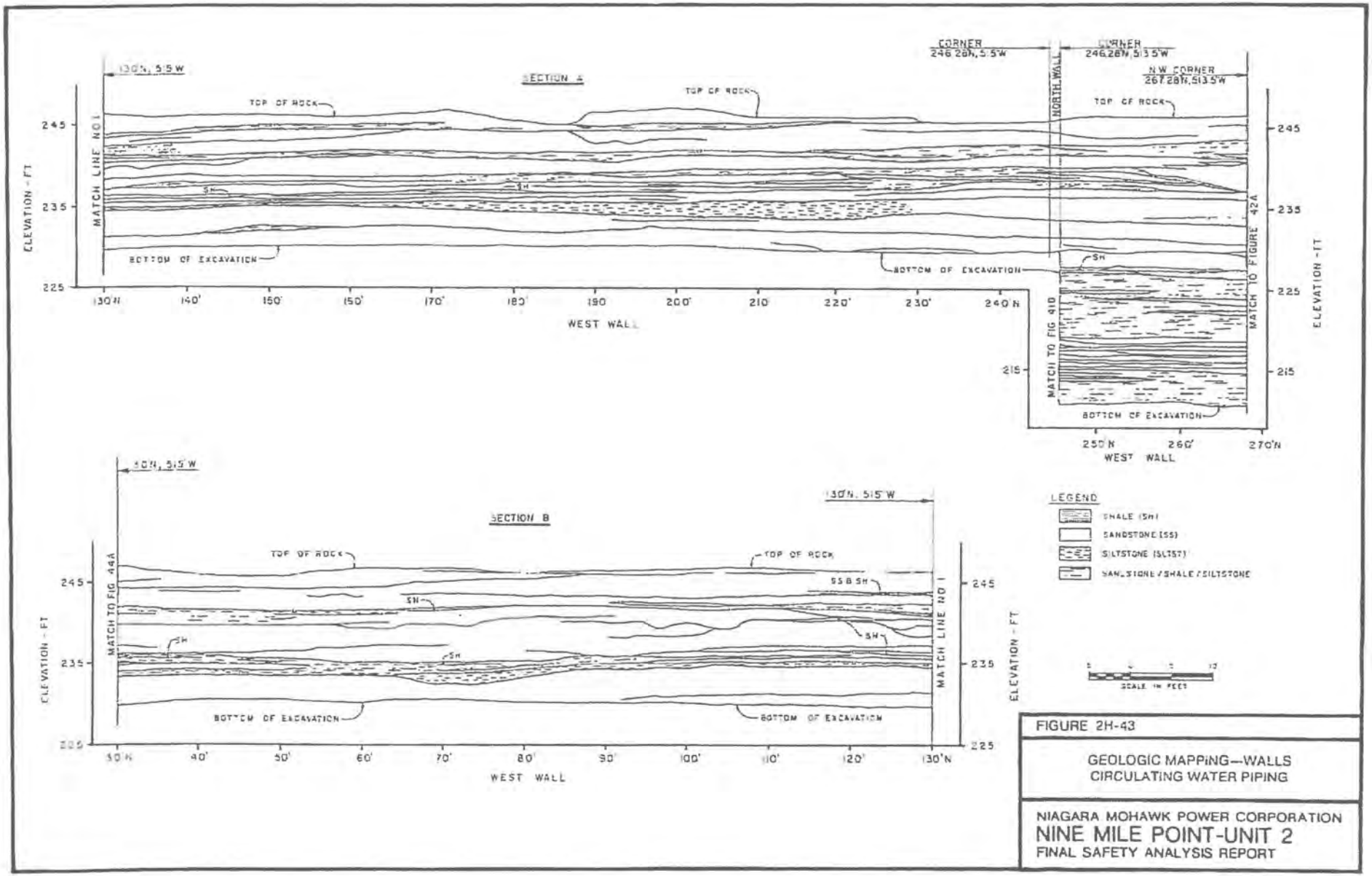


FIGURE 2H-43

GEOLOGIC MAPPING—WALLS
CIRCULATING WATER PIPING

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

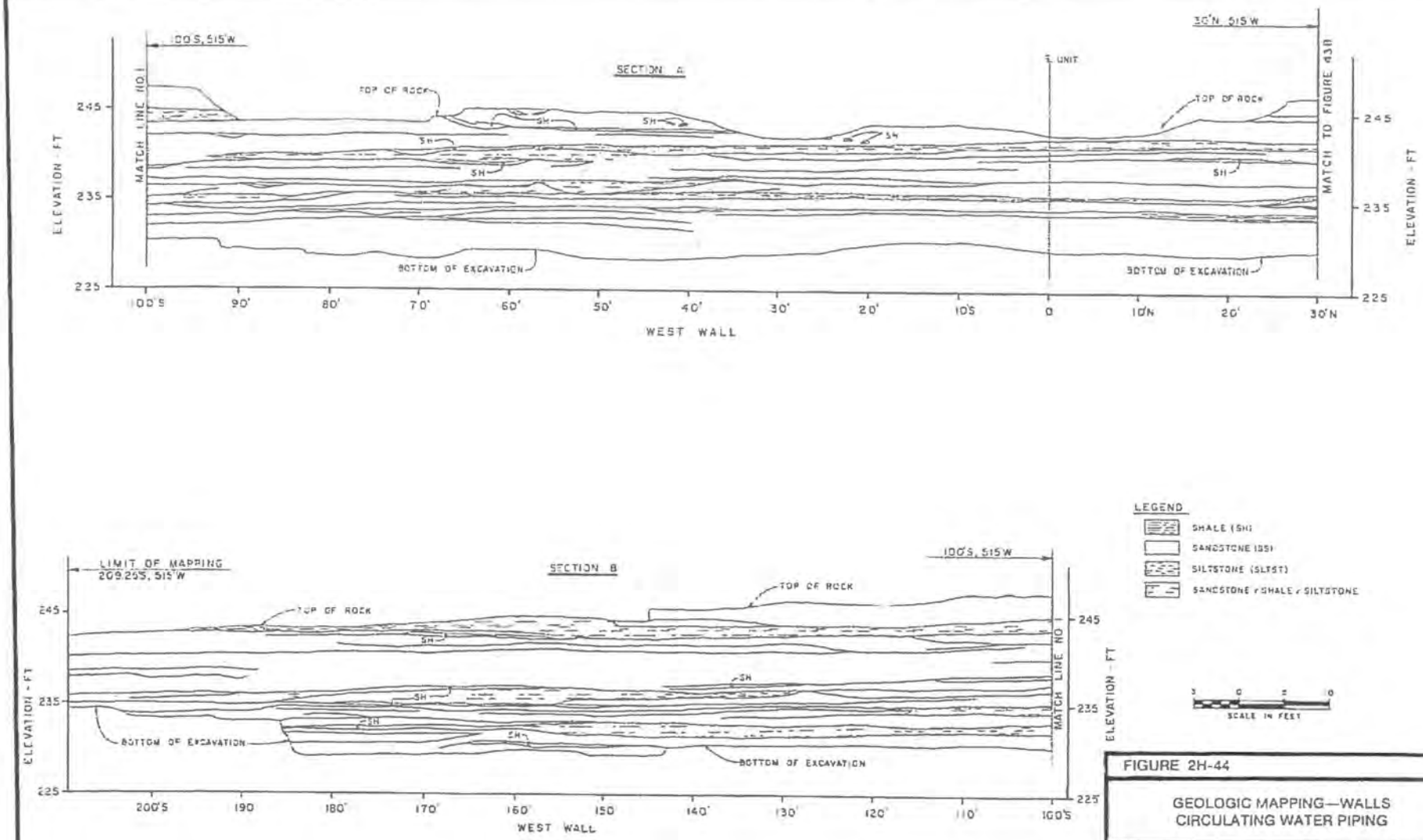


FIGURE 2H-44

GEOLOGIC MAPPING—WALLS
CIRCULATING WATER PIPING

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

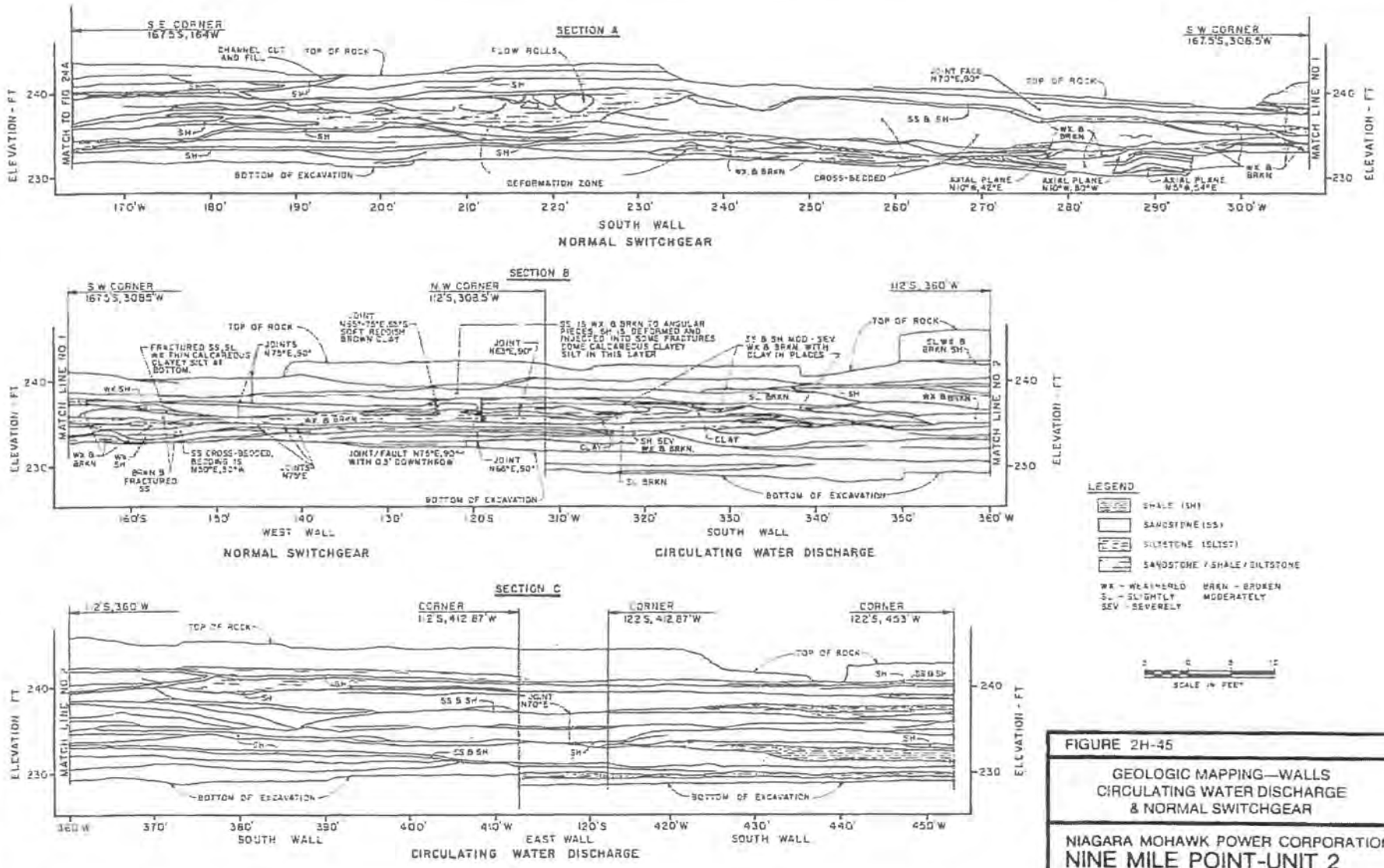


FIGURE 2H-45

GEOLOGIC MAPPING—WALLS
CIRCULATING WATER DISCHARGE
& NORMAL SWITCHGEAR

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

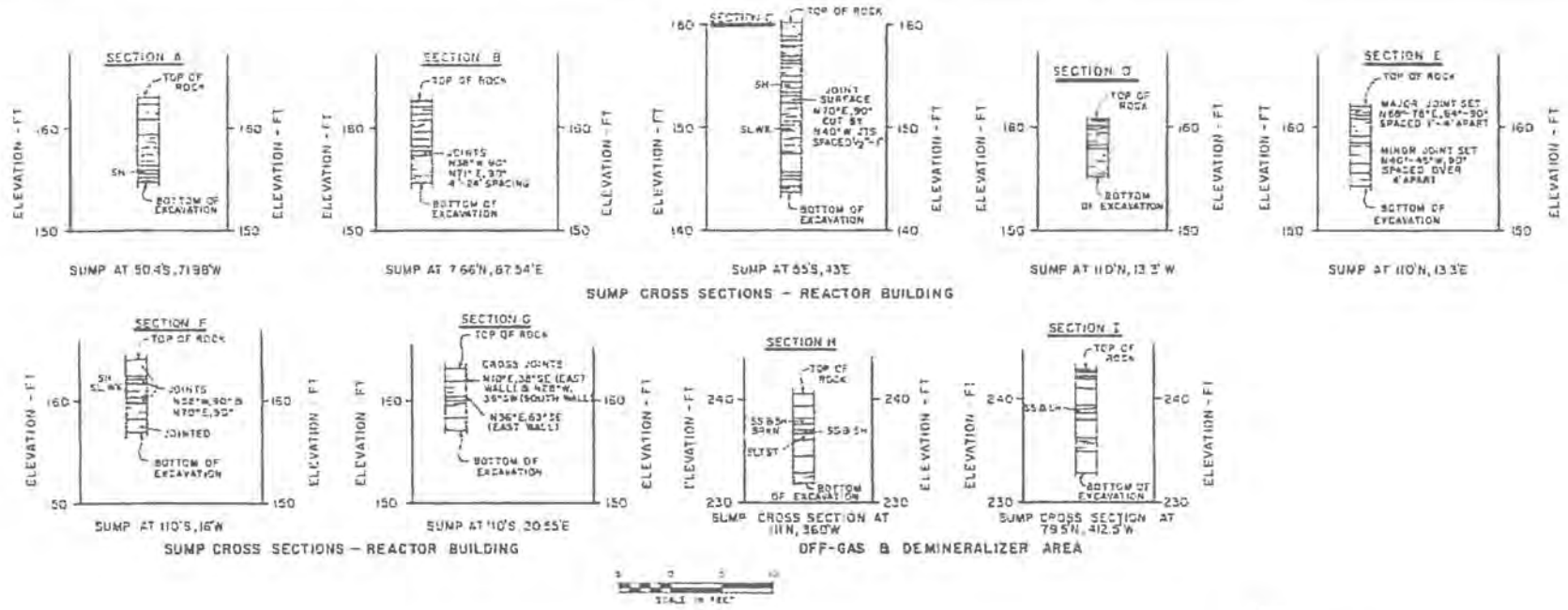


FIGURE 2H-46

GEOLOGIC MAPPING—WALLS SUMPS, NOTCH—REACTOR BUILDING SUMPS—OFF-GAS & DEMINERALIZER BUILDING

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

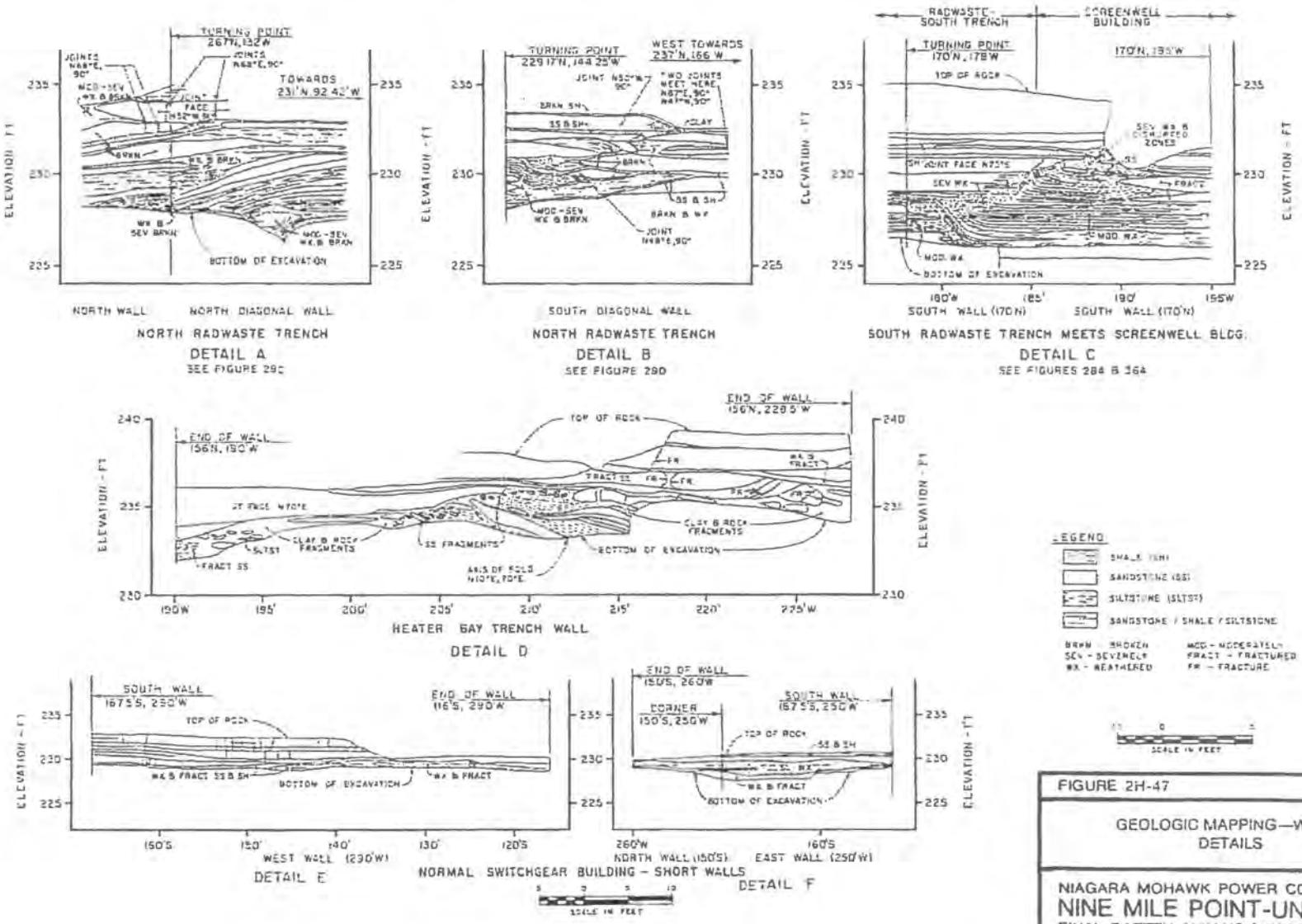


FIGURE 2H-47

GEOLOGIC MAPPING—WALLS
DETAILS

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

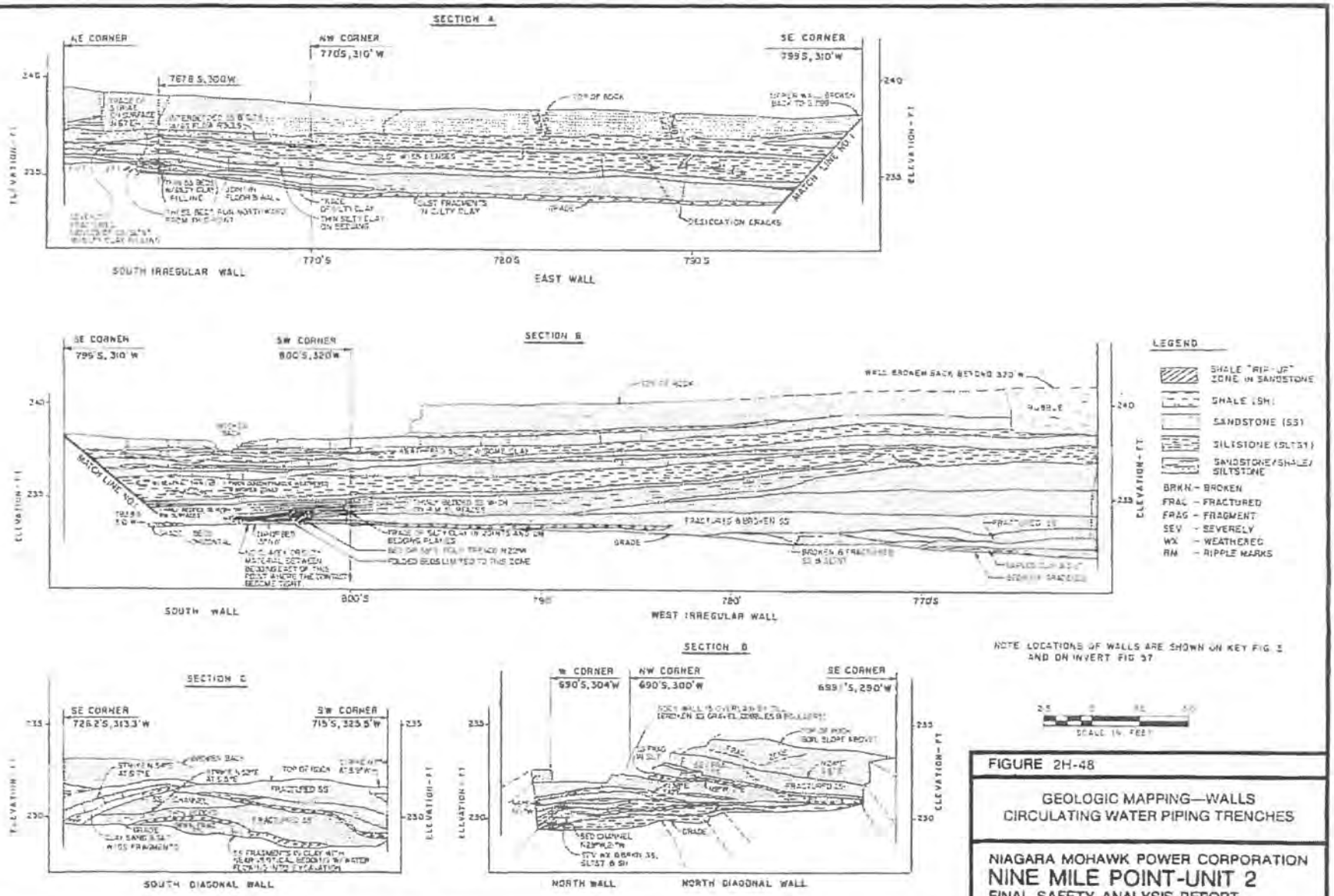
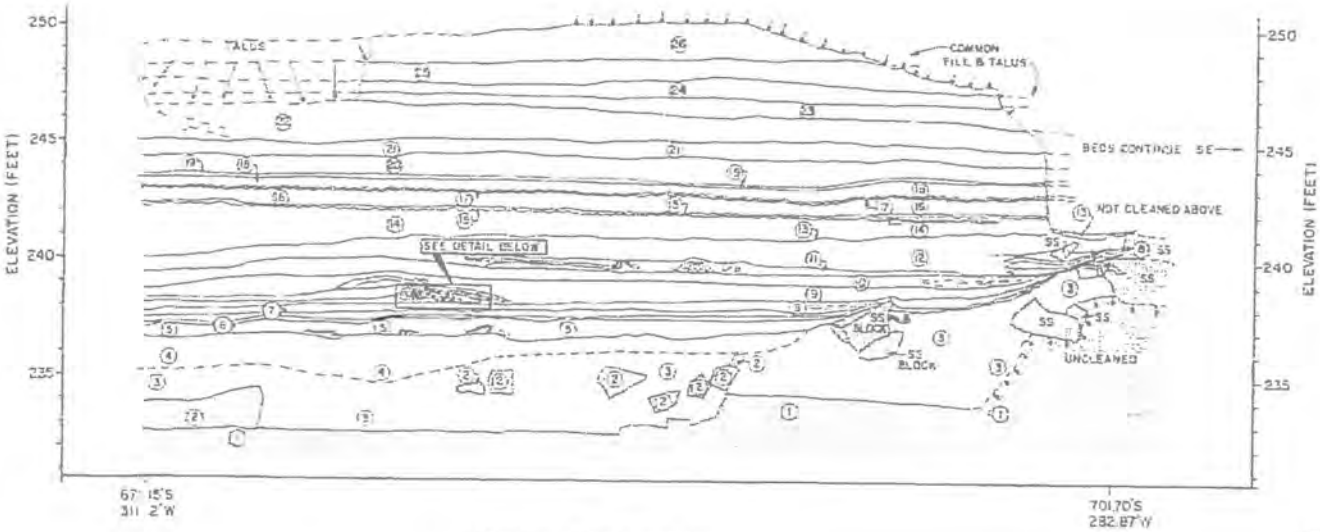


FIGURE 2H-48

GEOLOGIC MAPPING—WALLS
CIRCULATING WATER PIPING TRENCHES

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

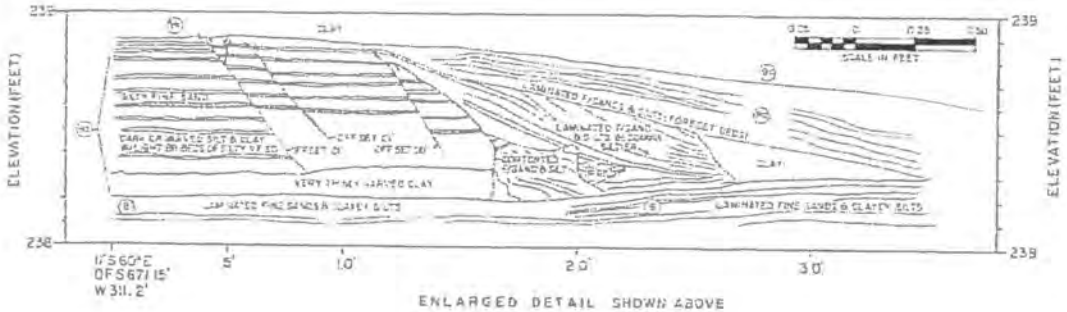


DIAGONAL NORTH SOIL WALL

STRATIGRAPHIC UNITS

1. IN PLACE BEDROCK
2. DECAYED BEDROCK.
3. COBBLE & BOULDER TILL.
4. GRAVEL TILL.
5. CONVOLUTED CLAY WITH SILT & SAND & OCCASIONAL ERRATICS.
6. VERY FINE SAND WITH SILT INTERBED.
7. ICE RAFTED UNSORTED CLAYEY SANDS & GRAVEL WITH OCCASIONAL CONVOLUTED SAND & CLAYEY SILT BEDS.
8. VARVED FINE SAND & CLAYEY SILT
9a. SEVERELY CONVOLUTED SAND, SILT & CLAY.
9b. LAMINATED & VARVED FINE SAND & SILT.
10. VARVED FINE SAND & CLAYEY SILT.
