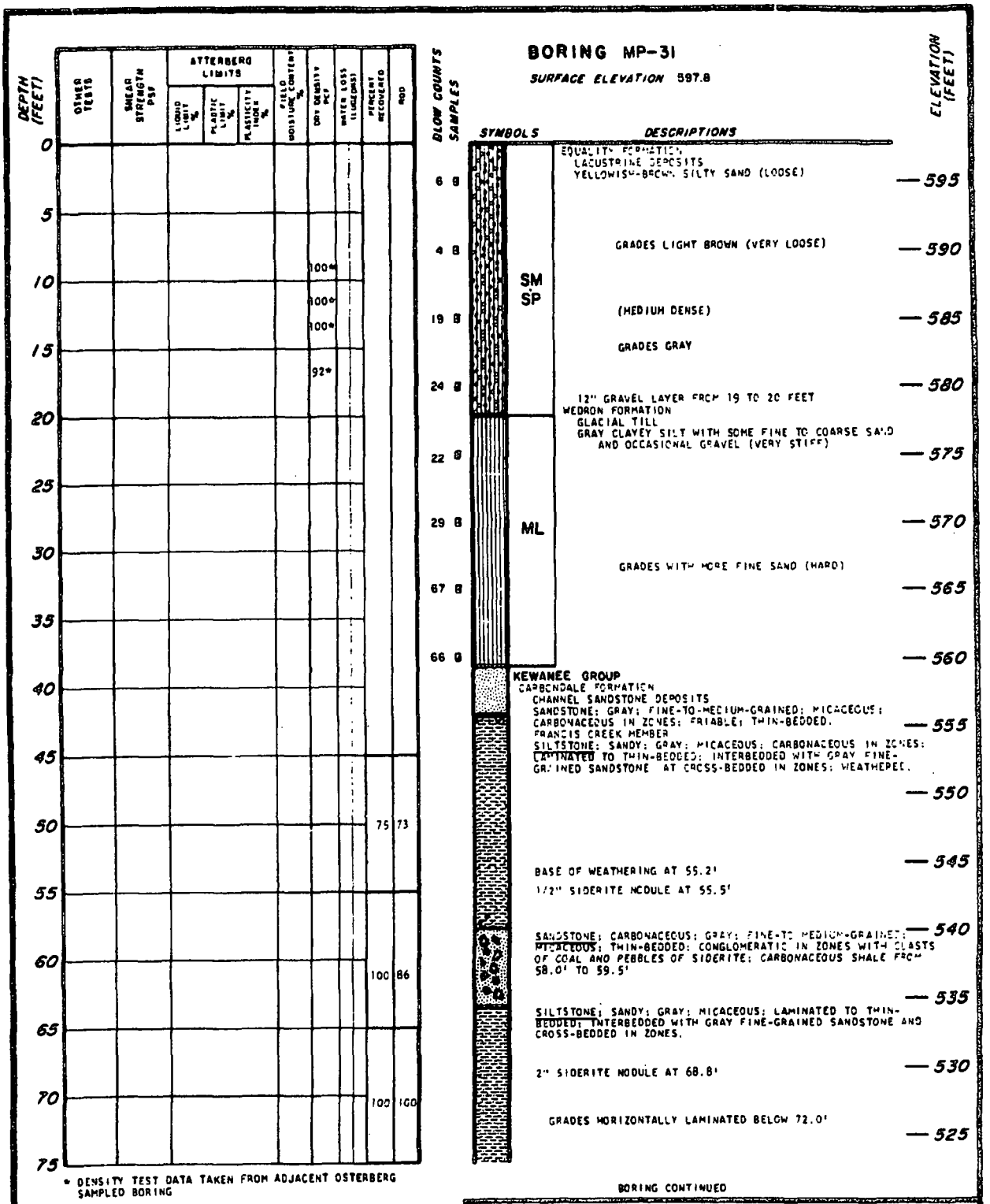
415

BORING COMPLETED AT 190.0 FEET ON 1-27-73
CASING USED TO A DEPTH OF 23.5 FEET
WATER LEVEL RECORDED AT 5.5 FEET ON 1-29-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-196

LOG OF BORING MP-30
(SHEET 3 OF 3)

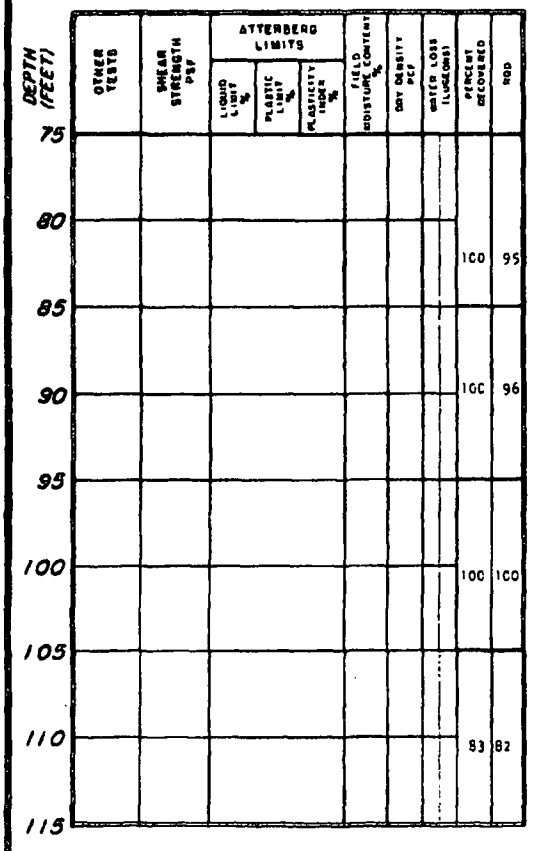


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-197

LOG OF BORING MP-31
(SHEET 1 OF 2)

BORING MP-31 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

VERTICAL FRACTURE FROM 79.6' TO 79.9' — 520

— 515

1" SIDERITE NODULE AT 86.1'

— 510

1" SIDERITE NODULE AT 90.7'

— 505

SHALE: SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED. — 500

COLCHESTER (NO. 2 COAL) MEMBER
COAL: BLACK, THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY. — 495

SPOON FORMATION
SHALE: CARBONACEOUS; DARK GRAY TO BROWN; MICACEOUS IN ZONES; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. — 490

1" COAL SEAM AT 110.7'

— 485

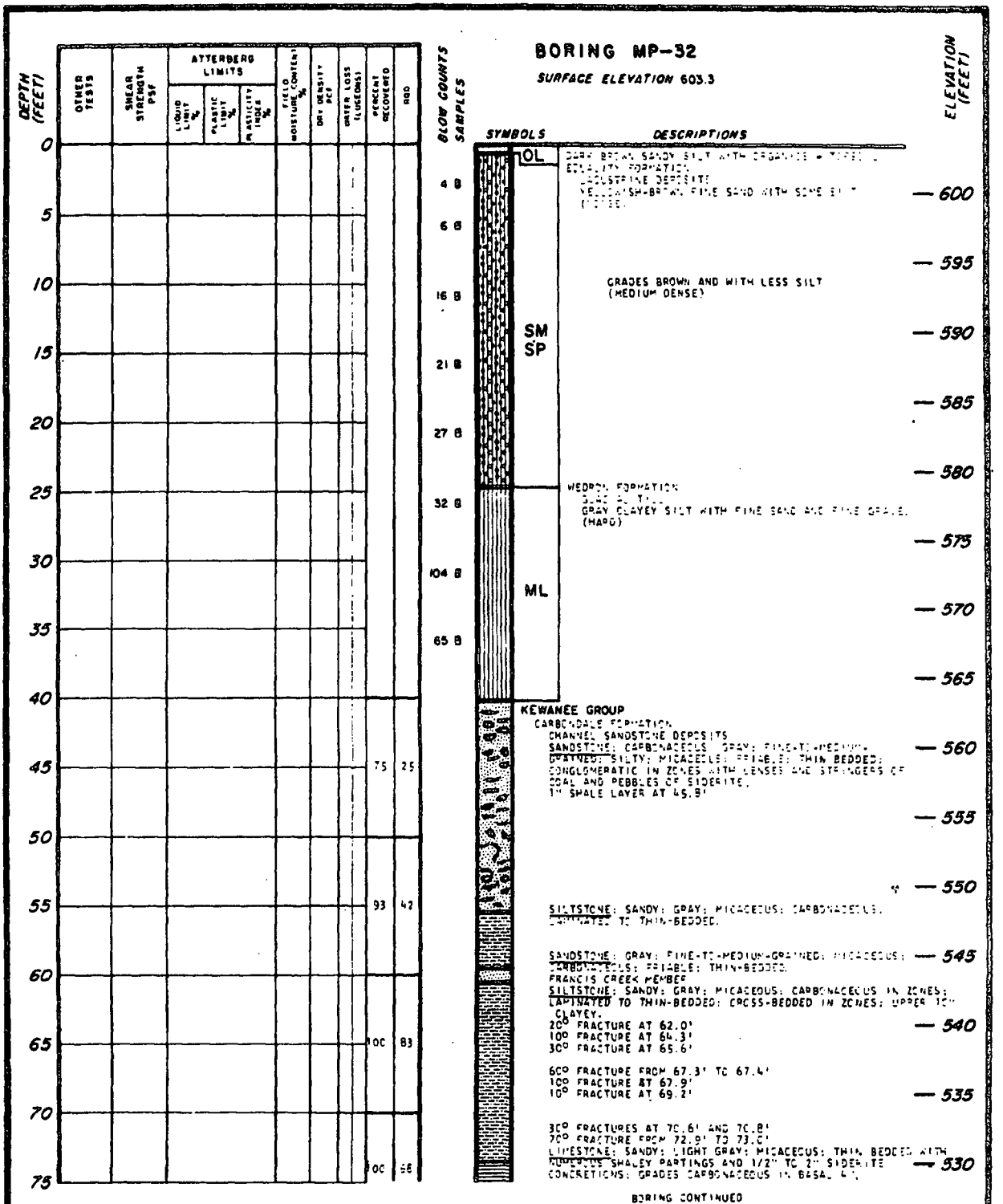
GRADES SILTY BELOW 114.4'

BORING COMPLETED AT 115.0 FEET ON 3-20-73
CASING USED TO A DEPTH OF 23.5 FEET
WATER LEVEL RECORDED AT 7.5 FEET ON 3-19-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-197

LOG OF BORING MP-31
(SHEET 2 OF 2)

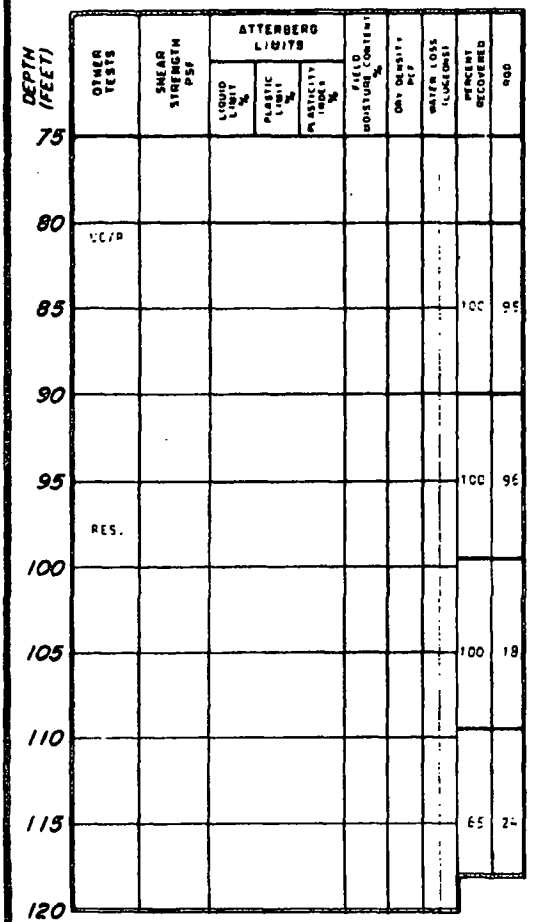


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-198

LOG OF BORING MP-32
(SHEET 1 OF 2)

BORING MP-32 CONTINUED



SYMBOLS

DESCRIPTIONS

SANDSTONE; CARBONACEOUS; [illegible]; THINLY-BEDDED; [illegible]; MICACEOUS; [illegible]; THIN-BEDDED.

— 525

LIMESTONE; SANDY; GRAY; MICACEOUS; THIN-BEDDED; [illegible] IN ZONES WITH [illegible] SIDERITIC PEBBLES AND [illegible] STRINGERS.
GRAY SILTSTONE LAYER FROM 81.2' TO 81.3'
SILTSTONE; SANDY; GRAY; MICACEOUS; THINLY LAMINATED; FISSILE.

— 520

— 515

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED FISSILE.
VERTICAL FRACTURE FROM 92.9' TO 93.2'

— 510

VERTICAL FRACTURES AT 95.5' AND 95.6'
VERTICAL FRACTURES AT 96.5' AND 96.9'

— 505

— 500

GRADES CARBONACEOUS BELOW 107.8'

COLCHESTER (NO. 2 COAL)
SHALE; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND COAL.

— 495

SPOON FORMATION
SHALE; CARBONACEOUS; BLACK TO GRAY; SILTY; MASS [illegible] FRACTURED WITH NUMEROUS RANDOMLY [illegible] FRACTURES

— 490

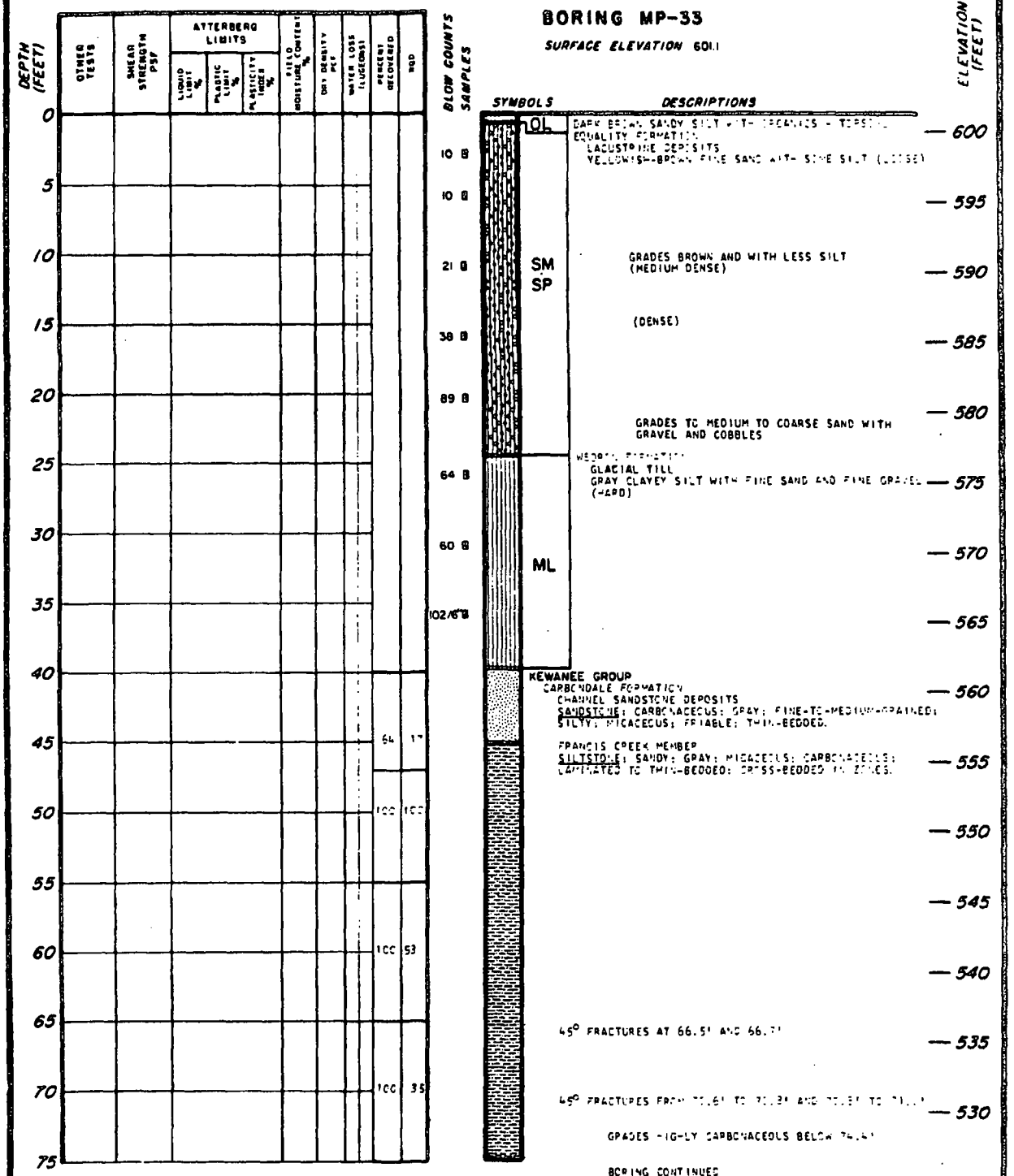
BORING COMPLETED AT 118.0 FEET ON 2-12-73
CASING USED TO A DEPTH OF 23.5 FEET
WATER LEVEL RECORDED AT 8.5 FEET ON 2-10-73

ELEVATION (FEET)

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-198

LOG OF BORING MP-32
(SHEET 2 OF 2)

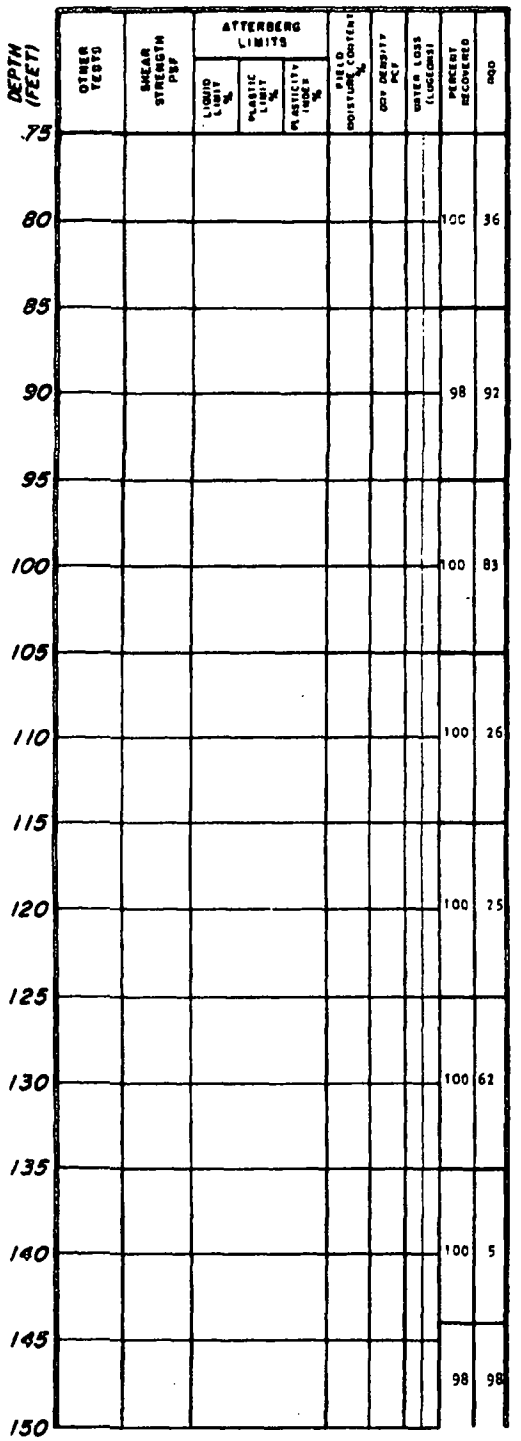


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-199

LOG OF BORING MP-33
(SHEET 1 OF 3)

BORING MP-33 CONTINUED



ELEVATION (FEET)

SYMBOLS

DESCRIPTIONS

COAL; BLACK; THIN-BEDDED; HIGHLY FRACTURED WITH SOME PYRITE AND CLAY. — 525

SANDSTONE; CARBONACEOUS; GRAY; FINE-GRAINED; SILTY; MICACEOUS; SIDERITIC; FRIABLE; THIN-BEDDED.
SILTSTONE; SANDY; GRAY; MICACEOUS; CARBONACEOUS IN ZONES; THINLY LAMINATED.

VERTICAL FRACTURE FROM 82.5' TO 82.7' — 520

VERTICAL FRACTURE FROM 95.0' TO 95.3' — 515

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE. — 510

VERTICAL FRACTURE FROM 94.1' TO 94.4' — 505

— 500

COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY; GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 6". — 495

SPOON FORMATION
SHALE; SILTY; BROWNISH-GRAY TO DARK GRAY; CARBONACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. — 490

SILTSTONE; SANDY; LIGHT GRAY; MICACEOUS; CARBONACEOUS; THIN-BEDDED; WELL INDURATED. — 485

SHALE; SILTY; BROWN TO GRAY; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

SILTSTONE; SANDY; LIGHT GREENISH-GRAY; MICACEOUS; SIDERITIC; CARBONACEOUS; THIN-BEDDED; WELL INDURATED. — 480

SANDSTONE; SILTY; LIGHT GREENISH-GRAY; FINE-GRAINED; MICACEOUS; SIDERITIC; CARBONACEOUS; THIN-BEDDED; WITH INTERBEDDED GREEN SILTSTONE LAYERS; WELL INDURATED. — 475
SHALE; CARBONACEOUS; BROWNISH-GRAY TO BLACK; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.
BLACK CLAYEY COAL BED FROM 138.2' TO 138.9'
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY. — 470
SHALE; CARBONACEOUS; TAN TO BLACK; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.
SILTSTONE; BROWNISH-GRAY; MICACEOUS; CARBONACEOUS; THIN-BEDDED.

— 465

GRADES DARK GRAY, SANDY, AND FISSILE WITH ABUNDANT CARBONIZED PLANT FOSSILS BELOW 137.0'

— 460

— 455

MAQUOKETA GROUP
FORT ATKINSON FORMATION
LIMESTONE; SILTY; GRAY; FINE-TO-MEDIUM-GRAINED; FOSSILIFEROUS; THIN-BEDDED; WITH NUMEROUS GRADATIONAL AND IRREGULAR

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-199

LOG OF BORING MP-33
(SHEET 2 OF 3)

BORING MP-33 CONTINUED

SURFACE ELEVATION

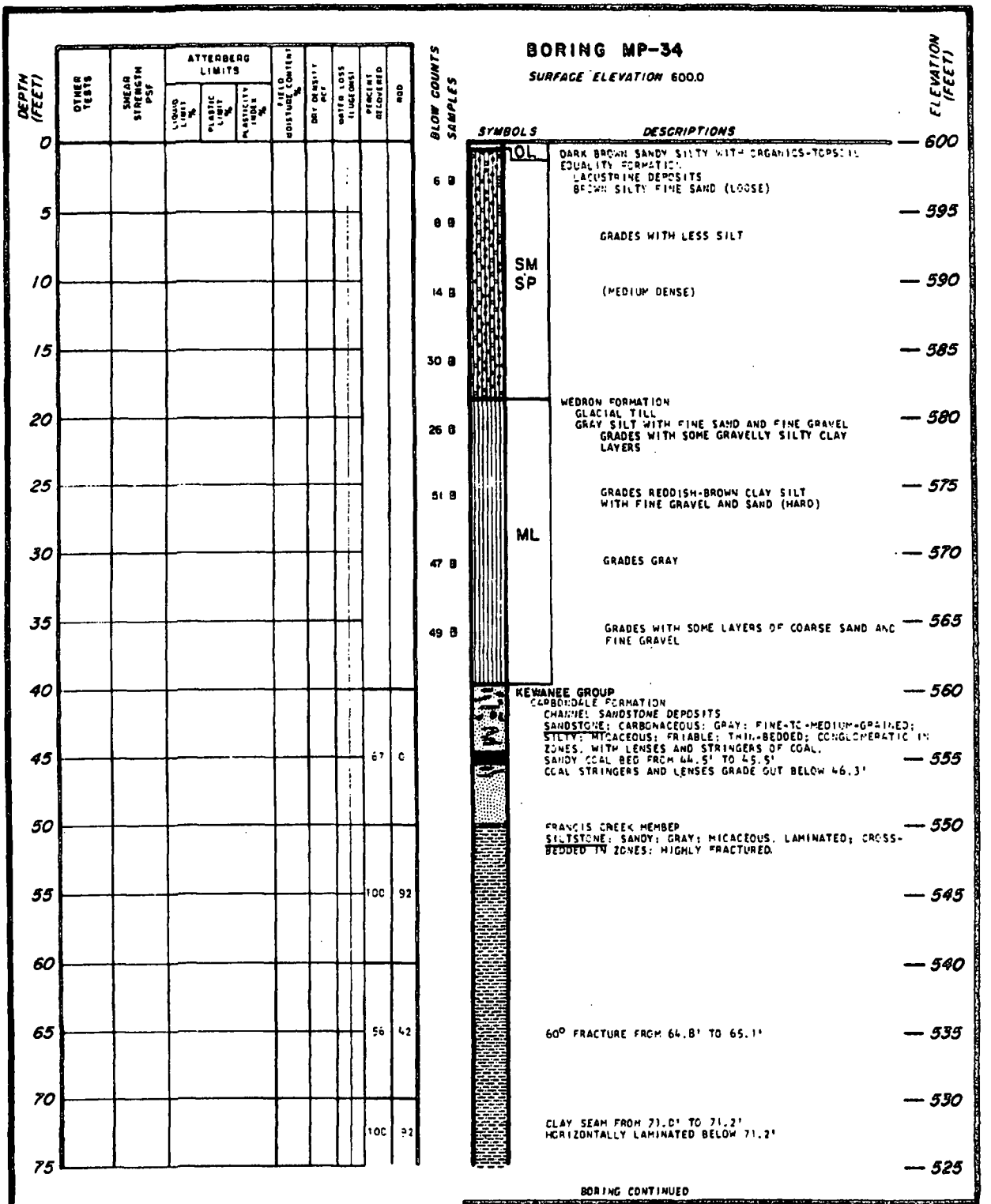
DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD	BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
150													PARTINGS ARE 1/4" TO 4" ZONES OF CALCAREOUS SHALE SPACED 1'-0" TO 15'-0"	450
155														445
160									100	93				440
165														

BORING COMPLETED AT 165.0 FEET ON 2-23-73
CASING USED TO A DEPTH OF 23.5 FEET
WATER LEVEL RECORDED AT 6.5 FEET ON 2-21-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-199

LOG OF BORING MP-33
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-200

LOG OF BORING MP-34
(SHEET 1 OF 3)

BORING MP-34 CONTINUED

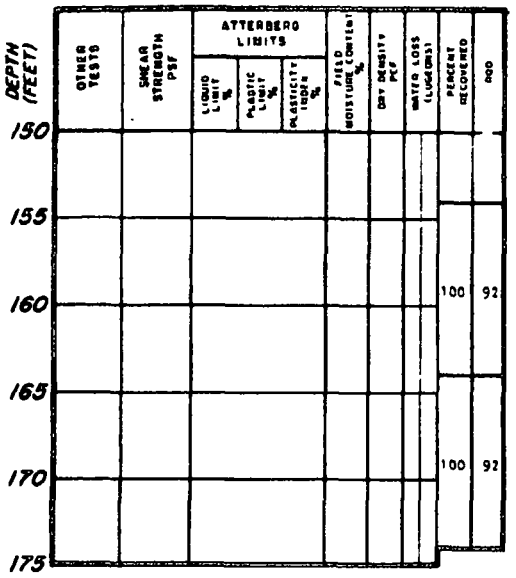
DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
75													525
80													520
85									95	95			515
90													510
95									100	78		CLAY SEAMS FROM 94.4' TO 94.6' AND 94.7' TO 94.9'	505
100												SHALE: SILTY, GRAY; FINELY MICACEOUS; THINLY LAMINATED.	500
105									100	25		COLCHESTER (NO. 2 COAL) MEMBER COAL: BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY; GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 2". CARBONACEOUS SHALE LAYER FROM 104.5' TO 105.0' SPOON FORMATION SHALE: SILTY; DARK GRAY TO BROWNISH-GRAY; CARBONACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	495
110													490
115									100	52		SILTSTONE: SANDY; LIGHT GRAY; MICACEOUS, MASSIVE; HIGHLY FRACTURED. SHALE: SILTY; BROWNISH-GRAY; MICACEOUS; CARBONACEOUS; THIN-BEDDED TO MASSIVE. 30° FRACTURE AT 114.9'	485
120												10° FRACTURE AT 116.0' 20° FRACTURE AT 116.1' SILTSTONE; SANDY; LIGHT GREENISH-GRAY; MICACEOUS; CARBONACEOUS; THIN-BEDDED; WELL INDURATED.	480
125									100	93		SANDSTONE: SILTY; LIGHT GREENISH-GRAY; FINE-GRAINED; MICACEOUS, CARBONACEOUS IN ZONES; THIN-BEDDED. SHALE: SILTY; GREEN; MICACEOUS; CARBONACEOUS; MASSIVE TO THIN-BEDDED; GRADES HIGHLY SILTY BELOW 124.9'. SHALE: CARBONACEOUS; DARK GRAY TO BLACK; THIN-BEDDED.	475
130									100	47		COAL SEAM FROM 125.6' TO 125.8' COAL: BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY. SHALE: CARBONACEOUS; BROWN TO BLACK; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. SILTSTONE; SANDY; BROWNISH-GRAY; MICACEOUS; CARBONACEOUS; MASSIVE; WELL INDURATED.	470
135												SHALE: SILTY; TANISH-GRAY; CARBONACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. COAL SEAM FROM 132.3' TO 132.7'. SILTSTONE; SANDY; GRAY; MICACEOUS; CARBONACEOUS; LAMINATED TO THIN-BEDDED WITH ABUNDANT CARBONIZED PLANT FOSSILS; FISSILE.	465
140									100	72		GRADES HIGHLY SANDY FROM 140.0' TO 141.4'	460
145									100	67		MAQUOKETA GROUP FORT ATKINSON FORMATION LIMESTONE: SILTY; GRAY; FINE-TO MEDIUM-GRAINED; FOSSILIFEROUS; THIN-BEDDED WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 4" ZONES OF CALCAREOUS SHALE SPACED 1/2" TO 6". OIL-STAINED ZONE FROM 145.4' TO 145.6'	455
150												BORING CONTINUED	450

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-200

LOG OF BORING MP-34
(SHEET 2 OF 3)

BORING MP-34 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

— 450

— 445

2" OPEN CALCITE LINED OIL-STAINED VUG AT 161.5'
TWO 1/2" OPEN CALCITE LINED OIL-STAINED VUGS AT 165.2'

— 440

SEVERAL PINPOINT OPEN OIL-FILLED VUGS FROM 166.8' TO 167.1'

— 435

TWO 2" DOLOMITE LINED OPEN VUGS AT 167.2' AND 167.4'
LIMESTONE; LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED WITH IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/2" TO 6".

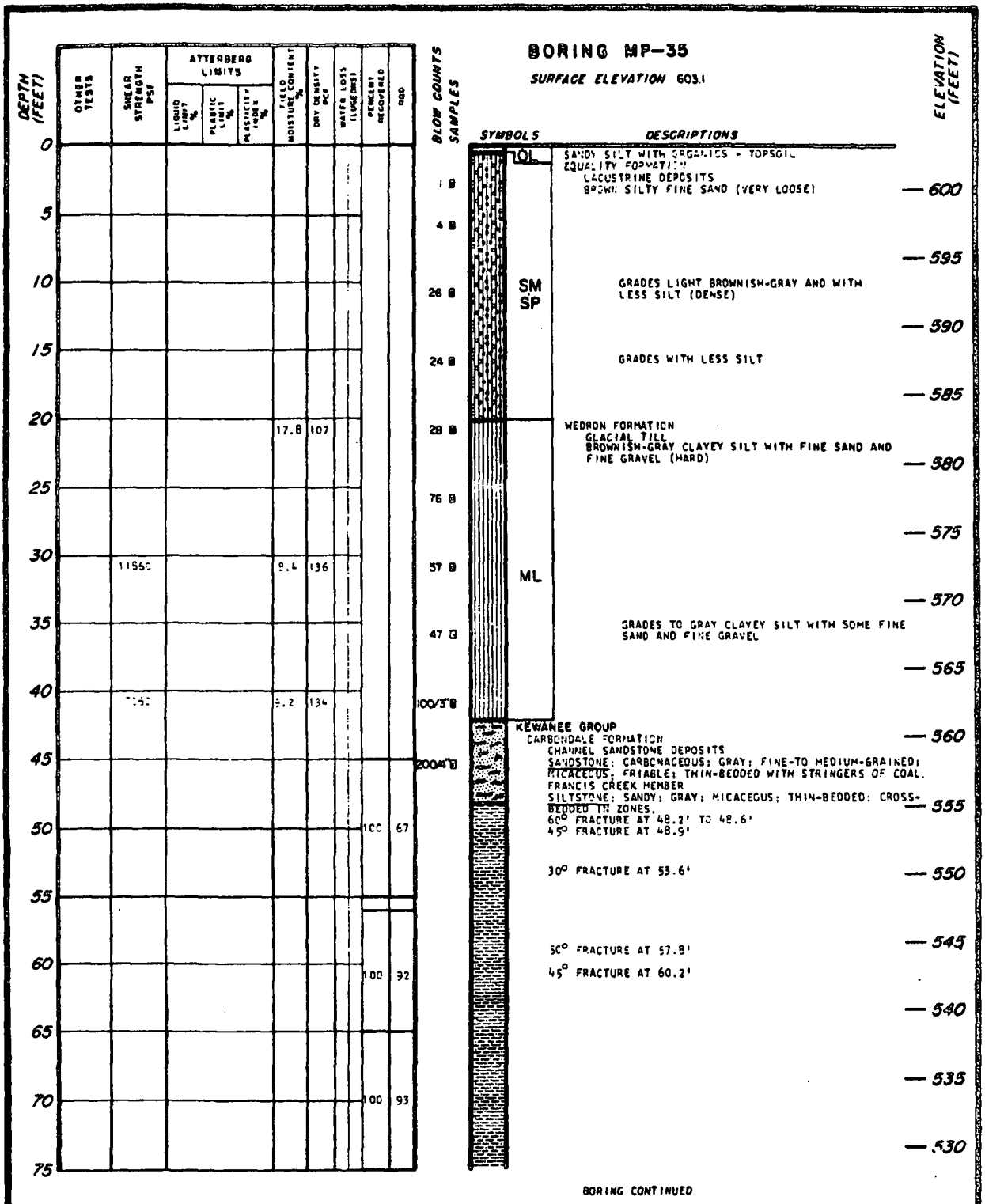
— 430

BORING COMPLETED AT 174.0 FEET ON 2-7-73
CASING USED TO A DEPTH OF 21.0 FEET
WATER LEVEL RECORDED AT 4.5 FEET ON 2-6-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-200

LOG OF BORING MP-34
(SHEET 3 OF 3)