11. ICE RAFTED ZONE WITH OCCASIONAL ERRATIC CONVOLUTED BED OF FINE SAND & SILT.
12. VARVED SAND, SILT & CLAY.
13. MEDIUM SAND.
14. RIPPLE MARKED SAND, SILT & CLAY.
15. GRAY CLAY.
16. RIPPLE MARKED FINE TO VERY FINE SAND, SILT & CLAY.
17. CLAY (RIPPLE MARKED - SOLE CASTS).
18. RIPPLE MARKED FINE TO VERY FINE SAND, SILT & CLAY.
19. CLAY (VERY THIN).
20. CONVOLUTED SILT
21. SILT WITH LENSES OF FINE TO VERY FINE SAND
22. DARK SILT WITH CONVOLUTED FINE SAND BEDS WITH TRACE OF CALCIC REPLACEMENT.
23. WHITISH VARVED VERY FINE SAND & SILT
24. LIGHT TO MEDIUM GRAY FINE SAND & SILT WITH OCCASIONAL PEBBLES & COBBLES.
25. LIGHT GRAY VERY FINE SAND & SILT WITH FROST WEDGES, ABUNDANT ORGANICS & PEAT
26. DARK BROWN MODERN PEAT WITH ROOTS & VEGETATION.

NOTE FOR SECTIONS OF UNDERLYING BEDROCK SEE FIG. 49



ENLARGED DETAIL SHOWN ABOVE

LEGEND

SS – SANDSTONE

SMALL OFFSETS SHOWING DIRECTION OF RELATIVE MOVEMENT

5) STRATIGRAPHIC UNITS DESCRIBED ABOVE
CY-CLAY FI-FINE OR GREEN BR-BROWN

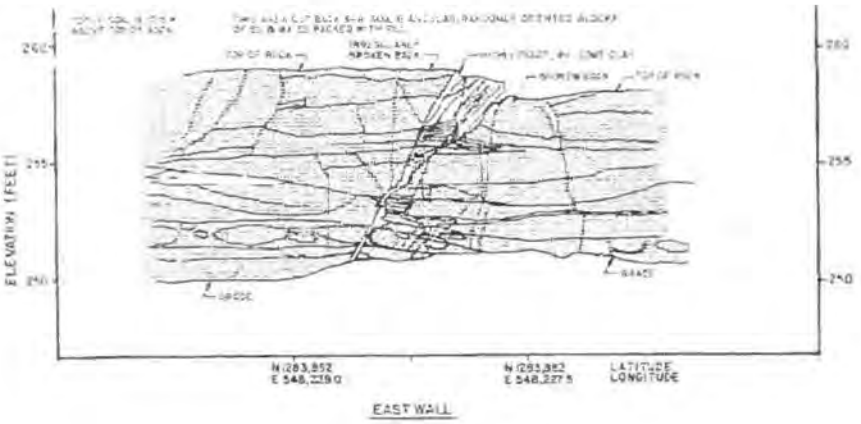
SCALE IN FEET

FIGURE 2H-49

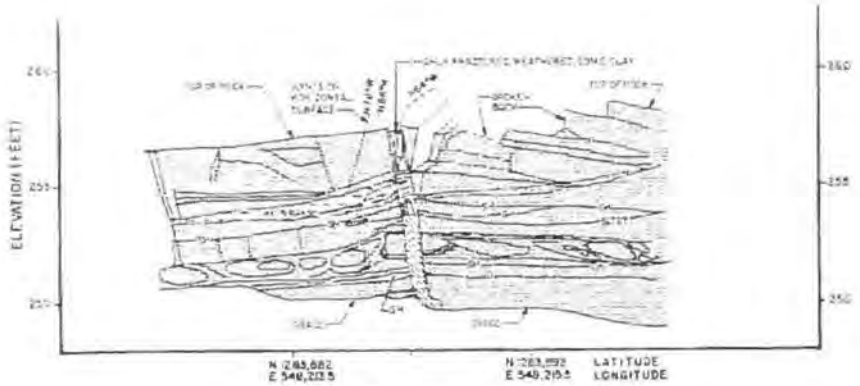
NORTH SOIL WALL OF
CIRCULATING WATER PIPING TRENCH

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

DRAINAGE DITCH



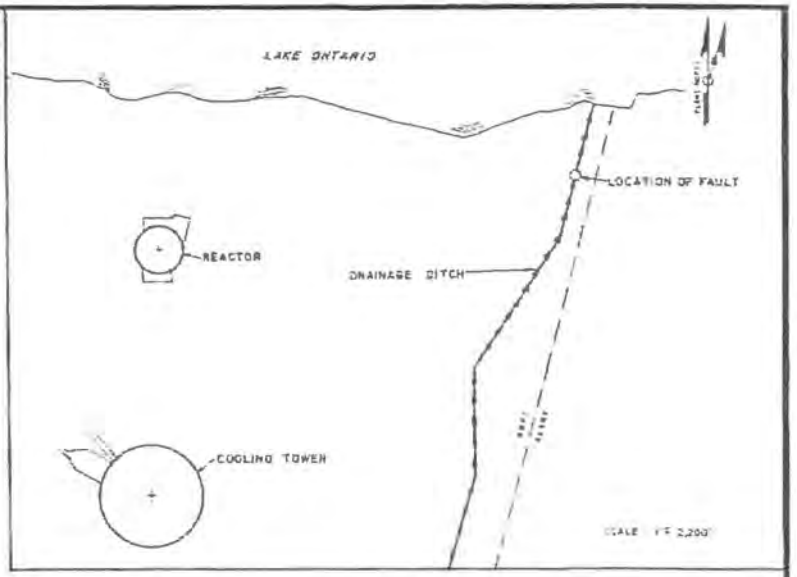
EAST WALL



WEST WALL

NOTE: THE DRAINAGE DITCH IS 16' WIDE WITH ITS MIDPOINT AT THE FAULT LOCATED AT PLANT COORDINATES -N 1269', W 1731' FROM THE CENTER OF THE REACTOR. THIS LOCATION FALLS OUTSIDE OF THE KEY TO GEOLOGIC MAPS. (FIG 1)

FAULT INTERSECTING THE DRAINAGE DITCH, N70°W, SUBVERTICAL NE DIP.