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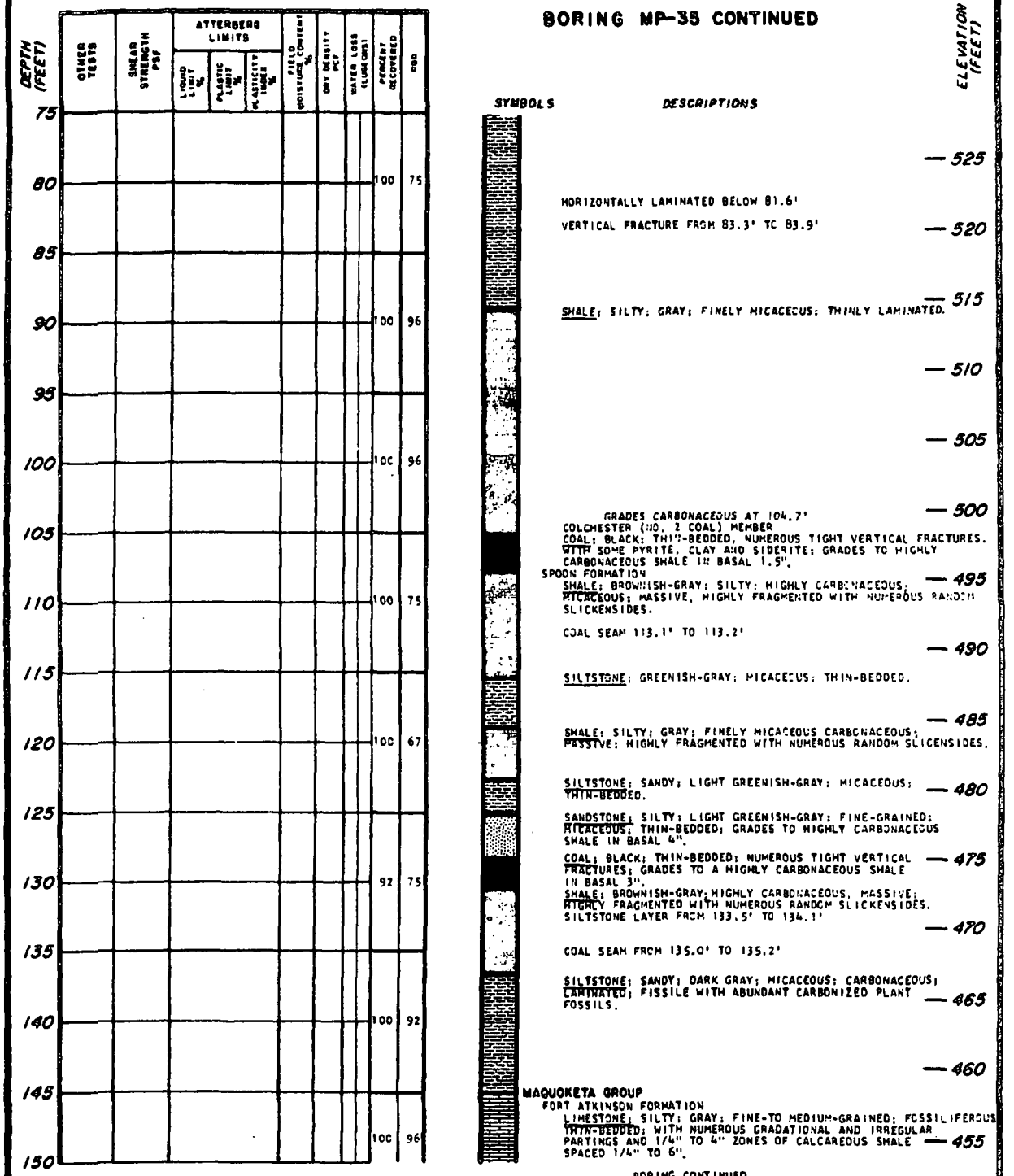
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-201

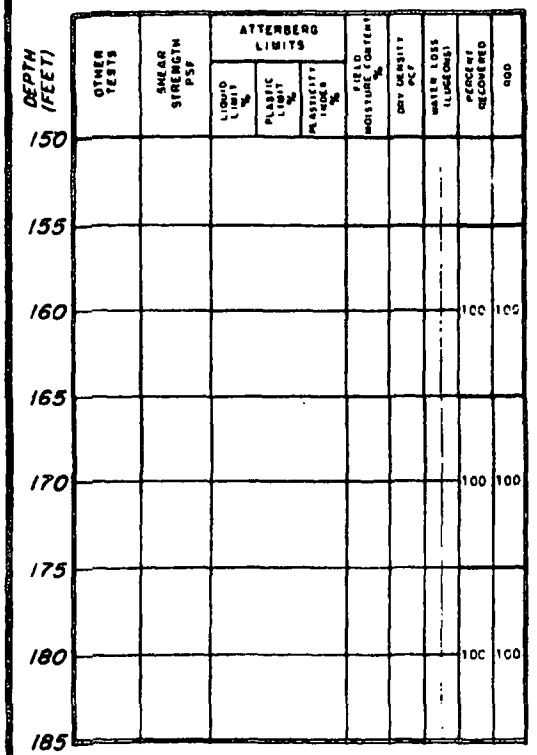
LOG OF BORING MP-35
(SHEET 1 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-201

LOG OF BORING MP-35
(SHEET 2 OF 3)



BORING MP-35 CONTINUED

ELEVATION (FEET)

SYMBOLS

DESCRIPTIONS

— 450

— 445

TWO 1/2" OPEN VUGS AT 163.1' AND 163.4'; OIL-STAINED

1/2" OPEN VUG AT 165.3'; OIL-STAINED

— 440

VERTICAL FRACTURE FROM 167.3' TO 167.6'
LIMESTONE: LIGHT BUFF; COARSE-GRAINED; CALCARANITIC; FOSSILIFEROUS; THIN-BEDDED; IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1" TO 6"; OIL-STAINED THROUGHOUT.
1/2" OPEN VUG AT 168.4'; OIL-STAINED
PINPOINT OPEN VUGS FROM 168.8' TO 168.9'; OIL-STAINED
PINPOINT OPEN VUGS FROM 170.3' TO 170.6'; OIL-STAINED
INTERBEDDED CARBONACEOUS SHALES AND LIMESTONES WITH THIN WHITE FOSSILS ABUNDANT FROM 171.6' TO 171.6'

— 435

VERTICAL FRACTURE FROM 175.0' TO 175.5'

— 430

— 425

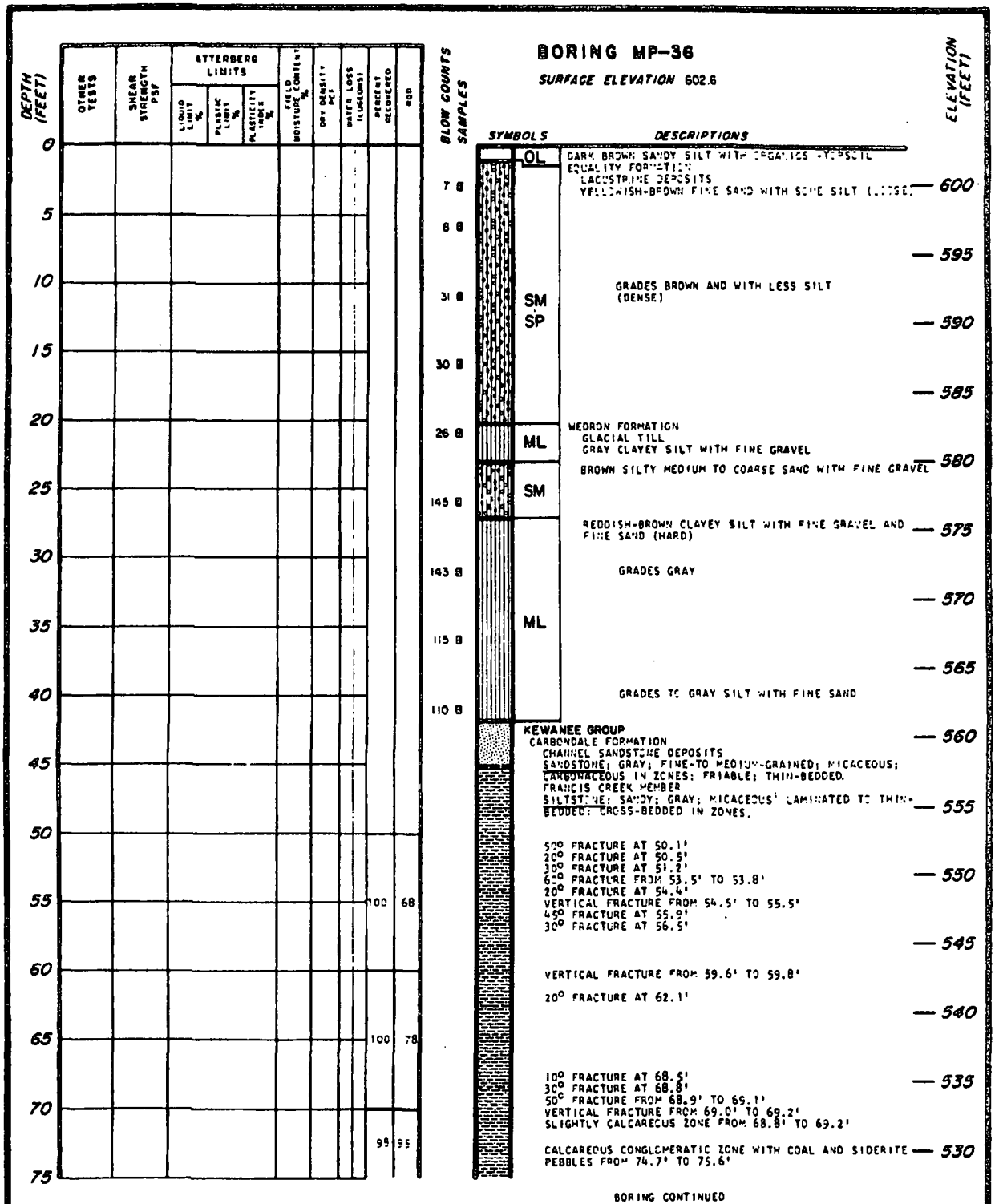
SCALES FORMATION
SILTSTONE: CALCAREOUS; DARK GRAY; LAMINATED; EXTREMELY ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS, INTERBEDDED GRADATIONAL 1/2" TO 3" ZONES OF LIGHT GRAY SILTY LIMESTONE SPACED 1" TO 15".

BORING COMPLETED AT 185.0 FEET ON 1-18-73
CASING USED TO A DEPTH OF 23.5 FEET
WATER LEVEL RECORDED AT 7.3 FEET ON 1-16-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-201

LOG OF BORING MP-35
(SHEET 3 OF 3)

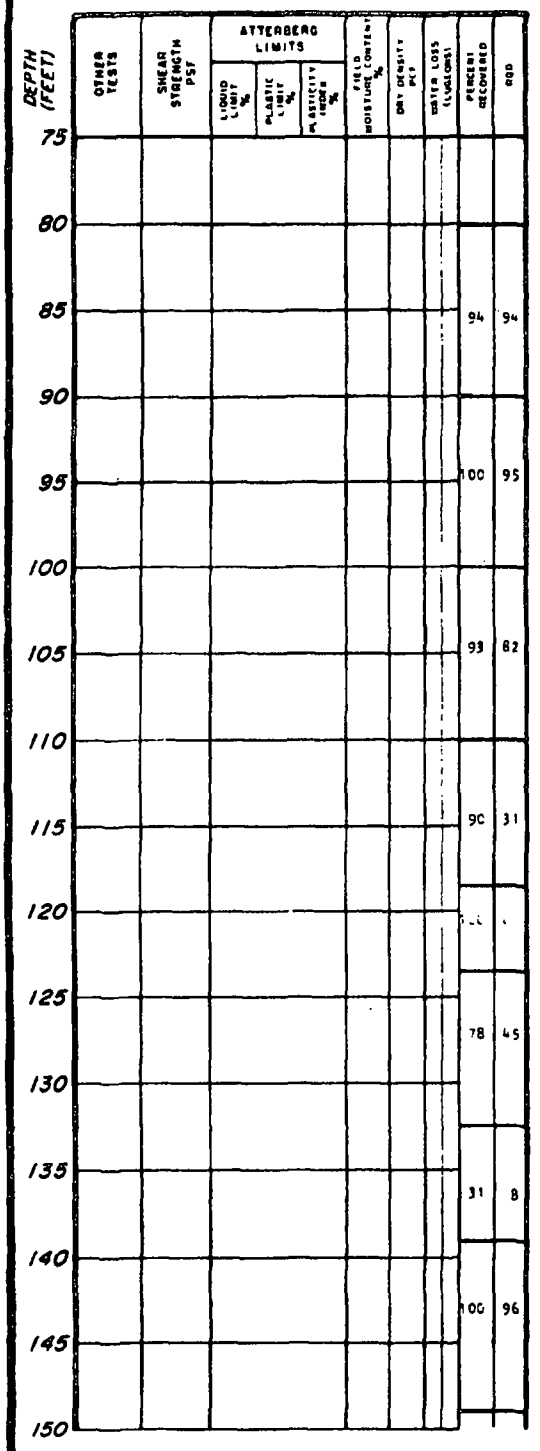


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-202

LOG OF BORING MP-36
(SHEET 1 OF 3)

BORING MP-36 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

GRADES HORIZONTALLY LAMINATED AND FISSILE BELOW 74.6' — 525

— 520

— 515

— 510

— 505

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.

1" SIDERITE NODULE AT 103.5' — 500

1" SIDERITE NODULE AT 104.8'

COLCHESTER (NO. 2 COAL) MEMBER

COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY; GRADES TO A HIGHLY CARBONACEOUS SHALE IN BASAL 3". — 495

SPOON FORMATION

SHALE; CARBONACEOUS; DARK GRAY; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

— 490

45° FRACTURE FROM 116.4' TO 116.5'

SILTSTONE; SANDY; LIGHT GRAY; MICACEOUS; CARBONACEOUS; MASSIVE; HIGHLY FRACTURED. — 485

SHALE; CARBONACEOUS; DARK GRAY; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

SILTSTONE; SANDY; GRAY TO GREENISH-GRAY; MICACEOUS; CARBONACEOUS; THIN-BEDDED; WELL INDURATED IN UPPER 12". — 480

GRADES SHALEY BELOW 124.1'

SHALE; CARBONACEOUS; GRAY TO BROWNISH-GRAY; MICACEOUS; MASSIVE, HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. — 475

COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.

SHALE; CARBONACEOUS; BROWNISH-GRAY TO BLACK; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. — 470

— 465

COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.

SILTSTONE; SANDY; DARK GRAY; MICACEOUS; CARBONACEOUS; LAMINATED TO THIN-BEDDED; WITH ABUNDANT CARBONIZED PLANT FOSSILS; FISSILE.

GRADES CALCAREOUS BELOW 142.9'

MAQUOKETA GROUP — 460

FORT ATKINSON FORMATION

LIMESTONE; SILTY; GRAY; FINE-TO MEDIUM-GRAINED; FOSSILIFEROUS; THIN-BEDDED, WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 4" ZONES OF CALCAREOUS SHALE SPACED 1/4" TO 12".

2" DOLOMITE LINED OPEN VUG AT 144.4' — 455

BORING CONTINUED

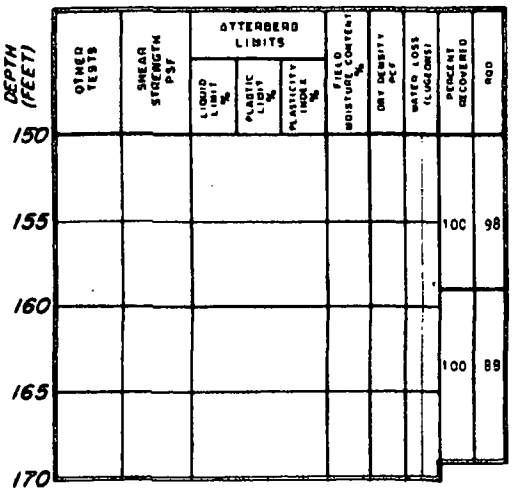
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-202

LOG OF BORING MP-36
(SHEET 2 OF 3)

BORING MP-36 CONTINUED

SURFACE ELEVATION



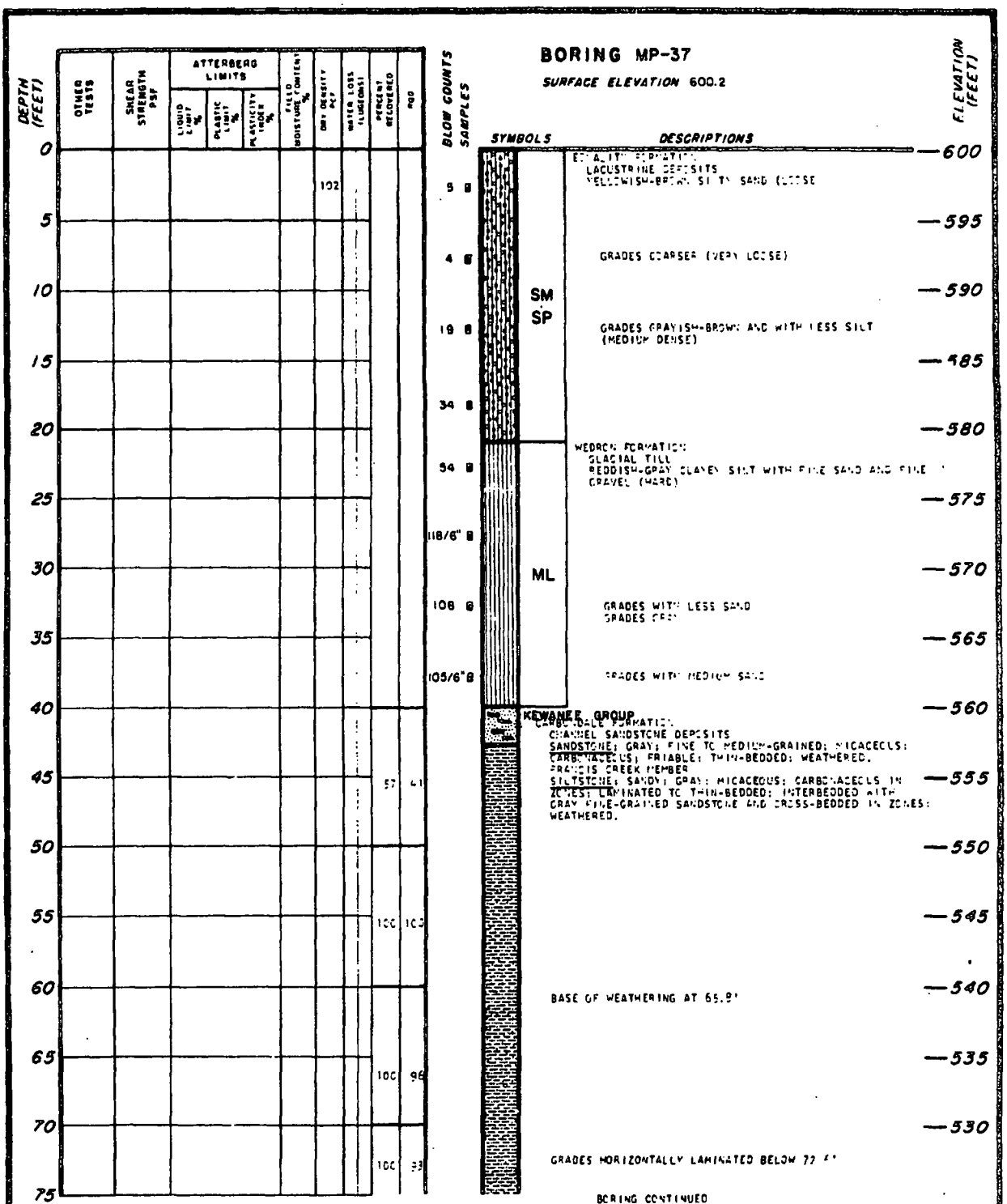
SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	20° SLICKENSIDED FRACTURE AT 151.4'	450
		445
	OIL-STAINED ZONE FROM 62.7' TO 63.1'	440
	1/2" OPEN VUG AT 165.2' VERTICAL FRACTURE FROM 166.0' TO 166.2' 80° FRACTURE FROM 166.4' TO 166.8' LIMESTONE; LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED; WITH IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/4" TO 10"; OIL-STAINED THROUGHOUT. ZONES OF PINPOINT OPEN VUGS FROM 167.3' TO 167.5', 167.7' TO 167.9' AND 168.0' TO 168.4'	435

BORING COMPLETED AT 169.0 FEET ON 2-15-73
WATER LEVEL NOT RECORDED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-202

LOG OF BORING MP-36
(SHEET 3 OF 3)

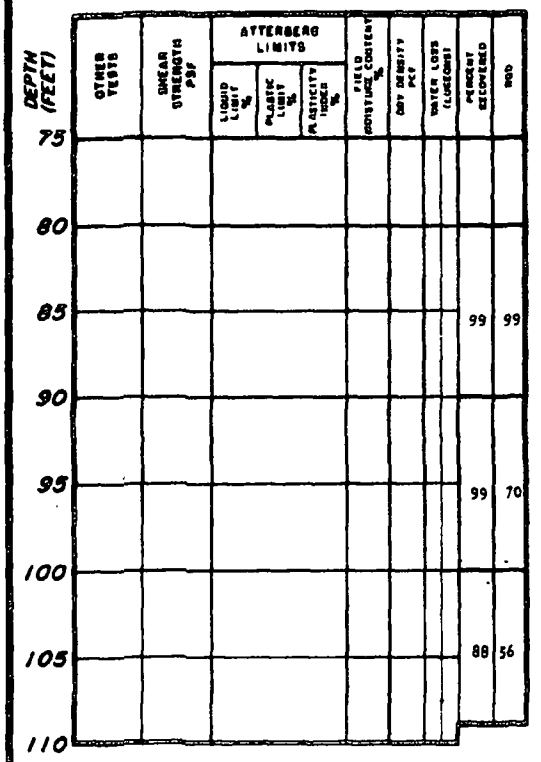


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-203

LOG OF BORING MP-37
(SHEET 1 OF 2)

BORING MP-37 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

—525

—520

—515

—510

—505

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.

COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY. —500

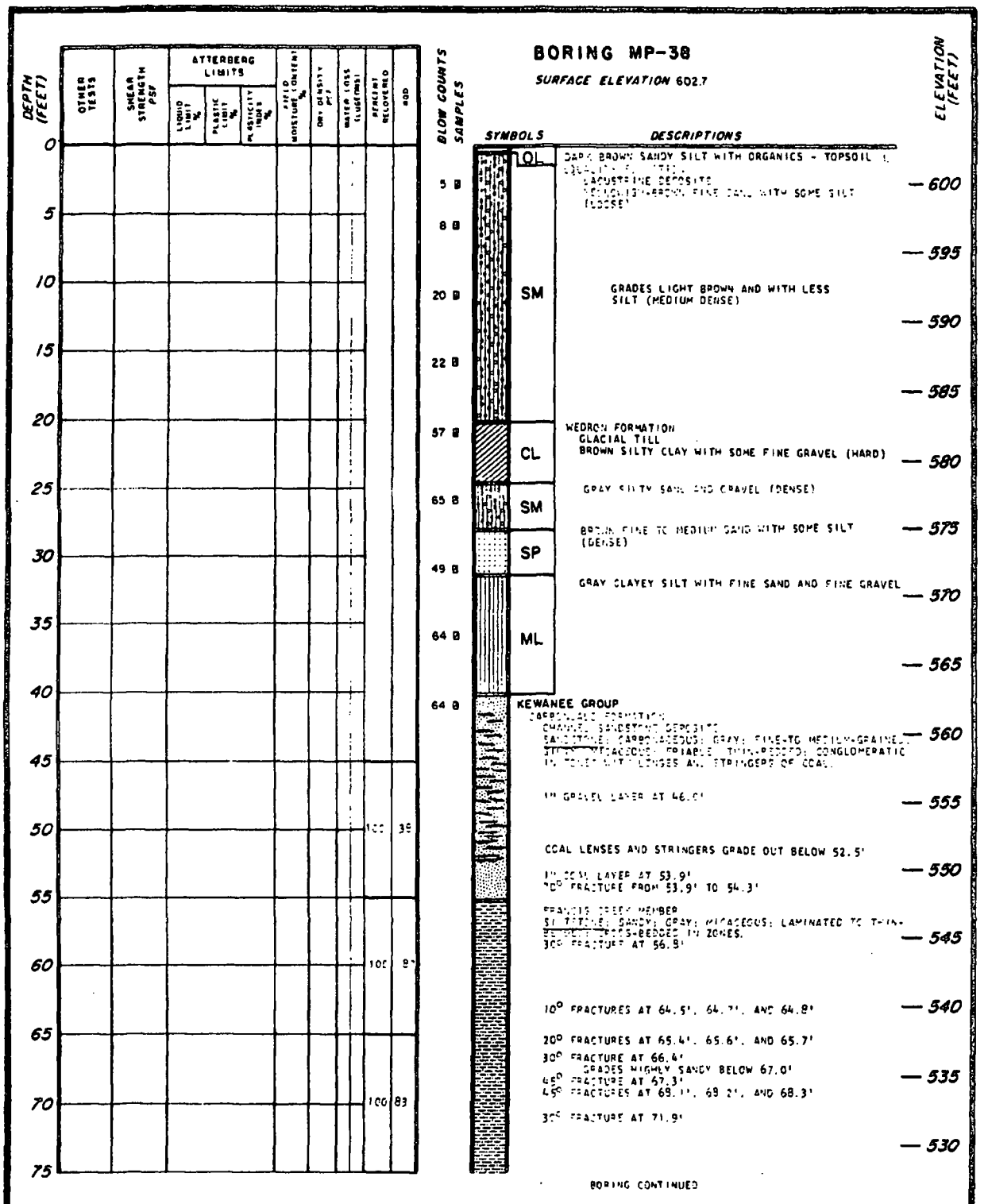
SPOON FORMATION
SHALE; DARK GRAY TO BROWN; CARBONACEOUS; MICACEOUS AND SILTY IN ZONES; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. —495

BORING COMPLETED AT 109.0 FEET ON 3-21-73
WATER LEVEL RECORDED AT 4.0 FEET ON 3-20-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-203

LOG OF BORING MP-37
(SHEET 2 OF 2)

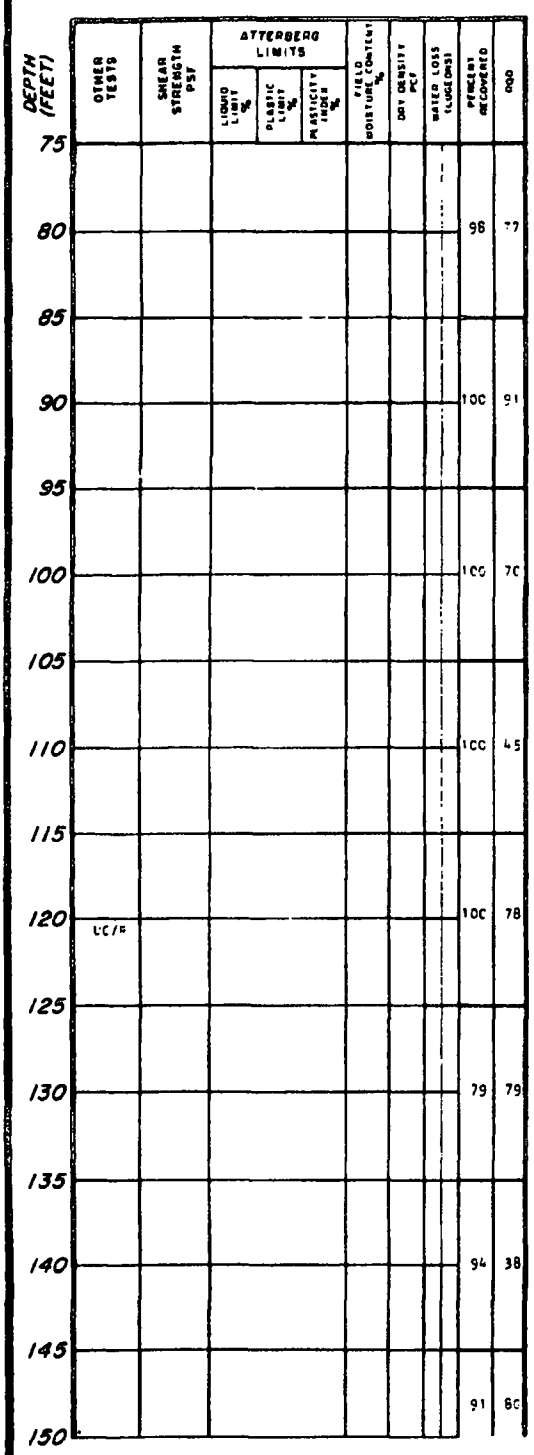


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-204

LOG OF BORING MP-38
(SHEET 1 OF 3)

BORING MP-38 CONTINUED



SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

— 525

SANDSTONE: CONGLOMERATIC: GRAY: FINE-GRAINED: WITH SIDERITE PEBBLES AND STRINGERS OF COAL: MICACEOUS: MEDIUM-BEDDED: FRIABLE: SHALEY IN ZONES.
SILTSTONE: SANDY: GRAY: MICACEOUS: THINLY LAMINATED: FISSILE. — 520

60° FRACTURE FROM 88.5' TO 88.7' — 515

SHALE: SILTY: GRAY: FINELY MICACEOUS: THINLY LAMINATED: FISSILE IN ZONES. — 510

VERTICAL FRACTURE FROM 98.3' TO 98.6'
VERTICAL FRACTURE FROM 99.9' TO 100.0' — 505

— 500

— 495

COLCHESTER (NO. 2 COAL) MEMBER
COAL: BLACK: THIN-BEDDED: NUMEROUS TIGHT VERTICAL FRACTURE WITH SOME PYRITE AND CLAY: GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 9". — 490

SPOON FORMATION
SHALE: CARBONACEOUS: BROWNISH-GRAY TO BLACK: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

— 485

SILTSTONE: SANDY: LIGHT GRAY: MICACEOUS: CARBONACEOUS: THIN-BEDDED: WELL INDURATED. — 480

SHALE: SILTY: BROWN TO GRAY: CARBONACEOUS: MICACEOUS: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

— 475

SILTSTONE: SANDY: LIGHT GREENISH-GRAY: MICACEOUS: SIDERITIC: CARBONACEOUS: THIN-BEDDED: WELL INDURATED.
SANDSTONE: SILTY: LIGHT GREENISH-GRAY: FINE-GRAINED: MICACEOUS: SIDERITIC: CARBONACEOUS: THIN-BEDDED: INTER-BEDDED WITH GREEN SILTSTONE LAYERS: WELL INDURATED. — 470

SHALE: CARBONACEOUS: BROWNISH-GRAY TO GRAY: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.
COAL: BLACK: THIN-BEDDED: NUMEROUS TIGHT VERTICAL FRACTURES.
SHALE: CARBONACEOUS: BROWNISH-GRAY TO GRAY: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES: SIDERITIC IN ZONES. — 465
BLACK COAL BED FROM 137.5' TO 139.0'

COAL: BLACK: THIN-BEDDED: NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY: GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 3". — 460
SILTSTONE: SANDY: DARK GRAY: MICACEOUS: CARBONACEOUS: LAMINATED TO THIN-BEDDED: WITH ABUNDANT CARBONIZED PLANT FOSSILS: FISSILE.

MAQUOKETA GROUP
FORT ATKINSON FORMATION — 455
LIMESTONE: SILTY: GRAY: FINE-TO MEDIUM-GRAINED: FOSSILIFEROUS: THIN-BEDDED WITH NUMEROUS GRADATIONAL AND

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-204

LOG OF BORING MP-38
(SHEET 2 OF 3)

BORING MP-38 CONTINUED

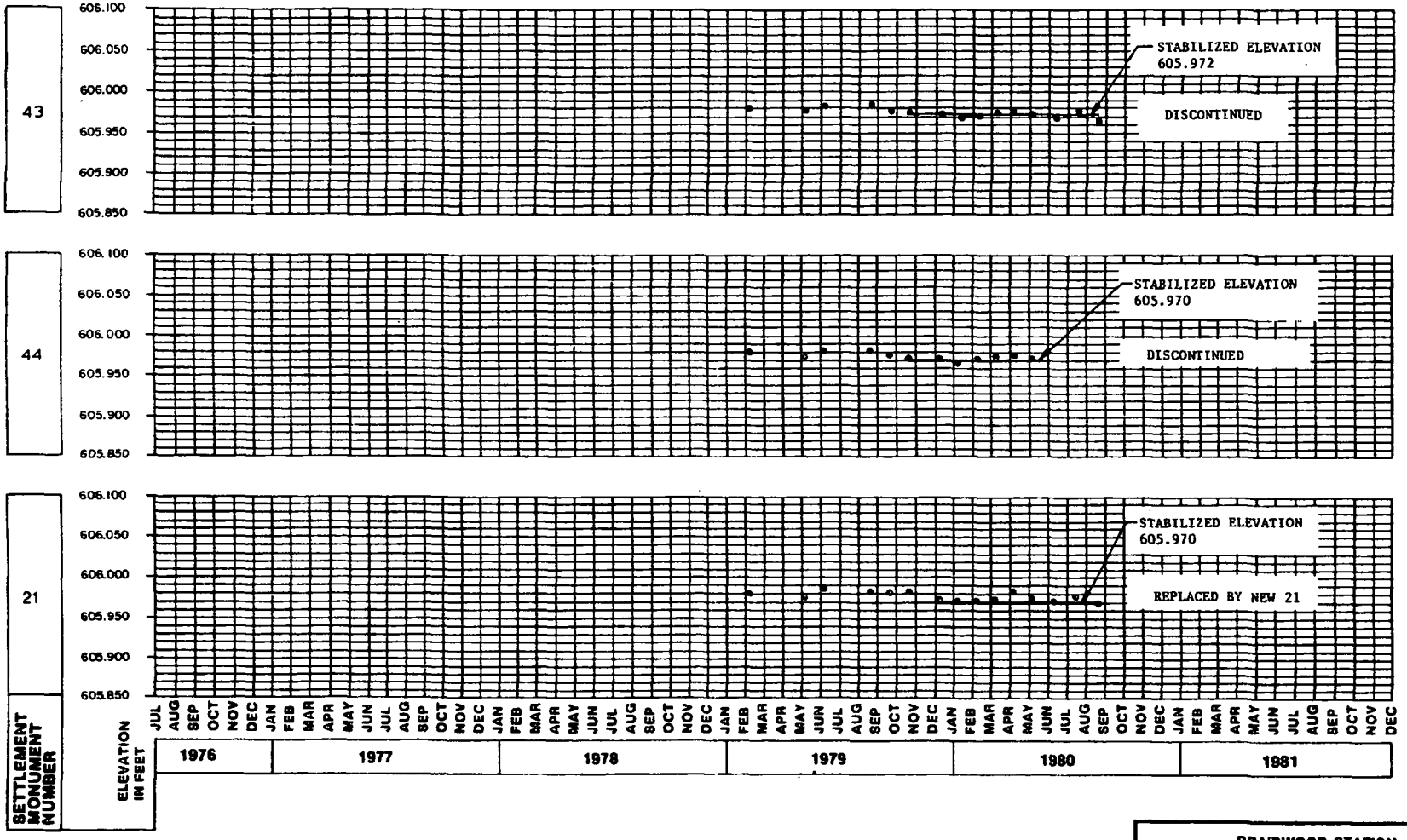
DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
150												IRREGULAR PARTINGS AND 1/4" TO 4" ZONES OF CALCAREOUS SHALE, SPACED 1/4" TO 10%. OIL-STAINED ZONES FROM 147.5' TO 147.8' AND 148.3' TO 148.5'	450
155													445
160									100	89			440
165												VERTICAL FRACTURE FROM 166.4' TO 166.7'	
170									100	71		PINPOINT TO 1/2" CALCITE LINED OPEN VUGS, OIL-STAINED FROM 168.2' TO 168.4' ZONE OF PINPOINT TO 1/8" OPEN VUGS, OIL-STAINED FROM 169.4' TO 169.7' 1" CALCITE LINED OPEN VUG AT 171.1'	435
175												VERTICAL FRACTURE FROM 175.3' TO 176.7' VERTICAL FRACTURE FROM 177.3' TO 178.3'	430
180									98	93		LIMESTONE: LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED WITH IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/4" TO 10".	425
185													420

BORING COMPLETED AT 185.0 FEET ON 2-20-73
CASING USED TO A DEPTH OF 25.5 FEET
WATER LEVEL RECORDED AT 7.0 FEET ON 2-17-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-204