LEGEND

- SHALE (SH)
- SANDSTONE (SS)
- SILTSTONE (SLTST)
- SANDSTONE / SHALE / SILTSTONE

WX - WEATHERED
BRKN - BROKEN
FRACT - FRACTURED

FIGURE 2H-50

GEOLOGIC MAPPING—WALLS
DRAINAGE DITCH FAULT

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

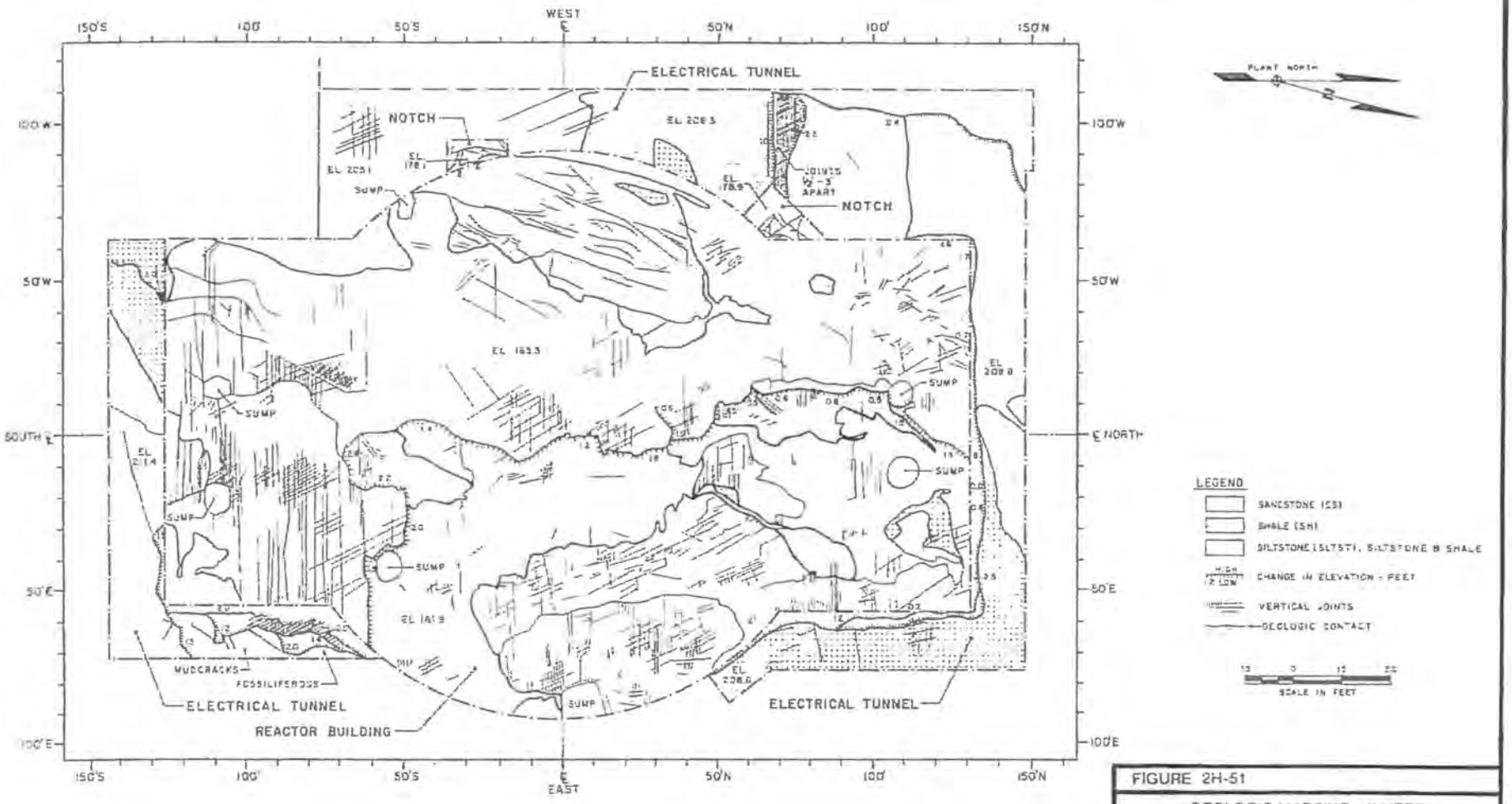
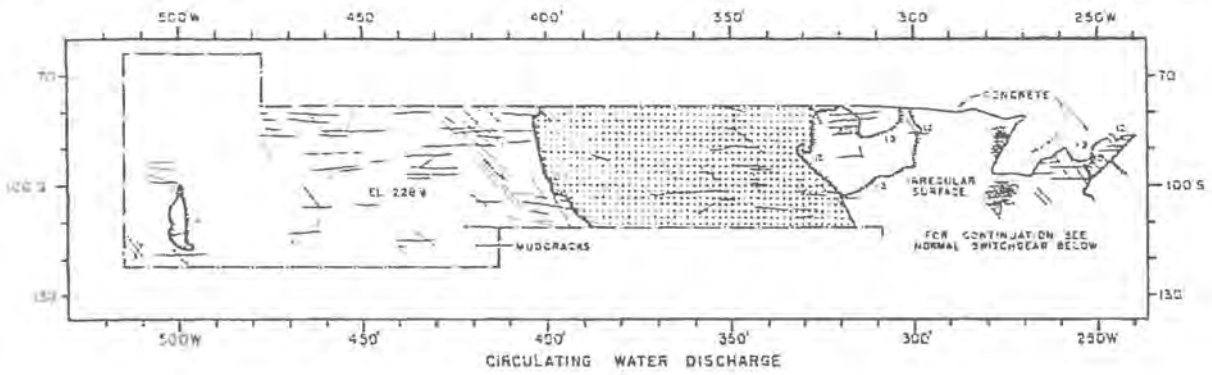


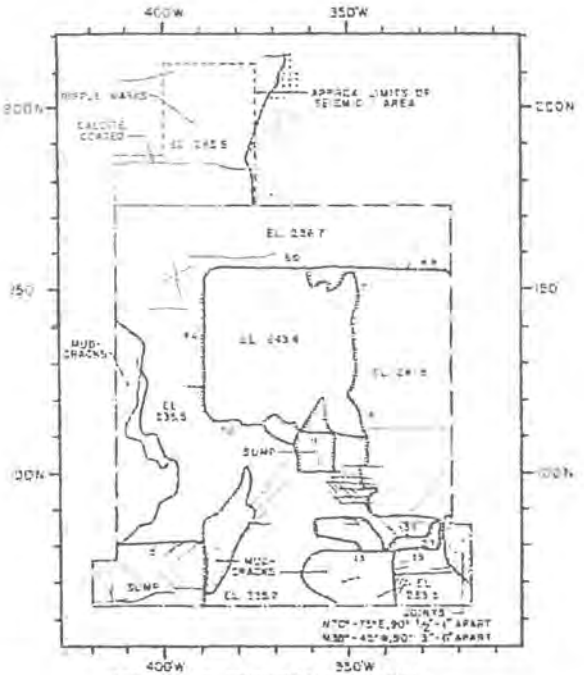
FIGURE 2H-51

GEOLOGIC MAPPING—INVERT
REACTOR BUILDING AND
ELECTRICAL TUNNELS

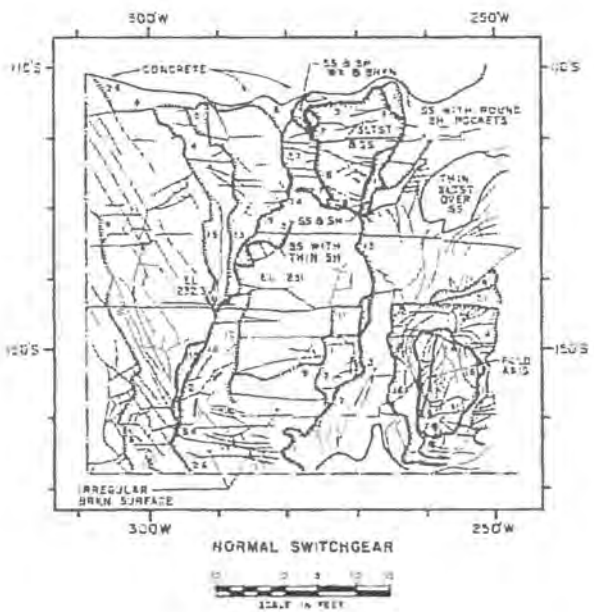
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



CIRCULATING WATER DISCHARGE



OFF-GAS & DEMINERALIZER AREA



NORMAL SWITCHGEAR

FIGURE 2H-52

GEOLOGIC MAPPING—INVERT CIRCULATING WATER DISCHARGE, OFF-GAS & DEMINERALIZER BUILDING, NORMAL SWITCHGEAR

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

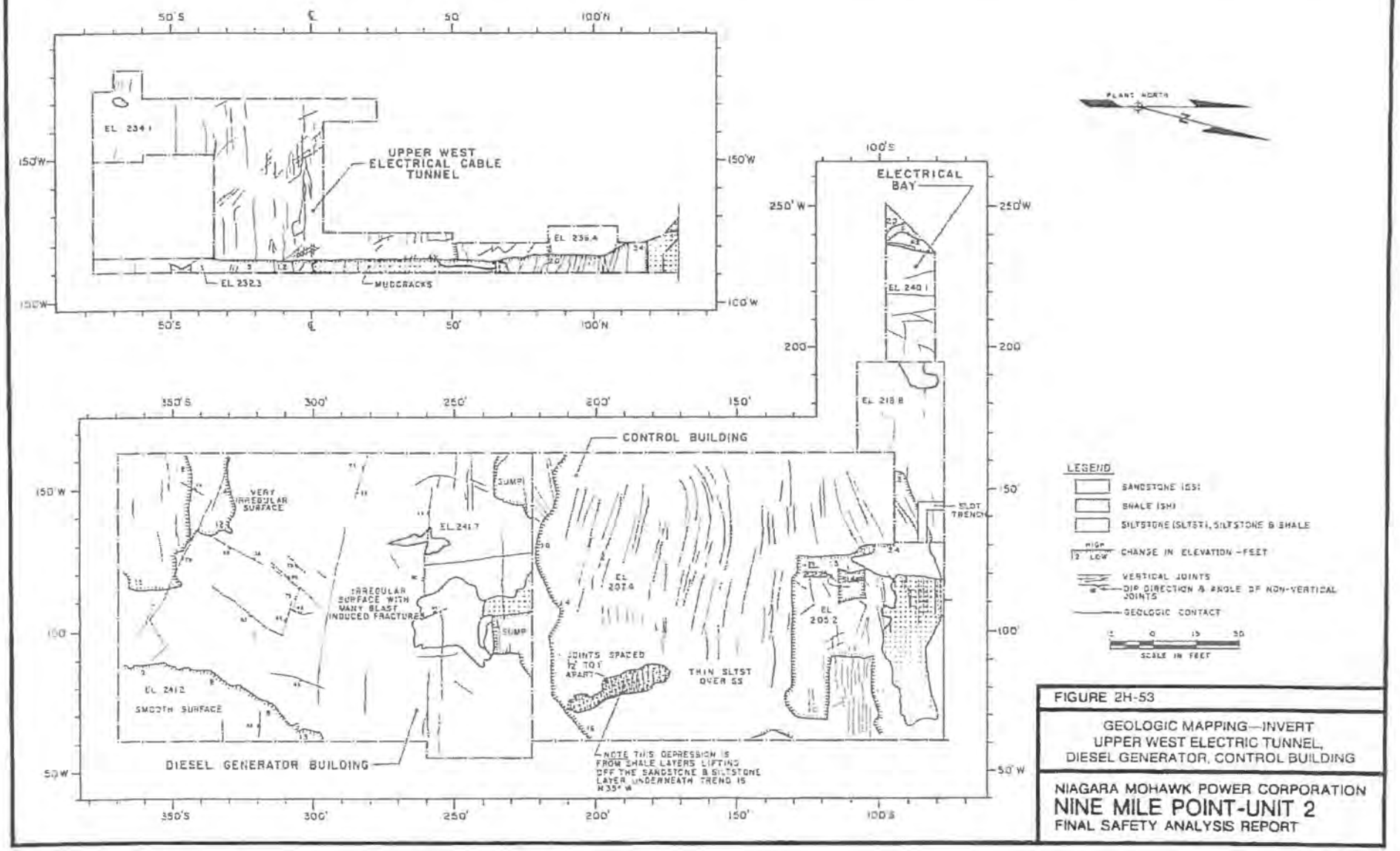


FIGURE 2H-53

GEOLOGIC MAPPING—INVERT
UPPER WEST ELECTRIC TUNNEL,
DIESEL GENERATOR, CONTROL BUILDING

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

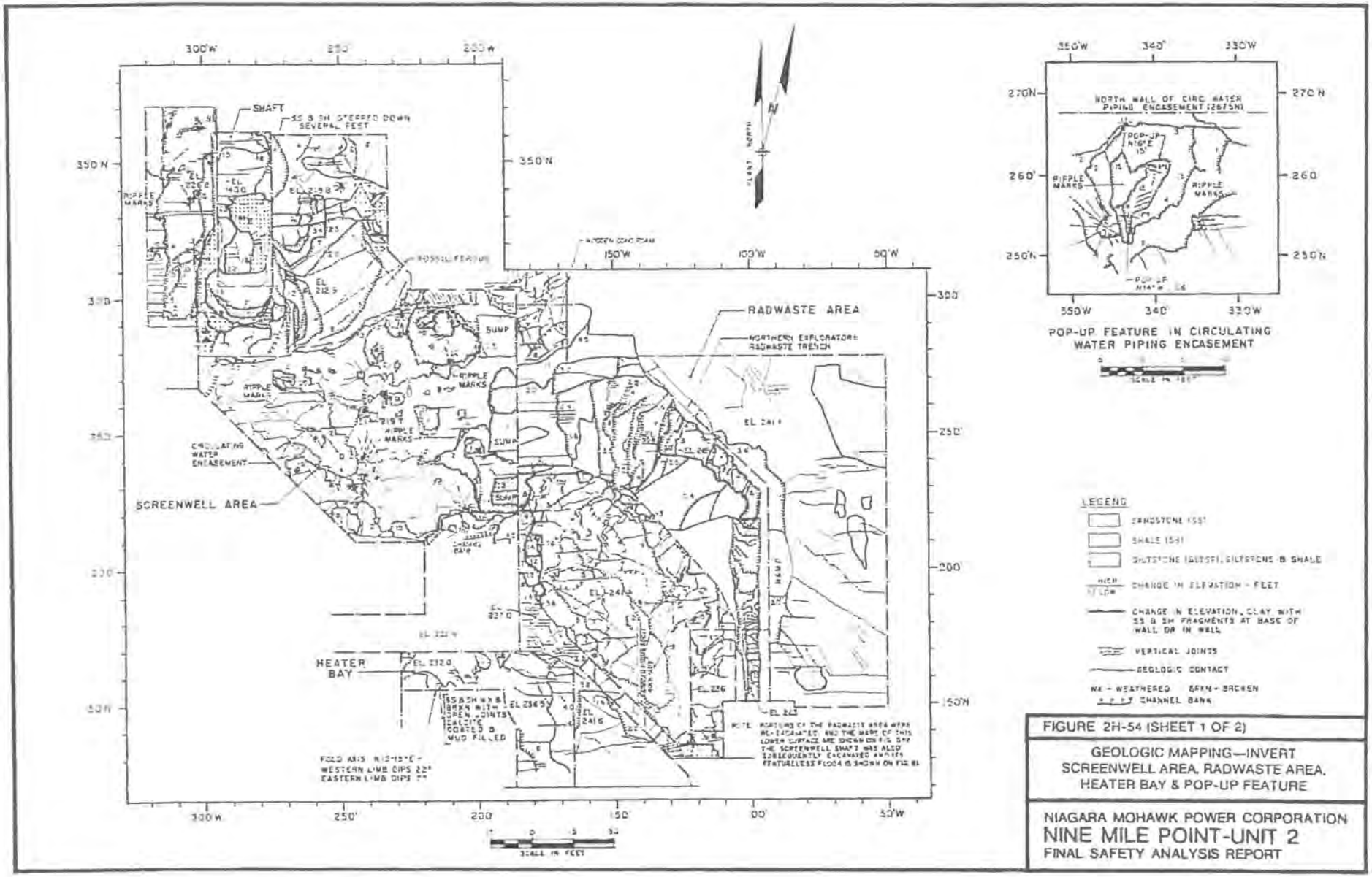
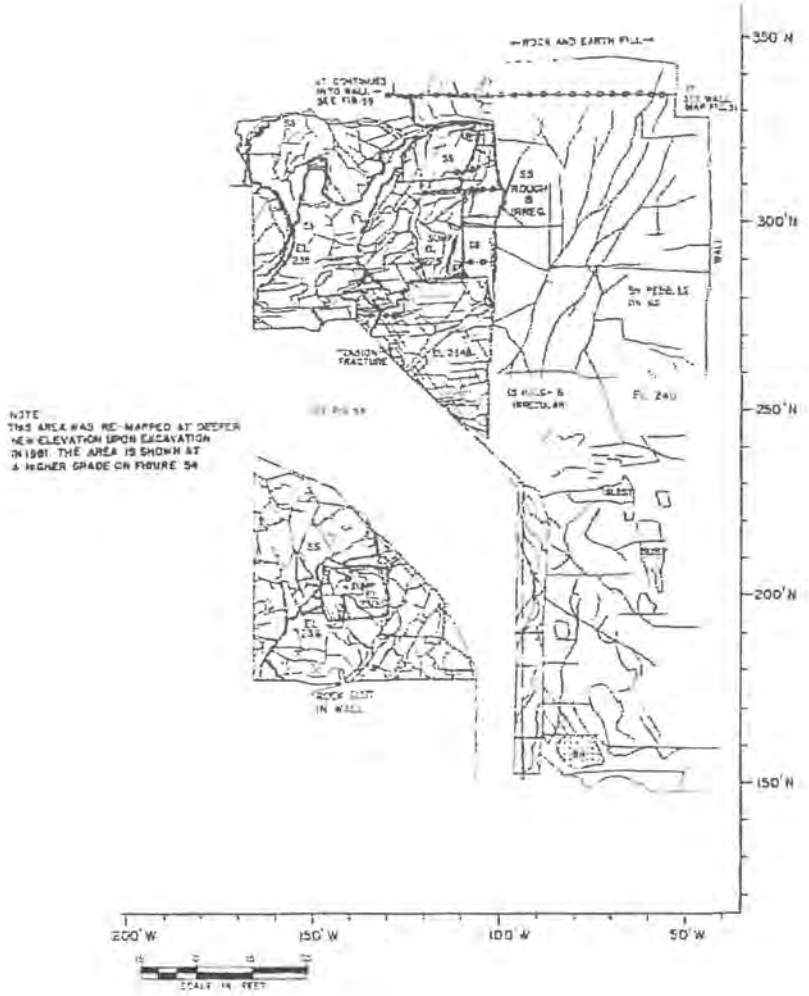


FIGURE 2H-54 (SHEET 1 OF 2)