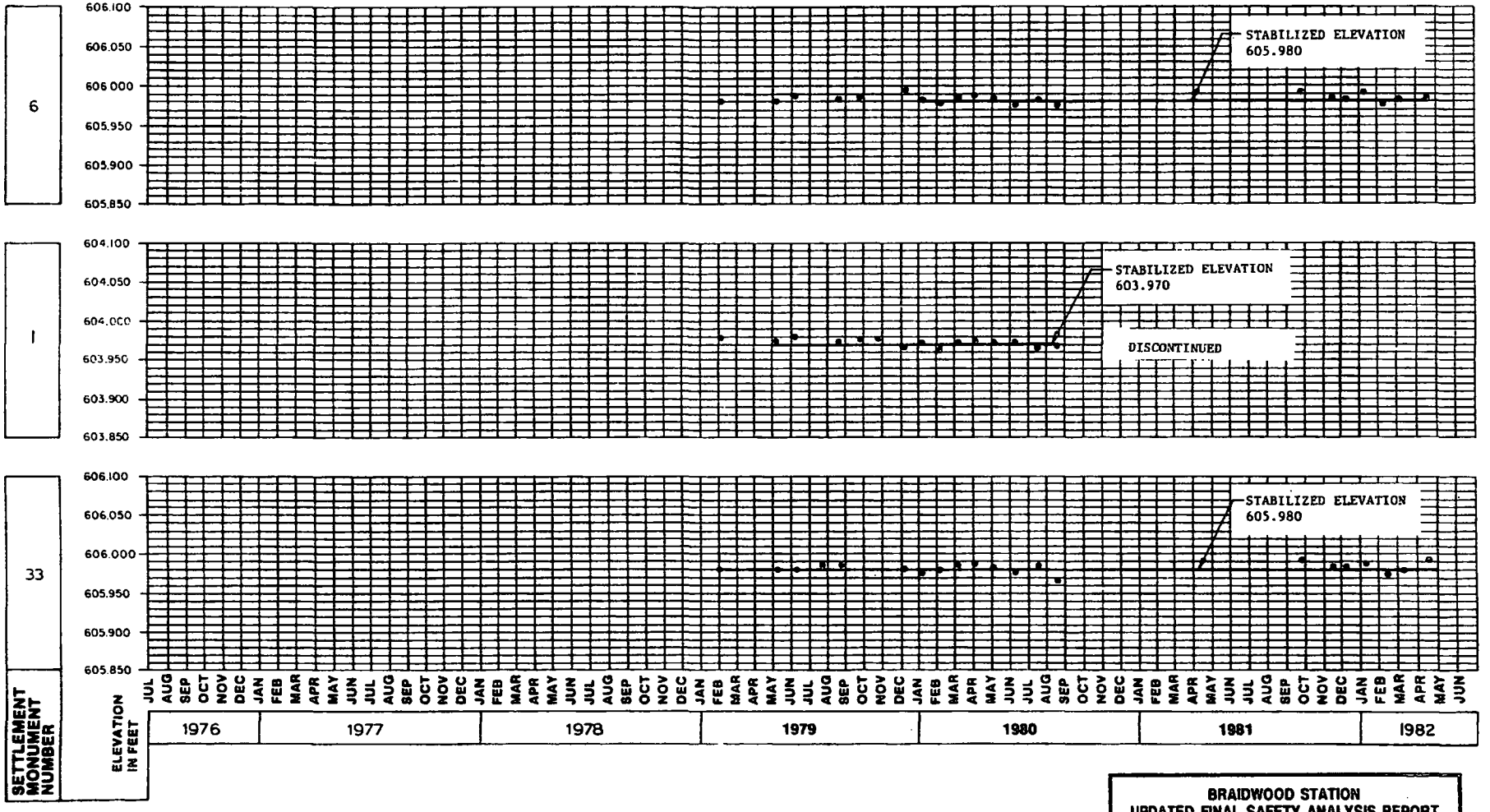
LOG OF BORING MP-38
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-279

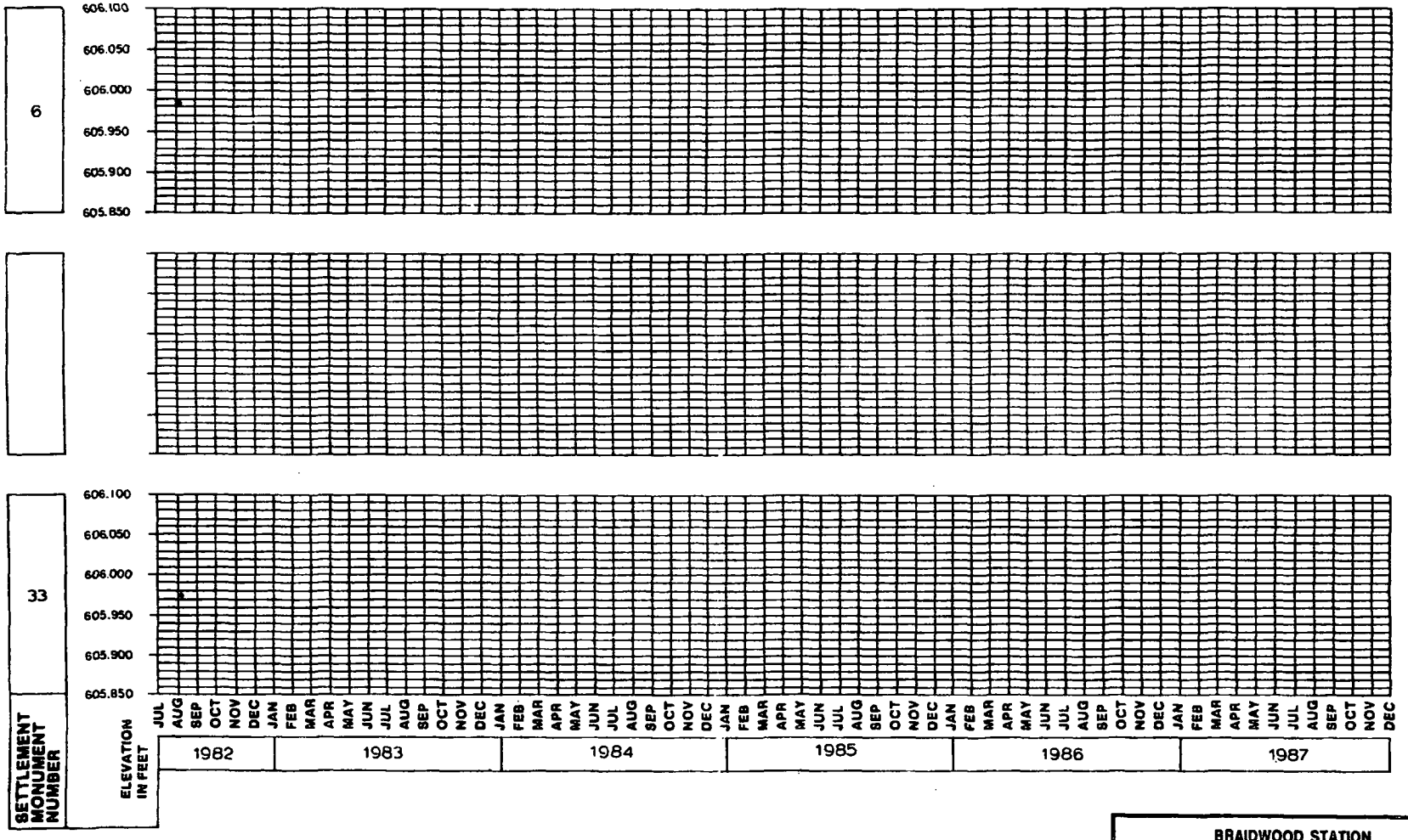
SETTLEMENT PLOTS FOR MONUMENTS 43, 44, 21



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-280

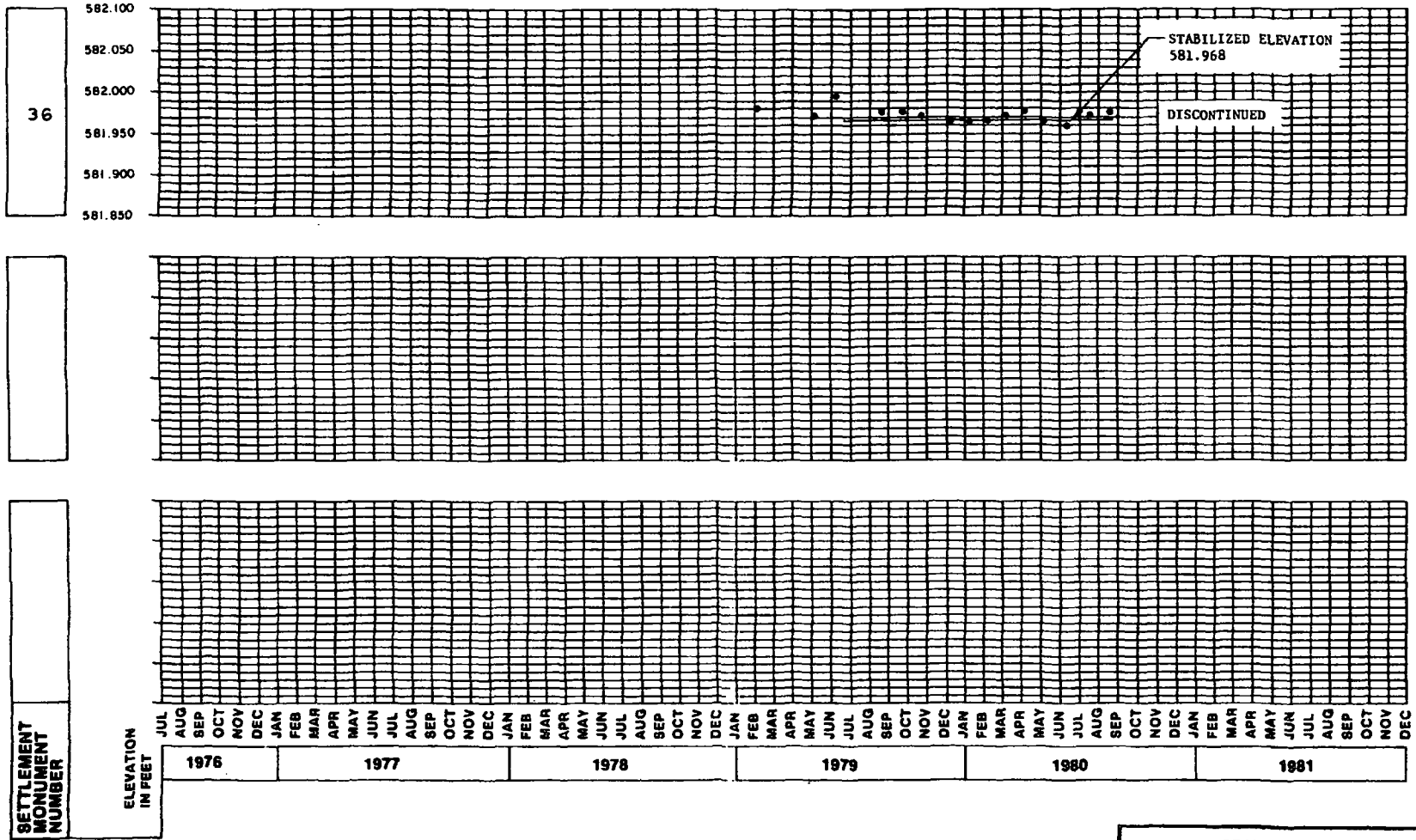
SETTLEMENT PLOTS FOR MONUMENTS 6, 1, 33
(SHEET 1 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-280

SETTLEMENT PLOTS FOR
MONUMENTS 6, 1, 33
(SHEET 2 OF 2)

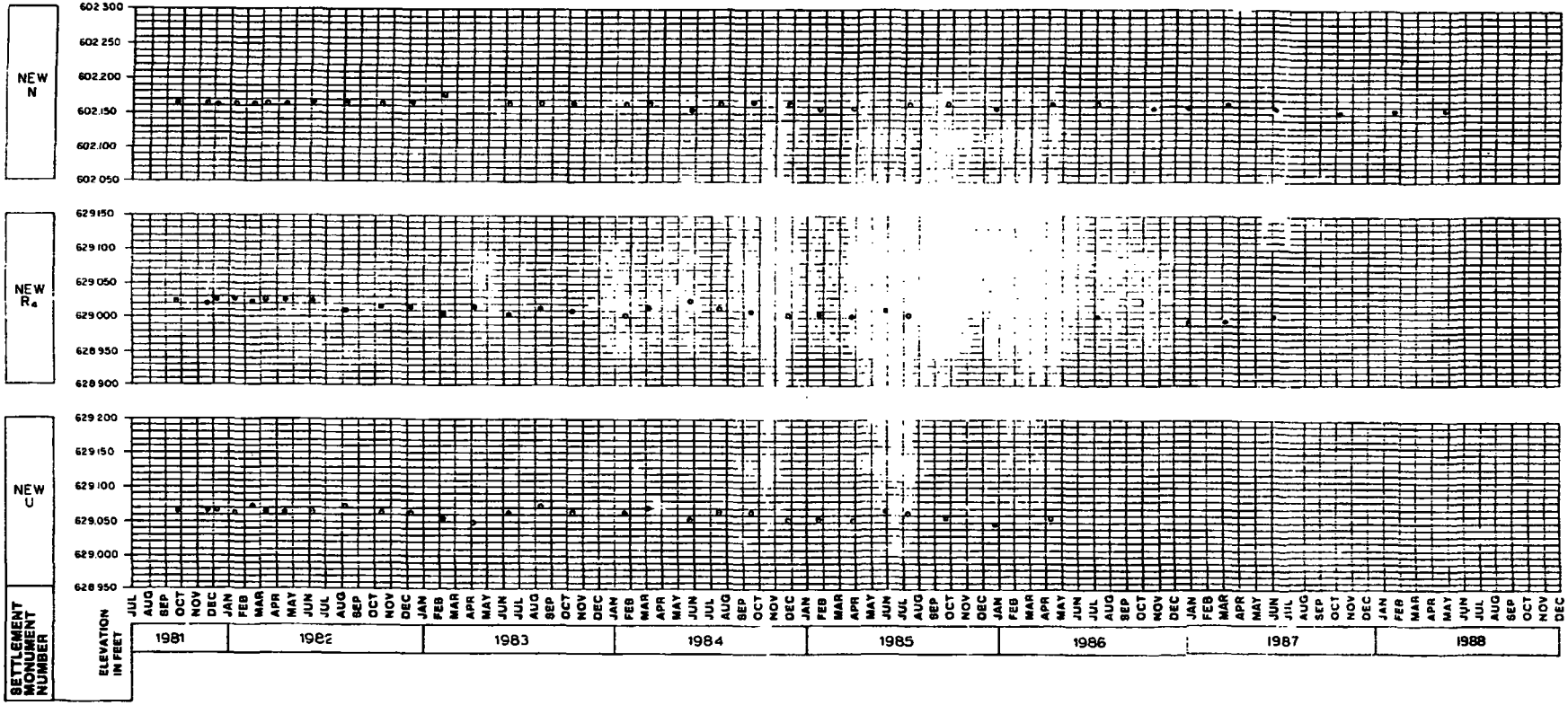


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-281

SETTLEMENT PLOT FOR
MONUMENT 36

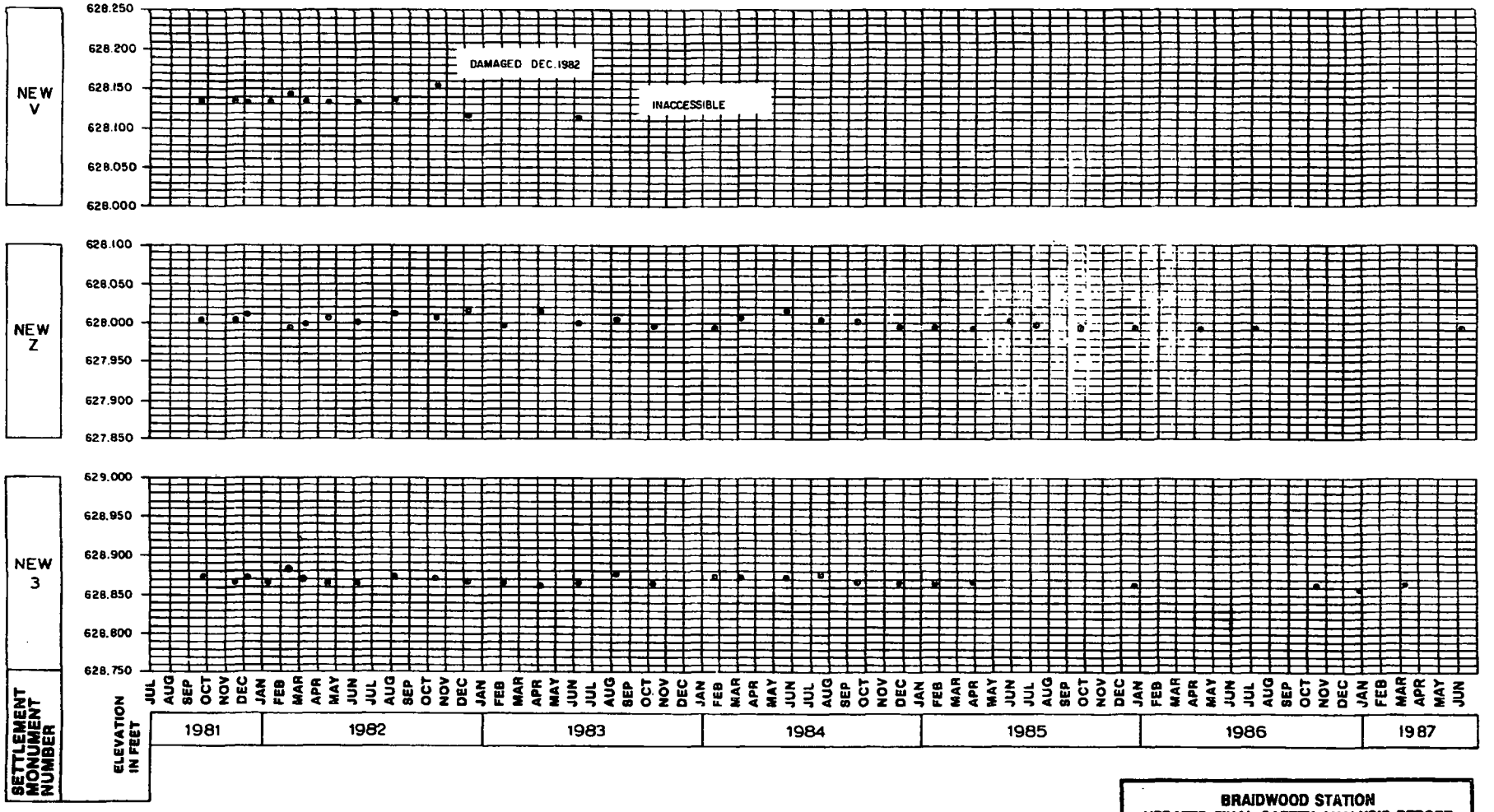
Figure 2.5-282 Redacted



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-283

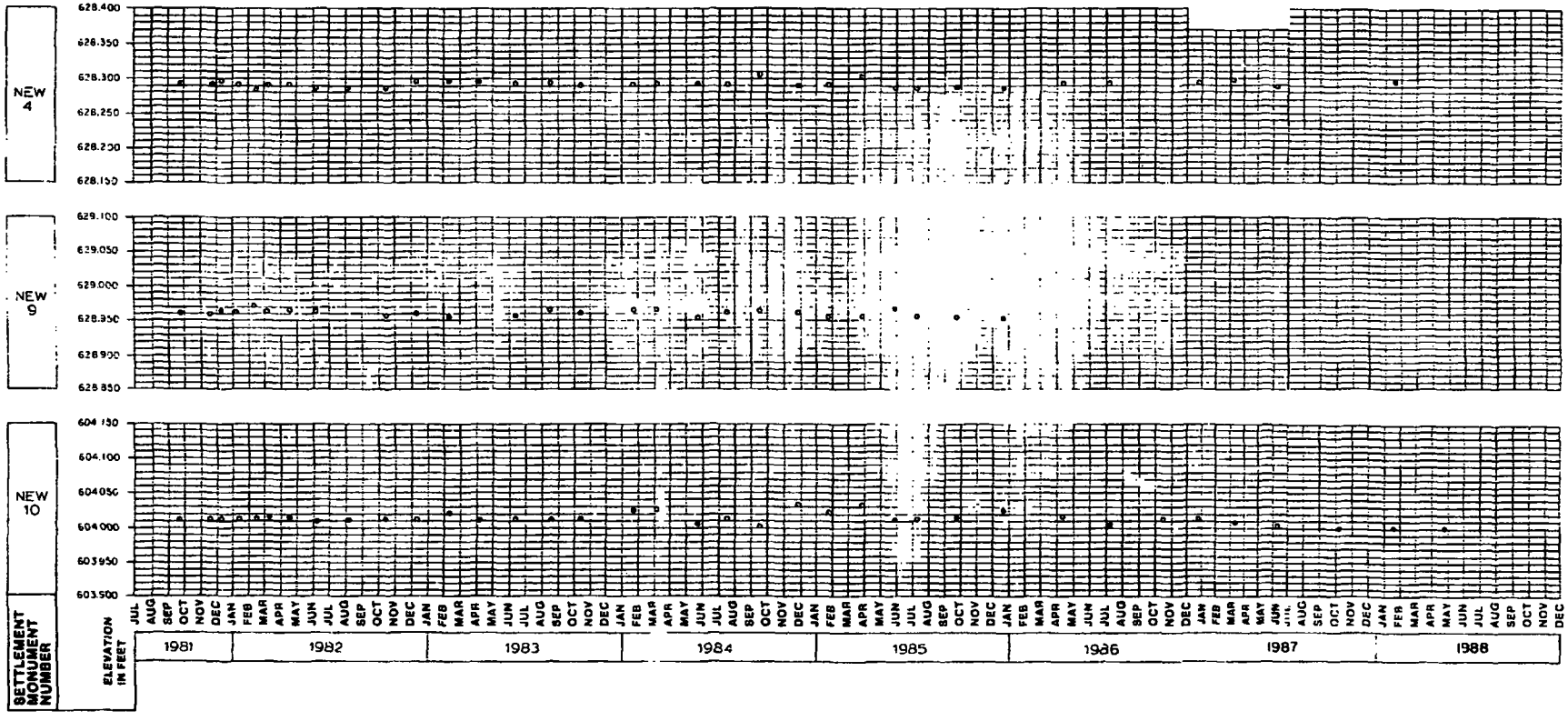
SETTLEMENT PLOTS FOR
NEW MONUMENTS N, R4, U



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-284

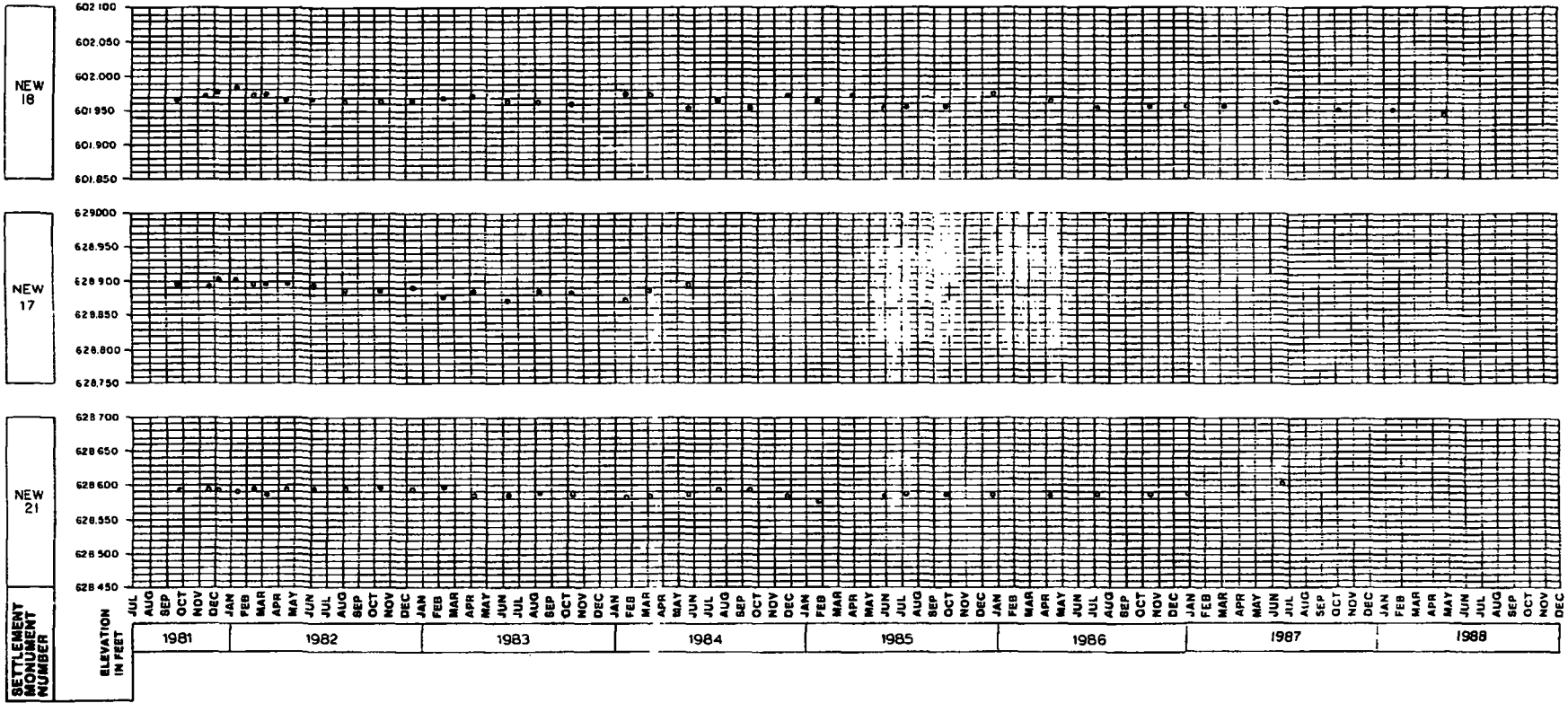
SETTLEMENT PLOTS FOR
NEW MONUMENTS V, Z, 3



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-285

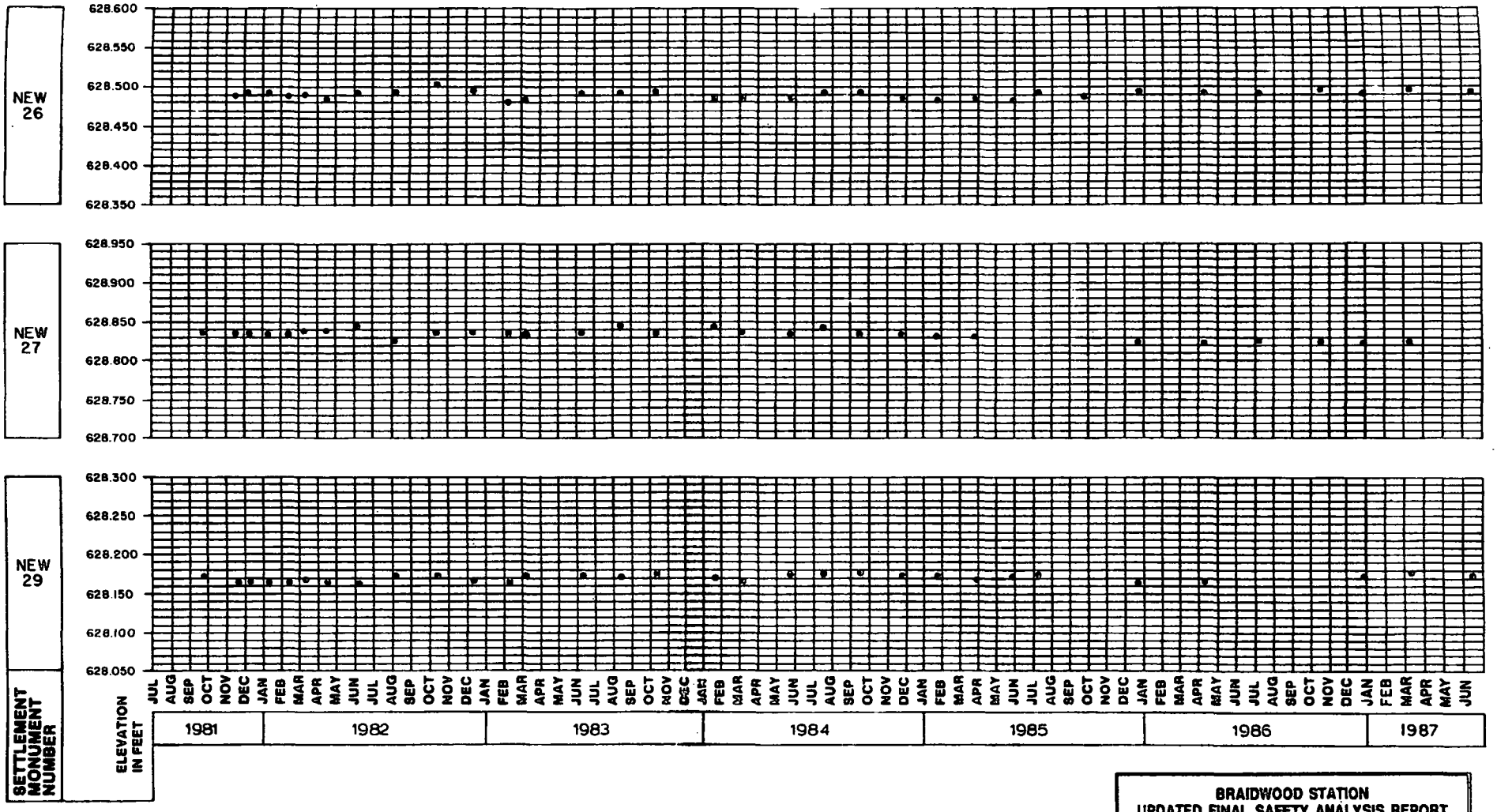
SETTLEMENT PLOTS FOR
NEW MONUMENTS 4, 9, 10



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-286

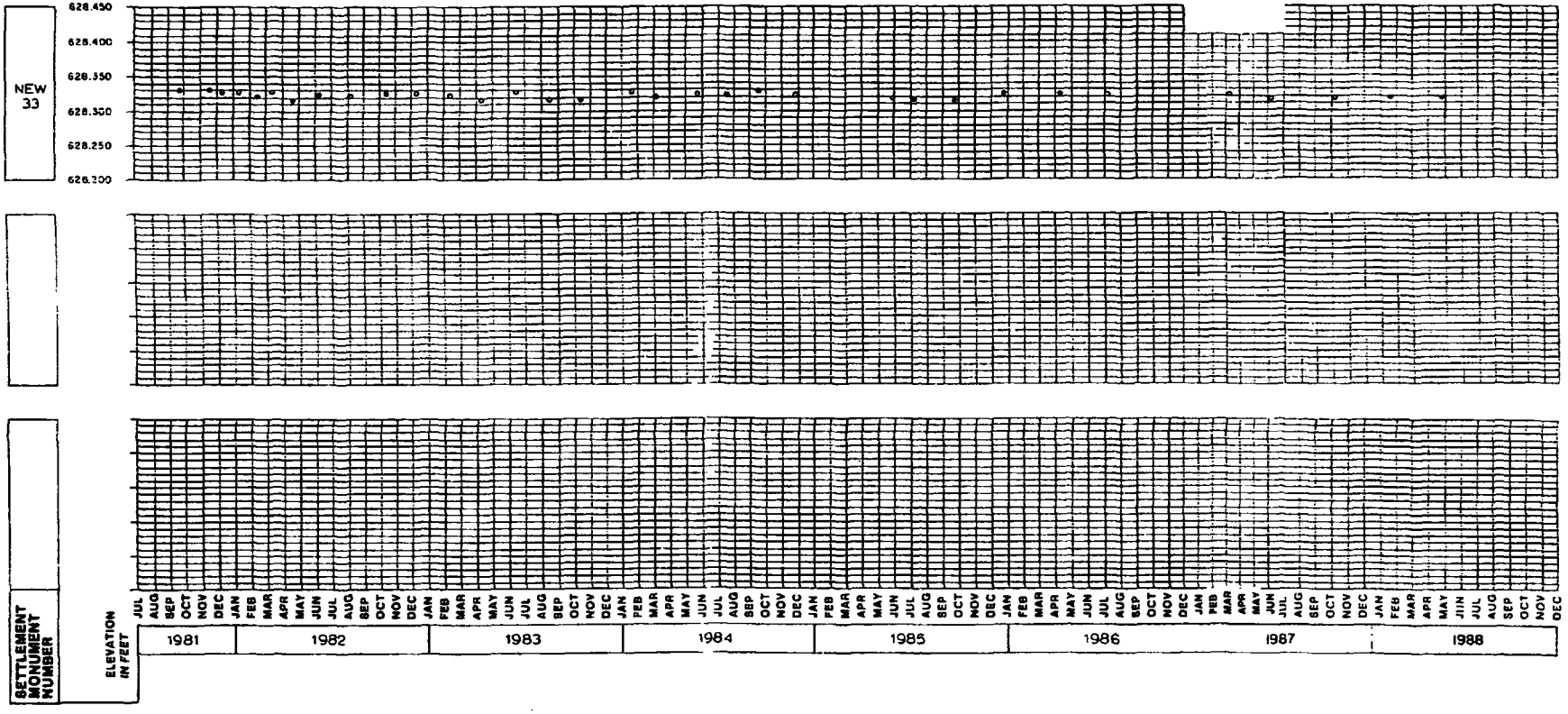
SETTLEMENT PLOTS FOR
NEW MONUMENTS 18, 17, 21



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-287

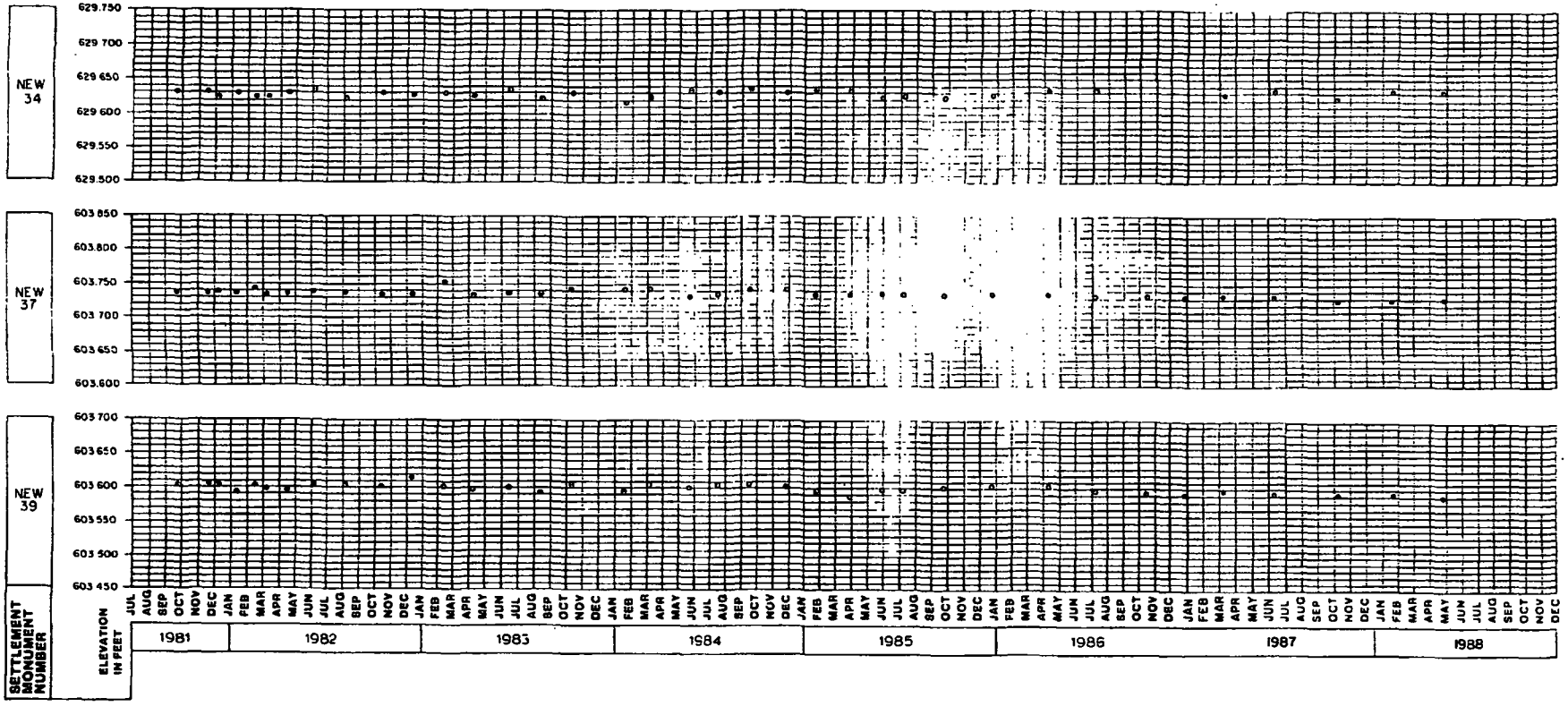
SETTLEMENT PLOTS FOR
NEW MONUMENTS 26, 27, 29