GEOLOGIC MAPPING—INVERT SCREENWELL AREA, RADWASTE AREA, HEATER BAY & POP-UP FEATURE

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



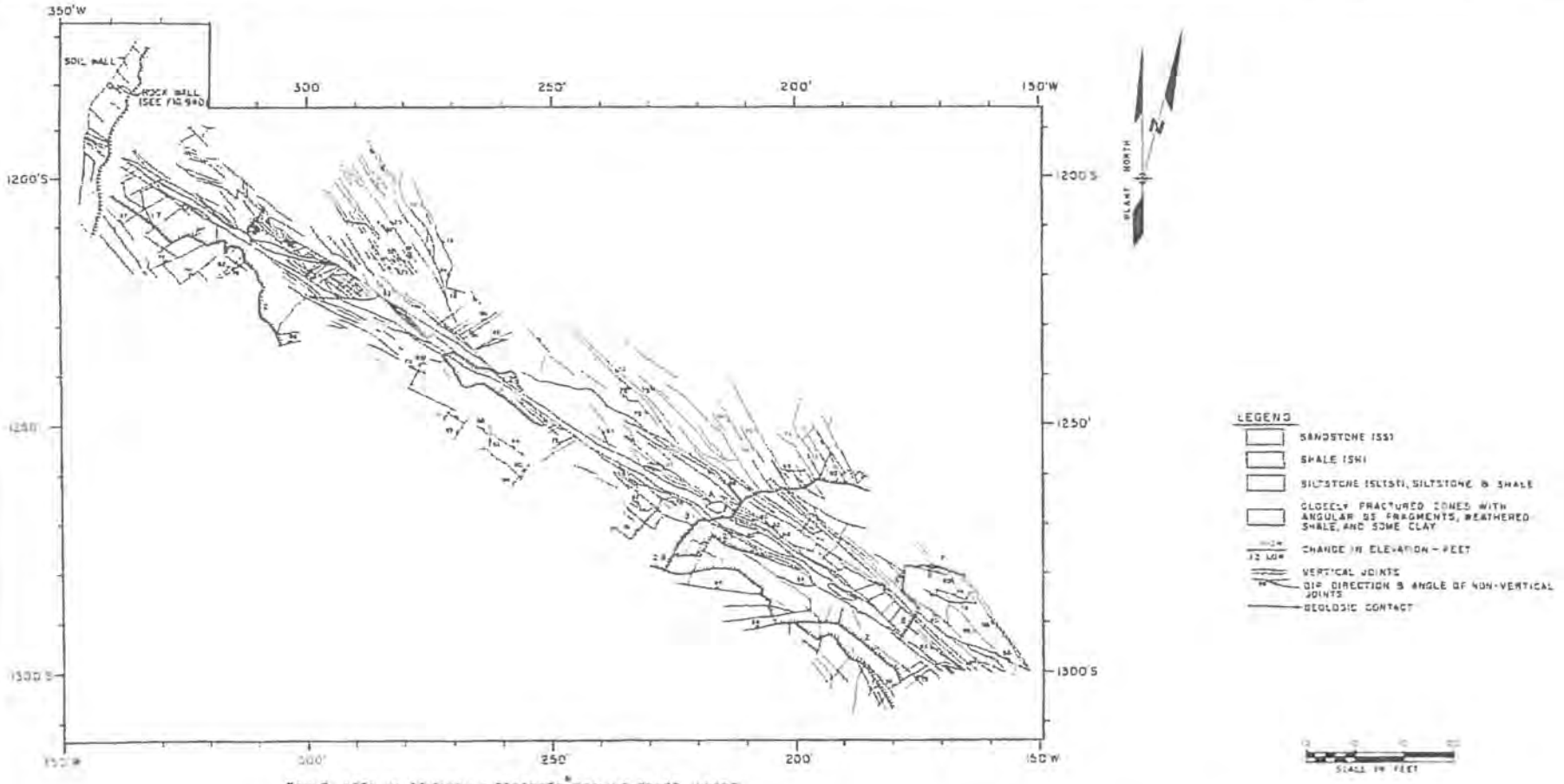
LEGEND

- SANDSTONE (SS)
- SHALE (SH)
- SILTSTONE (SLTST), SILTSTONE & SHALE
- HIGH / LOW — CHANGE IN ELEVATION — FEET
- CHANGE IN ELEVATION, CLAY WITH SS & SH FRAGMENTS AT BASE OF WALL OR IN WALL
- BRECCIATED, CLAY FILLED ZONE
- VERTICAL JOINTS INTERSECTING BRECCIATED, CLAY FILLED ZONE

FIGURE 2H-54 (SHEET 2 OF 2)

GEOLOGIC MAPPING—INVERT
RADWASTE EXCAVATION

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



*NOTE THE ORIGINALLY PROPOSED COOLING TOWER LOCATION WAS REVISED AND THE NEW LOCATION IS SHOWN ON FIG. 1

FIGURE 2H-55

GEOLOGIC MAPPING—INVERT
COOLING TOWER CIRCULATING WATER
PIPING TRENCH

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

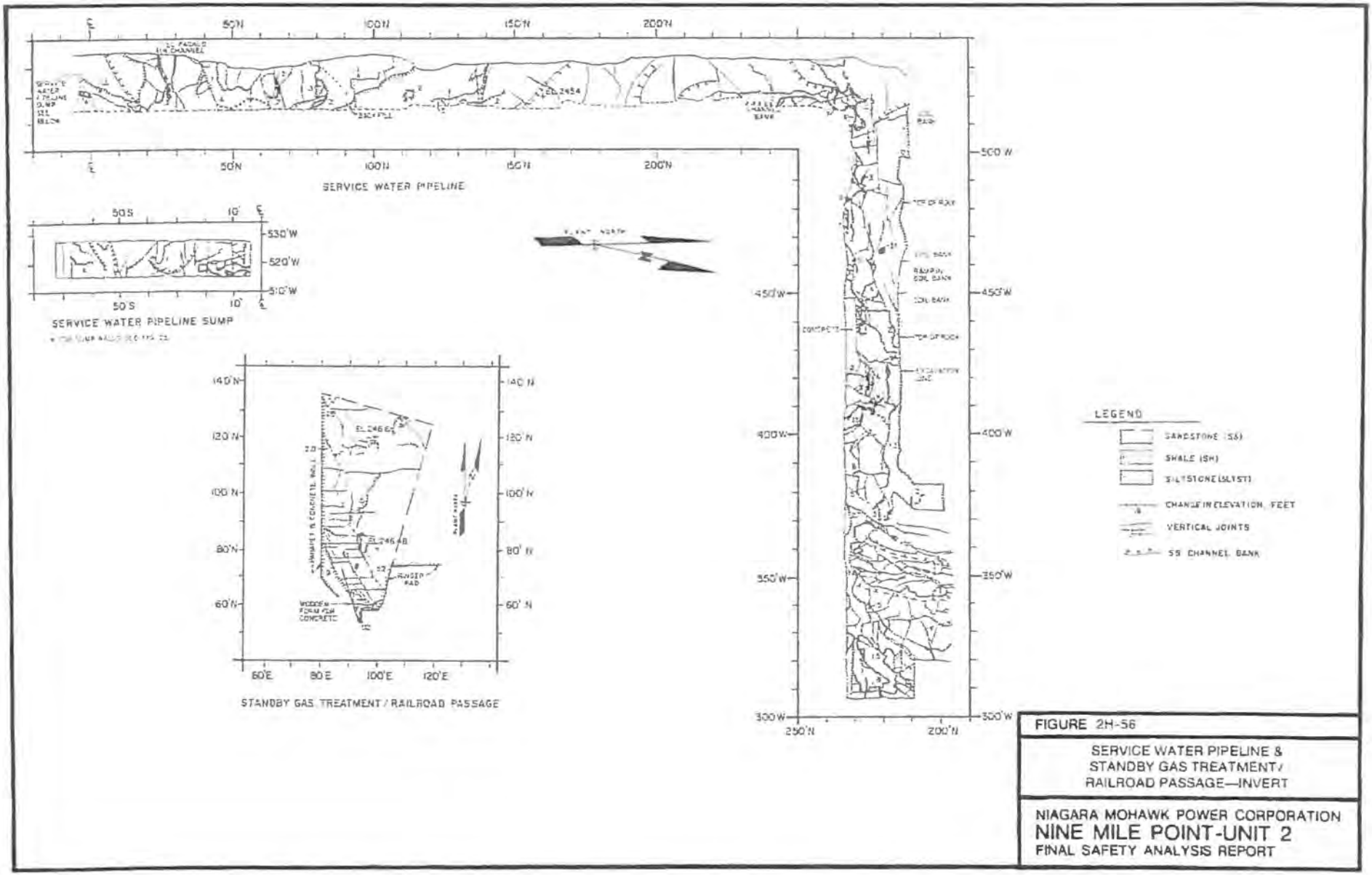


FIGURE 2H-56

SERVICE WATER PIPELINE & STANDBY GAS TREATMENT/ RAILROAD PASSAGE—INVERT

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

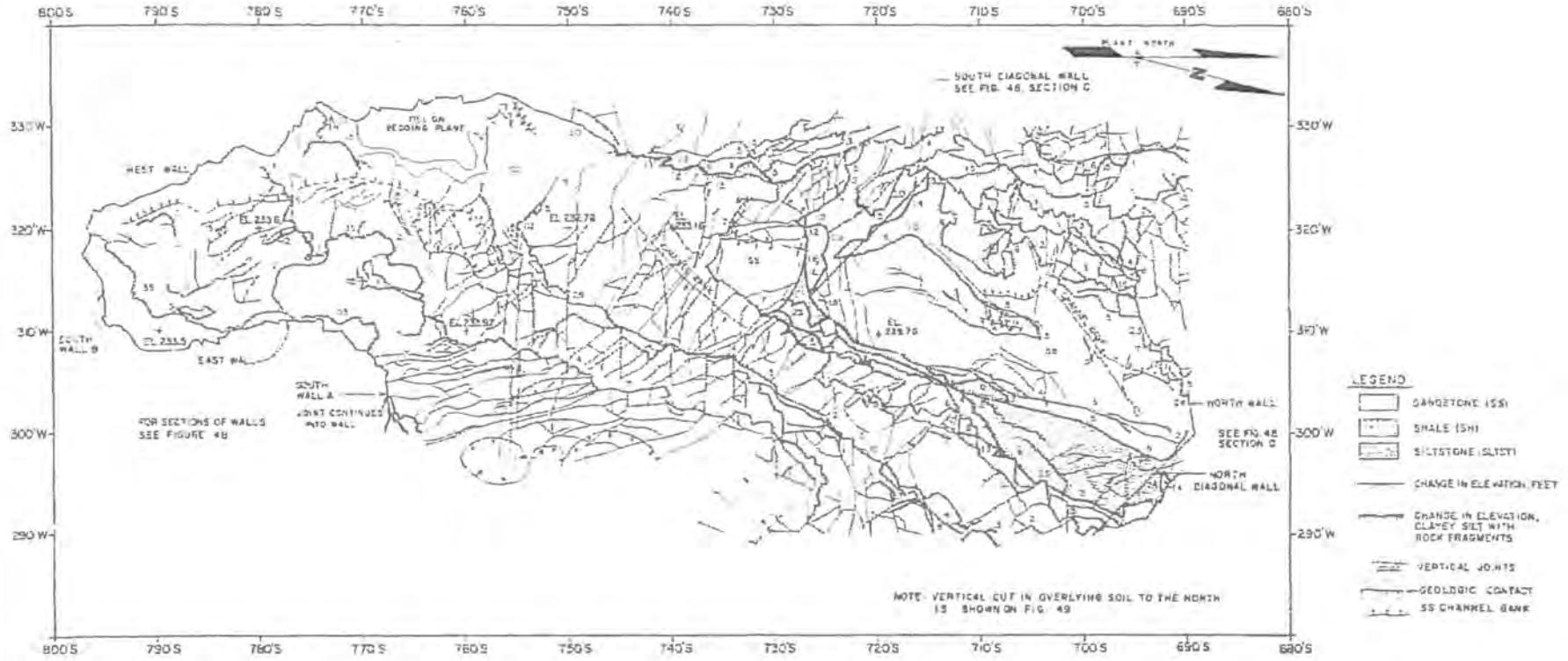


FIGURE 2H-57

GEOLOGIC MAPPING—INVERT
CIRCULATING WATER PIPING TRENCHES

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

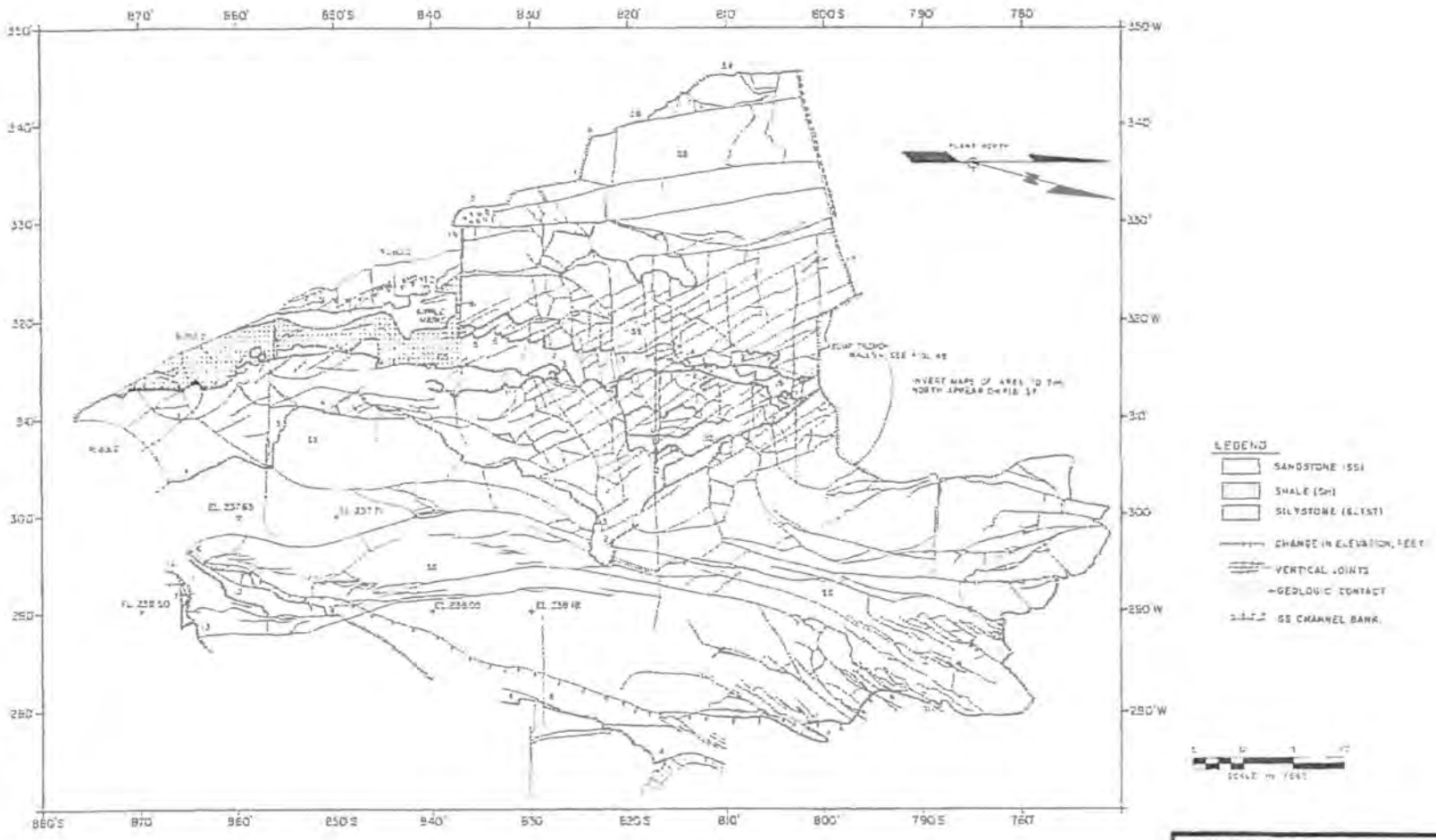
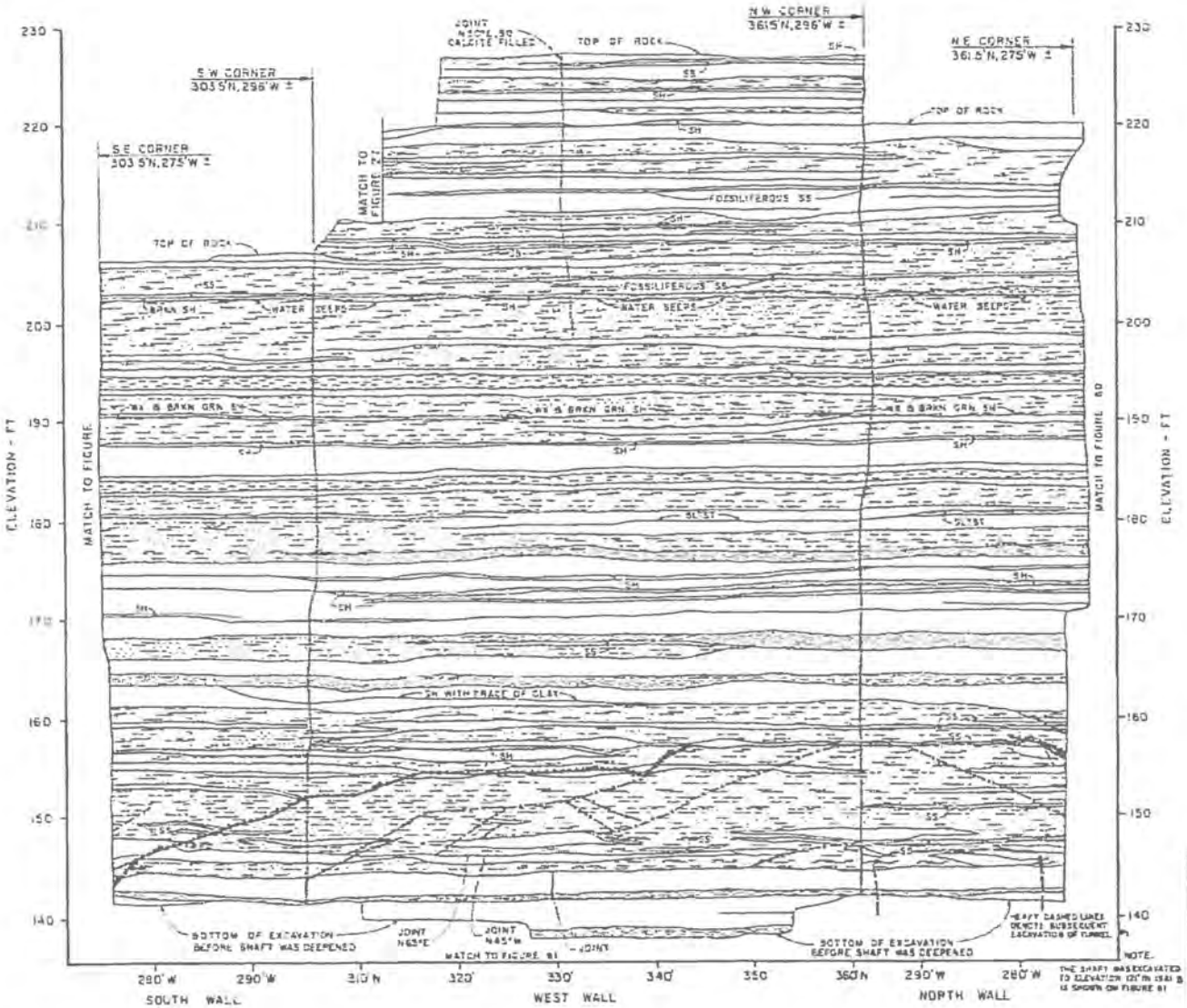