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-288

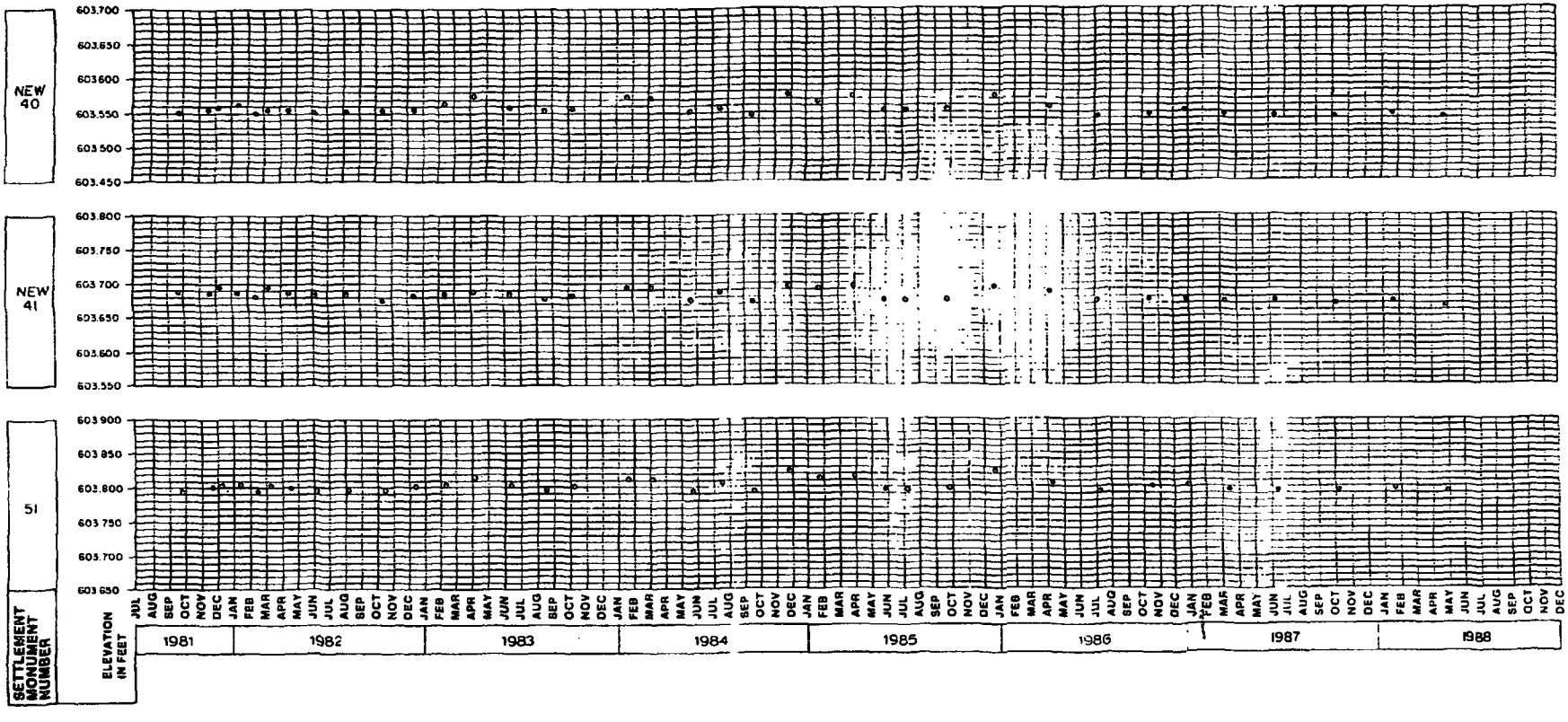
SETTLEMENT PLOT FOR
NEW MONUMENT 33



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-289

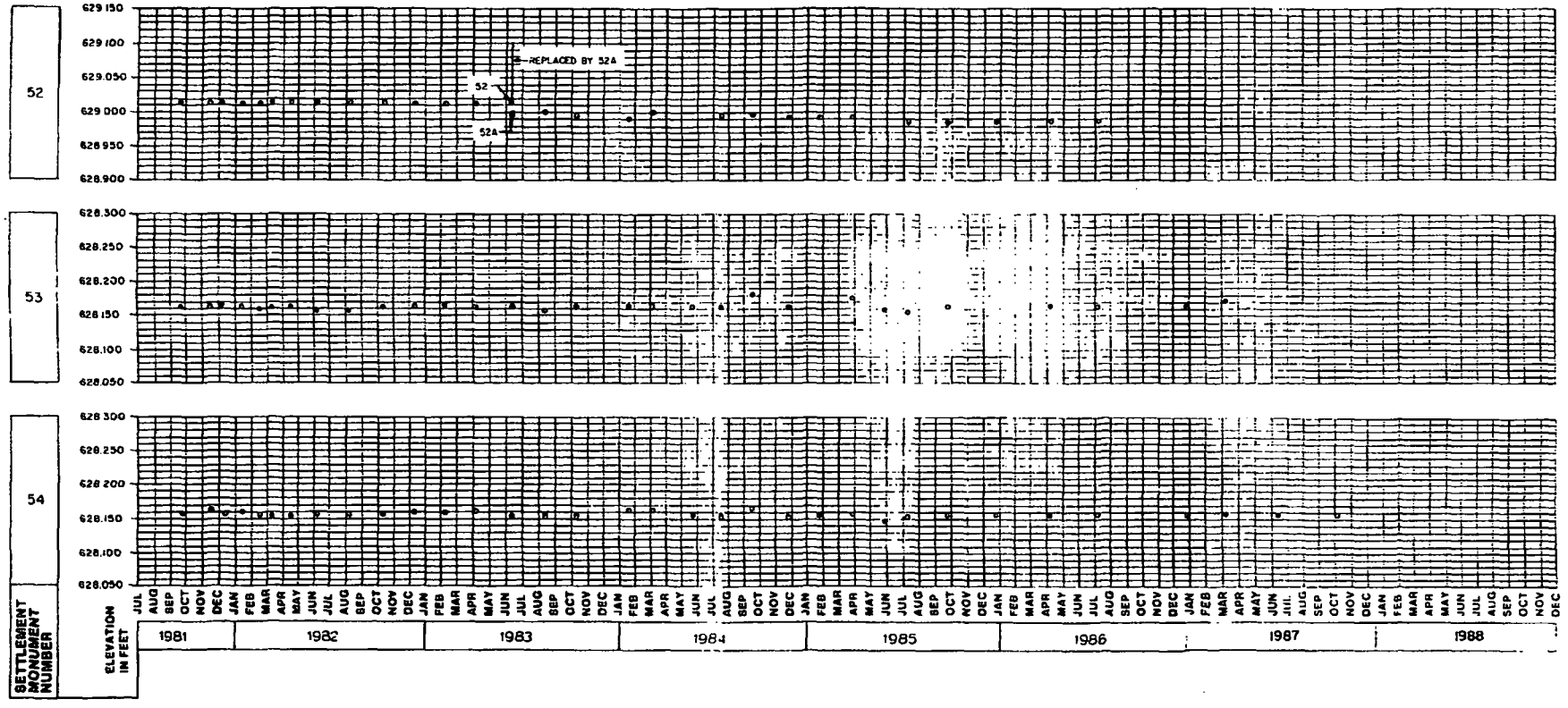
SETTLEMENT PLOTS FOR
NEW MONUMENTS 34, 37, 39



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-290

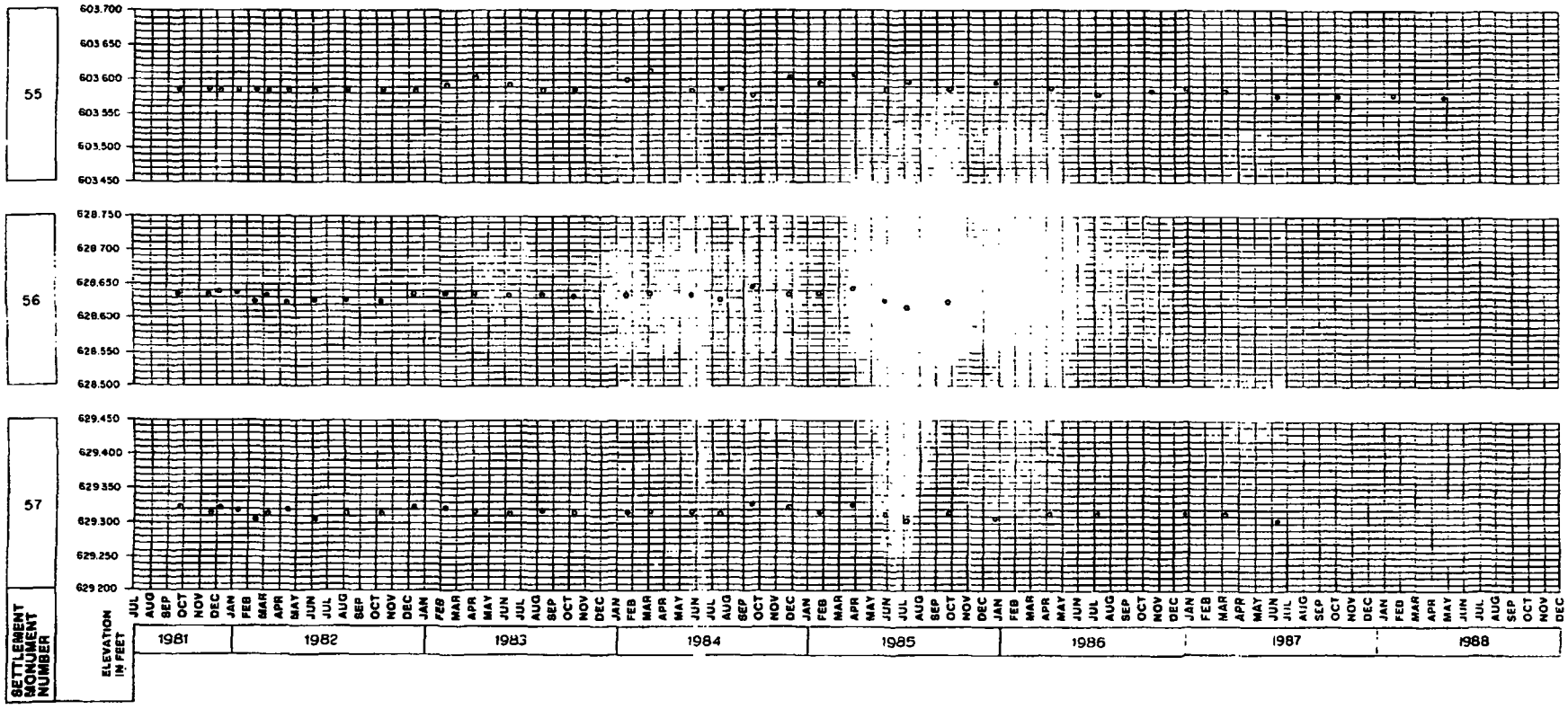
SETTLEMENT PLOTS FOR
MONUMENT 51 AND
NEW MONUMENTS 40, 41



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-291

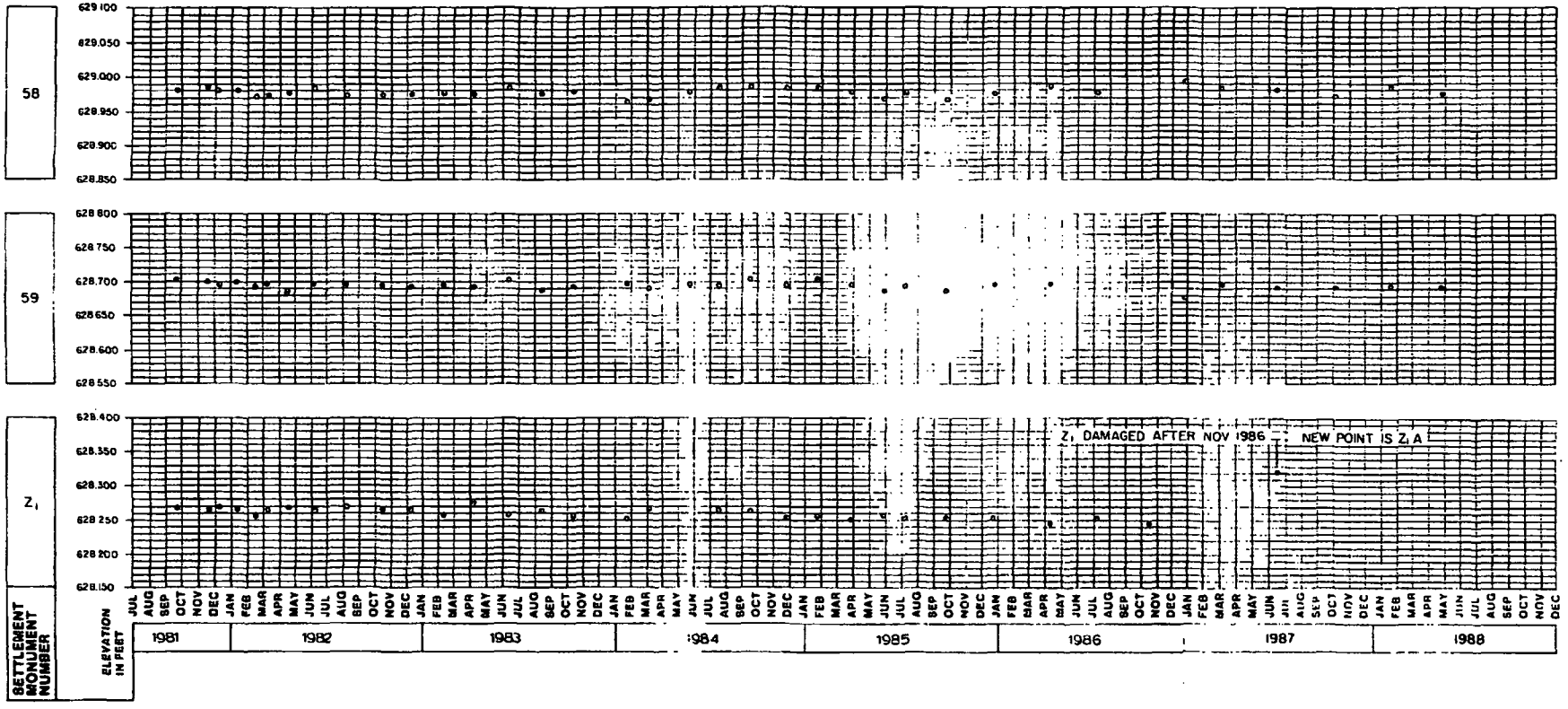
SETTLEMENT PLOTS FOR MONUMENTS 52, 53, 54



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-292

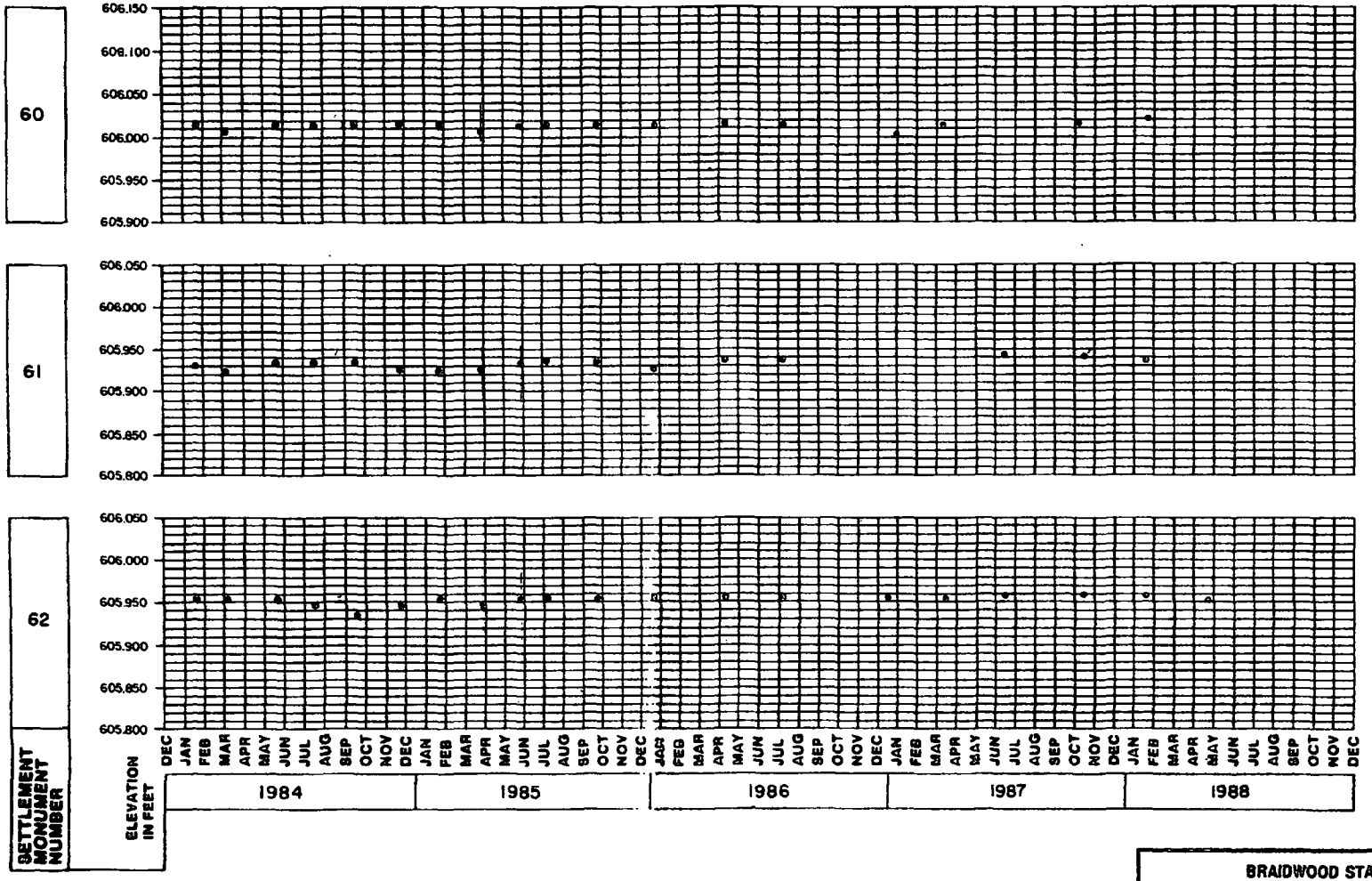
SETTLEMENT PLOTS FOR
MONUMENTS 55, 56, 57



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-283

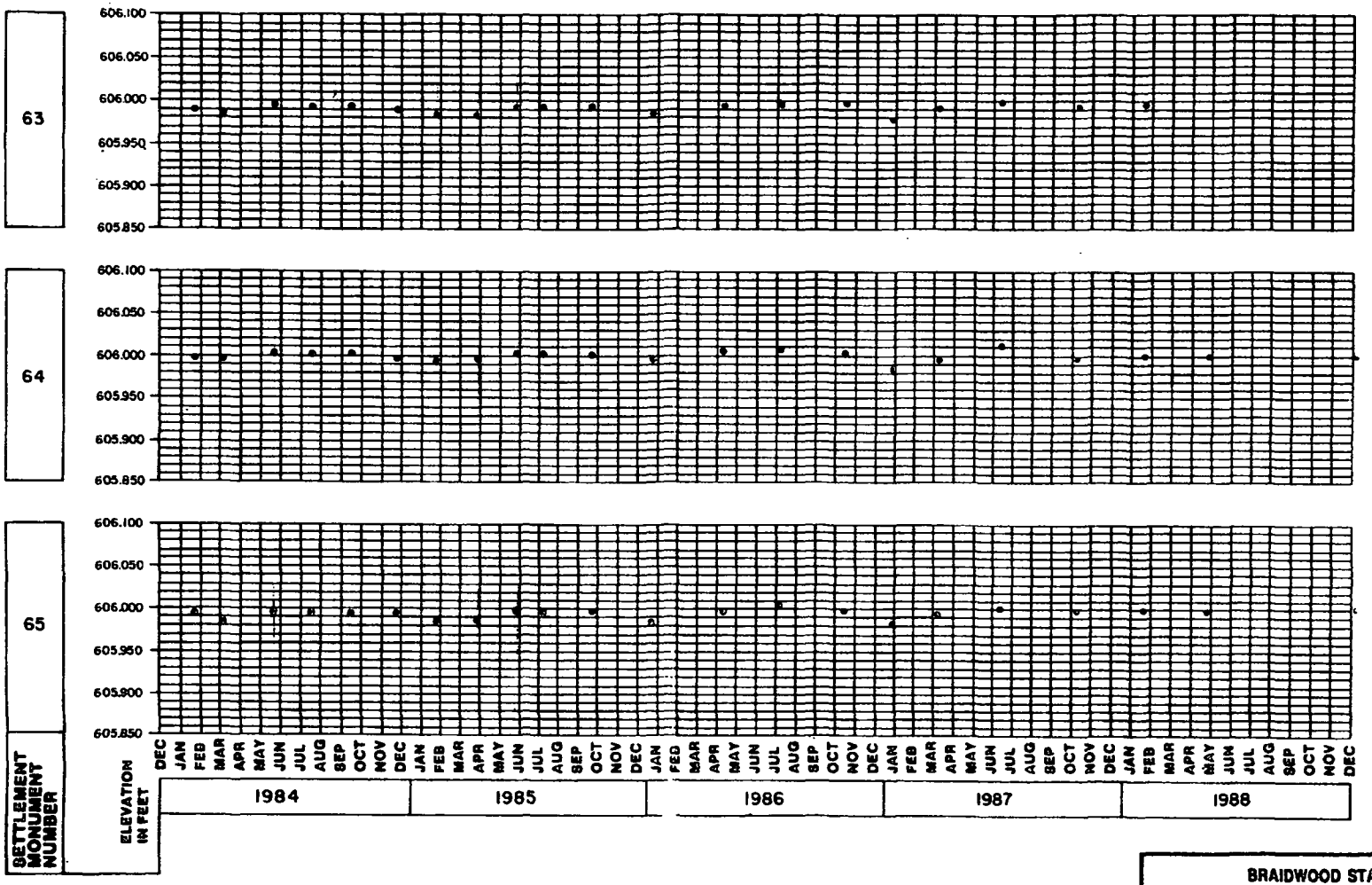
SETTLEMENT PLOTS FOR MONUMENTS 58, 59, Z_1



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-294

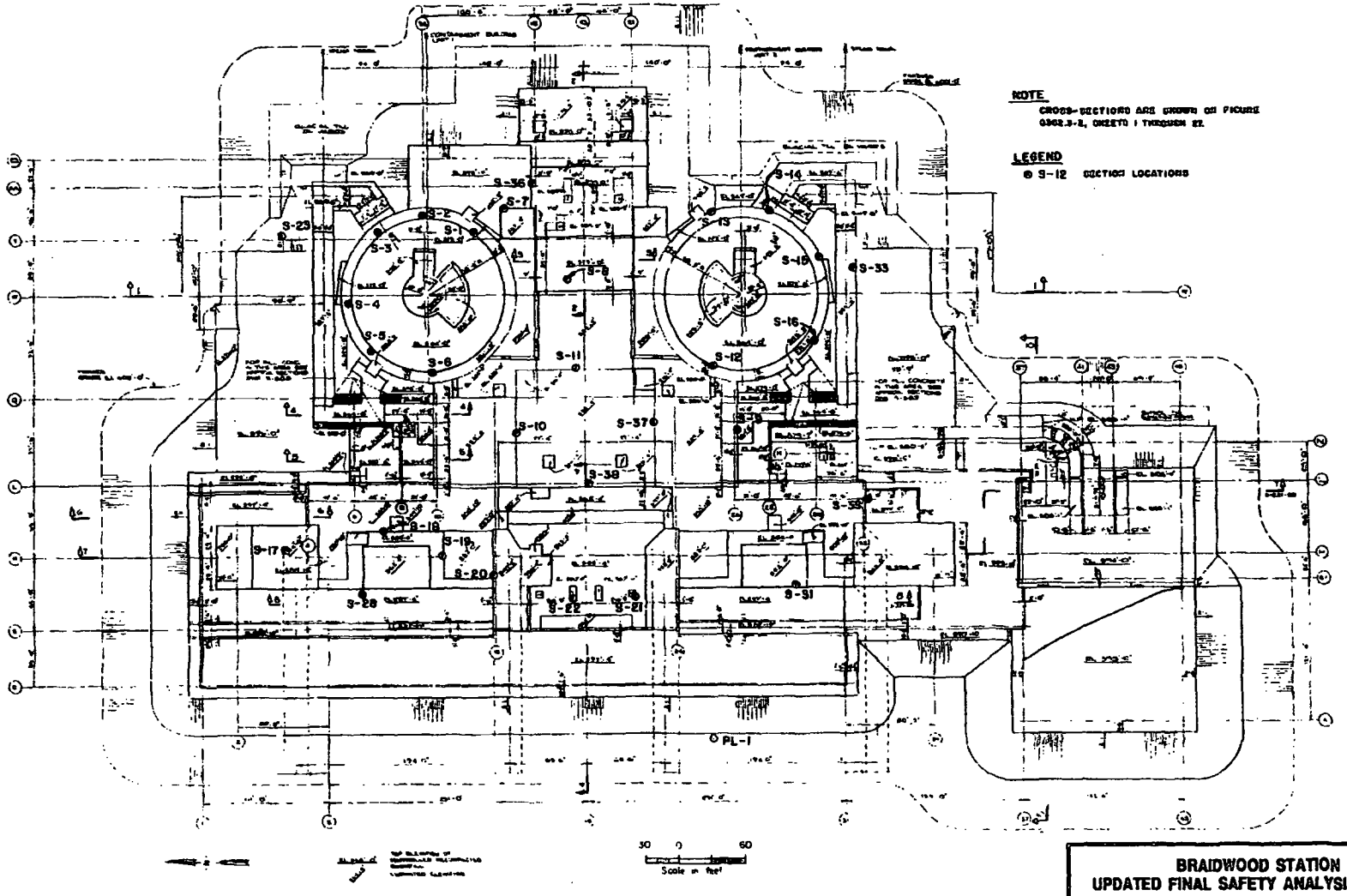
SETTLEMENT PLOTS FOR MONUMENTS 60, 61, 62



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-295

SETTLEMENT PLOTS FOR MONUMENTS 63, 64, 65

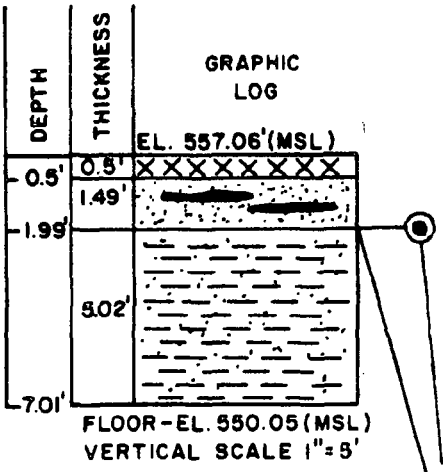


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-296

LOCATIONS OF
MAPPED GEOLOGIC SECTIONS

SECTION 1
UNIT 1, EAST PORTION OF REACTOR PERIMETER WALL



DESCRIPTION

MUD MAT

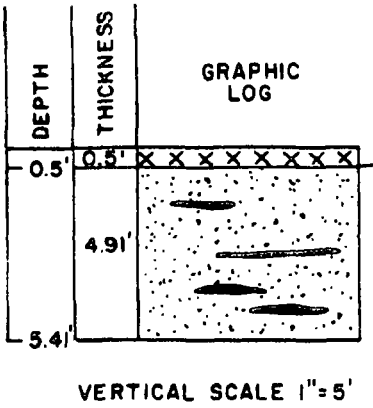
CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray to grayish-brown, fine to medium grained, loosely cemented, micaceous, sandstone; thin to medium bedded, some cross-bedding, jointed, slightly calcareous, scattered coal seams up to 1-inch thick.

CONTROL POINT: S-1
COORDINATES: 66 R, 4's of 45°
ELEVATION: 555.07' (MSL)

SILTSTONE - Gray to light gray, slightly sandy, shaley, micaceous, finely laminated, blocky siltstone.

NOTES: LOCATION OF SECTION 1 IS SHOWN ON FIGURE 2.5-296

SECTION 2
UNIT 1, NE PORTION OF REACTOR PERIMETER WALL



DESCRIPTION

MUD MAT

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray to grayish-brown, fine to medium grained, loosely cemented, micaceous sandstone; thin to medium bedded, some cross-bedding, jointed, scattered coal seams up to 1/2-inch thick

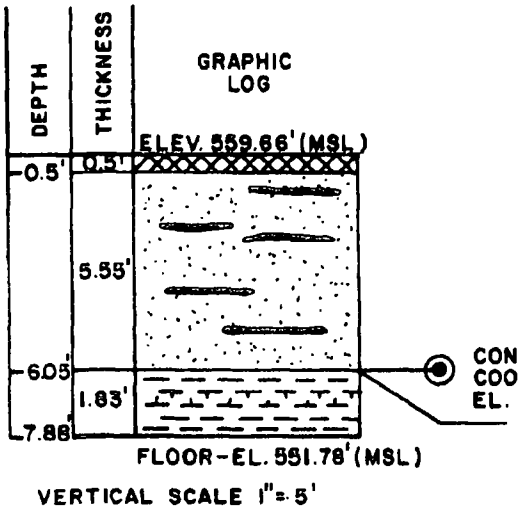
NOTES:
1) NO CONTROL POINT WAS USED IN THIS SECTION AS IT WAS ALL CHANNEL SANDSTONE.
2) LOCATION OF SECTION 2 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 1 OF 27)

SECTION 3
UNIT 1, REACTOR PERIMETER NE WALL



MUD MAT

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER

CHANNEL SANDSTONE

Gray to gray-brown, fine to medium grained, slightly calcareous sandstone; loosely cemented, a few scattered clay layers up to 1/2" thick, coal seams to 1-inch thick, clay-filled joints, some cross-bedding.

SILTSTONE -

Gray to light gray, slightly sandy, shaley, micaceous, blocky, siltstone: finely laminated, some coal slivers, calcareous in places.

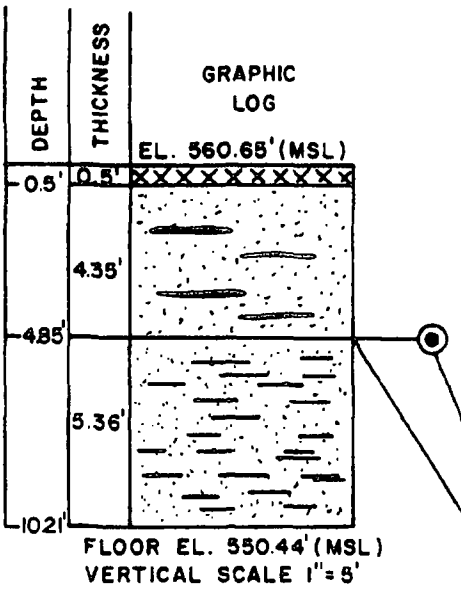
NOTE: LOCATION OF SECTION 3 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 2 OF 27)

SECTION 4
UNIT 1, NORTH PORTION OF REACTOR PERIMETER WALL



DESCRIPTION

MUD MAT
CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray to gray-brown, fine to medium grained, slightly cross-bedding, a few clay filled joints, clay layers up to ½" thick, coal seams up to 1" thick.

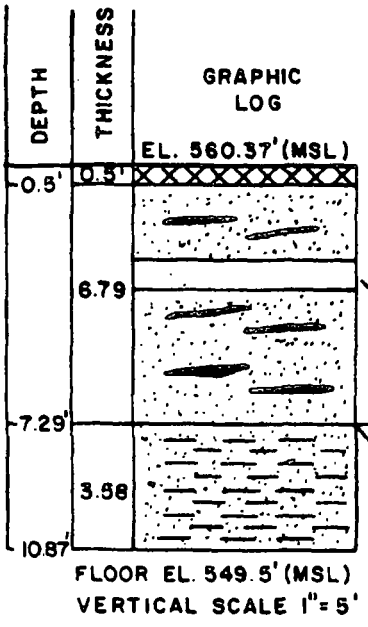
CONTROL POINT: S-4
COORDINATES: 66'R, 2-6' WEST of 270°
ELEVATION: 555.80' (MSL)

SILTSTONE - Gray to light gray, slightly sandy, shaley, micaceous, blocky siltstone; finely laminated, some coal slivers, calcareous in places.

NOTE: LOCATION OF SECTION 4 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION UPDATED FINAL SAFETY ANALYSIS REPORT
FIGURE 2.5-297 GEOLOGIC SECTIONS (SHEET 3 OF 27)

SECTION 5
UNIT 1, NORTHWEST PORTION OF REACTOR PERIMETER WALL



DESCRIPTION

MUDMAT
CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray, fine to medium grained, fairly well cemented sandstone; occasional cross-bedding, scattered joints; coal seams up to 1.5 inches thick. Petrified log; 0.8 ft. thick, brown, crumbly composed of lignite.
CONTROL POINT: S-5
COORDINATES: 67'R, 11'N of 216°
ELEVATION: 553.08'

SILTSTONE - Gray to lt. gray, slightly sandy, micaceous, shaley, siltstone; some laminations

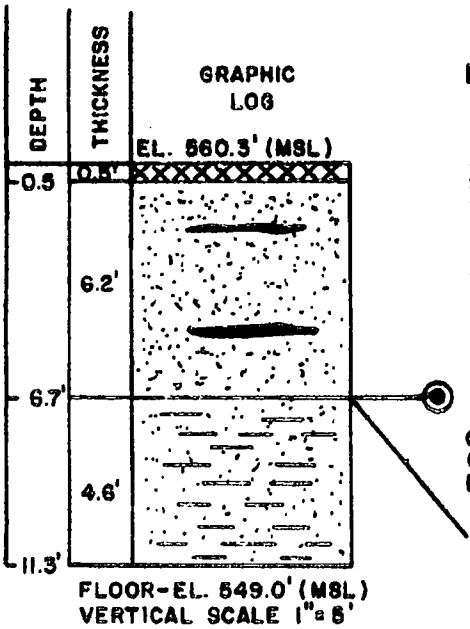
NOTE: LOCATION OF SECTION 5 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 4 OF 27)

SECTION 6
UNIT I, WEST PORTION OF REACTOR PERIMETER WALL



DESCRIPTION

MUD MAT
CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray, fine to medium grained, well-cemented sandstone; medium- to thickly-bedded, a few coal seams to 1/2" thick, scattered joints.

CONTROL POINT: S-6
COORDINATES: 68'R, 20'S of 199°
ELEVATION: 553.60' (MSL)

SILTSTONE - Gray to lt. gray, slightly sandy, micaceous, shaley siltstone; somewhat blocky.

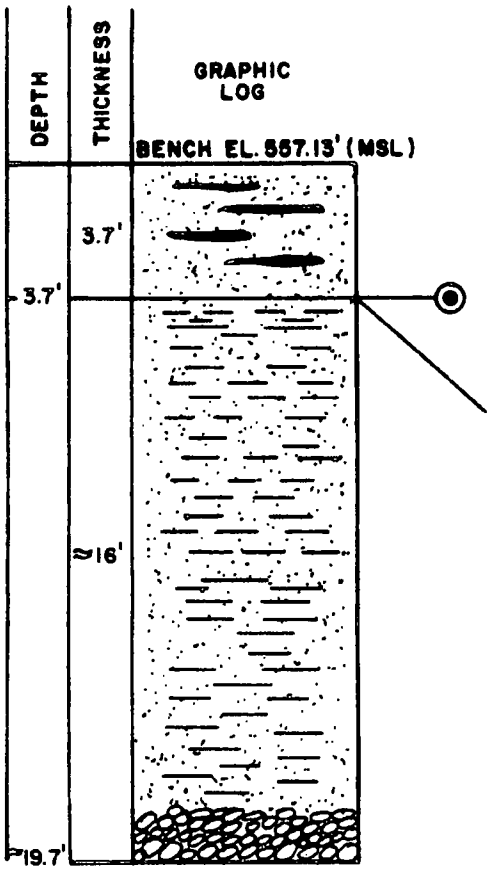
NOTE: LOCATION OF SECTION 6 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 5 OF 27)

SECTION 7
UNIT 1, CIRCULATING COOLING WATER
EAST WALL



VERTICAL SCALE 1"= 5'

DESCRIPTION

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER

CHANNEL SANDSTONE - Gray, fine-grained, micaceous, somewhat friable, thin-bedded sandstone; abundant coal seams up to 1-inch thick; sandstone beds have an apparent dip of 4° to the south.

CONTROL POINT S-7
COORDINATES: 85'R, 4'S of 45°
EL. 553.43' (MSL)

SILTSTONE - Light gray, slightly sandy, shaley, micaceous siltstone; blocky, calcareous in some places, widely scattered thin coal seams, badly slaked in some areas.