FIGURE 2H-58

GEOLOGIC MAPPING—INVERT
CIRCULATING WATER PIPING TRENCHES

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



LEGEND

- SHALE (SH)
- SANDSTONE (SS)
- SILTSTONE (SLTST)
- SANDSTONE / SHALE / SILTSTONE
- THRUST
- SHEAR

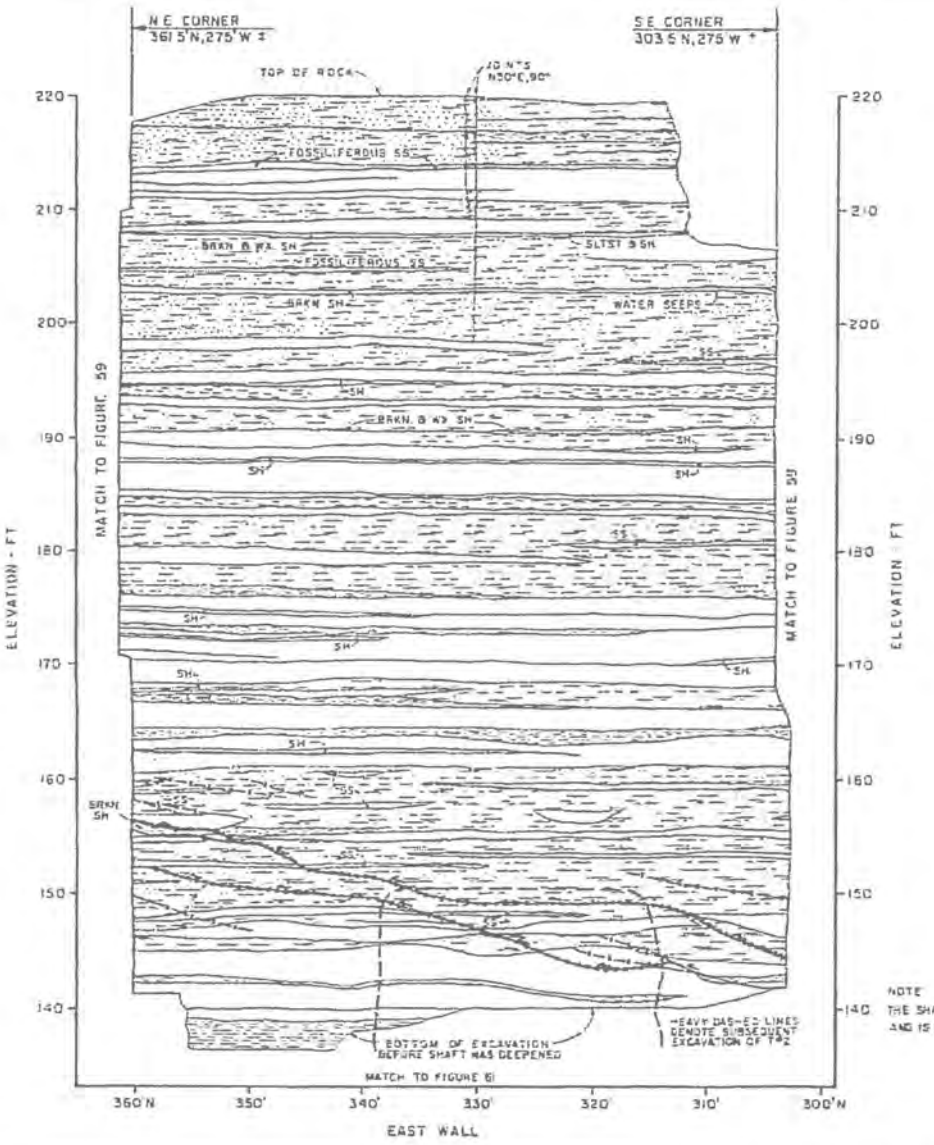
WX. - WEATHERED GRN - GREEN
BRKN - BROKEN

SCALE IN FEET

FIGURE 2H-59

GEOLOGIC MAPPING—WALLS
SCREENWELL SHAFT

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



NOTE
THE SHAFT WAS EXCAVATED TO ELEVATION 110 IN 1981 AND IS SHOWN ON FIGURE 61

LEGEND:
- SHALE (SH)
- SANDSTONE (SS)
- SILTSTONE (SLTST)
- SANDSTONE / SHALE / SILTSTONE
- SHEAR
- THRUST

WX - WEATHERED BRKN - BROKEN

SCALE IN FEET

FIGURE 2H-60

GEOLOGIC MAPPING—WALLS
SCREENWELL SHAFT

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

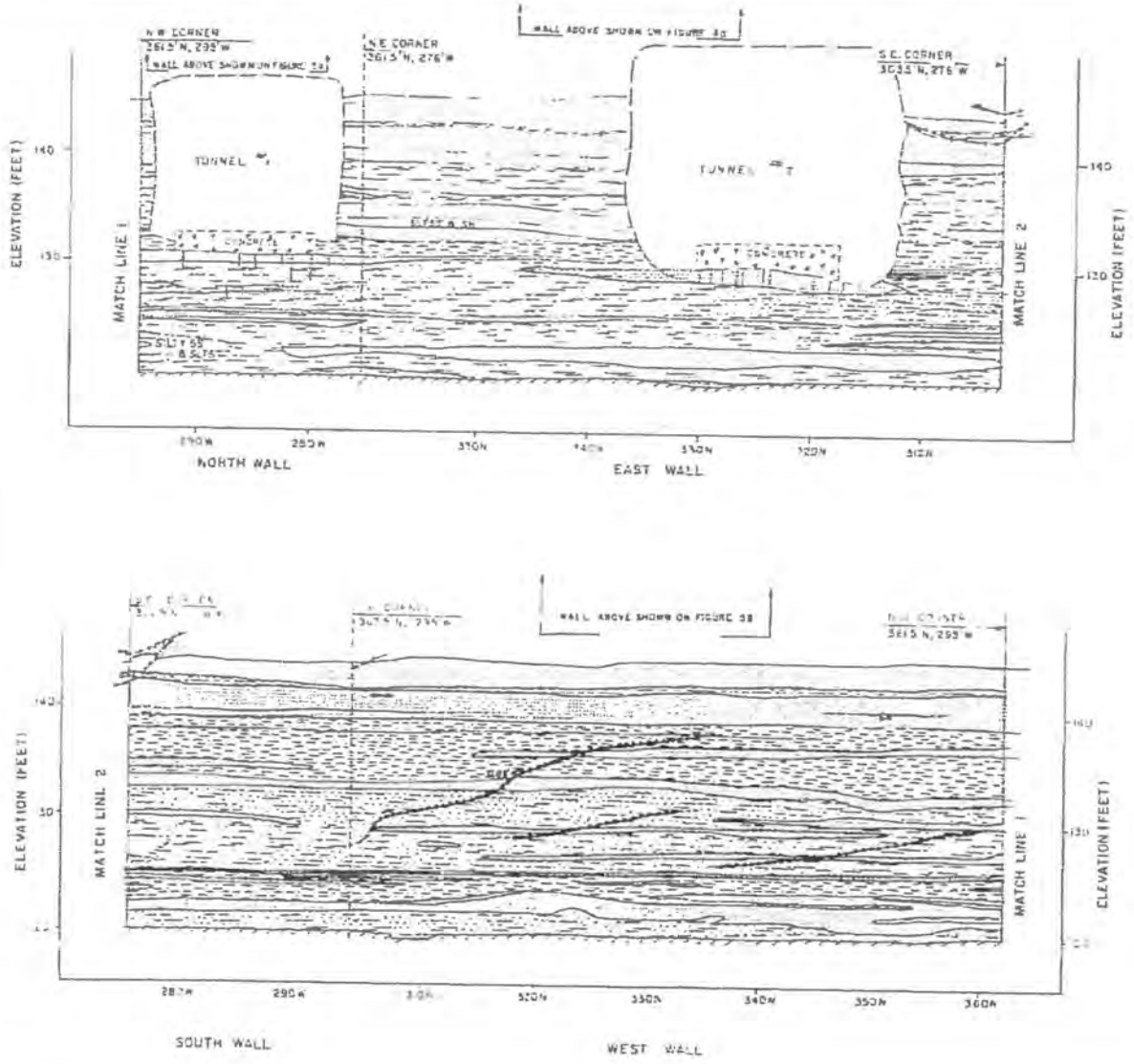
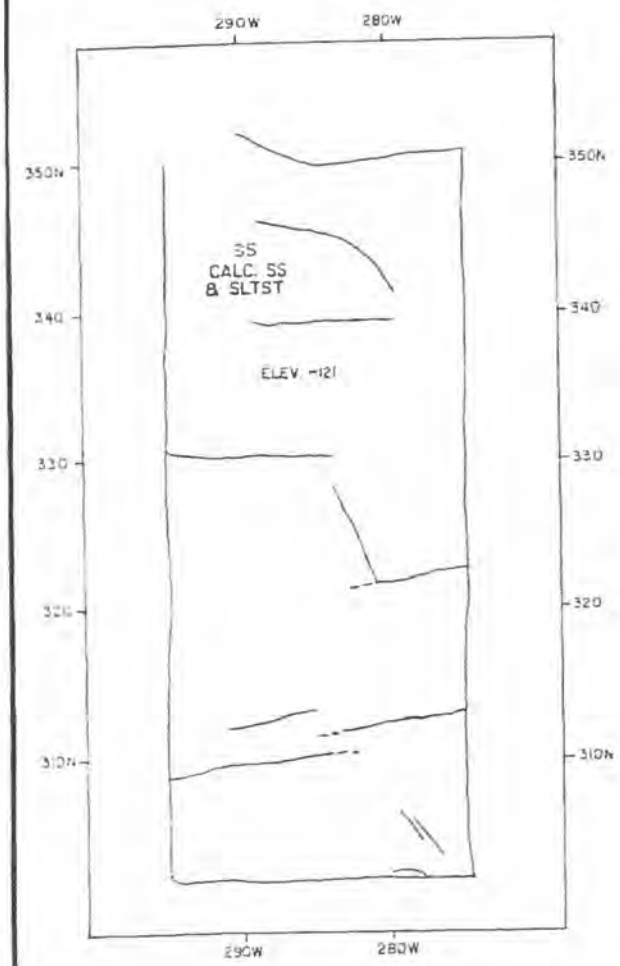


FIGURE 2H-61

GEOLOGIC MAPPING—WALLS & INVERT—SCREENWELL SHAFT

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



LEGEND

SS SANDSTONE, CALC-CALCAREOUS, SLTST-SILTSTONE

| JOINT (VERTICAL TO SUBVERTICAL)

NOTE: THE SHAFT WAS EXCAVATED AND MAPPED AT THIS ELEVATION IN 1981. A PREVIOUS MAP AT ELEV. -140 IS SHOWN ON FIGURE 54.

FIGURE 2H-62

GEOLOGIC MAPPING—INVERT SCREENWELL SHAFT

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

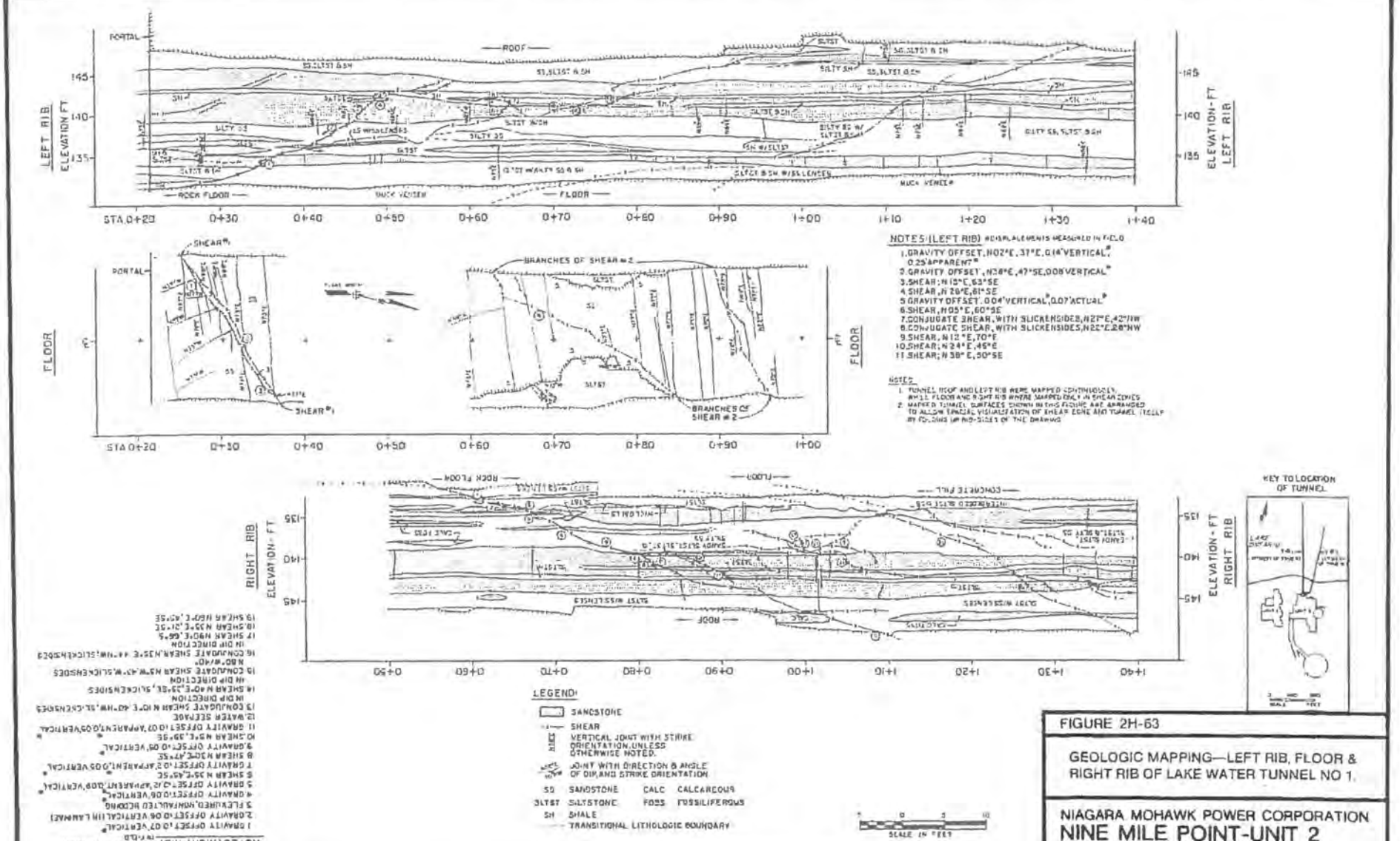


FIGURE 2H-63

GEOLOGIC MAPPING—LEFT RIB, FLOOR & RIGHT RIB OF LAKE WATER TUNNEL NO 1.