RUBBLE COVERING FLOOR

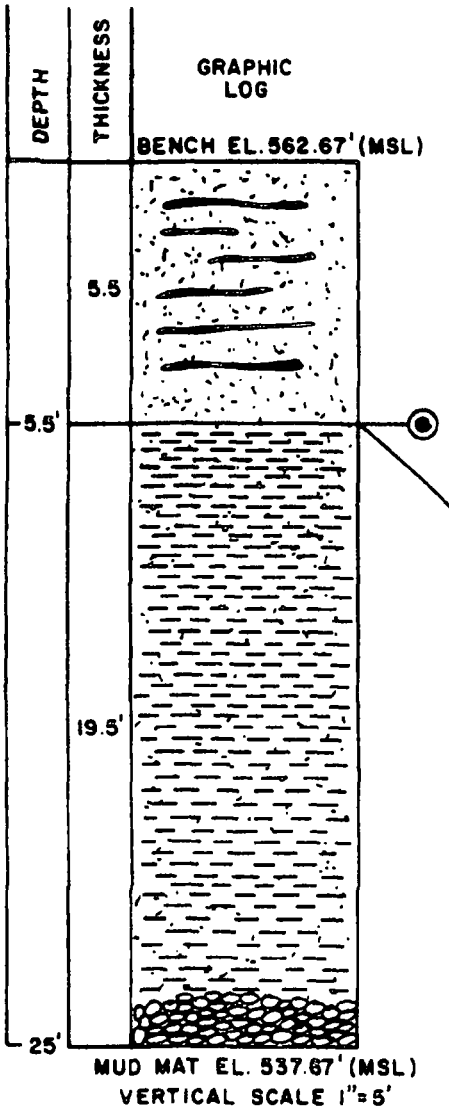
NOTE: LOCATION OF SECTION 7 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 6 OF 27)

SECTION 8
EAST WALL OF AUXILIARY BUILDING



DESCRIPTION

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray, fine- to medium-grained, micaceous, thin-bedded sandstone; numerous coal seams to 1" thick. Channel sandstone pinches out to south of measured section.

CONTROL POINT S-8
COORDINATES: S 30+72, E 47+52
EL. 557.17' (MSL)

SILTSTONE - Light gray, sandy, shaley, micaceous, siltstone; calcareous in places, scattered thin coal seams, same slaking.

RUBBLE COVERING LOWER PORTION

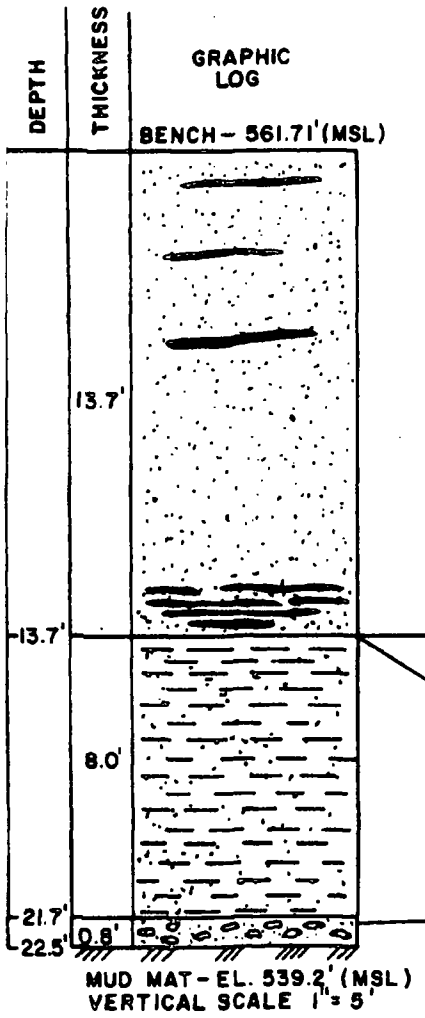
NOTE: LOCATION OF SECTION 8 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 7 OF 27)

SECTION 9
SOUTH WALL OF AUXILIARY BUILDING



DESCRIPTION

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray, fine to medium grained, micaceous, well cemented, thinly to thickly bedded sandstone; jointed, scattered coal seams to 2" thick, occasional cross-bedding.

Bottom 1-2' thin bedded with abundant coal seams
CONTROL POINT: S-9
COORDINATES: S 32+18, E 46+30.5
ELEVATION: 548.01'

SILTSTONE - Gray to light gray, slightly sandy, shaley, micaceous siltstone; blocky, finely laminated, jointed, calcareous in places.

CONGLOMERATE - Siderite conglomerate, pebbles 1/4" to 3", some chunks of coal, sandstone matrix. The siderite clasts are sub-angular to angular, indurated.

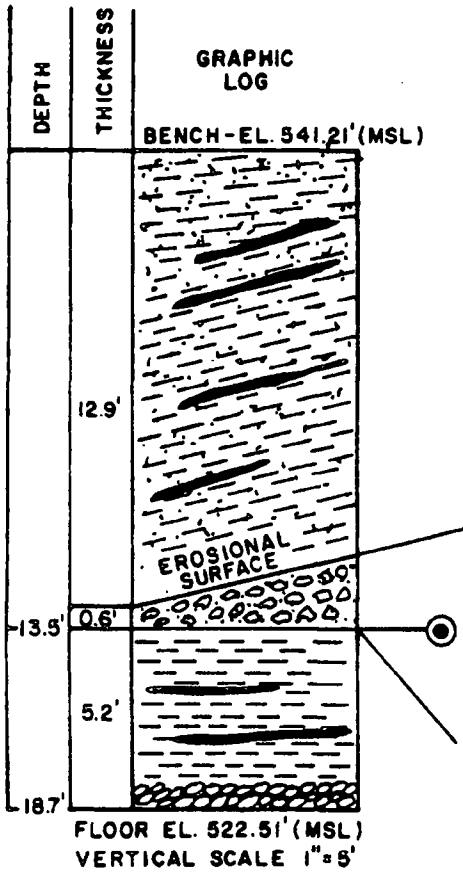
NOTE: LOCATION OF SECTION 9 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 8 OF 27)

SECTION 10
NORTH WALL OF AUXILIARY BUILDING



DESCRIPTION

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
SILTSTONE - Gray to light gray, shaley, micaceous siltstone, blocky, some portions calcareous, some areas laminated, scattered sand lenses 1 to 2 inches in thickness, coal seams to 1/2-inch. Bedding has an apparent dip of 15° to west.

CONGLOMERATE + COAL LENS - 0.4' coal lens; pebble conglomerate, pebbles 1/4 to 2-inches in diameter in sandstone matrix.

CONTROL POINT S-10
COORDINATES: S 30+24.33, E 46+23
ELEVATION: 527.71'

SILTSTONE, as above flat bedded.

RUBBLE

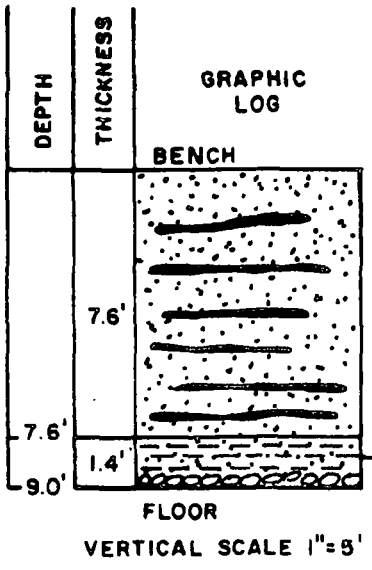
NOTE: LOCATION OF SECTION 10 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 9 OF 27)

SECTION 13
UNIT 2, EAST PORTION OF REACTOR PERIMETER WALL



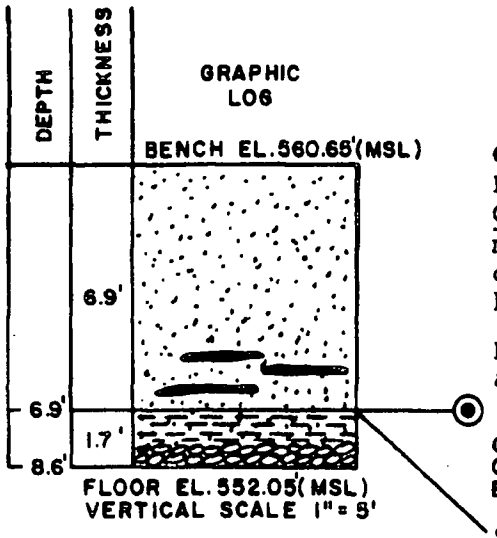
DESCRIPTION

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray, fine to medium grained, micaceous, well cemented sandstone; top 4 ft. medium bedded, thinly bedded in bottom 3 ft., abundant coal seams to 1½-inch thick, sandstone friable in bottom 3 ft.

SILTSTONE - Gray, slightly sandy, shaley, micaceous siltstone; occasionally laminated, calcareous in places, scattered coal stringers, badly slaked, bottom portion rubble covered.

NOTES: 1) LOCATION OF SECTION 13 SHOWN ON FIGURE 2.5-296
2) CONTROL POINT COULD NOT BE LOCATED AFTER MAPPING BY SURVEYORS AND COULD NOT BE RESET AS WALLS WERE COVERED WITH PLASTIC SHEETING AND WIRE MESH.

SECTION 14
UNIT 2, EAST PORTION OF REACTOR PERIMETER WALL



DESCRIPTION

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray, fine to medium-grained, micaceous, well cemented sandstone; medium to thinly bedded with thin shale lenses.

Bottom 1 to 2 ft. thinly bedded with abundant coal seams up to 1-inch thick.

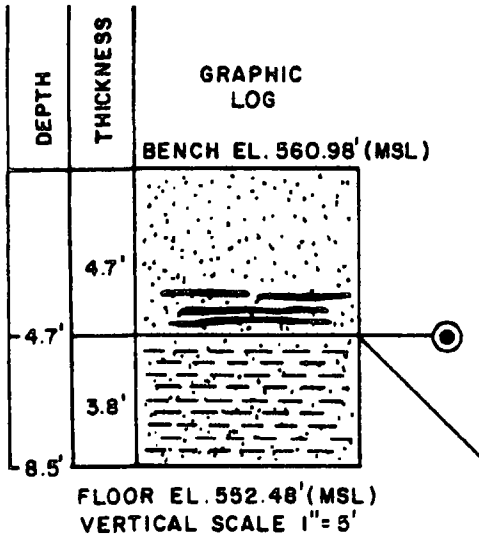
CONTROL POINT: S-14
COORDINATES: 84'3" R, 19'N of 216°
ELEVATION: 553.75' (MSL)

SILTSTONE - Gray, slightly sandy, micaceous, shaley siltstone; occasionaly laminated, calcareous in places, scattered coal stringers, jointed, badly slaked, rubble covering bottom portion.

NOTE: LOCATION OF SECTION 14 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION UPDATED FINAL SAFETY ANALYSIS REPORT
FIGURE 2.5-297 GEOLOGIC SECTIONS (SHEET 11 OF 27)

SECTION 15
UNIT 2, SOUTHEAST PORTION OF REACTOR PERIMETER WALL (OUTSIDE)



DESCRIPTION

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray, fine to medium-grained, micaceous, well cemented sandstone; top 3 ft. thickly bedded, bottom 1 to 1.5 ft. thinly bedded with abundant coal seams, some cross-bedding

CONTROL POINT: S-15
COORDINATES: 85'3" R, 13' SW of 234°
ELEVATION: 556.28' (MSL)

SILTSTONE - Gray, slightly sandy, micaceous, very shaley siltstone; occasionally laminated, calcareous in places, badly slaked, rubble covering bottom portion.

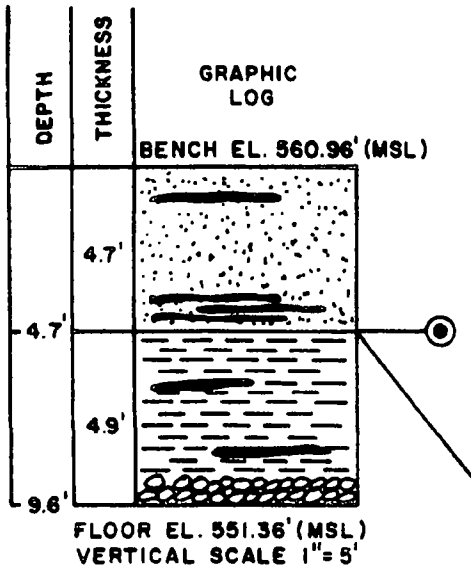
NOTE: LOCATION OF SECTION 15 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 12 OF 27)

SECTION 16
UNIT 2, SOUTHWEST PORTION OF REACTOR PERIMETER WALL (OUTSIDE)



DESCRIPTION

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray, fine to medium grained, micaceous, friable sandstone; top 3' thinly to medium bedded, jointed, scattered concretions and coal seams.

Bottom 1' thinly bedded with abundant coal seams to 1" thick, apparent dip of sandstone beds is 12° N

CONTROL POINT : S-16
COORDINATES: 83'3"R, 28'WEST of 272°
ELEVATION : 556.26' (MSL)

SILTSTONE - Gray, micaceous, blocky, jointed, shaley, slightly sandy siltstone; badly slaked, some laminations are calcareous in places, scattered coal stringers. Rubble covering bottom of section.

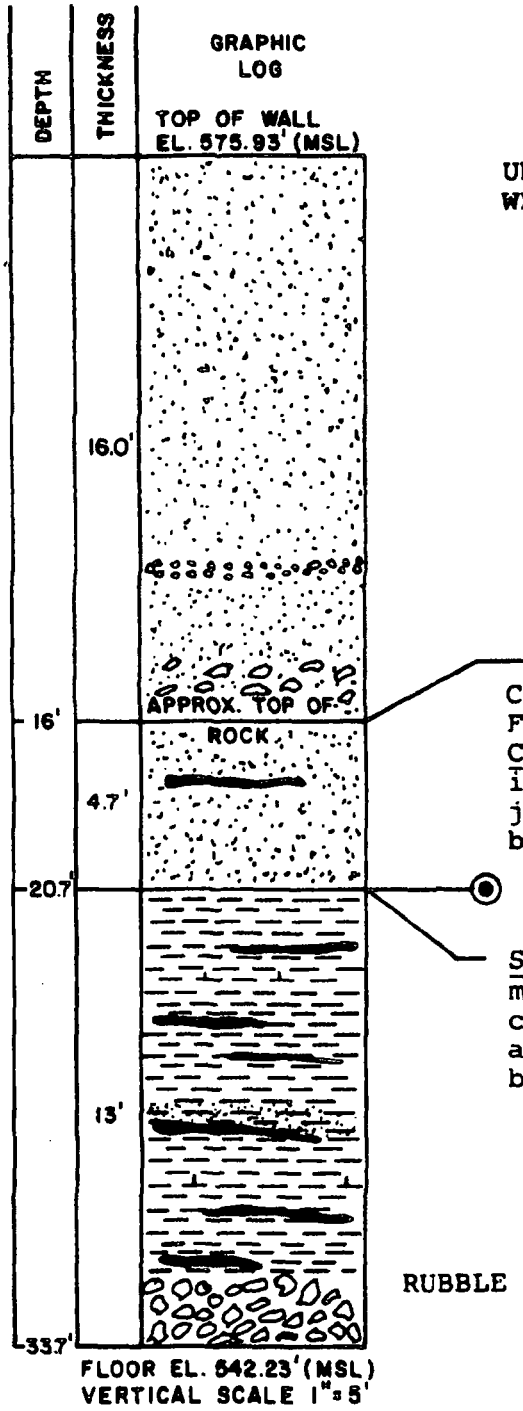
NOTE: LOCATION OF SECTION 16 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 13 OF 27)

SECTION 17
UNIT 1, NORTH WALL OF TURBINE BUILDING
(CIRCULATING WATER PIPE TRENCH)



DESCRIPTION

UNDIFFERENTIATED OVERBURDEN (2)
WEDRON FORMATION

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray, fine to medium grained, micaceous, well cemented, jointed sandstone; medium-to thickly-bedded, sparse to scattered coal seams.

CONTROL POINT: S-17
COORDINATES: S 28+05.5, E 44+87
ELEVATION: 565.23' (MSL)

SILTSTONE - Gray, slightly sandy, micaceous, shaley, blocky siltstone; calcareous in places; top 4' contains abundant coal seams up to 1/2" thick, badly slaked and weathered.

RUBBLE

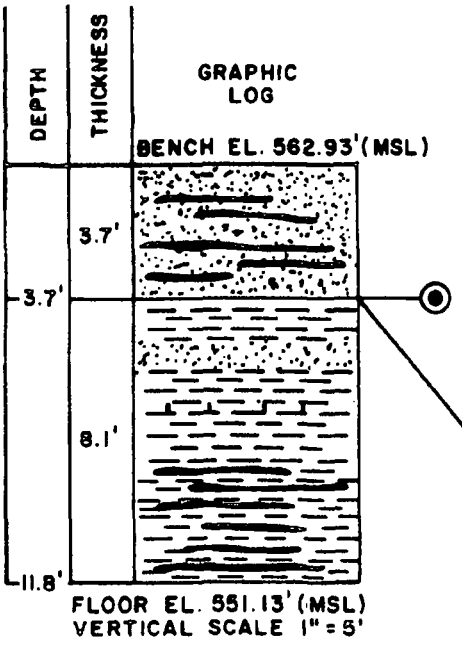
NOTES: 1) LOCATION OF SECTION 17 IS SHOWN ON FIGURE 2.5-296
2) OVERBURDEN COULD NOT BE MAPPED DUE TO STEEPNESS OF WALL.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 14 OF 27)

SECTION 18
UNIT 1, WEST WALL OF TURBINE BUILDING
(NORTH PORTION)



DESCRIPTION

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray, fine-to medium-grained, micaceous, well cemented, jointed sandstone; medium to thickly-bedded, scattered to abundant coal seams to 1" thick.

CONTROL POINT : S-18
COORDINATES : S 29+10, E 45+33
ELEVATION : 559.23' (MSL)

SILTSTONE - Gray, slightly sandy, micaceous, shaley, blocky siltstone; calcareous in places, badly slaked and weathered, abundant coal seams to 1/2" thick in bottom portion of section.

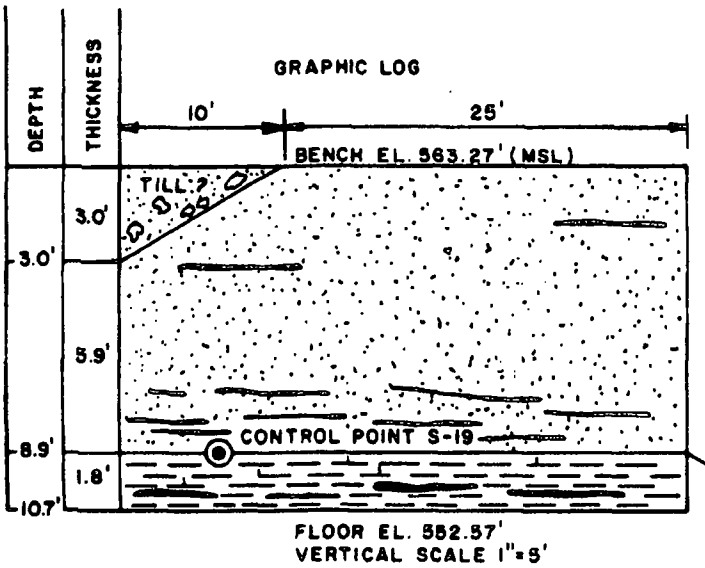
NOTE: LOCATION OF SECTION 18 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 15 OF 27)

SECTION 19
UNIT 1, NORTH WALL OF TURBINE BUILDING



CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray, fine to medium-grained, micaceous, well-cemented, jointed sandstone; medium to thickly-bedded, coal seams abundant near base.

COORDINATES: S 29+61, E 45+09
ELEVATION: 554.37' (MSL)

SILTSTONE - Gray, slightly sandy, micaceous, shaley, blocky siltstone; calcareous in places, badly slaked and weathered, coal seams to 1/2" thick in bottom portion of section.

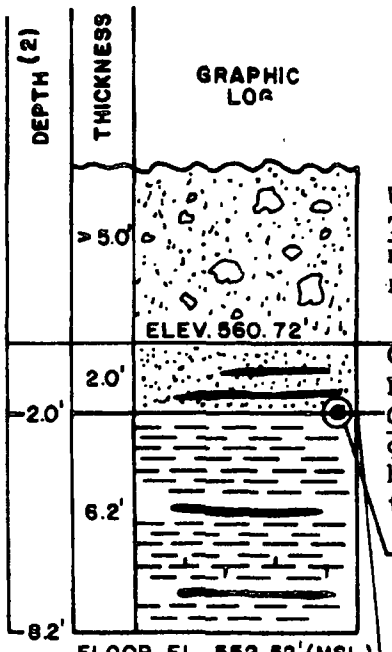
NOTE: LOCATION OF SECTION 19 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 16 OF 27)

SECTION 20
UNIT 1, NORTH WALL OF TURBINE BUILDING



DESCRIPTION

WEDRON FORMATION
TILL - Gray, silty, sandy clay till; mottled pink and brown. (Thickness not recorded)

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray, fine to medium-grained, micaceous, well cemented, medium bedded sandstone; scattered joints, scattered thin coal seams.

CONTROL POINT : S-20
COORDINATES : S 29 ÷ 98, E 44 ÷ 62
ELEVATION : 558.72' (MSL)

SILTSTONE - Light gray, slightly sandy, micaceous, shaley, blocky, laminated siltstone; calcareous in places, scattered coal stringers

NOTES: 1) LOCATION OF SECTION 20 IS SHOWN ON FIGURE 2.5-296
2) DEPTH SHOWN IS DEPTH BELOW WEDRON - CARBONDALE, CONTACT AS THICKNESS OF WEDRON WAS NOT RECORDED.

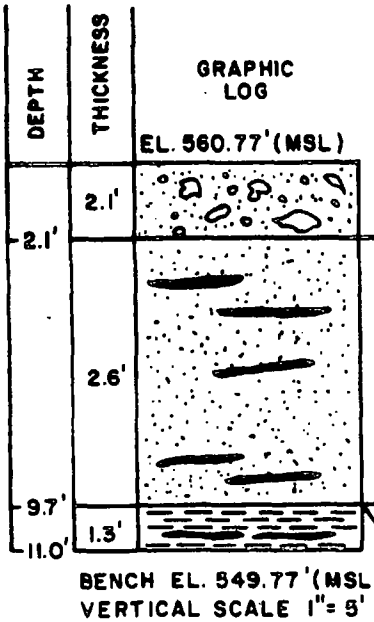
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 17 OF 27)

SECTION 21

UNIT 2, WEST WALL OF TURBINE BUILDING



DESCRIPTION

WEDRON FORMATION
TILL - Gray, silty, sandy clay with pink and brown mottling

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE- Gray, fine-to medium-grained, micaceous, well cemented, thin-to medium-bedded sandstone; scattered joints, scattered thin coal seams.

CONTROL POINT S-21
COORDINATES: S 31 + 41, E 44+65
ELEVATION: 551.07'

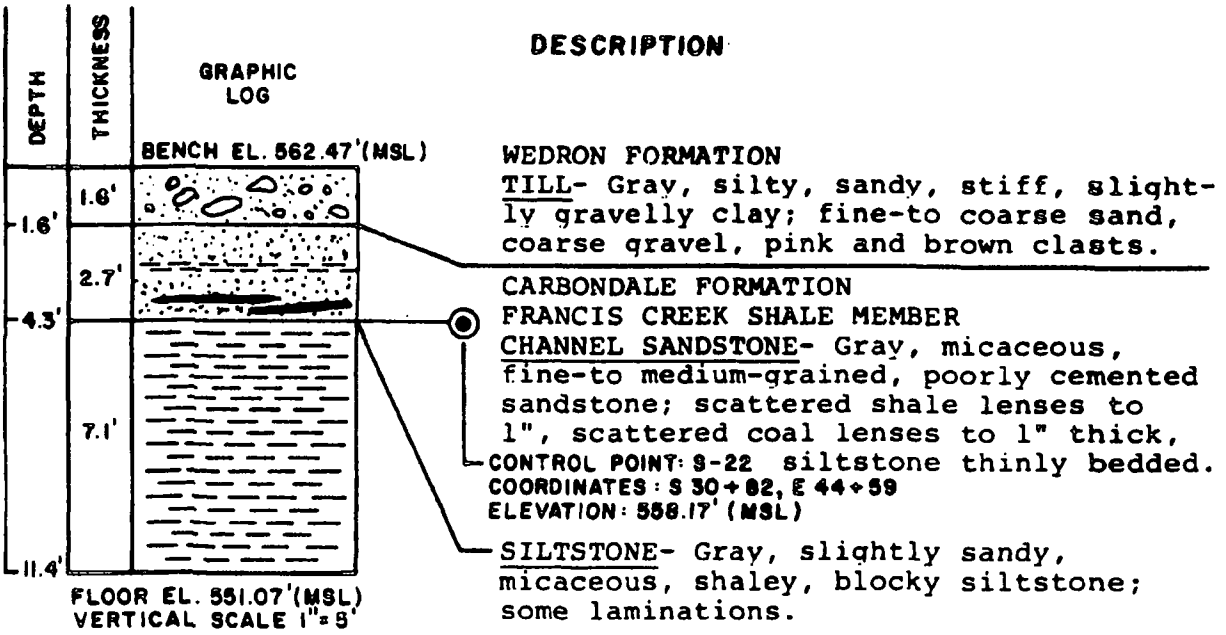
SILTSTONE- Light gray, slightly sandy, micaceous, shaley, blocky, laminated siltstone; calcareous in places, scattered coal stringers. The contact with the overlying channel sandstone has an apparent dip of 10° E.

NOTE: LOCATION OF SECTION 21 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION UPDATED FINAL SAFETY ANALYSIS REPORT
FIGURE 2.5-297 GEOLOGIC SECTIONS (SHEET 18 OF 27)

SECTION 22

UNITS 1&2 WEST WALL OF TURBINE BUILDING
(BETWEEN UNITS 1 & 2)

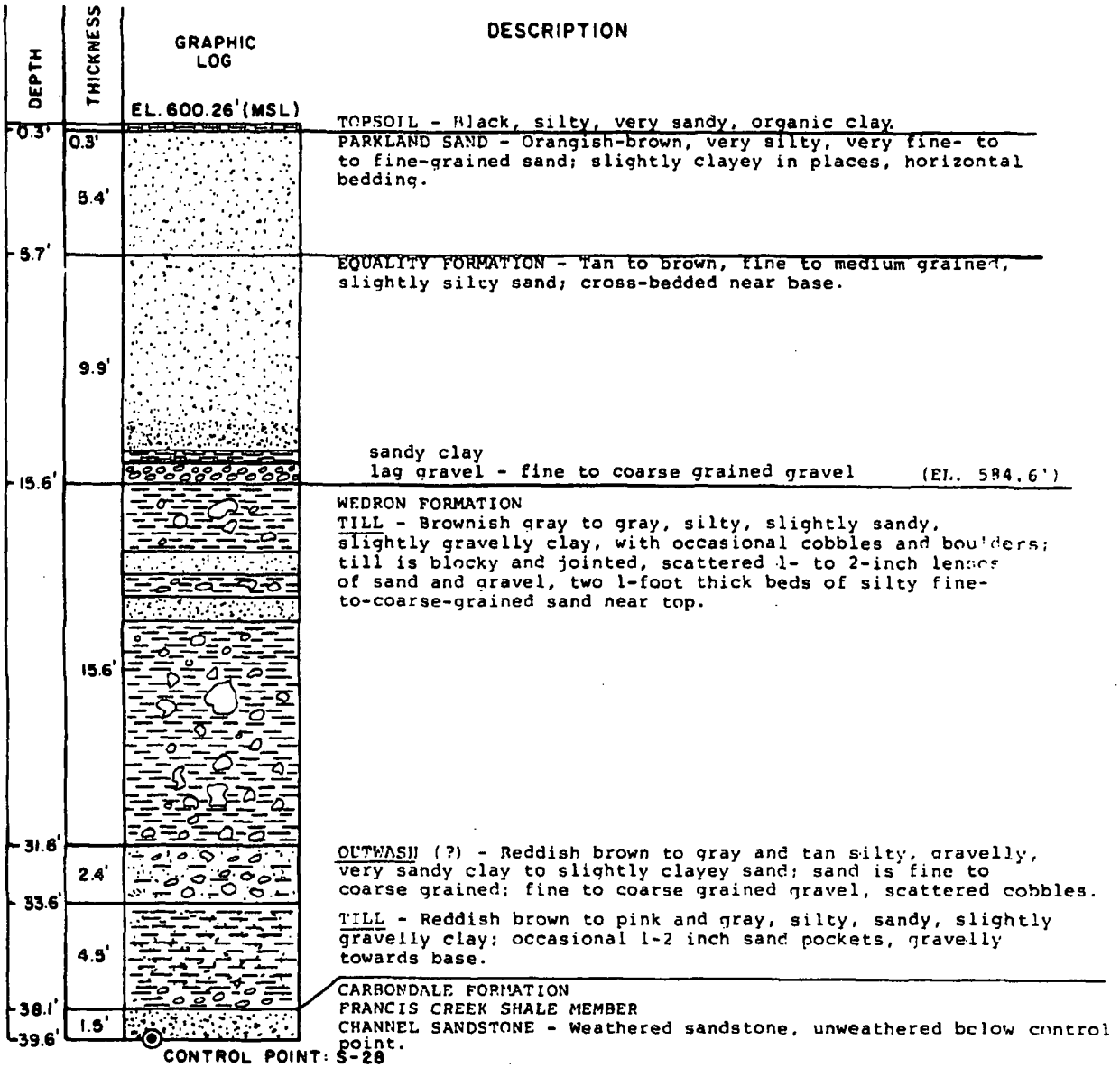


NOTE: LOCATION OF SECTION 22 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION UPDATED FINAL SAFETY ANALYSIS REPORT
FIGURE 2.5-297 GEOLOGIC SECTIONS (SHEET 19 OF 27)

SECTION 28

NORTH PORTION OF WEST WALL OF EXCAVATION



NOTE: LOCATION OF SECTION 28 IS SHOWN ON FIGURE 2.5-296

VERTICAL SCALE 1"=5'

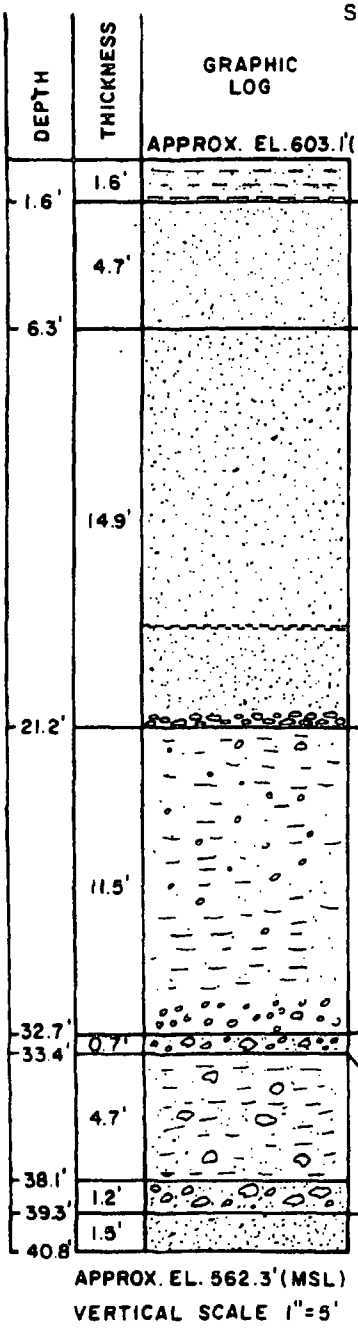
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 20 OF 27)

SECTION 31

SOUTH PORTION OF WEST WALL OF EXCAVATION



DESCRIPTION

TOPSOIL - Black, very sandy, silty clay with organics

PARKLAND SAND - Orange to orange-brown, loose, very silty, very fine to fine sand; some root fragments

EQUALITY FORMATION - Gray to light brown, loose, fine- to medium grained sand; cross-bedded in places.

cross-bedding
clay-layer approximately 4 feet from base

basal lag gravel, abundant cobbles and boulders (EL. 581.9')

WEDRON FORMATION
TILL - Pinkish to brownish gray, somewhat soft to loose, very sandy and silty clay; some gravel, top 1 to 2' very gravelly with abundant cobbles. Gravel most abundant near top and bottom.

OUTWASH - Grayish brown to light brown, loose, silty sand and gravel; sand mostly fine- to medium-grained, gravel fine to coarse grained.
TILL - Gray to brownish gray, hard, silty clay with some sand and gravel; scattered cobbles.

basal outwash of gravelly, fine to coarse sand with abundant cobbles and scattered boulders.

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - weathered sandstone

NOTES: 1) APPROXIMATE LOCATION OF SECTION 31 IS SHOWN ON FIGURE 2.5-296
2) CONTROL POINT WAS DESTROYED BEFORE SURVEYING COULD BE PERFORMED; THE ELEVATION OF THE TOP OF THE WEDRON FORMATION WAS TAKEN FROM FSAR FIGURE 2.5-29.

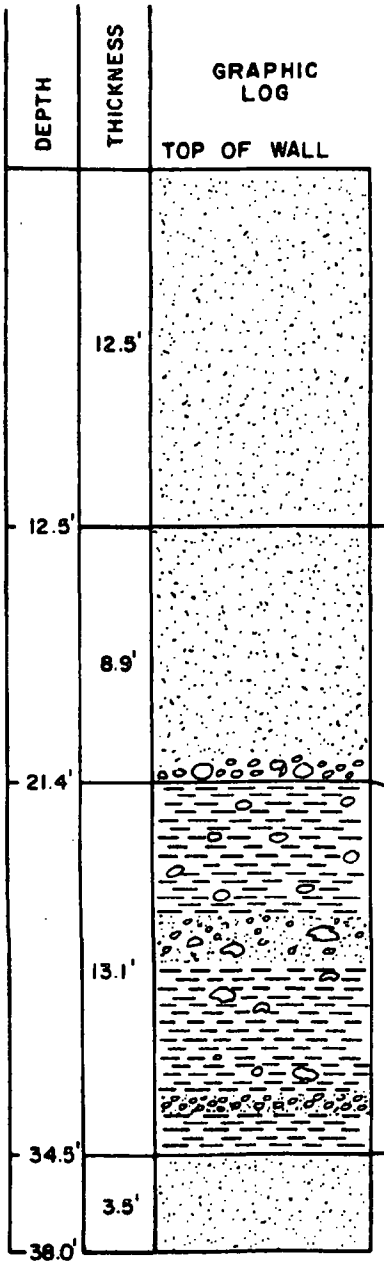
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 21 OF 27)

SECTION 33

UNIT 2, SOUTH EXCAVATION WALL
(SOUTH OF UNIT 2 REACTOR)



VERTICAL SCALE 1"=5'

DESCRIPTION

PARKLAND SAND - Orange to light brown, slightly silty to to silty, poorly graded very fine to fine sand; horizontal bedding.

EQUALITY FORMATION - Gray-brown to light brown, poorly graded, fine-to-medium-grained sand.

cross-bedded from 2 to 7 feet above bottom

scattered gravel and cobbles near base (approximate el. 577.0' (MSL)

WEDRON FORMATION
TILL - Gray to brownish gray, hard, silty, clayey, slightly gravelly sand and sandy silt to clayey silt.

OUTWASH - Light brown, loose, fine to coarse sand and fine gravel; scattered cobbles
TILL - Gray, pinkish gray, and brownish gray, hard, sandy, gravelly clayey silt to silty clay; very sandy in places

OUTWASH - Fine to coarse sand with gravel.

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Upper 2-feet weathered, gray, friable, fine-to-medium grained sandstone; weathered to about 36.5'. Floor covered with rubble.

NOTES:
1) CONTROL POINT WAS DESTROYED PRIOR TO SURVEYING. ELEVATION OF TOP OF WEDRON FORMATION IS FROM FSAR FIGURE 2.5-29.
2) APPROXIMATE LOCATION OF SECTION 33 IS SHOWN ON FIGURE 2.5-296

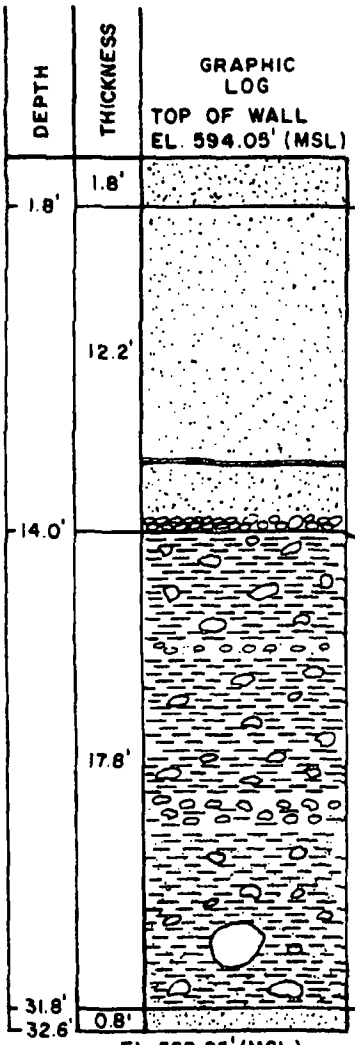
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 22 OF 27)

SECTION 36

UNIT I, EAST WALL OF EXCAVATION



DESCRIPTION

PARKLAND SAND - Orange to light orangish-brown, loose, slightly silty, very fine- to fine-grained sand; horizontally bedded.