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

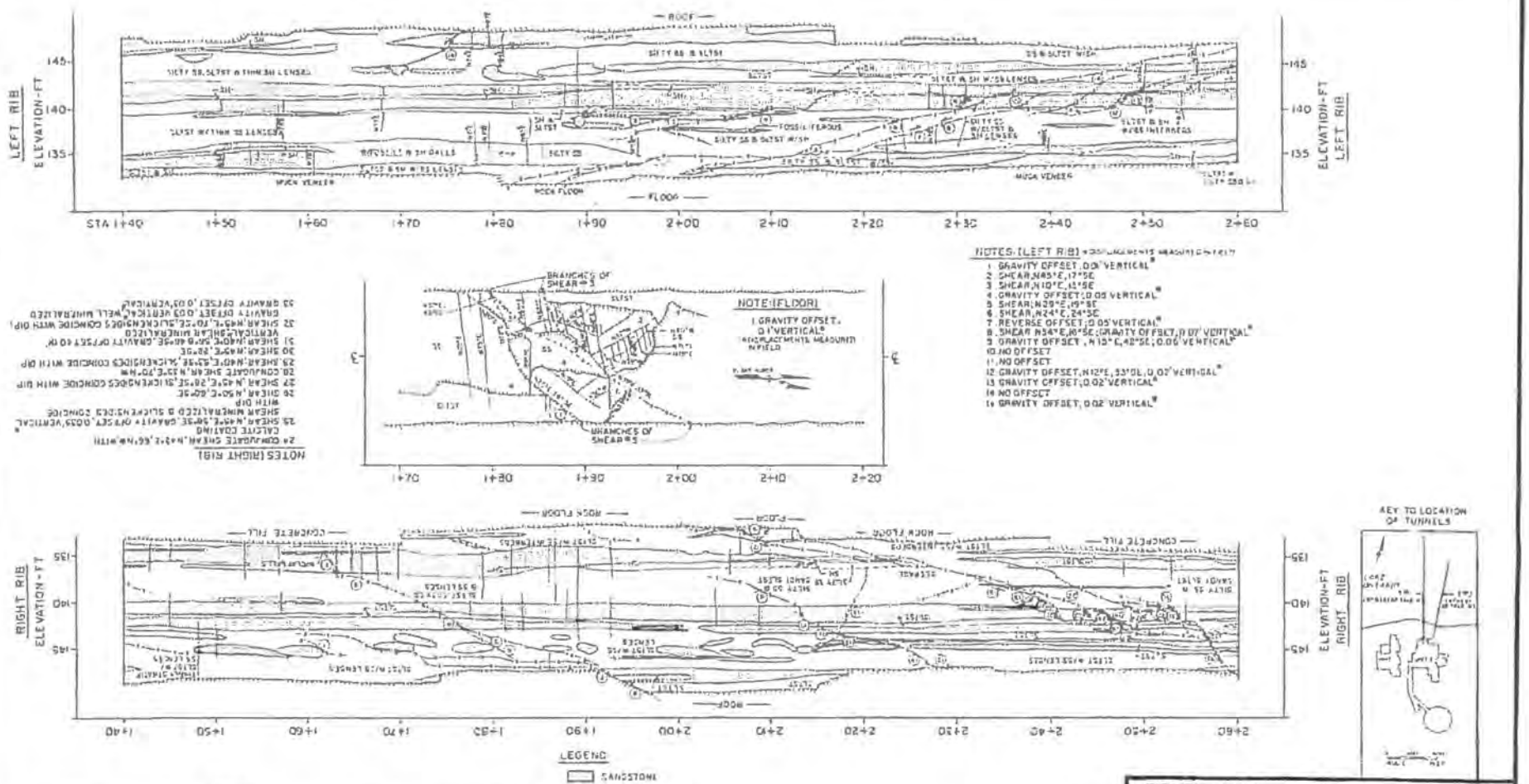


FIGURE 2H-64

GEOLOGIC MAPPING—LEFT RIB, FLOOR & RIGHT RIB OF LAKE WATER TUNNEL NO 1

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

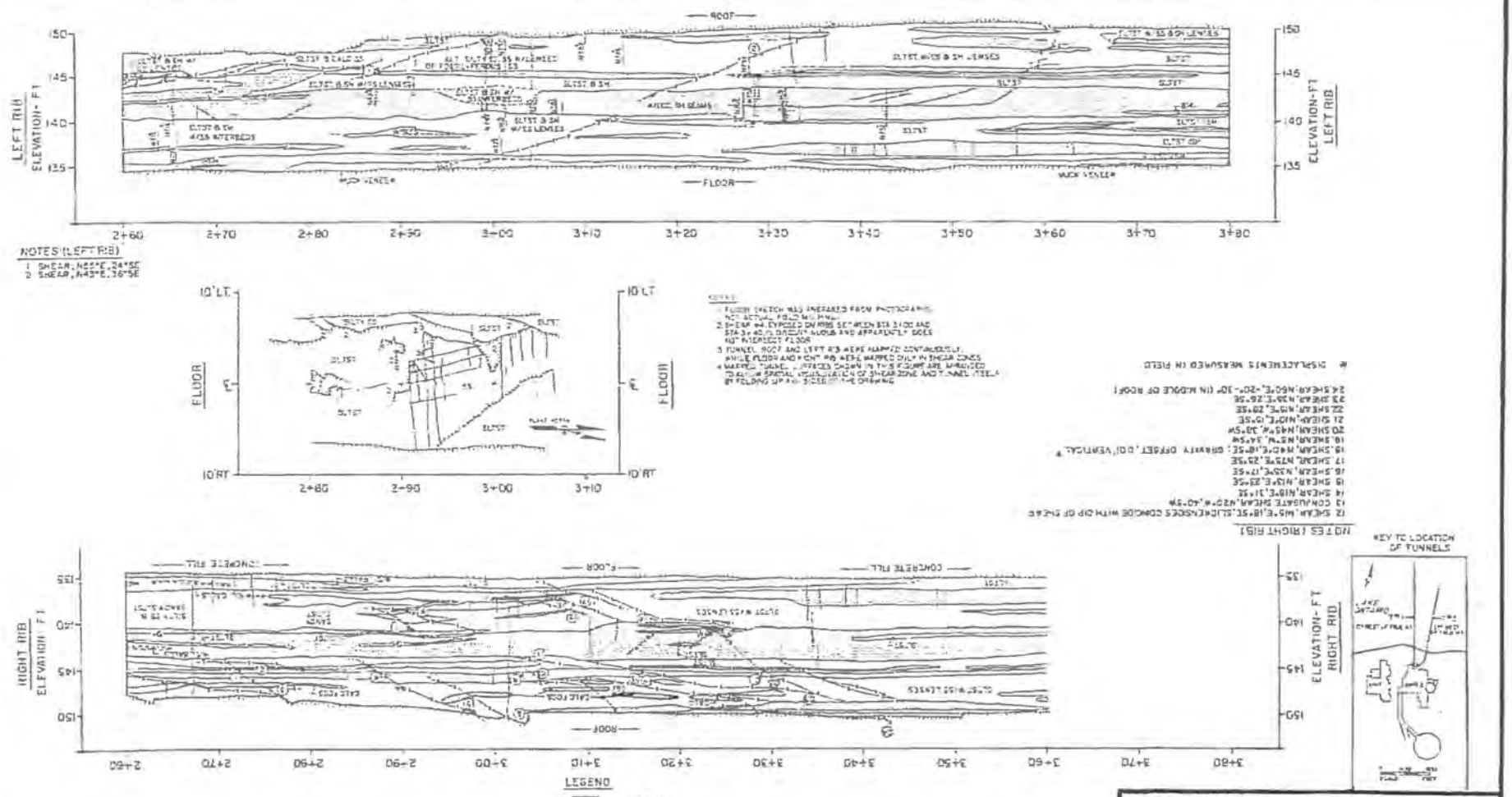


FIGURE 2H-65

GEOLOGIC MAPPING—LEFT RIB, FLOOR & RIGHT RIB OF LAKE WATER TUNNEL NO 1.

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT-UNIT 2

FINAL SAFETY ANALYSIS REPORT

GEOLOGIC MAPPING—LEFT RIB, FLOOR & RIGHT RIB OF LAKE WATER TUNNEL NO 1.

FIGURE 2H-66

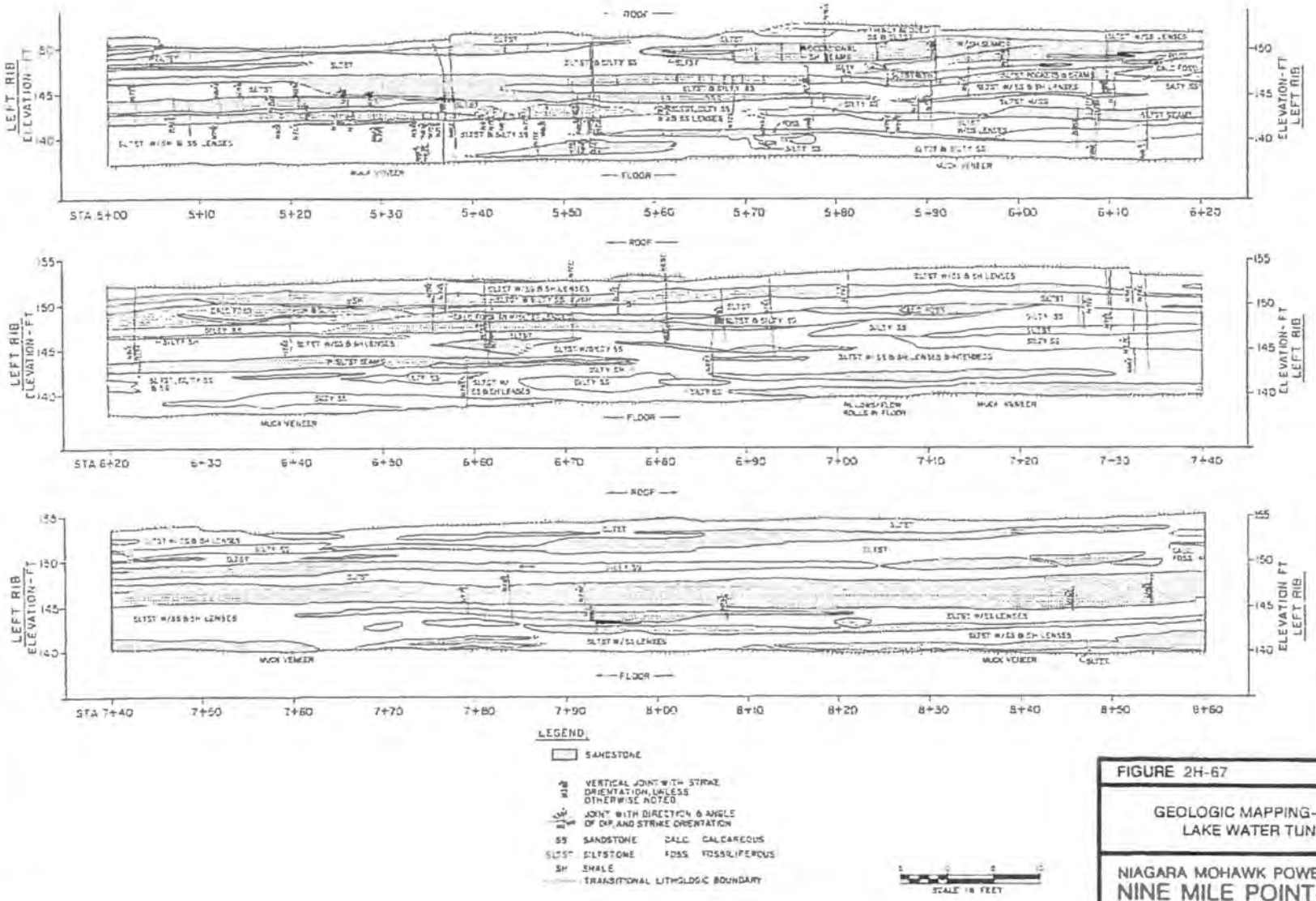


FIGURE 2H-67

GEOLOGIC MAPPING—LEFT RIB OF LAKE WATER TUNNEL NO 1.

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

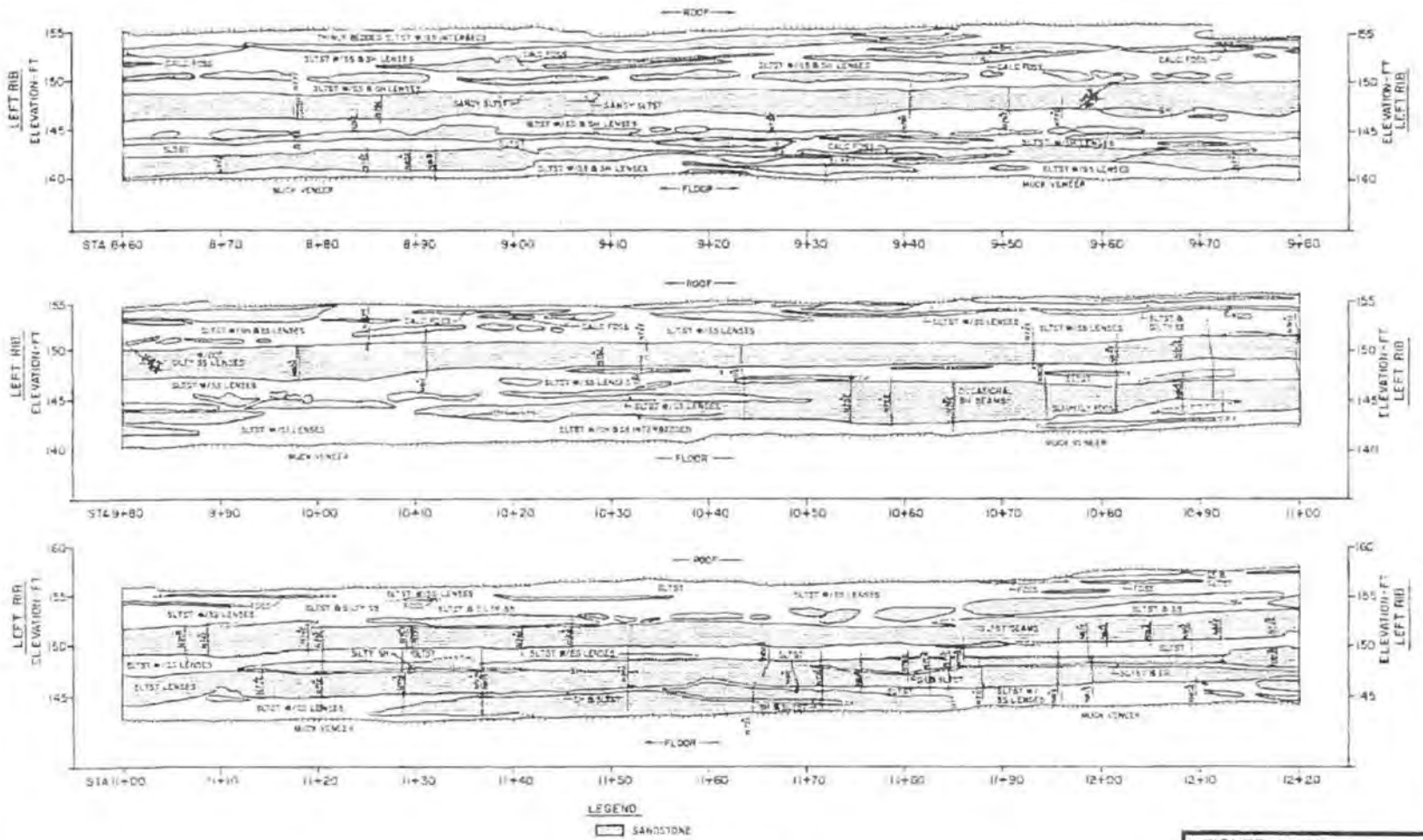


FIGURE 2H-68

GEOLOGIC MAPPING—LEFT RIB OF LAKE WATER TUNNEL NO 1.