EQUALITY FORMATION - Light brown to gray, loose, poorly graded, fine- to medium-grained sand; cross-bedded in some areas.

clay layer approximately 1 inch thick

lag gravel - sand and gravel with cobbles, layer approximately 0.5 feet thick (EL.580.85')

WEDRON FORMATION

TILL - Gray to brownish gray, hard, sandy, gravelly, silty clay to clayey silt with scattered cobbles; very sandy in places

OUTWASH - sand and gravel; approximately 0.5' thick

OUTWASH- gray to light brown, loose, soft, silty, clayey, gravelly sand with scattered cobbles, sand is fine to coarse grained, gravel predominataby fine grained.

TILL - Gray to brownish gray, hard, gravelly, sandy, silt clay to clayey silt; scattered cobbles and boulders with glacial striations, a few joints.

CONTROL POINT: S-36
COORDINATES: S 30+59, E 48+37
ELEVATION: 563.05' (MSL)

CARBONDALE FORMATION

FRANCIS CREEK SHALE MEMBER

CHANNEL SANDSTONE - Weathered sandstone; unweathered below elevation 562.25' (MSL)

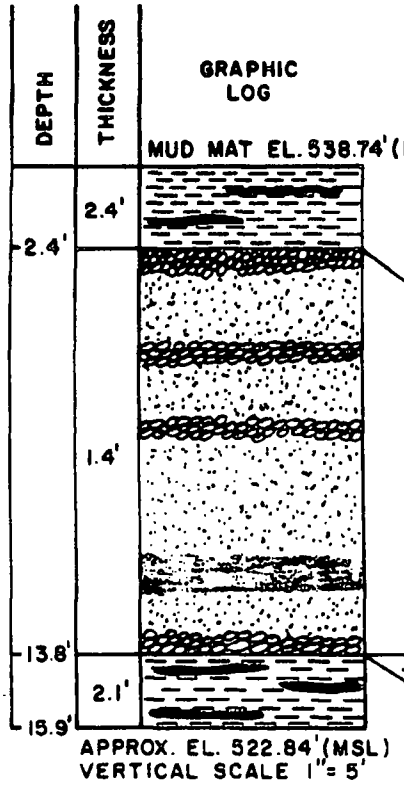
NOTE: LOCATION OF SECTION 36 IS SHOWN OF FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 23 OF 27)

SECTION 37
UNIT 2 SOUTH WALL OF AUXILIARY BUILDING



DESCRIPTION

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER

SILTSTONE- Gray, slightly sandy, micaceous, shaley, blocky, laminated siltstone; calcareous in places, scattered lenses of coal, sandstone, and siderite pebbles.

SANDSTONE- Gray, well cemented, thin to thick bedded, fine-to medium-grained sandstone alternating with coal beds to 1.5 feet thick and conglomerate beds with gravel and cobble sized siderite concretions in sandstone matrix; a few thin siltstone beds.

CONTROL POINT: S-37
COORDINATES: S 31+53.75, E 46+03.58
ELEVATION: 529.94'(MSL)

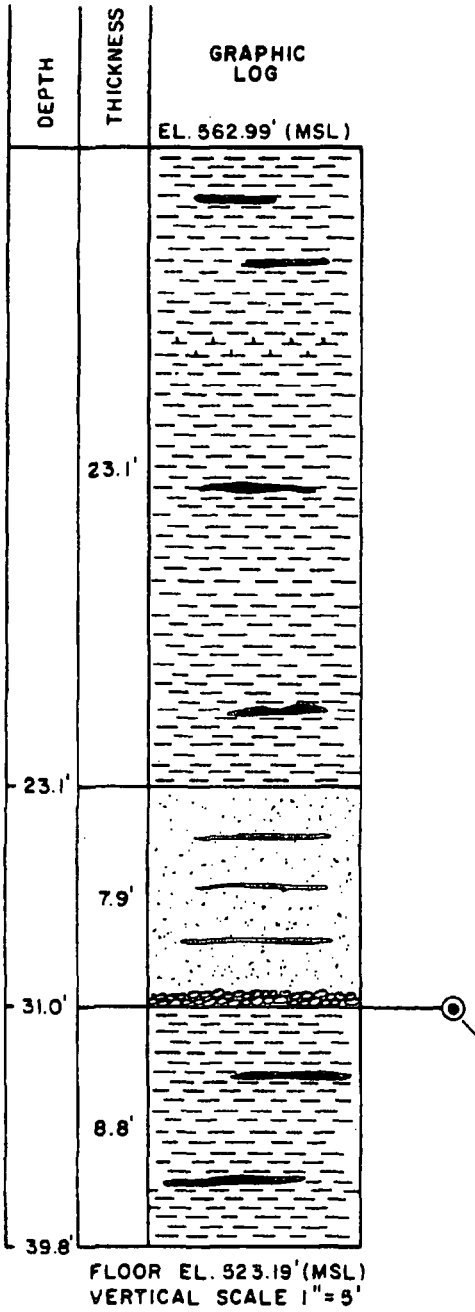
SILTSTONE - As above siltstone

NOTE: LOCATION OF SECTION 37 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION UPDATED FINAL SAFETY ANALYSIS REPORT
FIGURE 2.5-297 GEOLOGIC SECTIONS (SHEET 24 OF 27)

SECTION 38

UNITS 1 & 2-WEST WALL OF AUXILIARY BUILDING



DESCRIPTION

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
SILTSTONE - Gray, slightly sandy, micaceous, shaley, blocky, laminated siltstone; calcareous in places, scattered lenses of coal, sandstone and siderite pebbles

SANDSTONE - Gray, thin to thick bedded, fine to medium sandstone; some coal beds to 0.5' thick, thin siltstone layers, basal conglomerate composed of siderite pebbles ranging in size from 0.25 to 3 inches, conglomerate is well cemented. This sandstone pinches out to the north of the measured section.

SILTSTONE - as upper siltstone

CONTROL POINT: S-38
COORDINATES: S 31+02.17, E 45+60.17
ELEVATION: 531.99' (MSL)

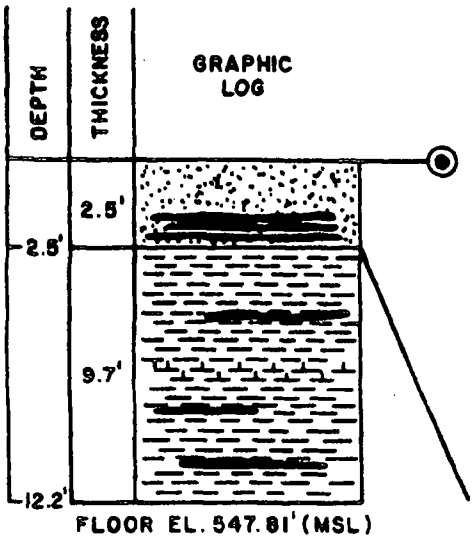
NOTE: LOCATION OF SECTION SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 25 OF 27)

SECTION 39
UNIT 2 SOUTH END OF TURBINE ROOM



DESCRIPTION

CONTROL POINT: S-39
COORDINATES: S 33+65, E 45+55
ELEVATION: 860.01'

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE- Brownish-gray, fine- to medium-grained, loosely cemented, micaceous, slightly silty, thin-to medium bedded sandstone; occasional cross-beds, abundant coal seams to 4-inches thick, thickly bedded near top.

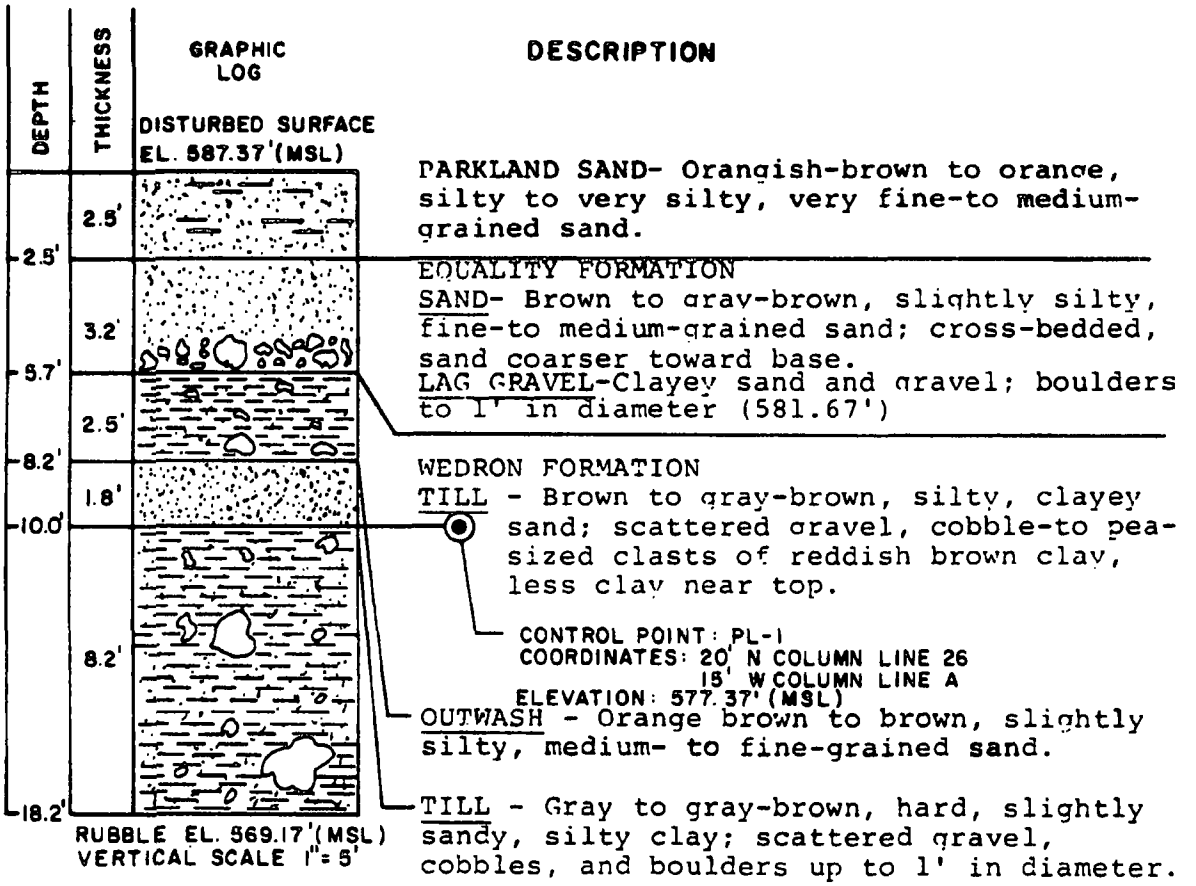
SILTSTONE - Greenish-gray, slightly sandy, micaceous, laminated, shaley, blocky siltstone; slightly calcareous in places, widely scattered coal stringers.

NOTE: LOCATION OF SECTION 39 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION UPDATED FINAL SAFETY ANALYSIS REPORT
FIGURE 2.5-297 GEOLOGIC SECTIONS (SHEET 26 OF 27)

SECTION PL-1

PIPELINE SECTION – EAST WALL OF TRENCH

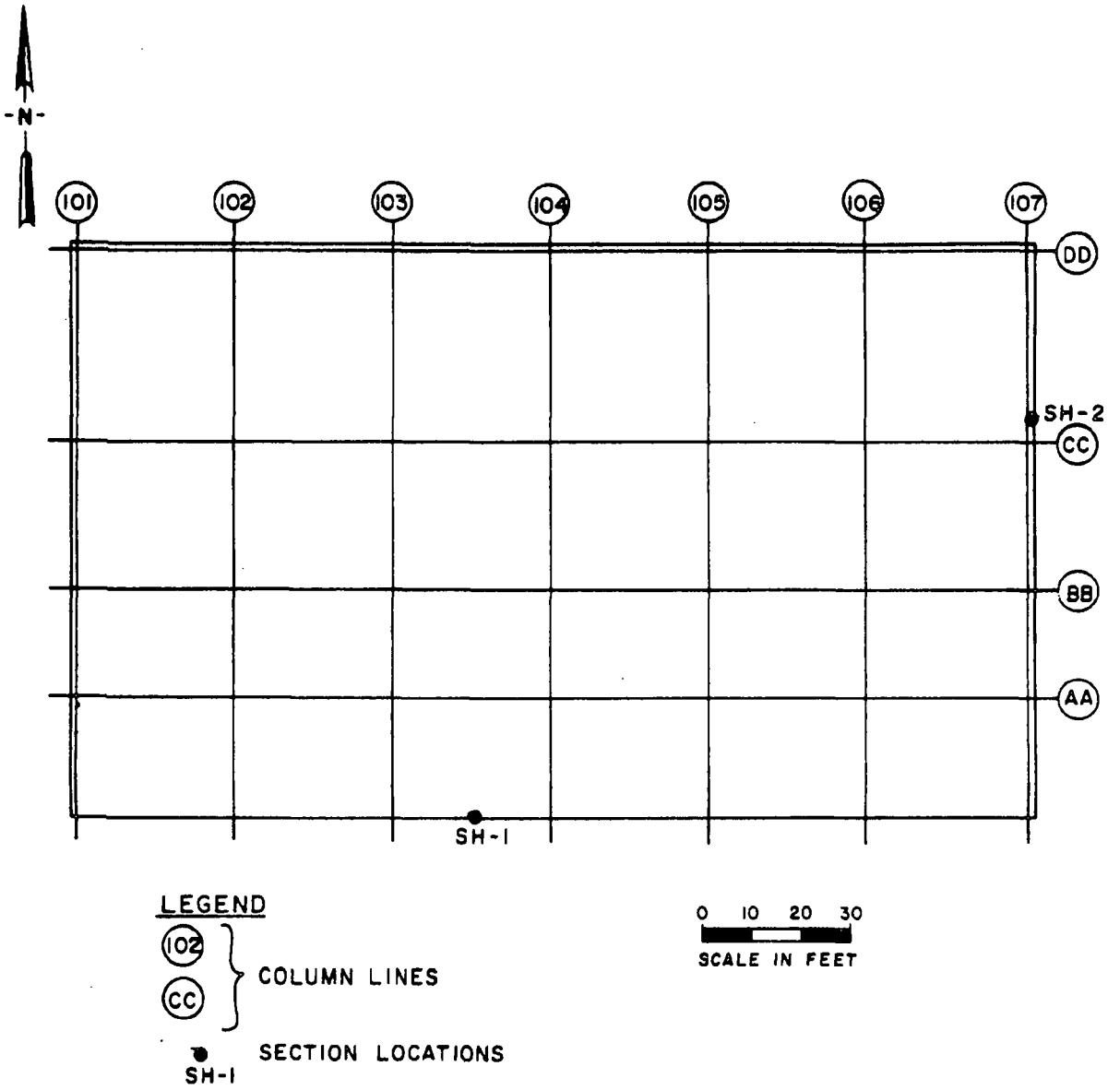


NOTE: LOCATION OF SECTION PL-1 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 27 OF 27)



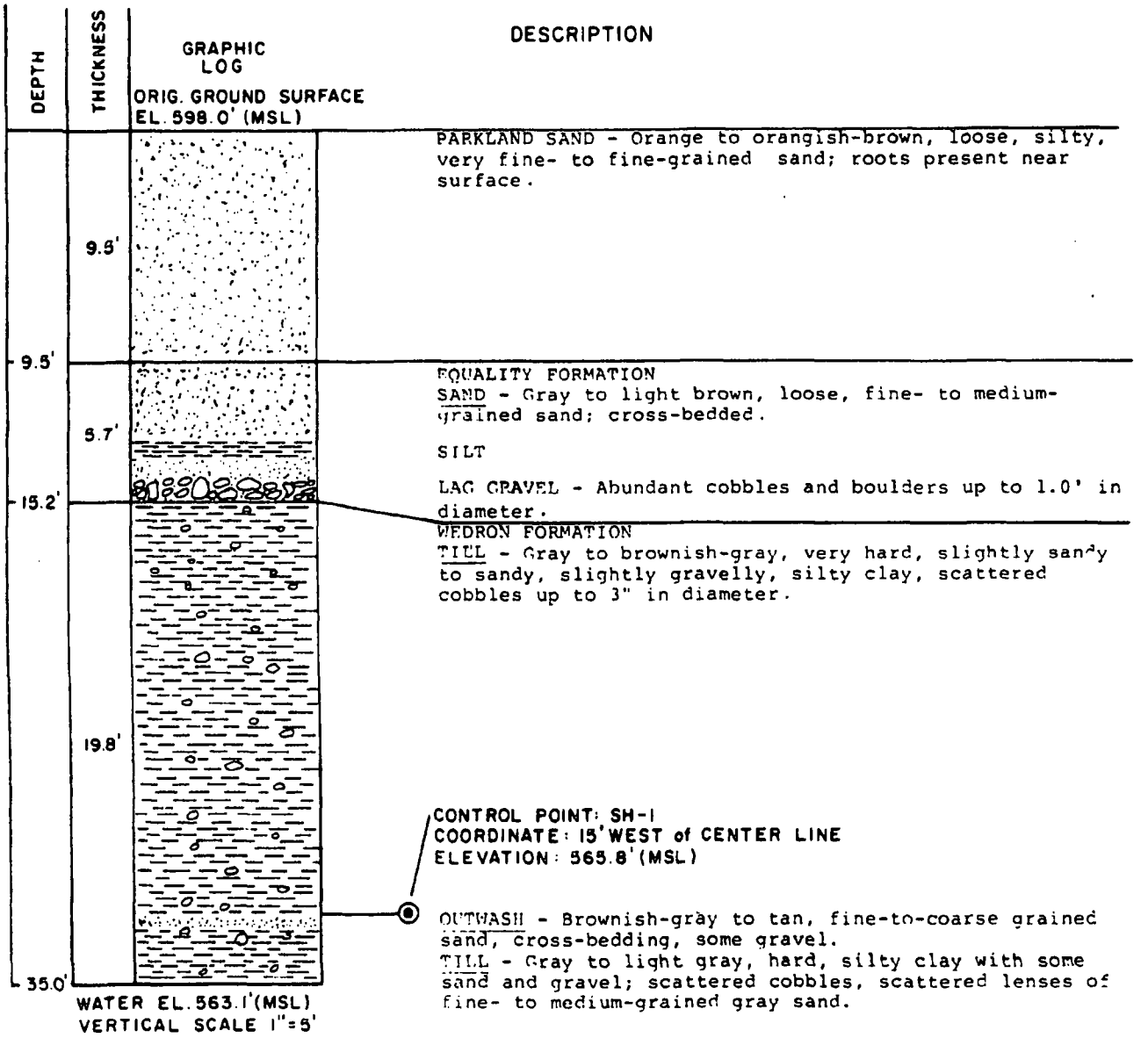
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-298

SKETCH MAP OF SCREEN HOUSE
SHOWING SECTION LOCATIONS

SECTION SH-1

SCREENHOUSE - SOUTH WALL OF EXCAVATION



NOTE: LOCATION OF SECTION SH-1 IS SHOWN ON FIGURE 2.5-298

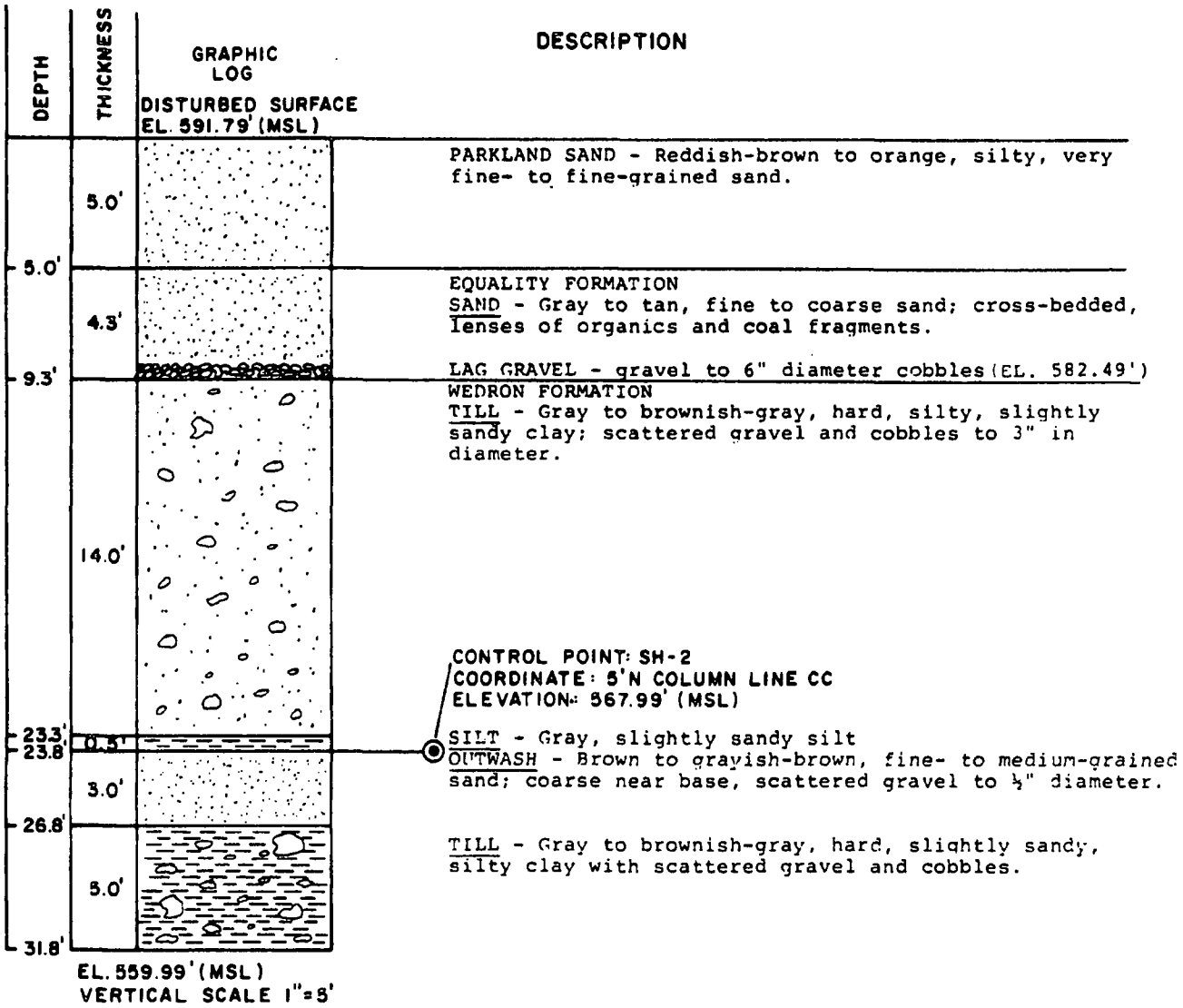
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-299

SCREEN HOUSE GEOLOGIC SECTIONS
(SHEET 1 OF 2)

SECTION SH-2

SCREENHOUSE - EAST WALL OF EXCAVATION

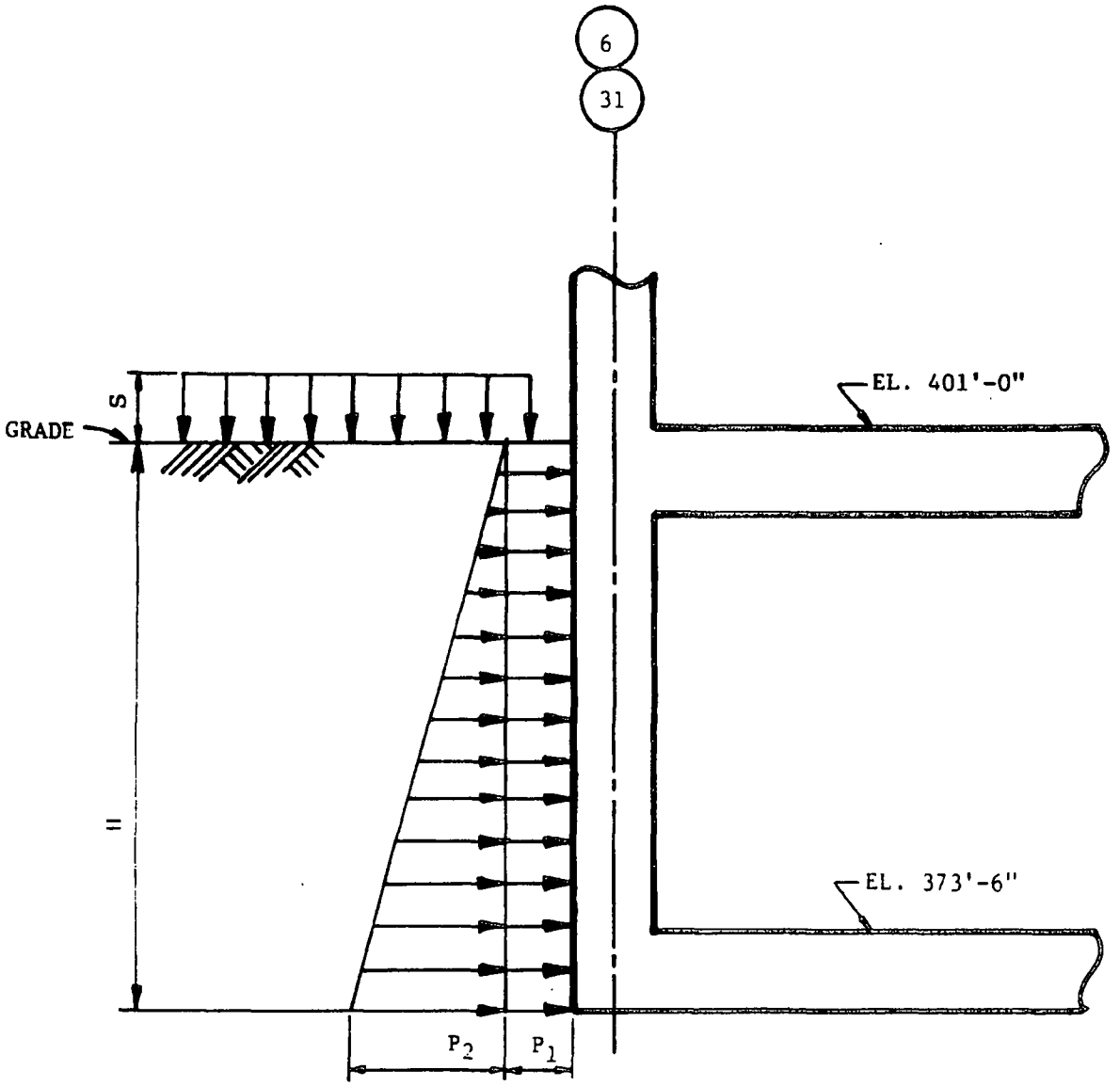


NOTE: LOCATION OF SECTION SH-2 IS SHOWN ON FIGURE 2.5-298

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-299

SCREEN HOUSE GEOLOGIC SECTIONS
(SHEET 2 OF 2)



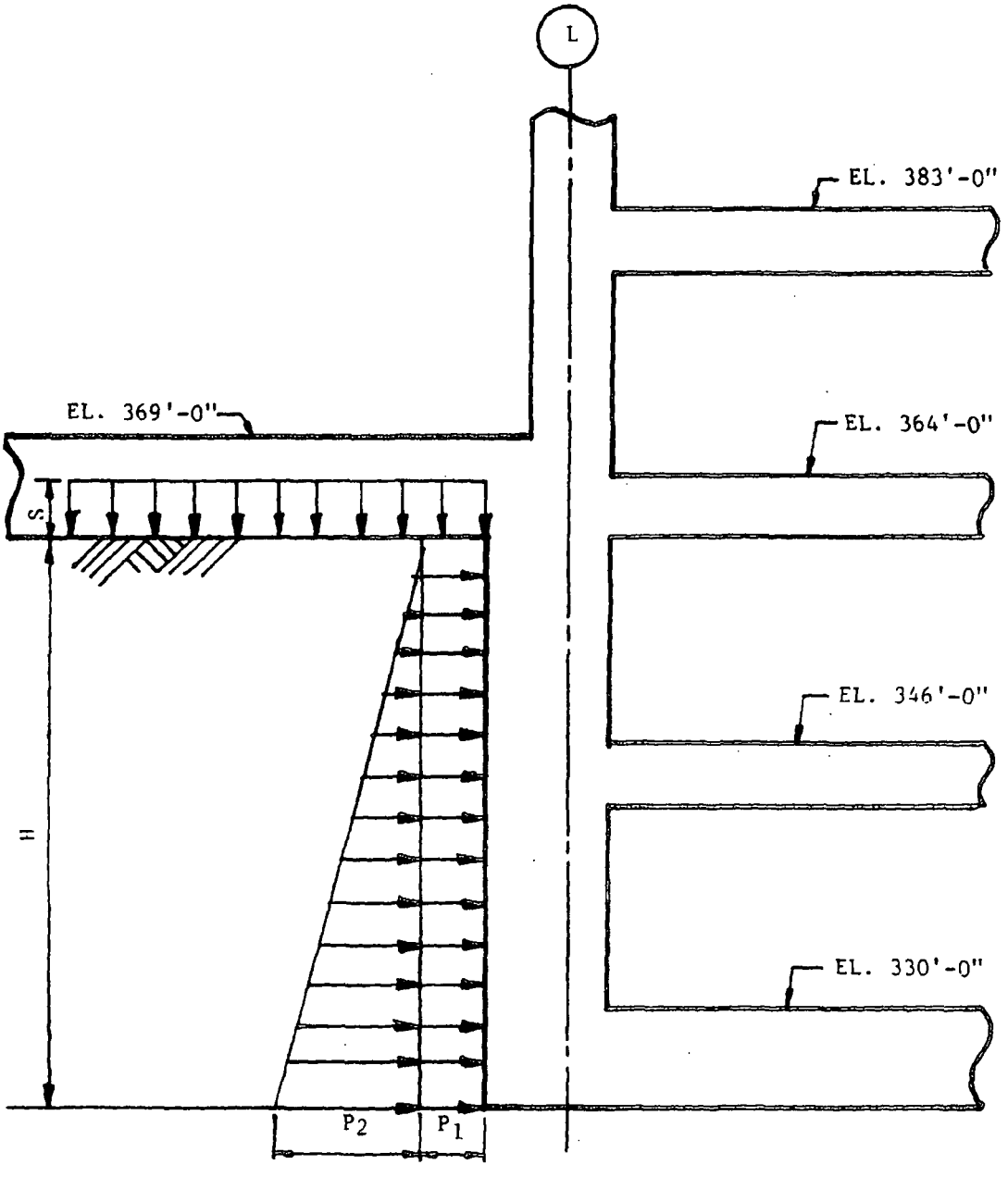
AUXILIARY BUILDING

P_1 = (ko) S
P_2 = (ko) γ_s (H)
ko = Coefficient of Lateral Earth Pressure (0.88)
S = Surcharge
H = Depth Below Grade
γ_s = Submerged Soil Density (68 pcf)
Water Table Assumed at Grade

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-300

AUXILIARY BUILDING LATERAL EARTH PRESSURE
(SHEET 1 OF 2)



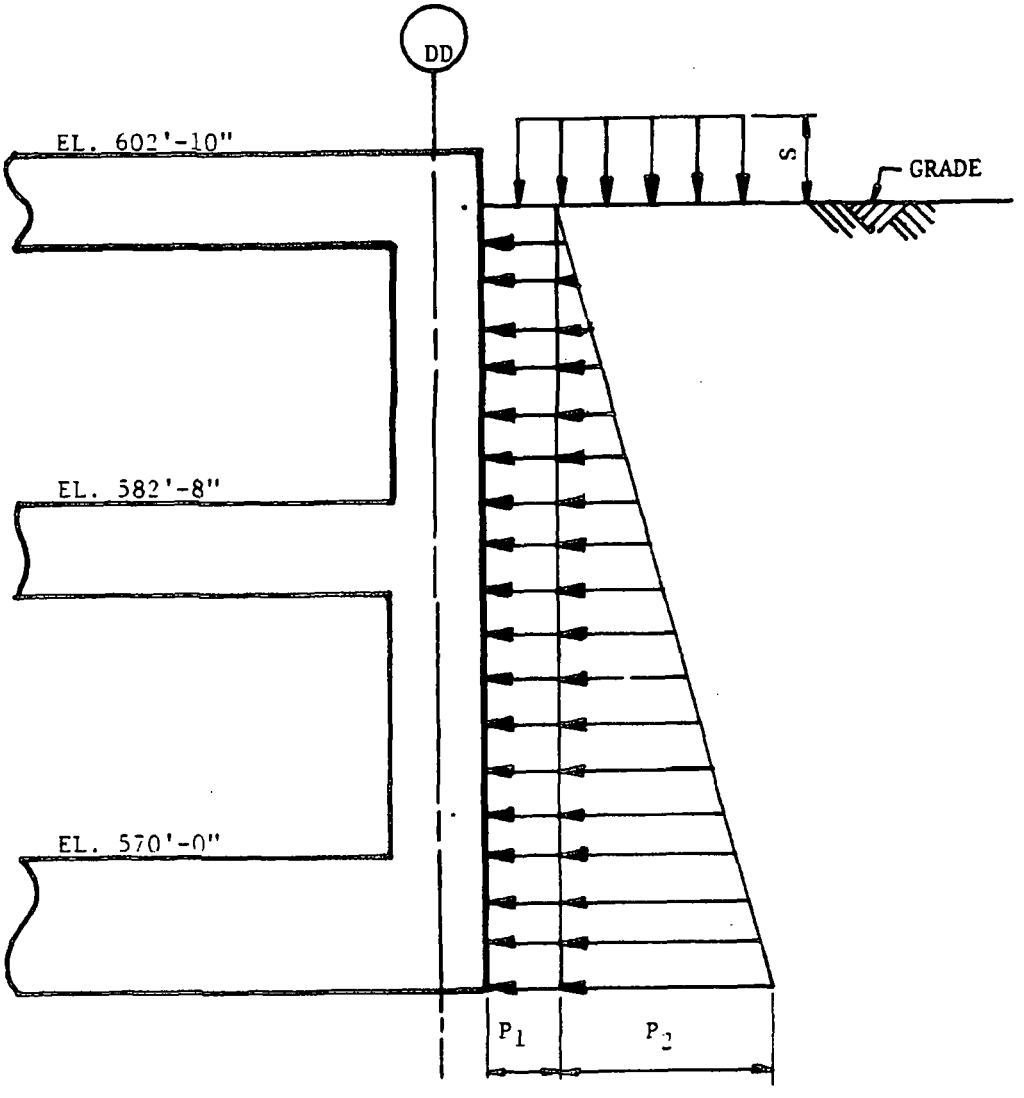
AUXILIARY BUILDING

P_1 = (ko) S
P_2 = (ko) γ_s (H)
ko = Coefficient of Lateral Earth Pressure (0.88)
S = Surcharge
H = Depth Below Grade
γ_s = Submerged Soil Density (68 pcf)
Water Table Assumed at Grade

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-300

AUXILIARY BUILDING LATERAL EARTH PRESSURE (SHEET 2 OF 2)



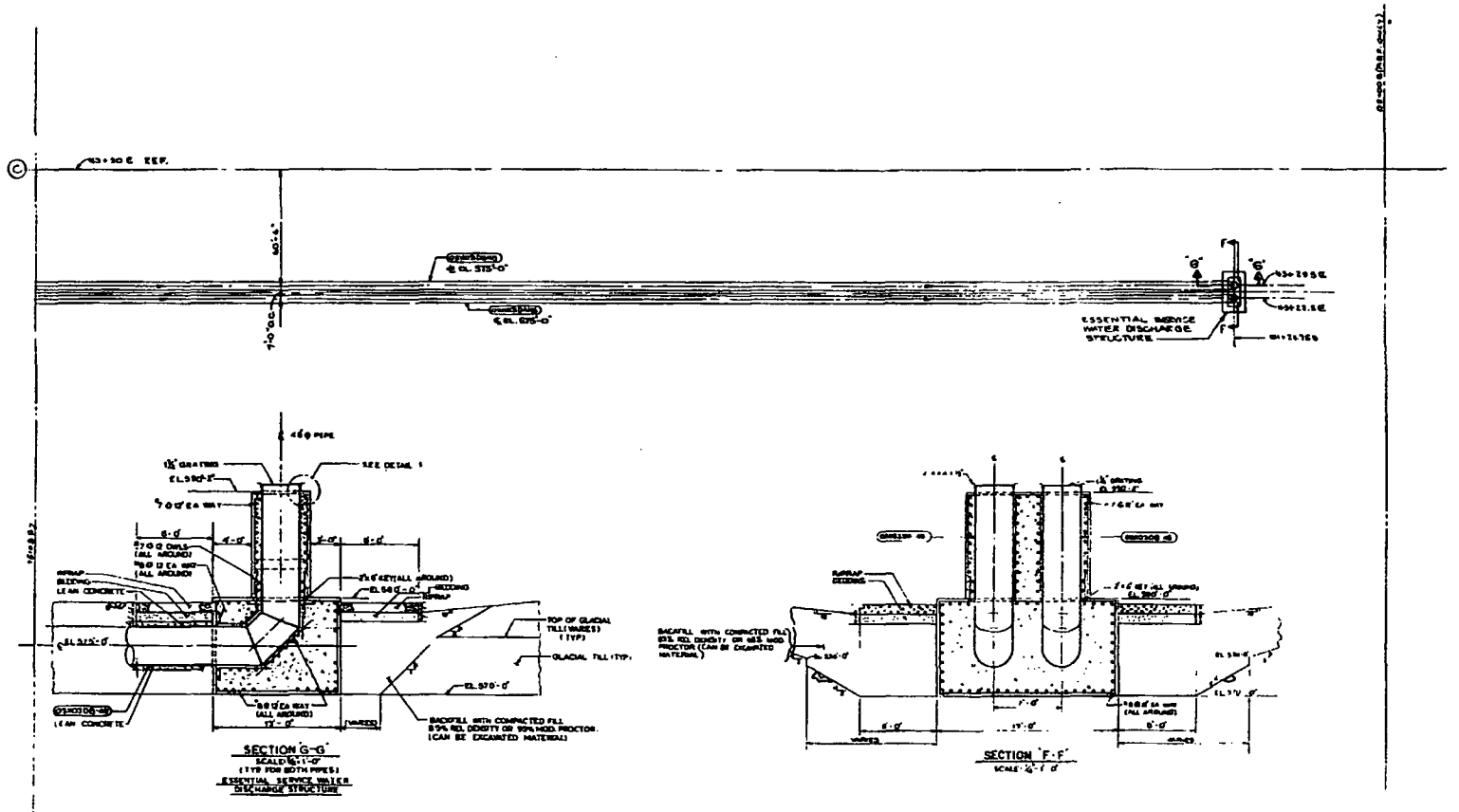
LAKE SCREEN HOUSE

P_1 = (ko) S
P_2 = (ko) γ_s (H)
ko = Coefficient of Lateral Earth Pressure (0.88)
S = Surcharge
H = Depth Below Grade
γ_s = Submerged Soil Density (68 pcf)
Water Table Assumed at Grade

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-301

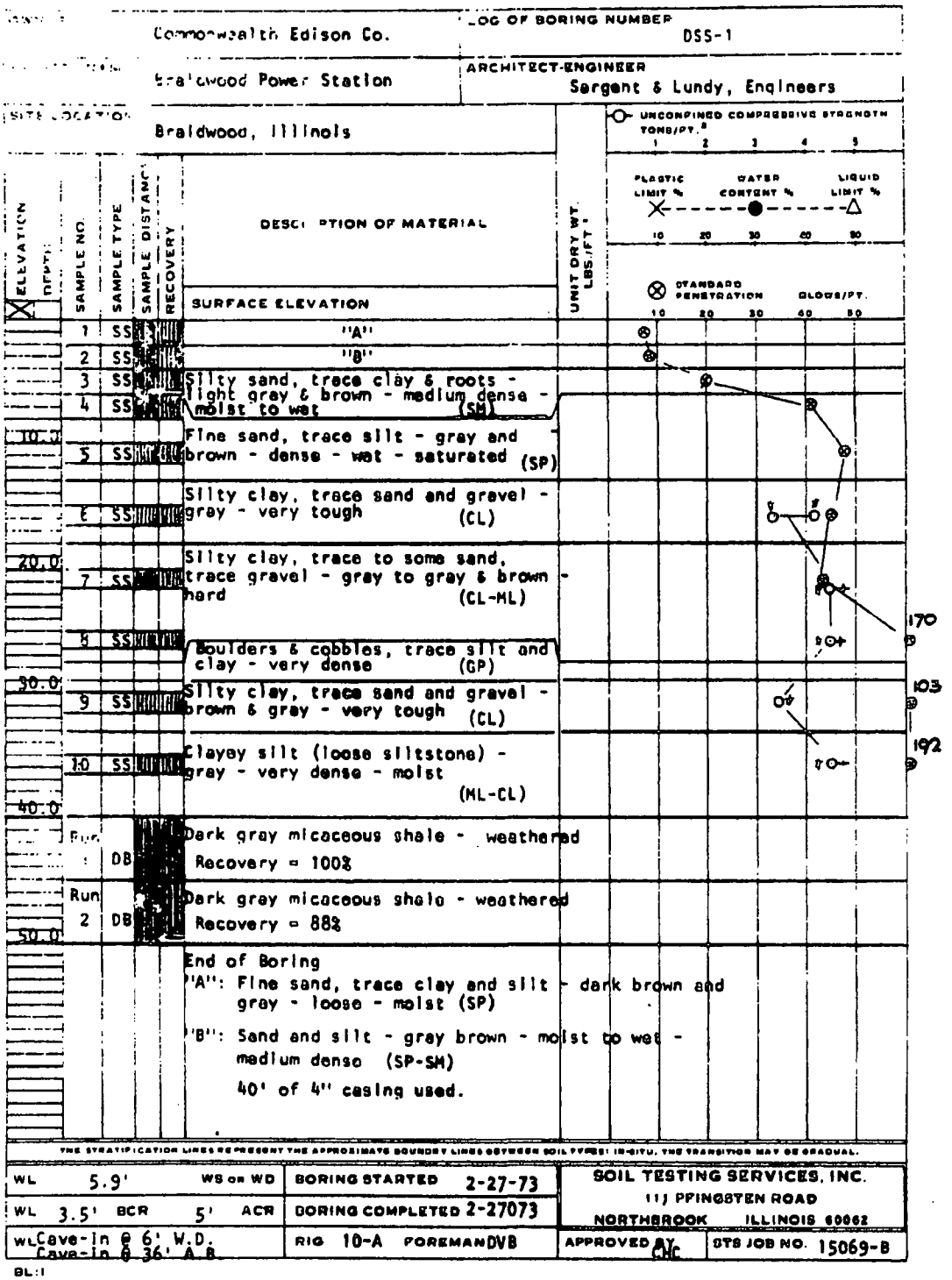
LAKE SCREEN HOUSE LATERAL EARTH PRESSURE



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-302

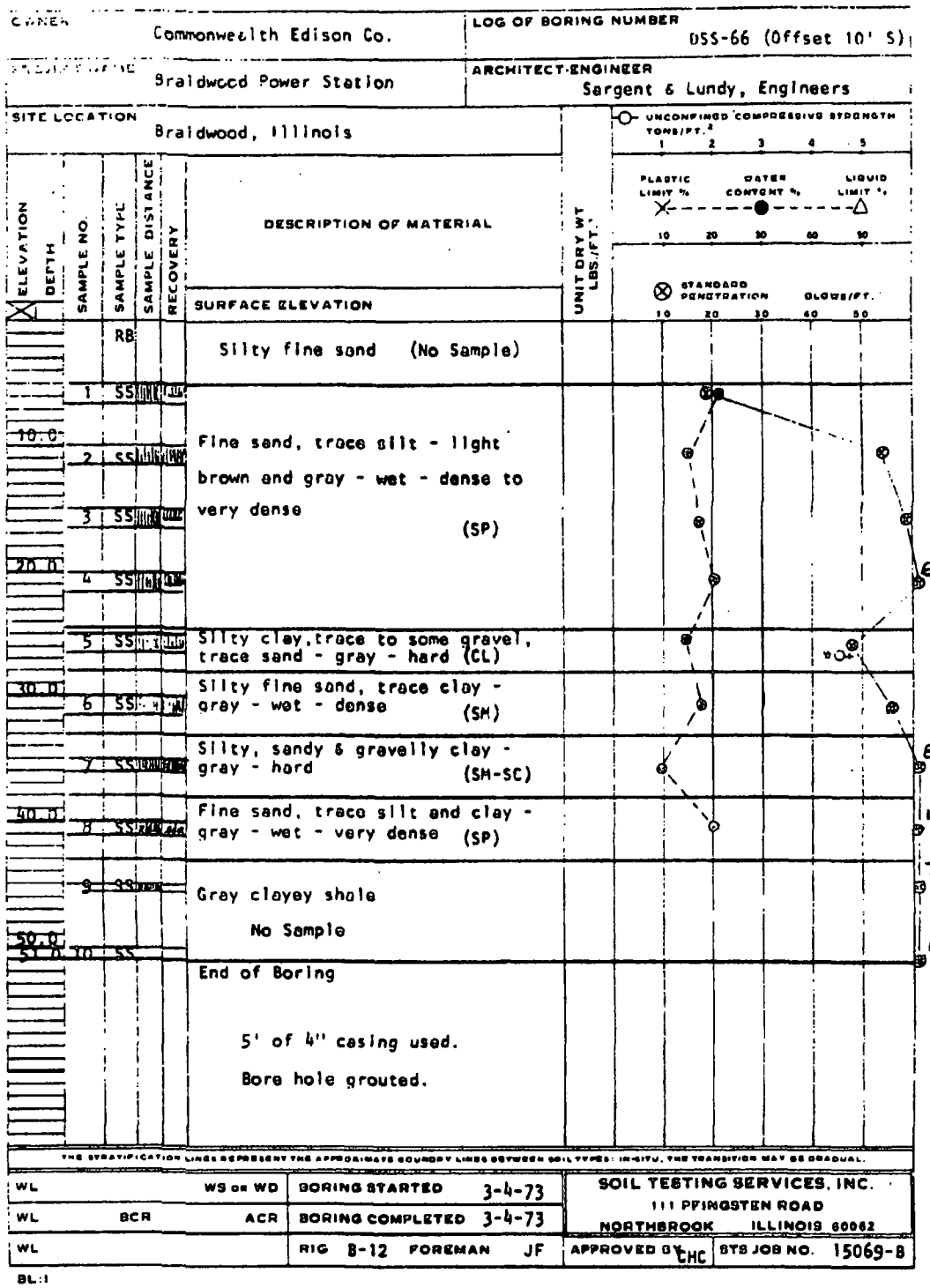
ESSENTIAL SERVICE WATER
DISCHARGE STRUCTURE



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-303

LOG OF BORING DSS-1



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-304

LOG OF BORING DSS-66

OWNER: Commonwealth Edison Co.

LOG OF BORING NUMBER: DSS-67

PROJECT NAME: Braidwood Power Station

ARCHITECT-ENGINEER: Sargent & Lundy

SITE LOCATION: Braidwood, Illinois

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL
					SURFACE ELEVATION
		RB			No Sample
	1	SS			Sand, trace silt - boulder at 18' - light brown and gray - dense to very dense - moist to wet (SP)
	2	SS			
	3	SS			
10.0	4	SS			
	5	SS			
20.0	6	SS			Clayey silt, trace sand & gravel - gray - dense (ML-CL)
	7	SS			Silty & sandy clay, trace gravel (CL-SC)
30.0	8	SS			Fine to medium sand, trace gravel - gray - very dense - wet (SP)
	9	SS			
40.0	10	SS			Silty sand, trace clay - gray - very dense - wet (SM)
		RB			
					Dark gray shale
50.0	Run 1	DB			Dark gray shale with thin lamination of light gray fine grained sandstone. Recovery = 95%, RQD = 45%
60.0	Run 2	DB			Same as above. Recovery = 88%, RQD = 57%
69.0					(Contd. on Sheet 2)

UNIT DRY WT. LBS./FT.³

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1, 2, 3, 4, 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % (10, 20, 30, 40, 50)

STANDARD PENETRATION BLOWS/FT. (10, 20, 30, 40, 50)

70, 87, 85, 104, 104, 84, 96, 95, 100/8

Sheet 1 of 2

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES; IN-SITU, THE TRANSITION MAY BE GRADUAL.

BL: 2

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-305

LOG OF BORING DSS-67
(SHEET 1 OF 2)

OWNER: Commonwealth Edison Co.

LOG OF BORING NUMBER: DSS-67 (Contd.)

PROJECT NAME: Braidwood Power Station

ARCHITECT-ENGINEER: Sargent & Lundy

SITE LOCATION: Braidwood, Illinois

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³	UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5) / PLASTIC LIMIT % / WATER CONTENT % / LIQUID LIMIT % (10 20 30 40 50) / STANDARD PENETRATION BLOWS/FT. (10 20 30 40 50)
SURFACE ELEVATION					(Contd. from Sheet 1)		
65.0							
78.0 / 75.0	Run 3	DB			Dark grey shale with thin lamination of light gray fine grained sandstone. Recovery = 100%, RQD = 86%		
					End of Boring		*Calibrated Penetrometer

Casing used: 47' of NX
17' of 4"

Bore hole grouted.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU, THE TRANSITION MAY BE GRADUAL.

WL	WS or WD	BORING STARTED 2-3-73	SOIL TESTING SERVICES, INC.
WL 18'	BCR ACR	BORING COMPLETED 2-3-73	111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL		RIG 12A FOREMAN CB	APPROVED BY CHC STS JOB NO. 15069-B

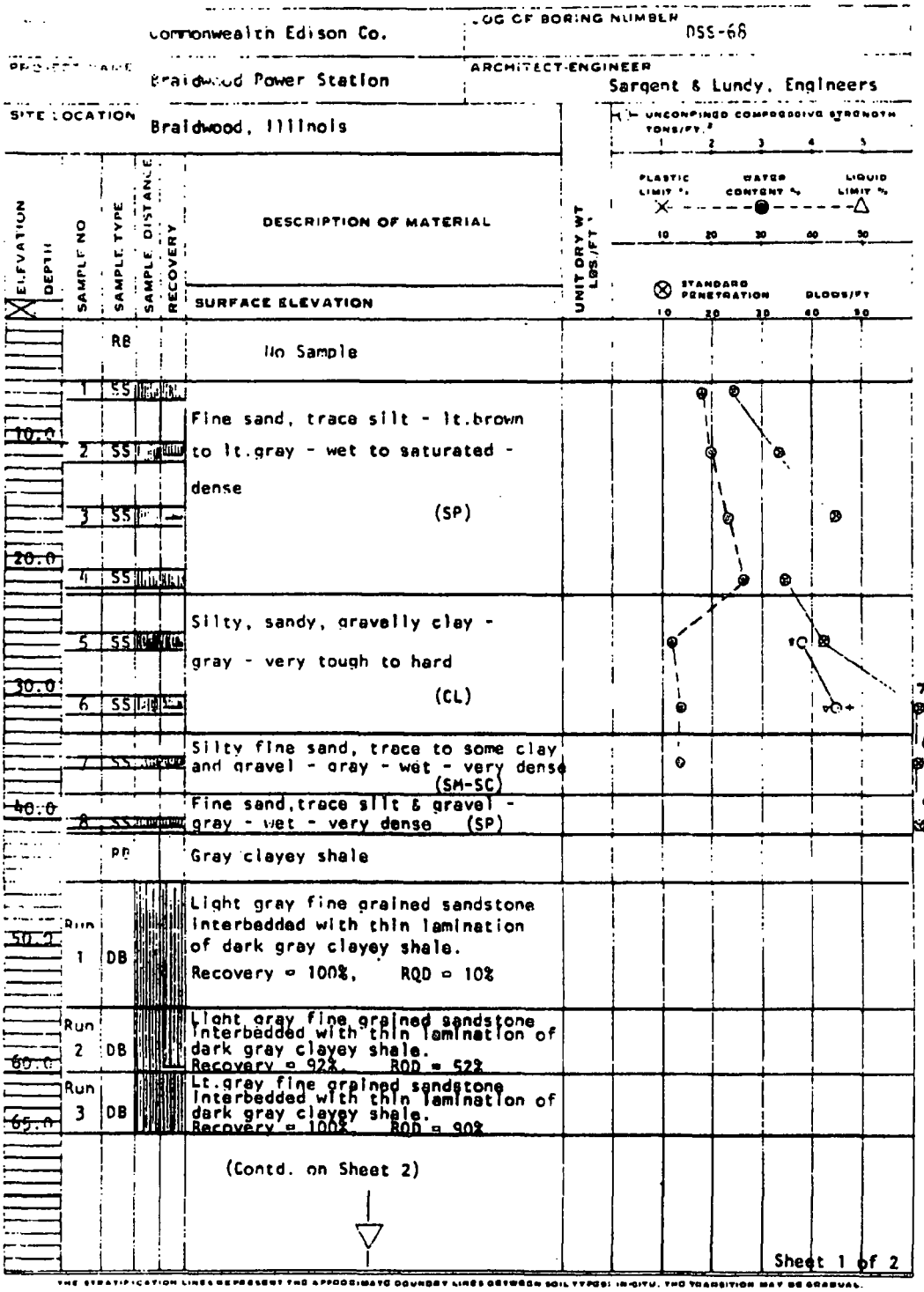
DL:1

Sheet 2 of 2.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-305

LOG OF BORING DSS-67
(SHEET 2 OF 2)



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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-306

LOG OF BORING DSS-68
(SHEET 1 OF 2)

CLIENT	Commonwealth Edison Co.	LOG OF BORING NUMBER	DSS-68 (Contd.)
PROJECT NAME	Braidwood Power Station	ARCHITECT-ENGINEER	Sargent & Lundy, Engineers
SITE LOCATION	Braidwood, Illinois		

ELEVATION / DEPTH	SAMPLE NO	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT LBS./FT.³	UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5); PLASTIC LIMIT %; WATER CONTENT %; LIQUID LIMIT %; STANDARD PENETRATION BLOWS/FT. (10 20 30 40 50)
					SURFACE ELEVATION		
					(Contd. from Sheet 1)		
65.0							
70.2	Run 4	DB			Dark gray shale interbedded with thin lamination of lt.gray fine grained sandstone. Recovery = 100%,		RQD = 90%
75.0	Run 5	DB			Light gray fine grained sandstone interbedded with thin lamination of dark gray shale. Recovery = 100%, RQD = 92%		
					End of Boring		*Calibrated Penetrometer

Casing used: 5' of 4"
45' of NX

Bore hole grouted.

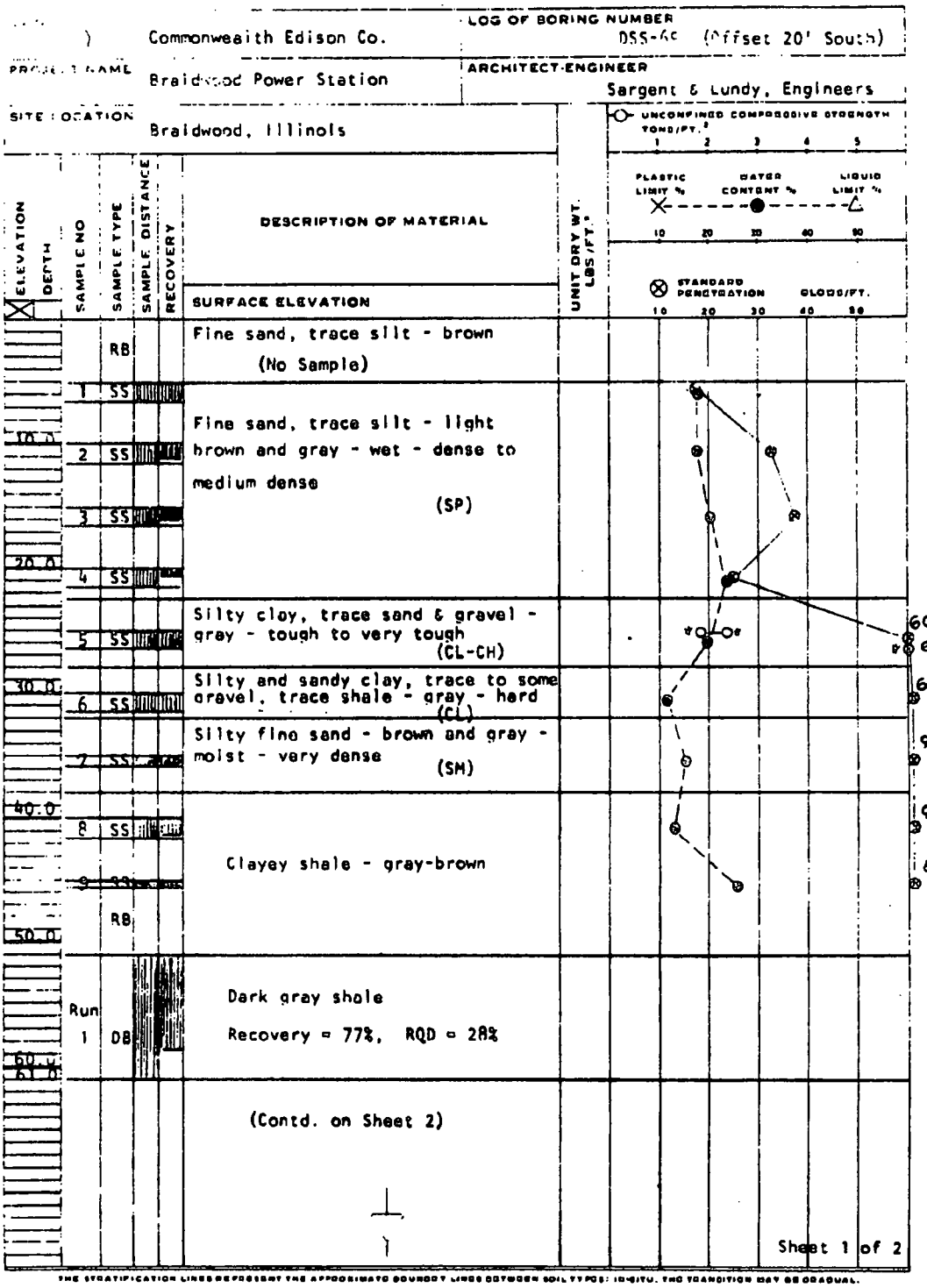
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES IN-SITU, THE TRANSITION MAY BE GRADUAL

WL	WS or WD	BORING STARTED 3-3-73	SOIL TESTING SERVICES, INC. 111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL	BCR ACR	BORING COMPLETED 3-3-73	
WL		RIG B-12 FOREMAN JF	APPROVED BY CAC STS JOB NO. 15069-B

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-306

LOG OF BORING DSS-68
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-307

LOG OF BORING DSS-69
(SHEET 1 OF 2)

OWNER: Commonwealth Edison Co.

LOG OF BORING NUMBER: DSS-69 (Contd.)

PROJECT NAME: Braidwood Power Station

ARCHITECT-ENGINEER: Sargent & Lundy, Engineers

SITE LOCATION: Braidwood, Illinois

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE / RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³	UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5)	PLASTIC LIMIT % / WATER CONTENT % / LIQUID LIMIT % (10 20 30 40 50)	STANDARD PENETRATION BLOWS/FT. (10 20 30 40 50)
SURFACE ELEVATION 61.0				(Contd. from Sheet 1)				
70.0	Run 2	DB		Dark gray shale interbedded with thin lamination of lt.gray fine grained sandstone. Recovery = 97%, RQD = 76%				
80.0	Run 3	DB		Light gray, fine grained sandstone interbedded with thin lamination of dark gray shale. Recovery = 87%, RQD = 63%				
90.0	Run 4	DB		Light gray, fine grained sandstone interbedded with thin lamination of dark gray shale. Recovery = 94%, RQD = 84%				
100.0	Run 5	DB		Light gray fine grained sandstone interbedded with thin lamination of dark gray shale, with black coal from 92'10" to 93'8" Recovery = 37%, RQD = 14%				
				End of Boring Casing used: 10' of 4" 45' of NX Bore hole grouted. Pressure Tests taken: 51' to 61' 80' to 90'				

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU, THE TRANSITION MAY BE GRADUAL

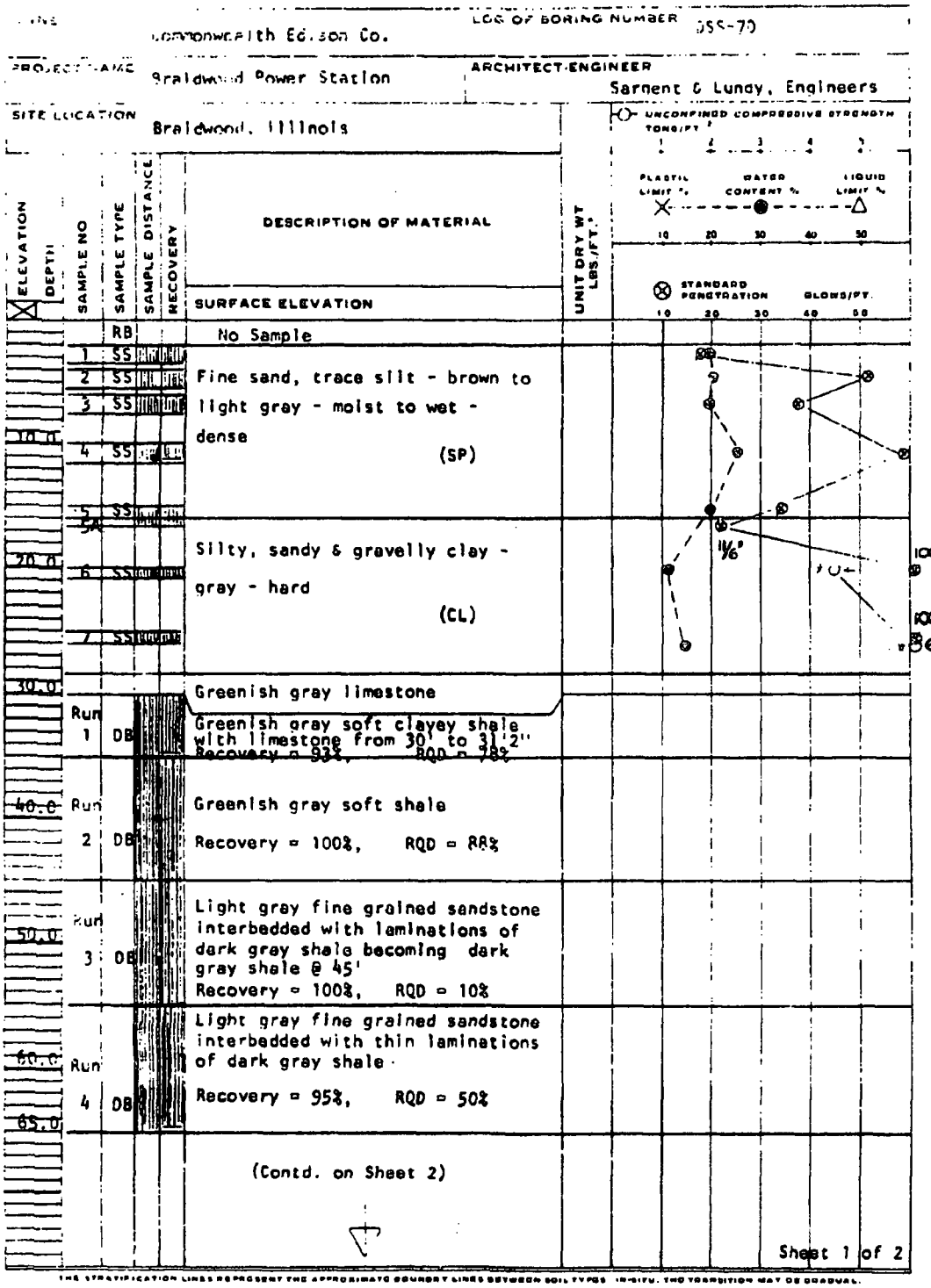
WL	WS or WD	BORING STARTED 3-5-73	SOIL TESTING SERVICES, INC. 111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL	BCR ACR	BORING COMPLETED 3-6-73	
WL 5.9' on 3/6/73, 7:30 AM		RIG B-12 FOREMAN JF	APPROVED BY CHC STS JOB NO. 15069-B

BL:1

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-307

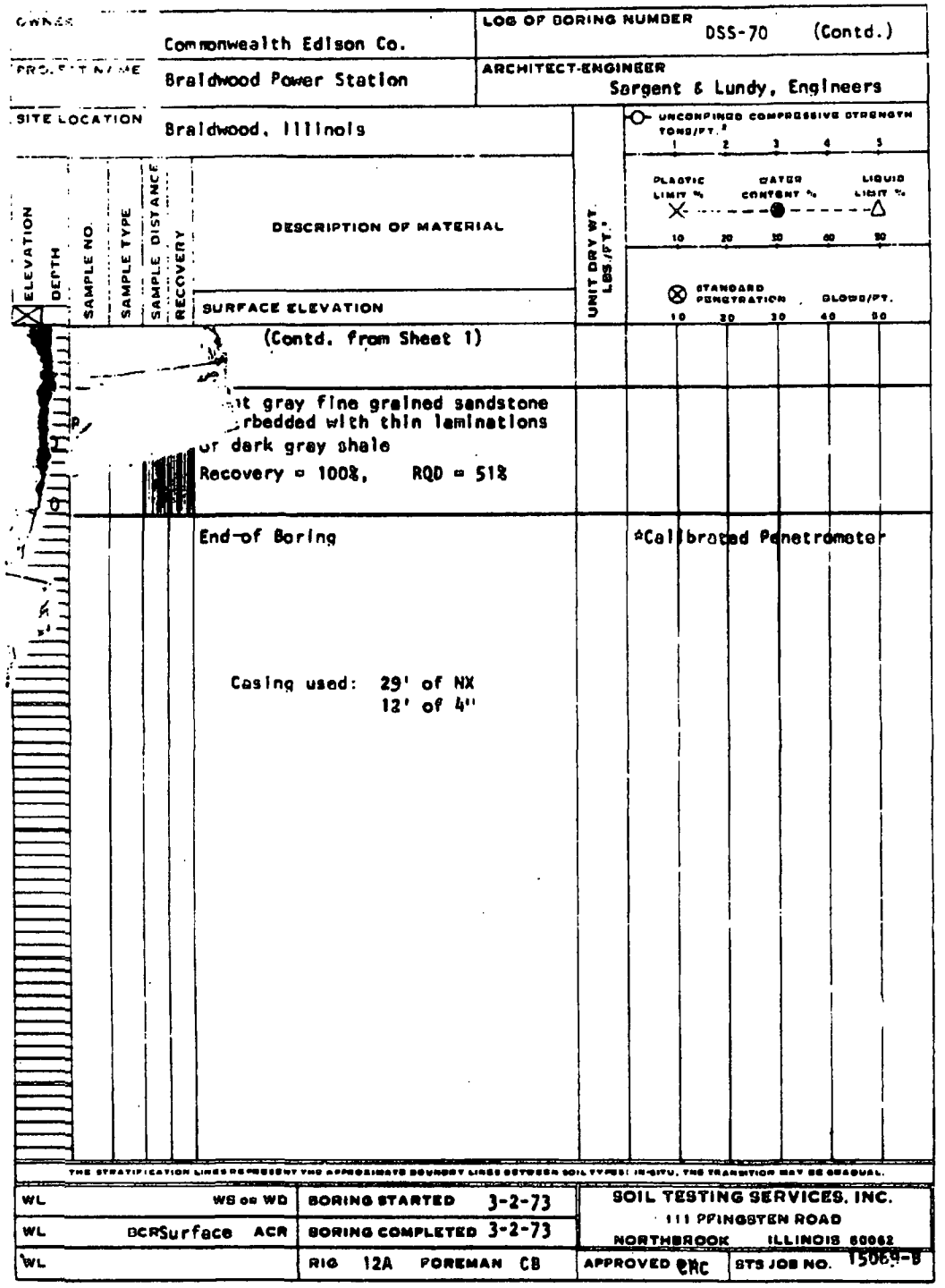
LOG OF BORING DSS-69
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-308

LOG OF BORING DSS-70
(SHEET 1 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-308

LOG OF BORING DSS-70
(SHEET 2 OF 2)

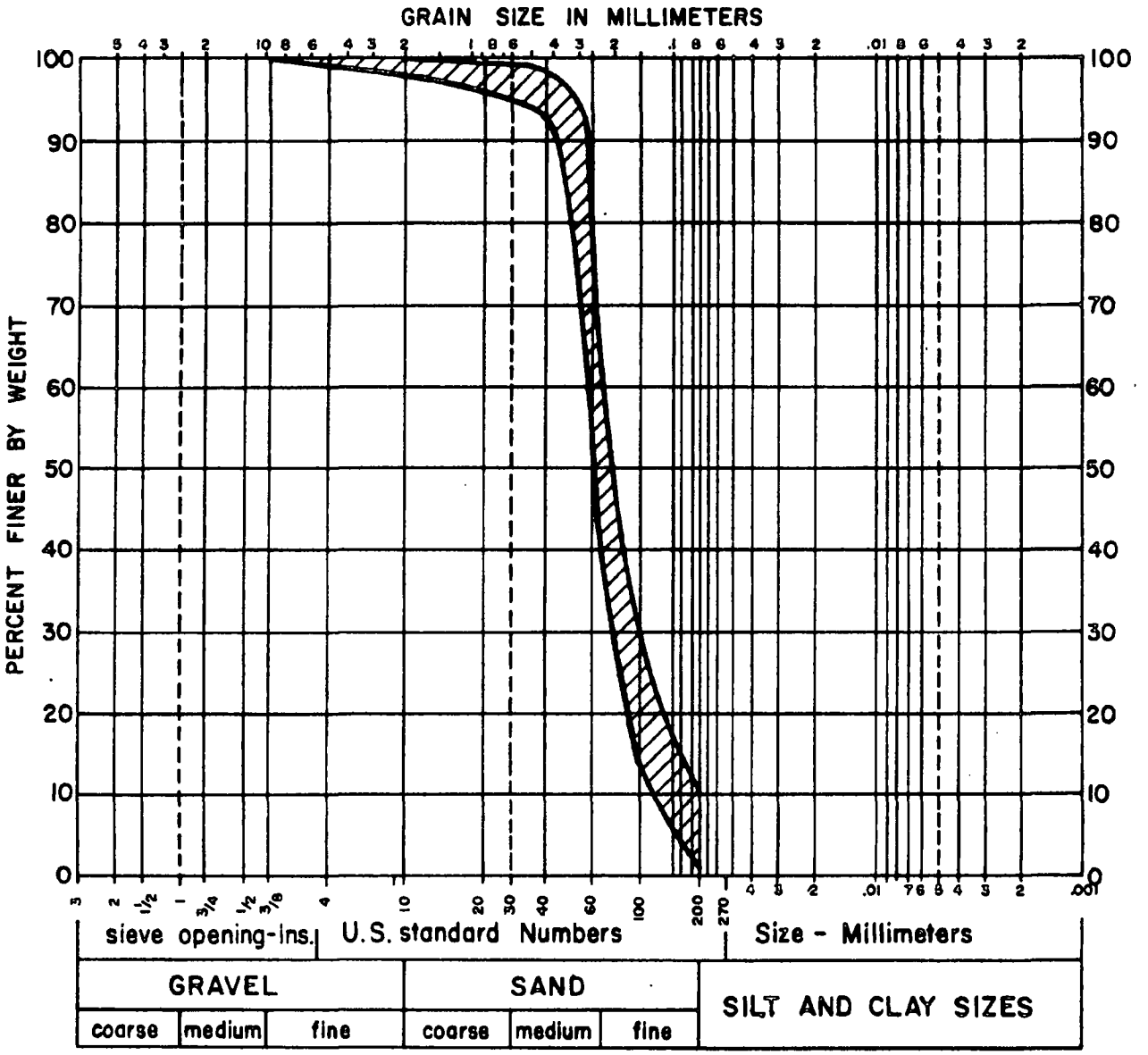


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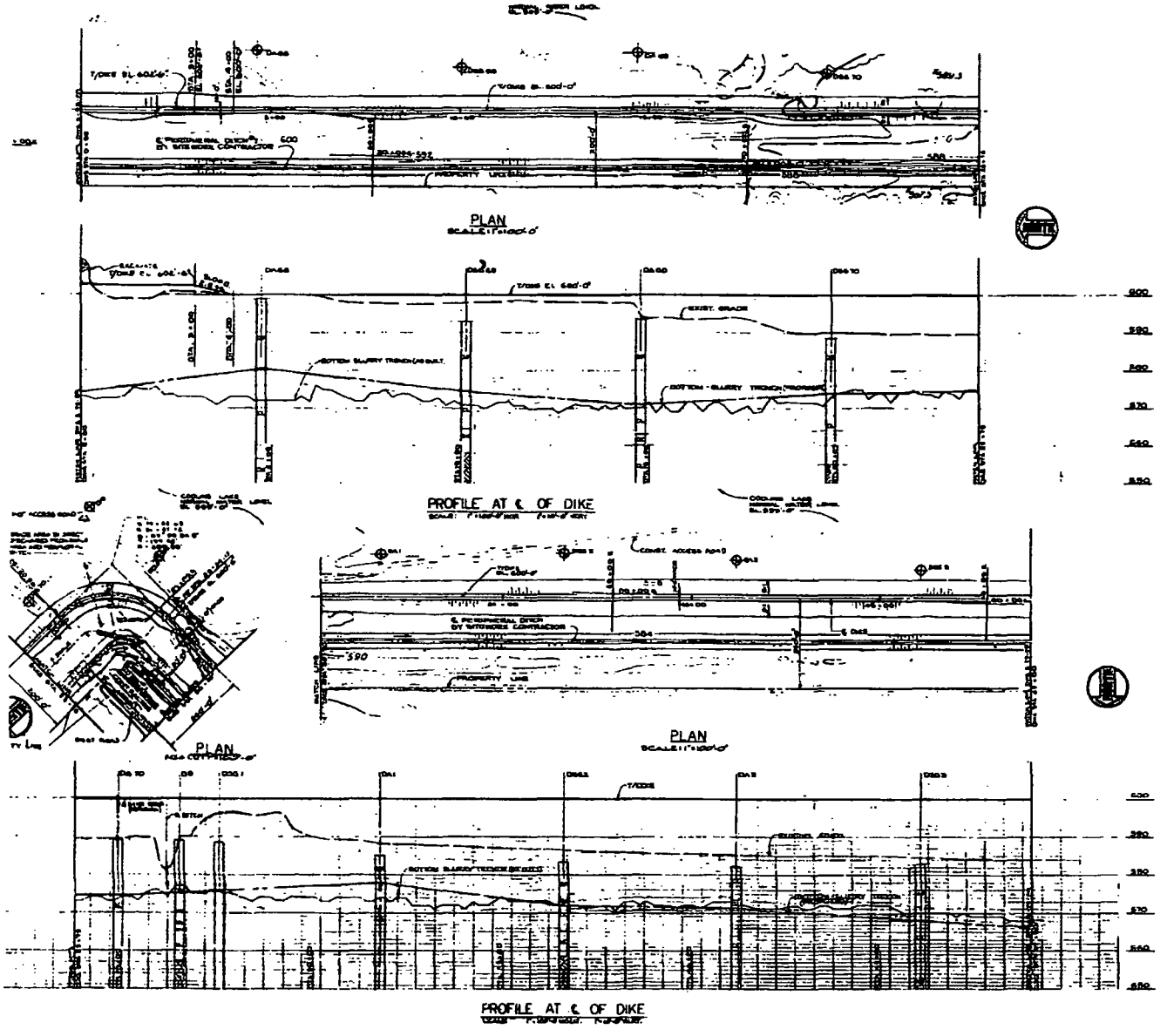
FIGURE 2.5-309