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

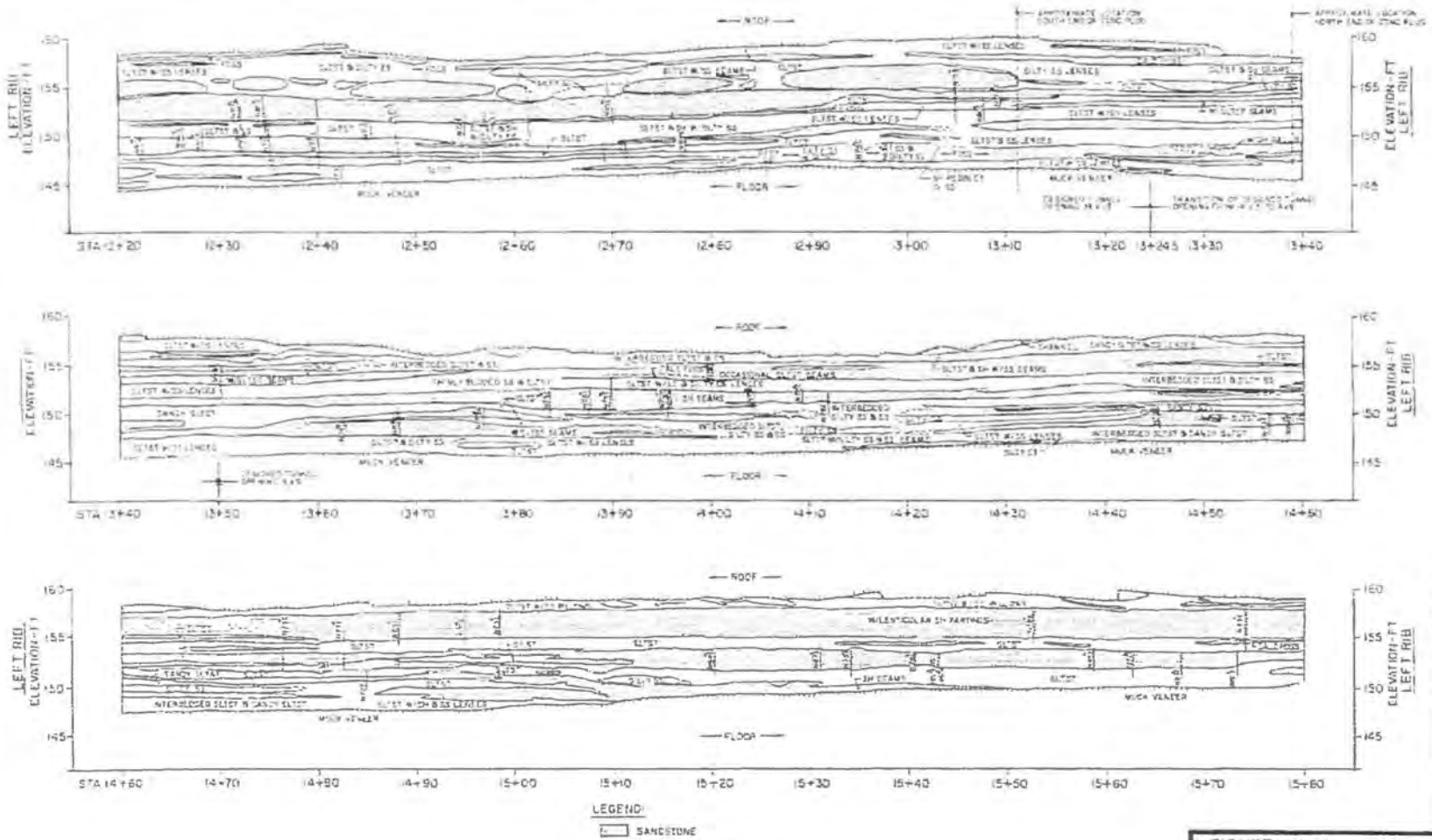
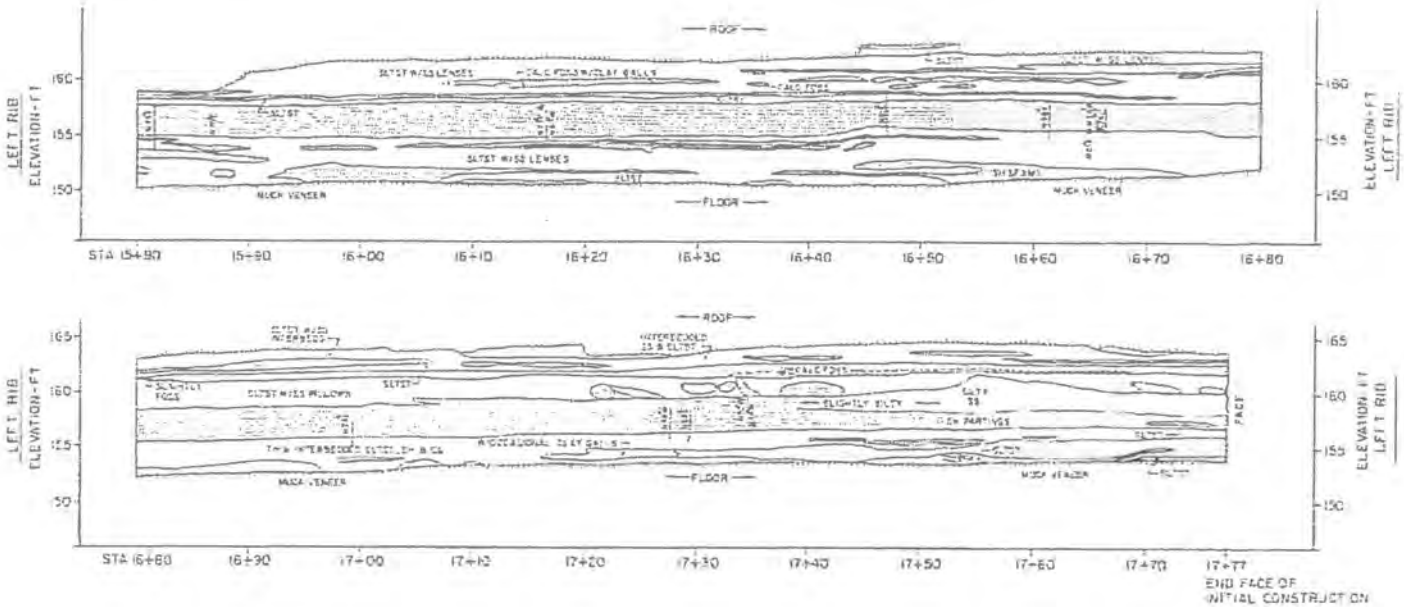
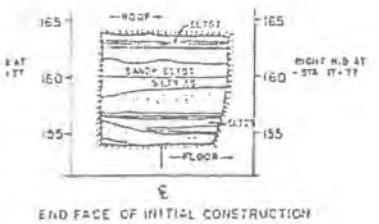


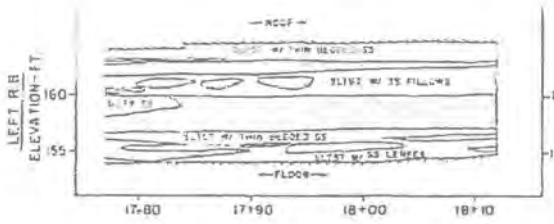
FIGURE 2H-69

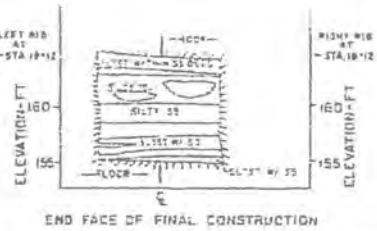
GEOLOGIC MAPPING—LEFT RIB OF LAKE WATER TUNNEL NO 1.

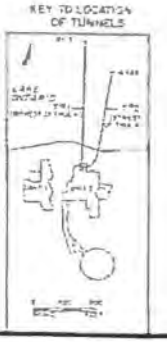
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT











LEGEND

- SANDSTONE
- VERTICAL JOINT WITH STRIKE ORIENTATION UNLESS OTHERWISE NOTED
- JOINT WITH DIRECTION & ANGLE OF DIP, AND STRIKE ORIENTATION
- SS SANDSTONE — CALC. CALCAREOUS
- SLTST SILTSTONE — FOSS. FOSSILIFEROUS
- SH. SHALE
- TRANSITIONAL LITHOLOGIC BOUNDARY

SCALE IN FEET

FIGURE 2H-70

GEOLOGIC MAPPING—LEFT RIB & FACE OF LAKE WATER TUNNEL NO 1

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

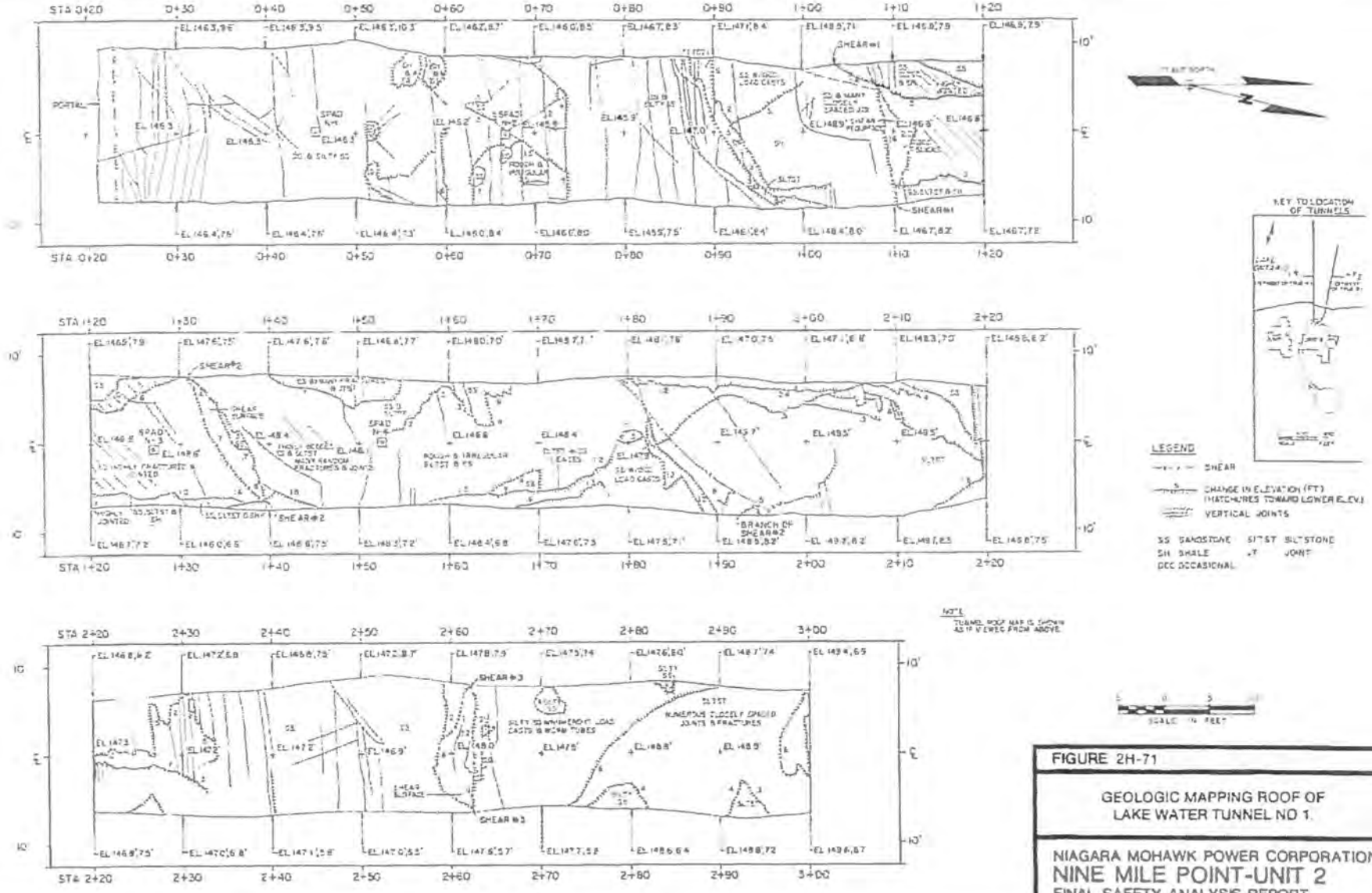


FIGURE 2H-71

GEOLOGIC MAPPING ROOF OF LAKE WATER TUNNEL NO 1.

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

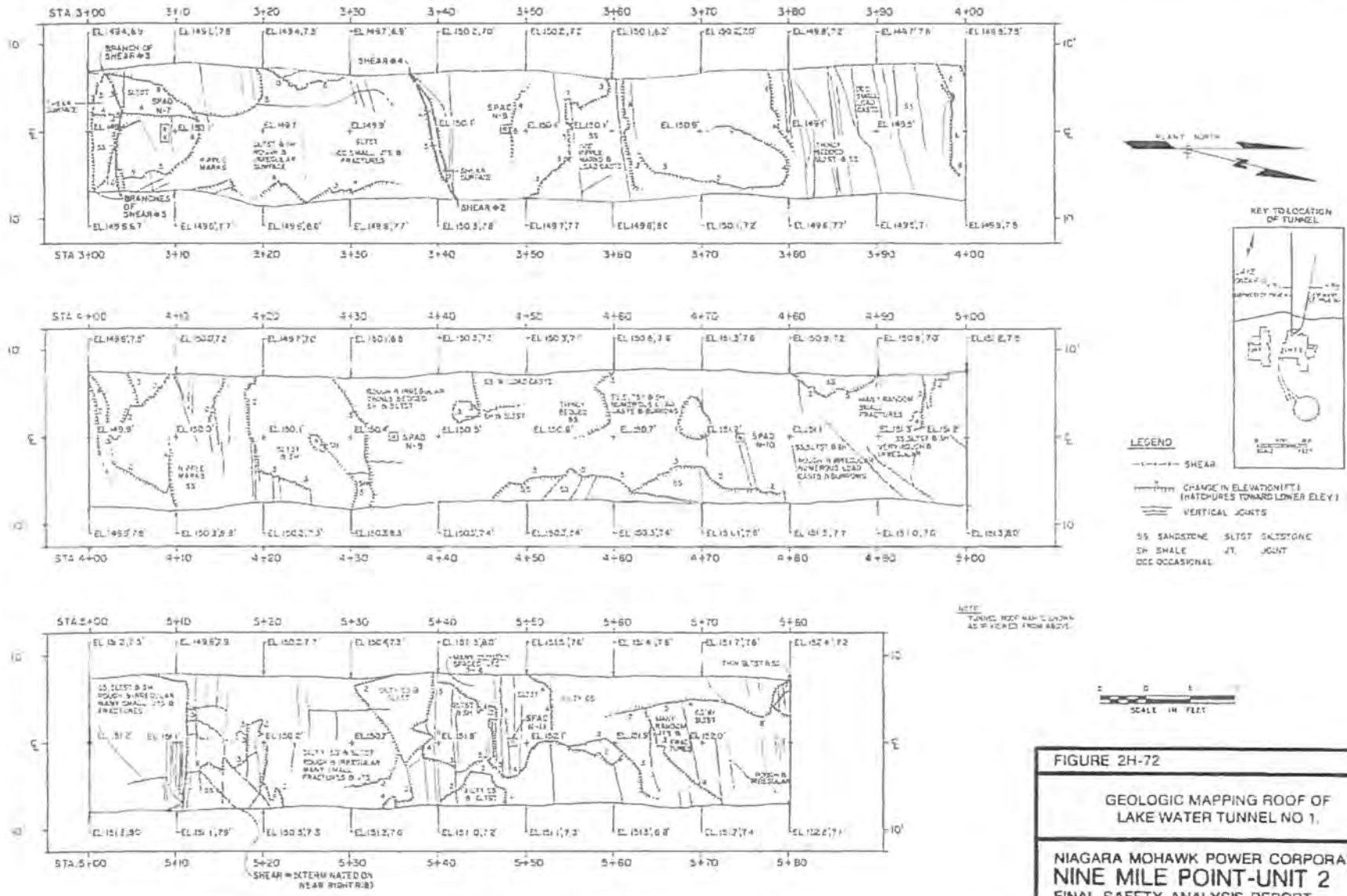
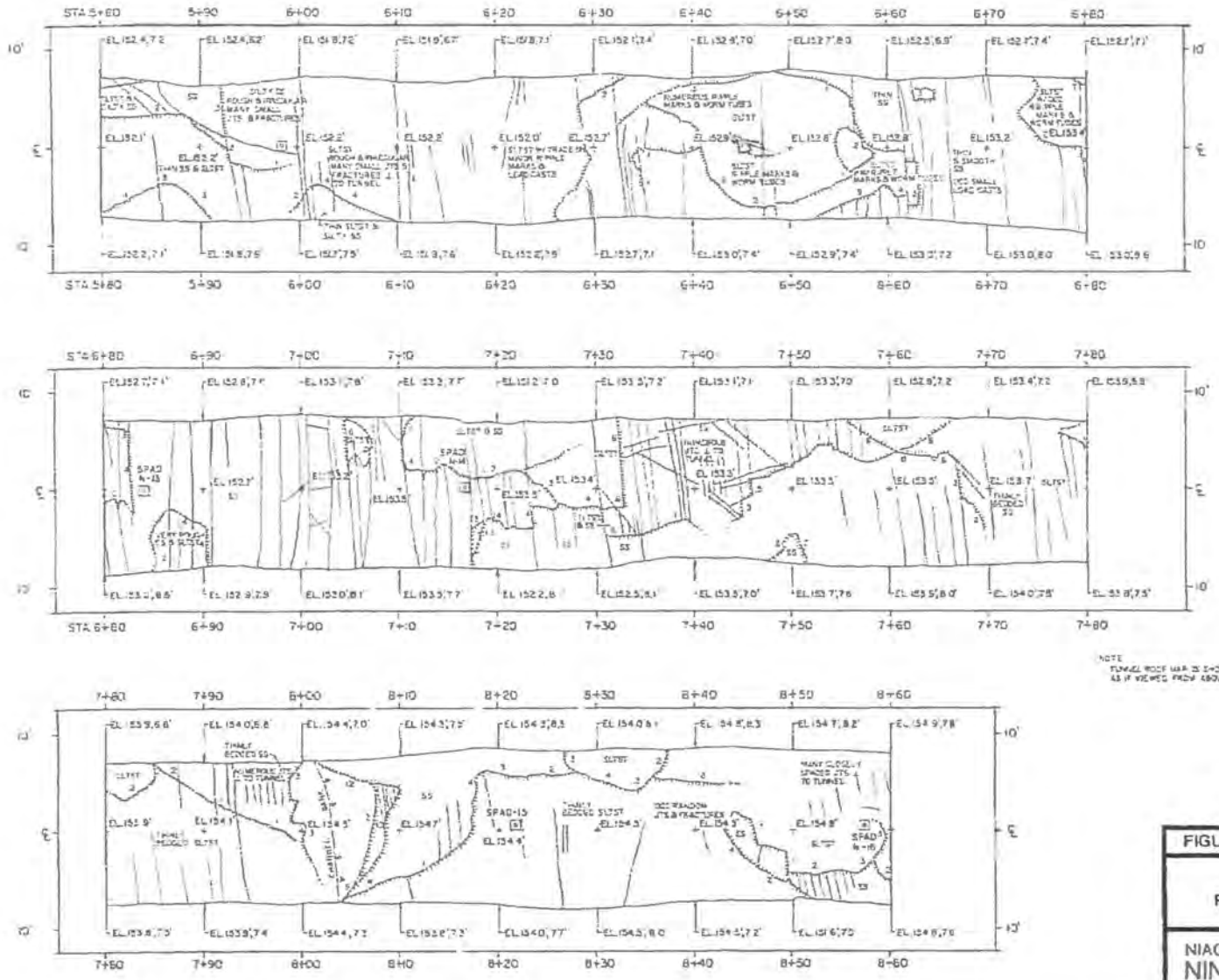
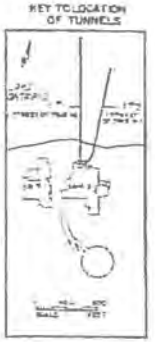


FIGURE 2H-72

GEOLOGIC MAPPING ROOF OF LAKE WATER TUNNEL NO 1.