GRAIN SIZE ENVELOPE,
SAND BACKFILL, ESWP WITHIN ESCP



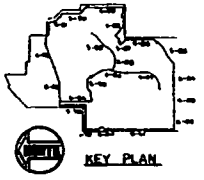


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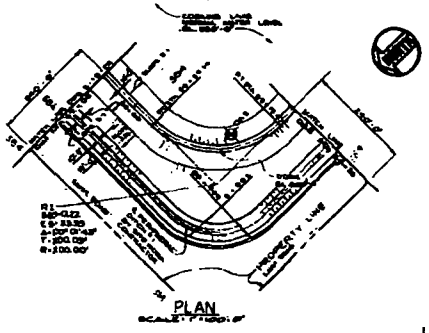
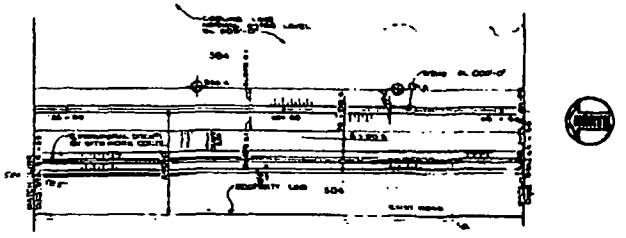
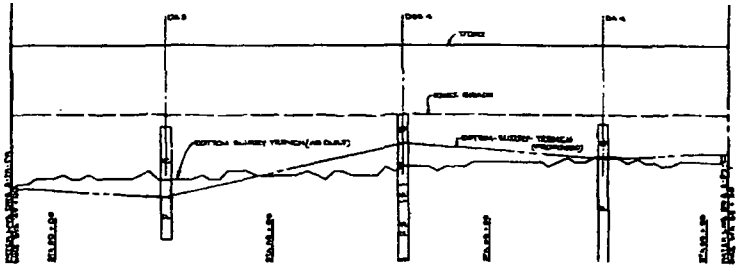
FIGURE 2.5-310

EXTERIOR DIKE PROFILE
STA 0+00 TO STA 49+00







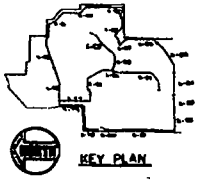


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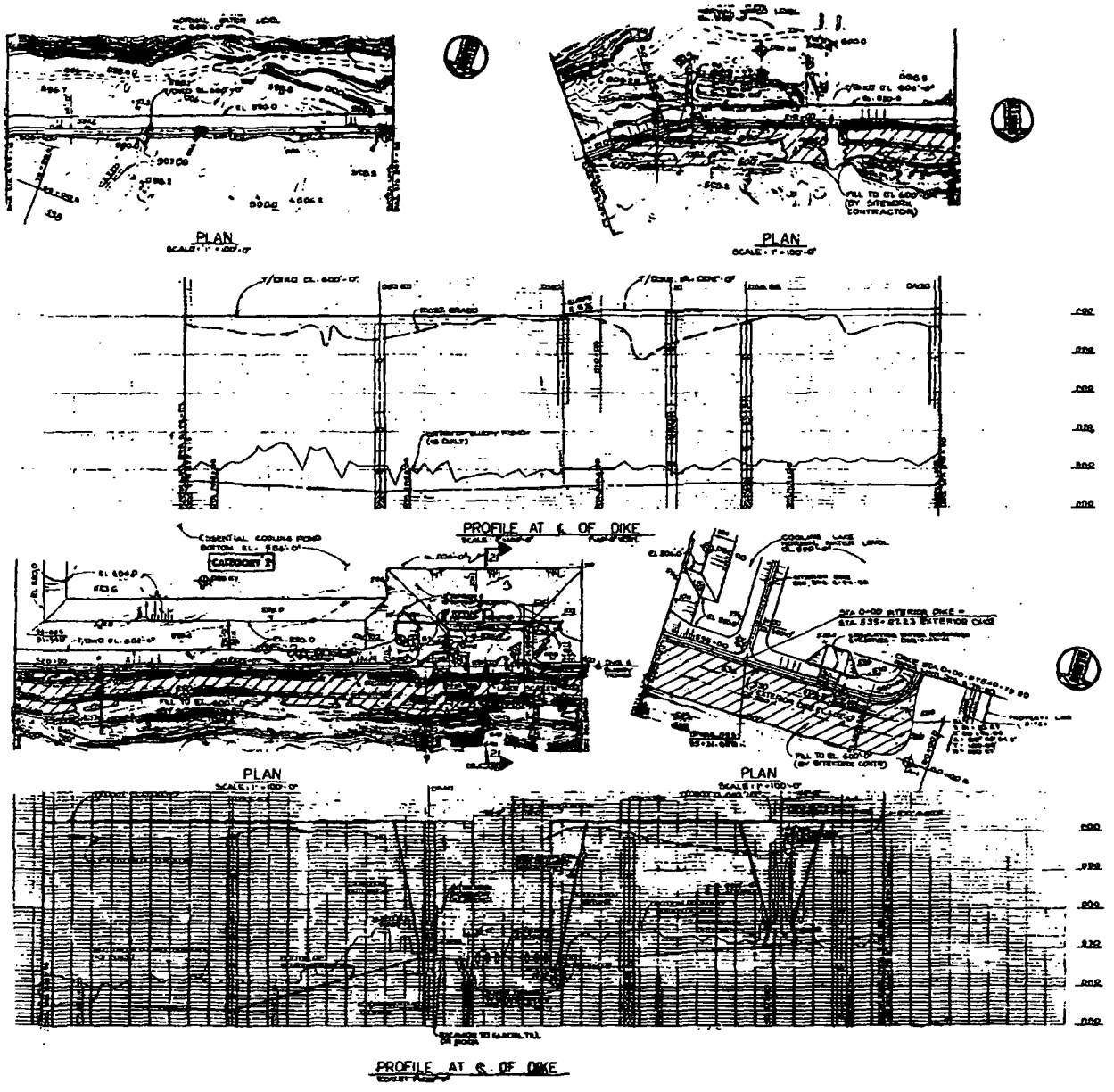
FIGURE 2.5-311

EXTERIOR DIKE PROFILE
STA 49+00 TO STA 65+50



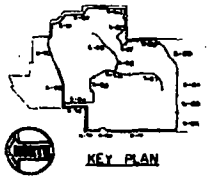


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FIGURE 2.5-312

EXTERIOR DIKE PROFILE
STA 499+15 TO STA 540+79.6

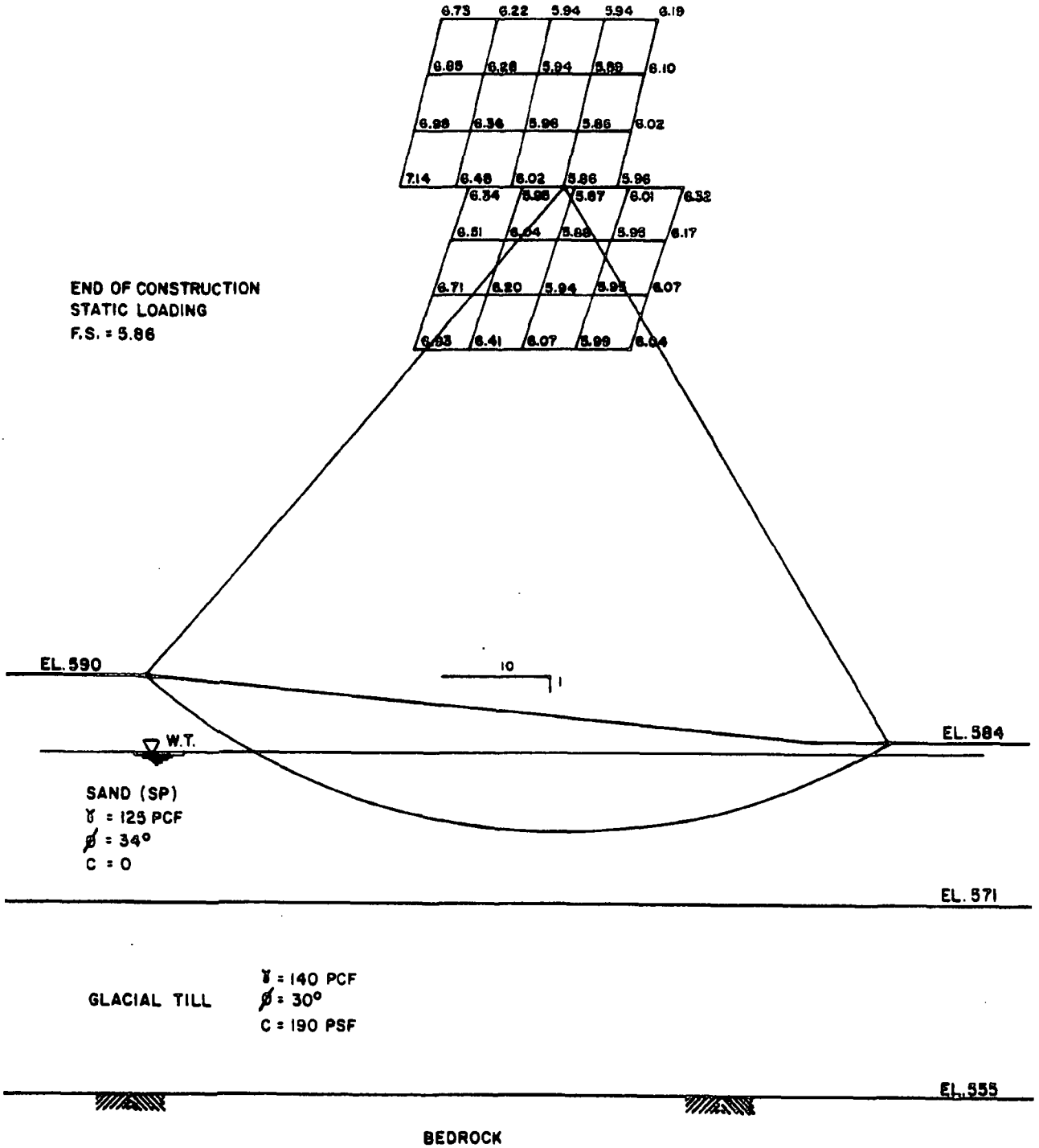

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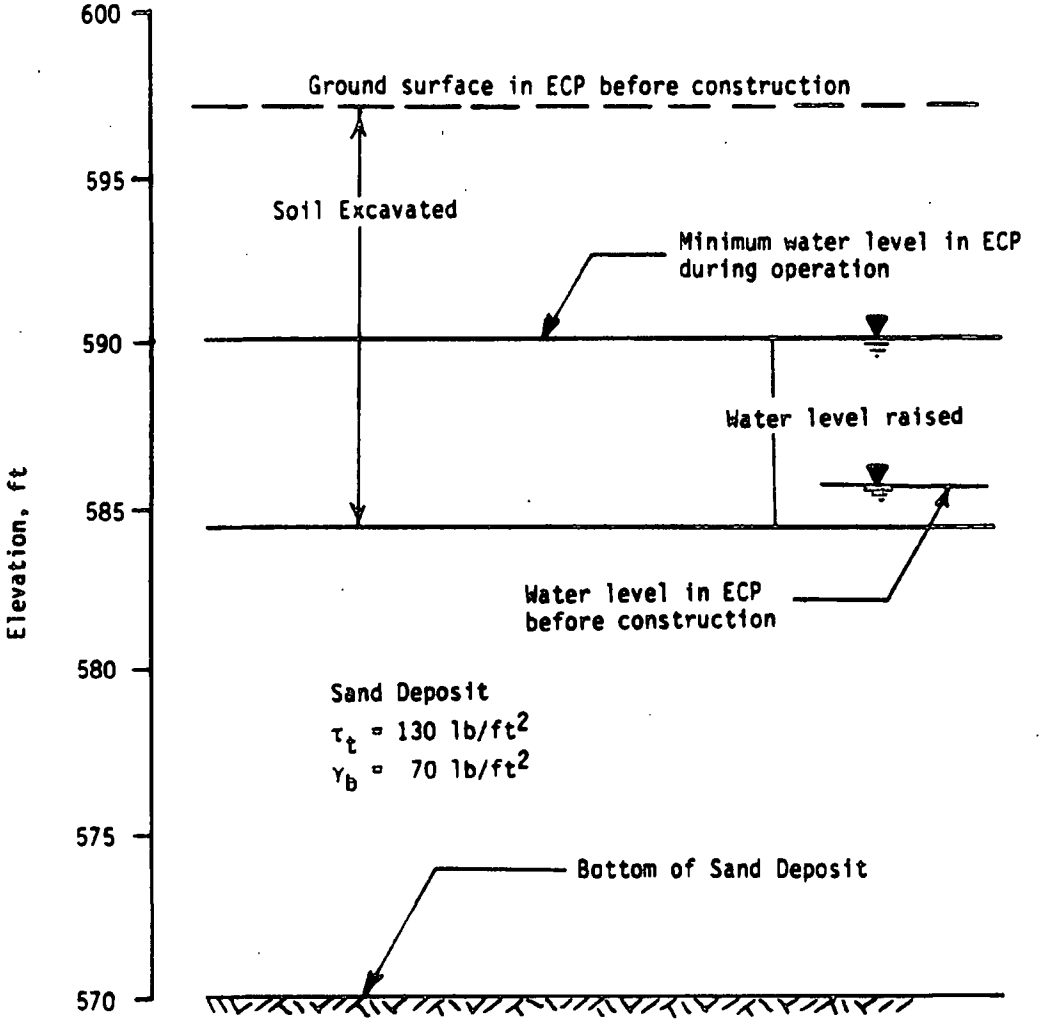
FIGURE 2.5-313

CRITICAL SECTION FOR STATIC ESCP
SLOPE STABILITY ANALYSIS



Before Construction				During Construction		
	$\bar{\sigma}_b$		$\bar{\sigma}_h$	$\bar{\sigma}_a$		
el.ft	lb/ft^2	K_o	lb/ft^2	lb/ft^2	OCR*	K_o
577.5	2085	0.40	834	455	4.5	0.88
575.0	2260	0.40	900	630	3.6	0.78
570.0	2610	0.40	1040	980	2.7	0.70

* OCR = Overconsolidation Ratio = $\frac{\bar{\sigma}_b}{\bar{\sigma}_a}$ = $\frac{\text{Effective Overburden Pressure Before Construction}}{\text{Effective Overburden Pressure After Construction}}$

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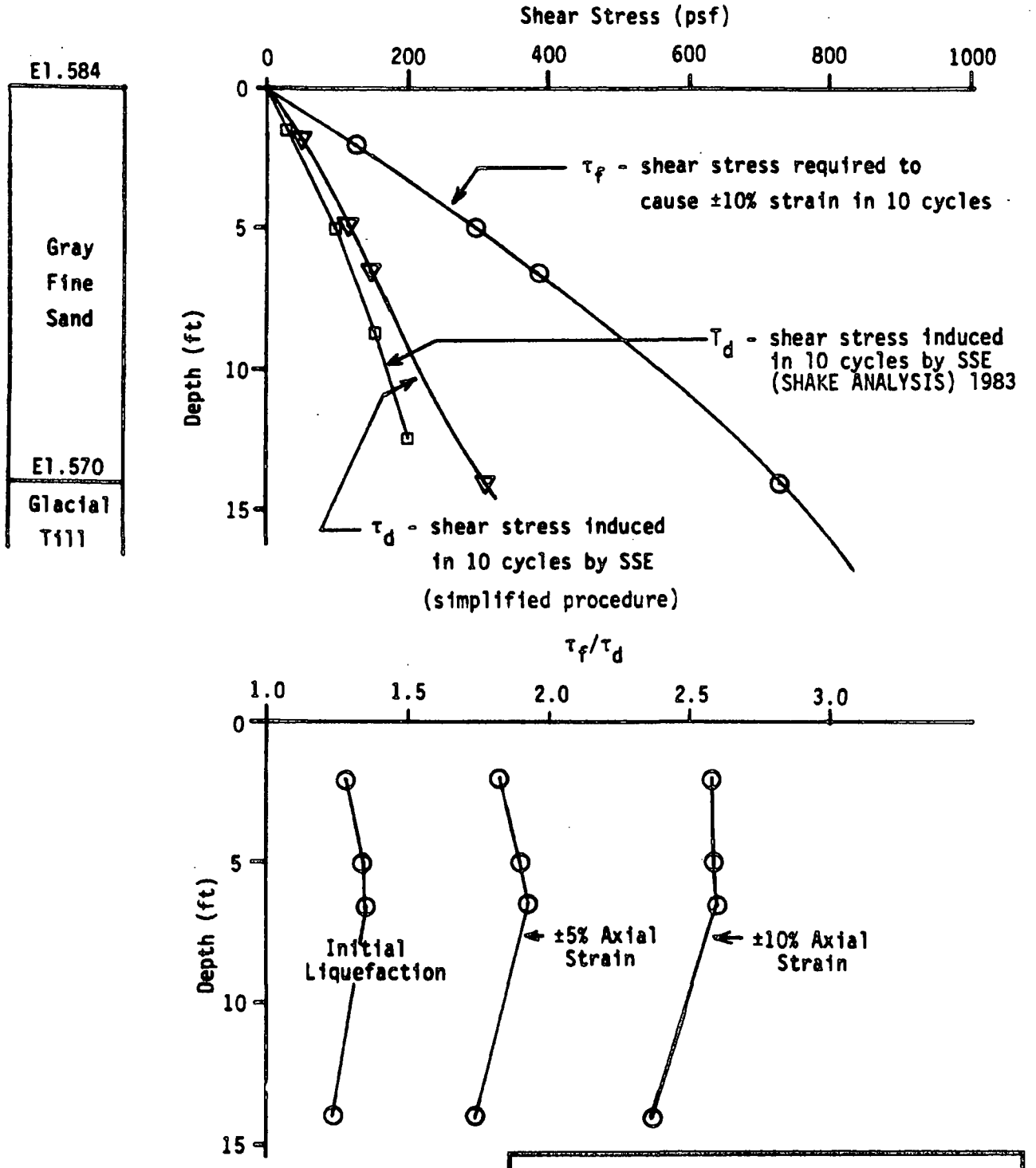
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-314

MINIMUM PRINCIPLE STRESS RATIO WITHIN SAND DEPOSIT DURING OPERATION AT EL 584 FT



BRAIDWOOD STATION
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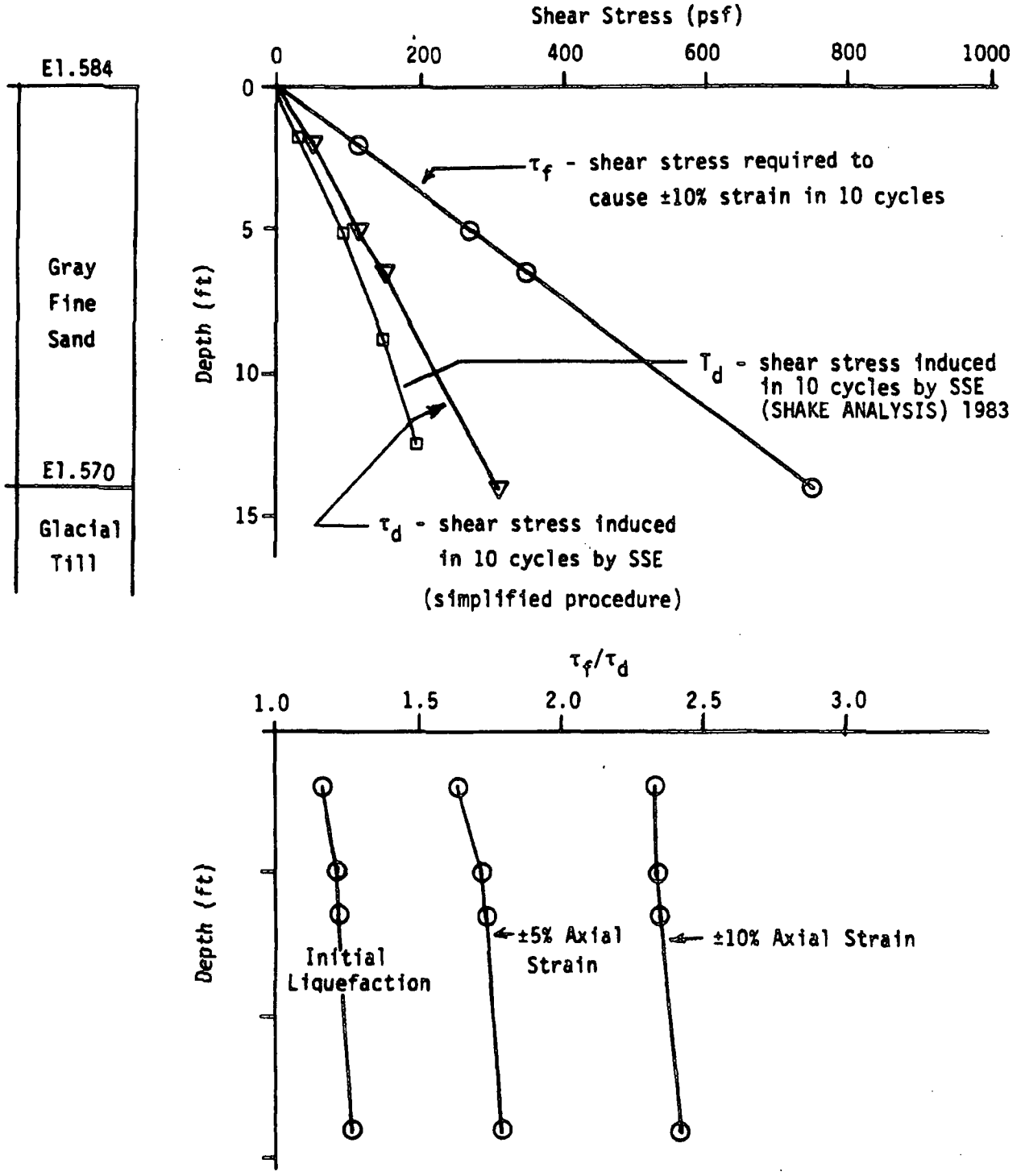
FIGURE 2.5-315

EVALUATION OF LIQUEFACTION POTENTIAL—
LEVEL GROUND AT EL 584 FT—
C_r BASED ON D_r



BRAIDWOOD STATION
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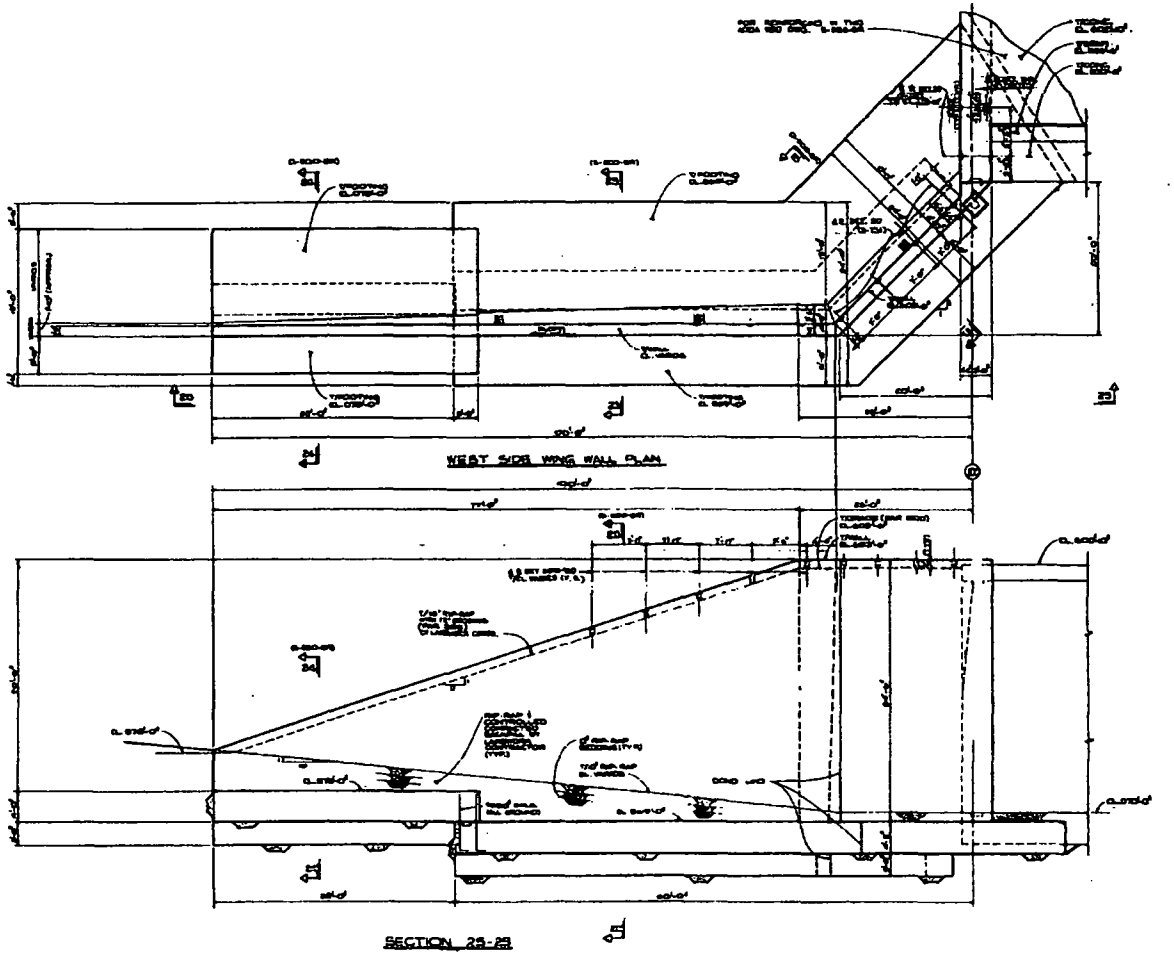
FIGURE 2.5-316

EVALUATON OF LIQUEFACTION POTENTIAL—
LEVEL GROUND AT EL 584 FT—
Cr BASED ON K_o



BRAIDWOOD STATION
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FIGURE 2.5-317

LAKE SCREEN HOUSE WEST WING WALL

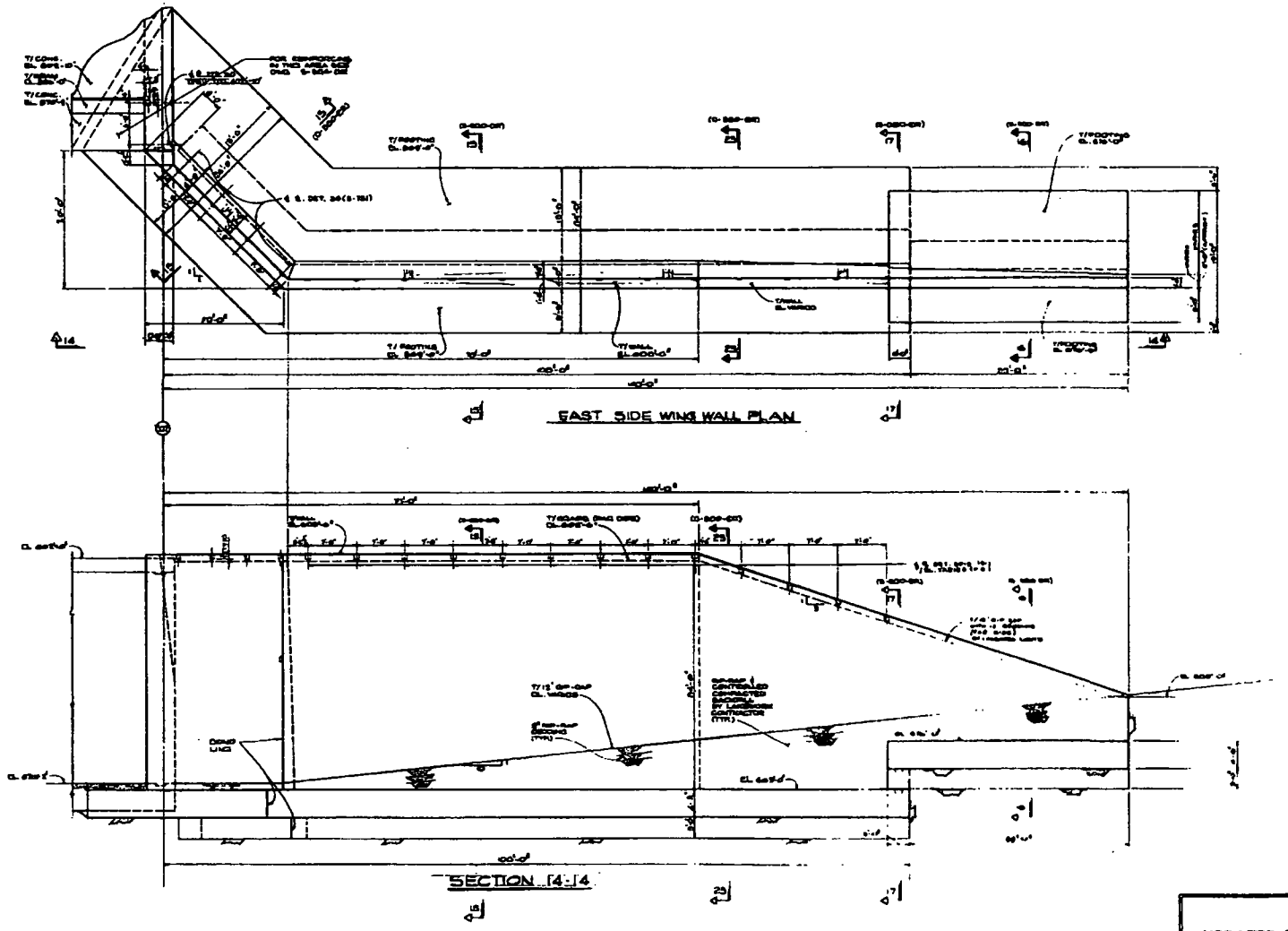

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FIGURE 2.5-318

LAKE SCREEN HOUSE EAST WING WALL

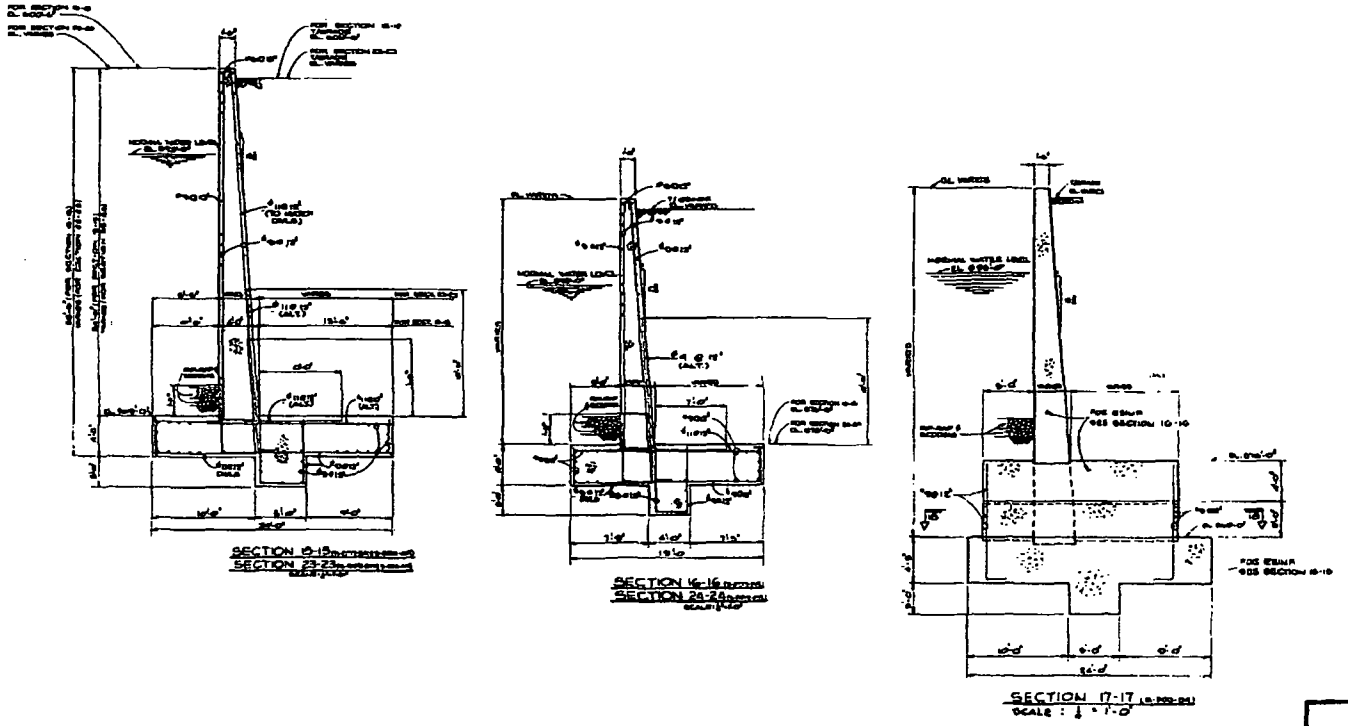

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FIGURE 2.5-319

LAKE SCREEN HOUSE WINGWALL SECTIONS