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT





LEGEND

- CHANGE IN ELEVATION (FT.) (HATCHURES TOWARD LOWER ELEV.)
- VERTICAL JOINTS

SS SANDSTONE SLTST. SILTSTONE
SH SHALE JT JOINT
OCC.OCCASIONAL ⊥ PERPENDICULAR

NOTE
TUNNEL ROOF MAP IS SHOWN AS IF VIEWED FROM ABOVE

SCALE IN FEET

FIGURE 2H-73

GEOLOGIC MAPPING
ROOF OF LAKE WATER TUNNEL NO.1

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

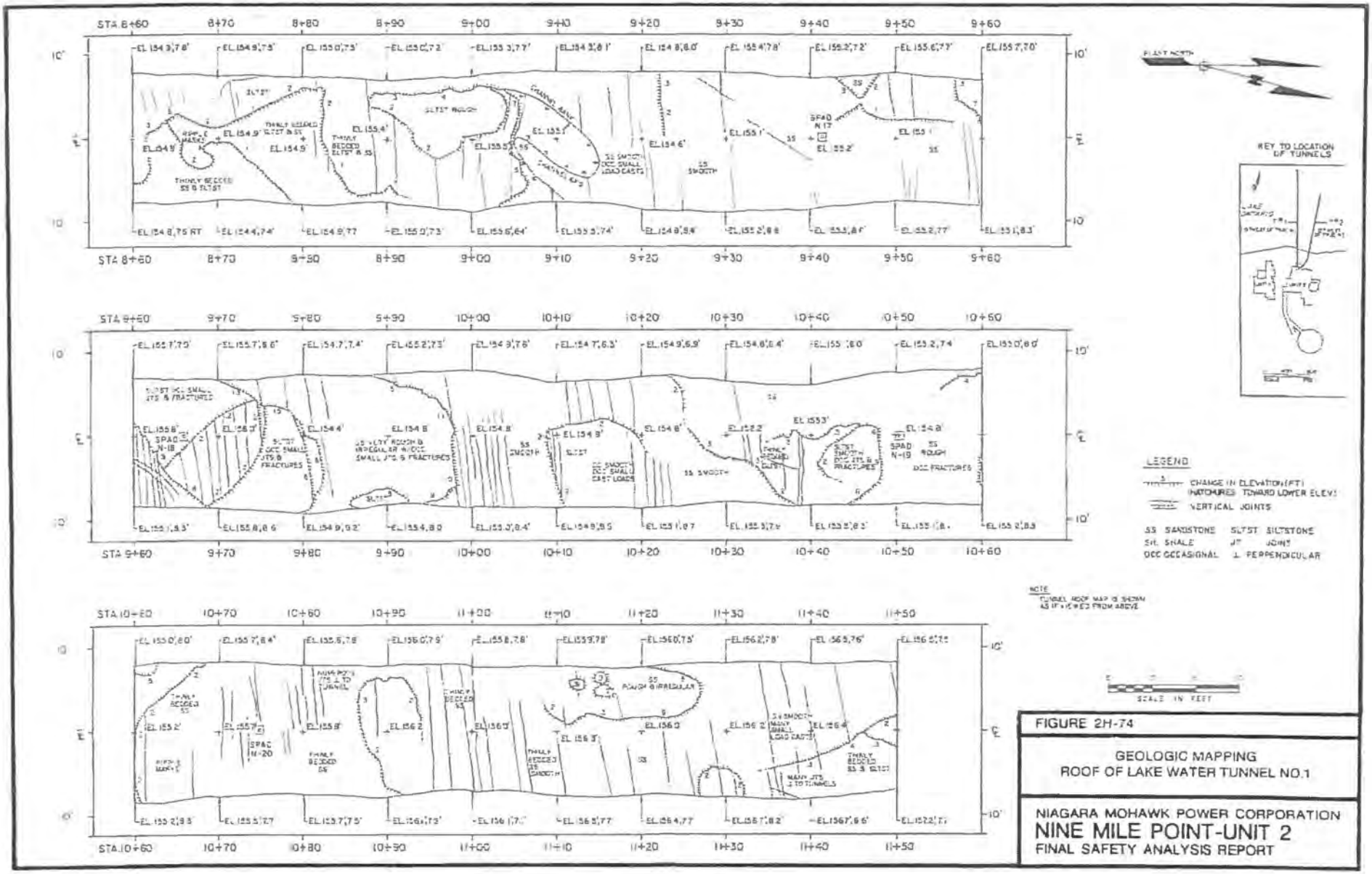


FIGURE 2H-74

GEOLOGIC MAPPING
ROOF OF LAKE WATER TUNNEL NO.1

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

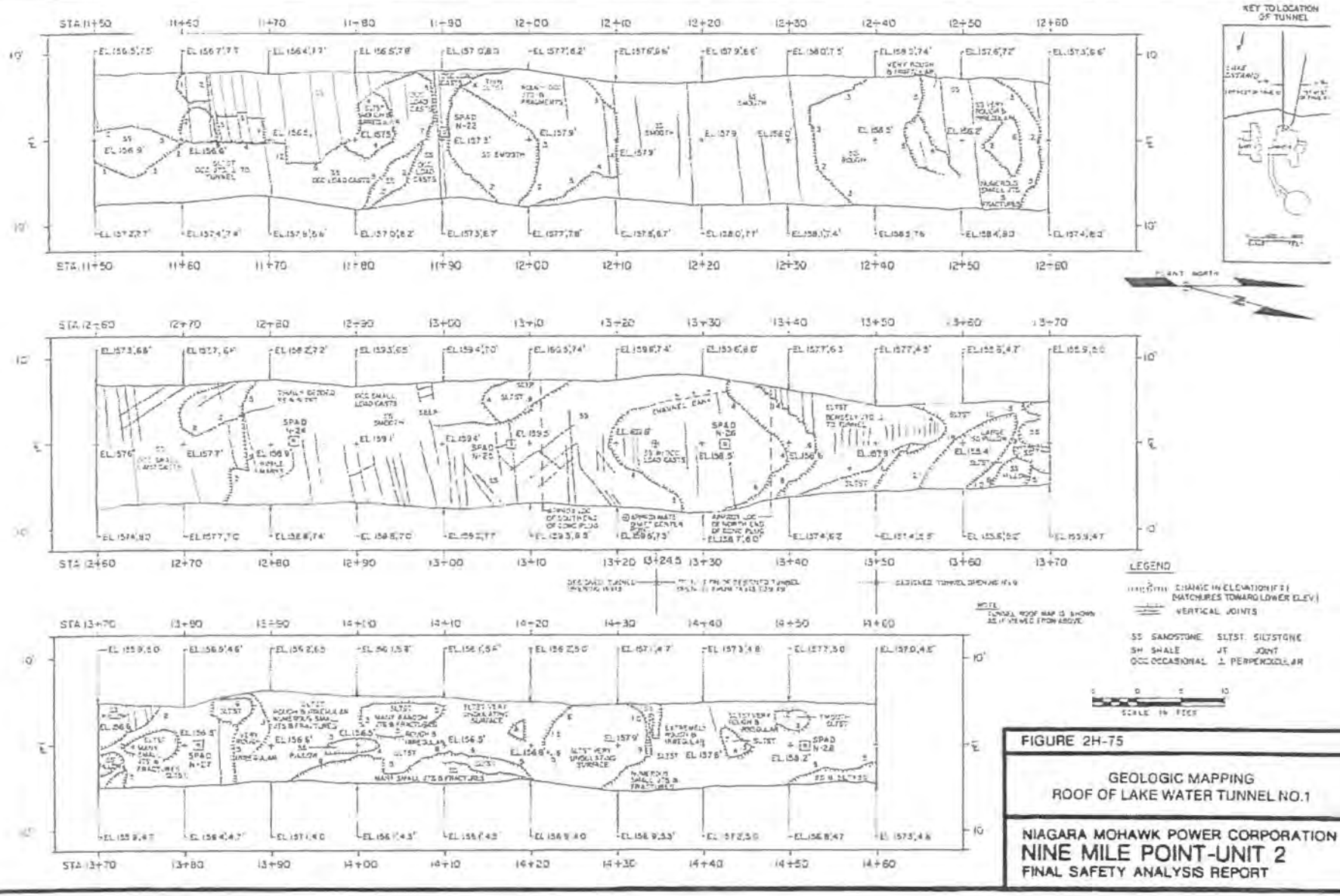


FIGURE 2H-75

GEOLOGIC MAPPING
ROOF OF LAKE WATER TUNNEL NO.1

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

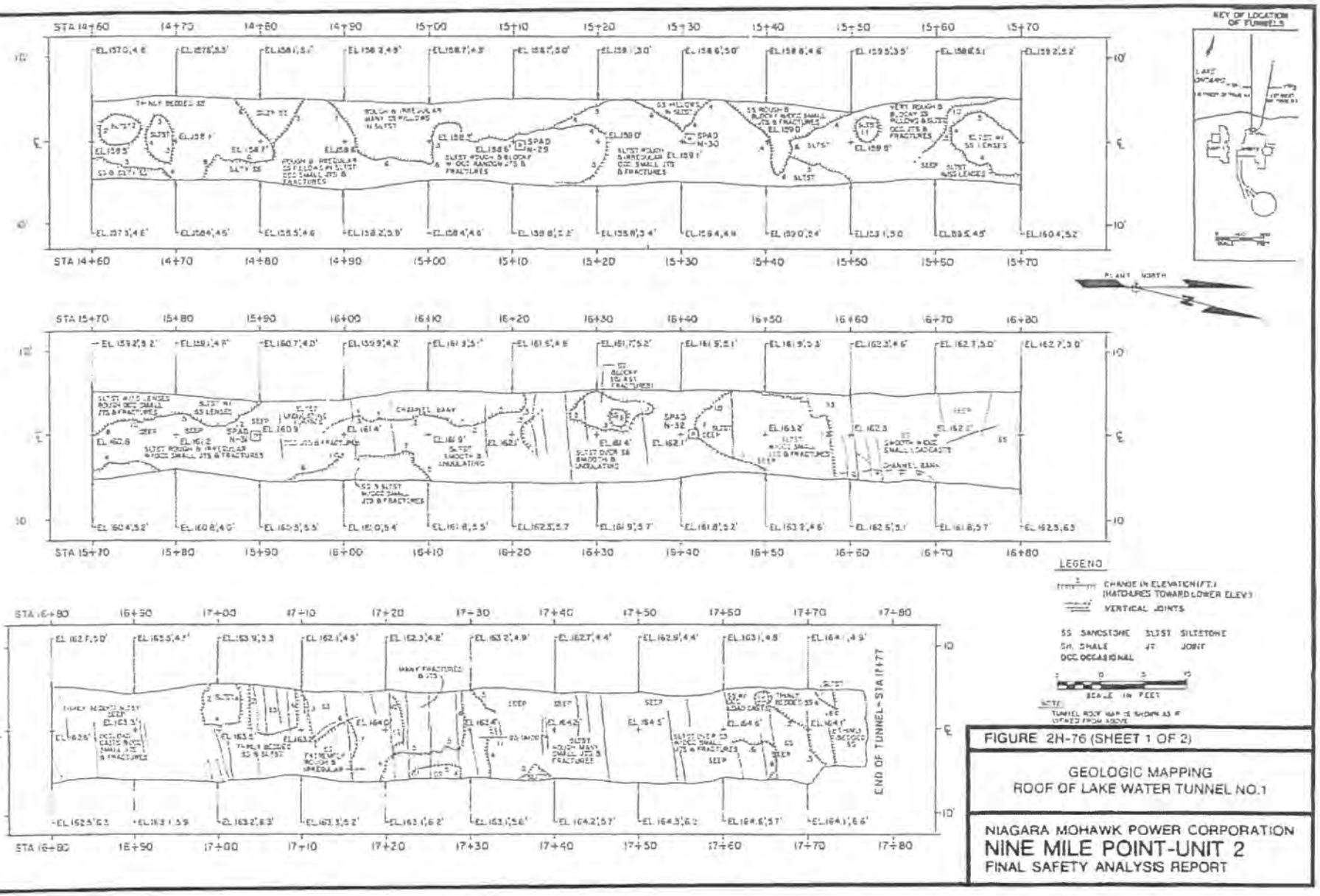
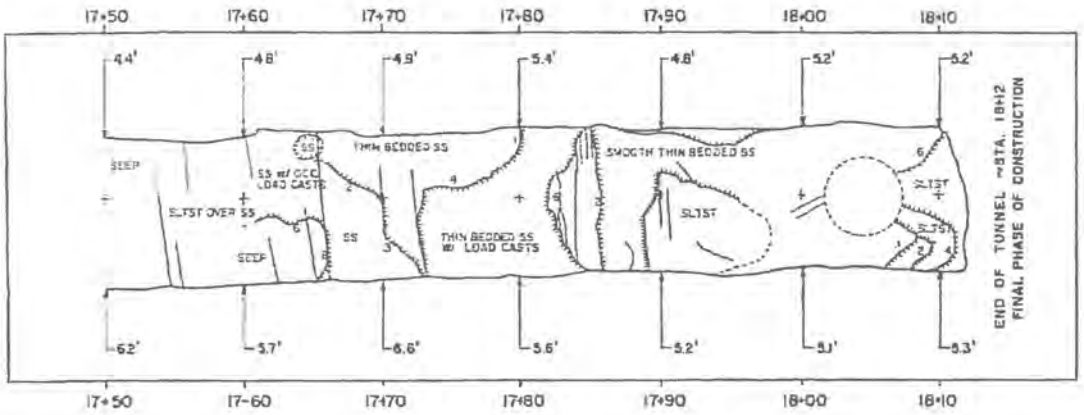


FIGURE 2H-76 (SHEET 1 OF 2)

GEOLOGIC MAPPING
ROOF OF LAKE WATER TUNNEL NO.1

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



LEGEND

5 CHANGE IN ELEVATION (FT.) (HATCHURES TOWARD LOWER ELEV.)

VERTICAL JOINTS

SS SANDSTONE SLTST. SILTSTONE
SH SHALE JT. JOINT
OCC OCCASIONAL

FIGURE 2H-76 (SHEET 2 OF 2)

GEOLOGIC MAPPING
ROOF OF LAKE WATER TUNNEL NO.1

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

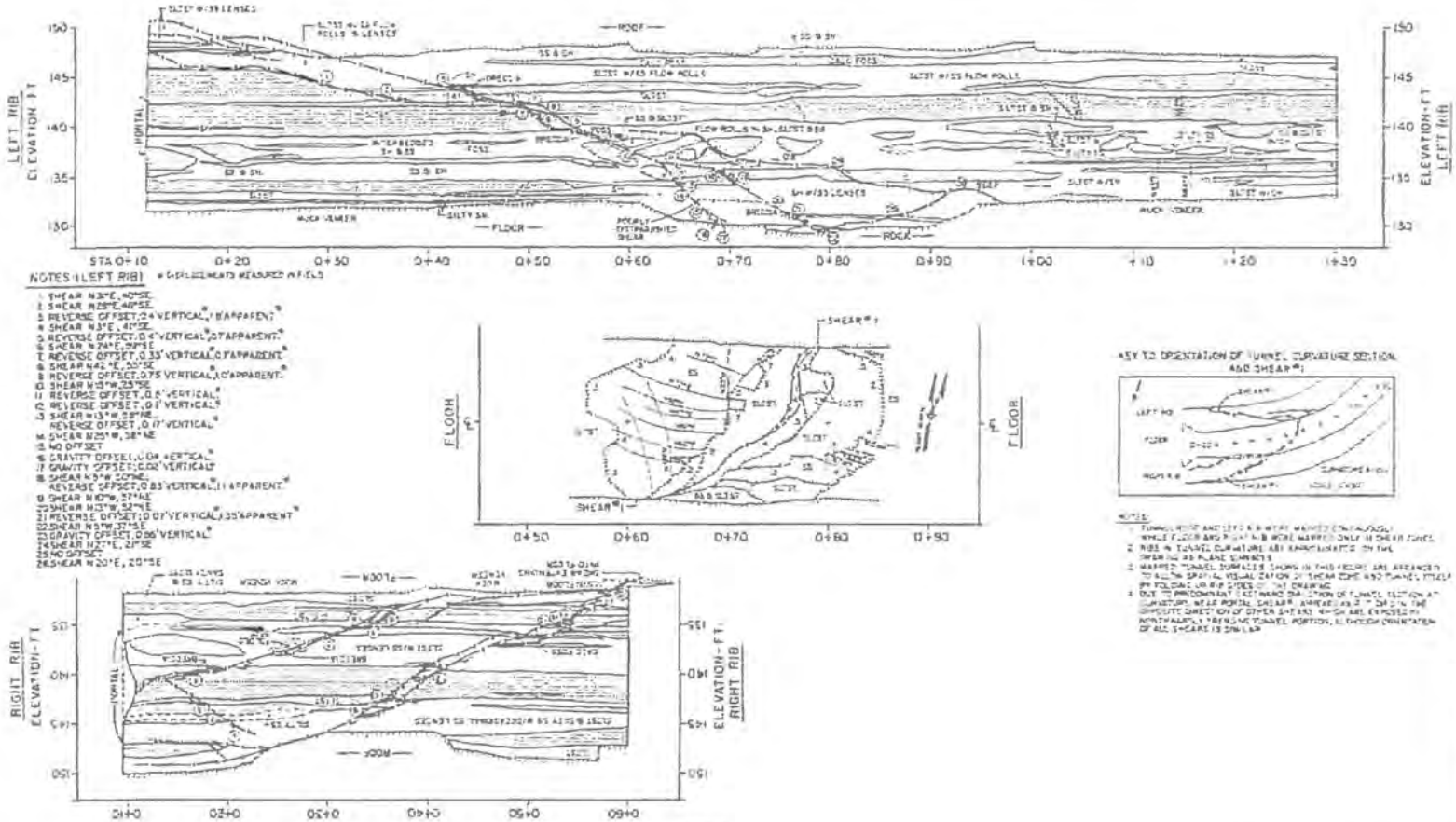


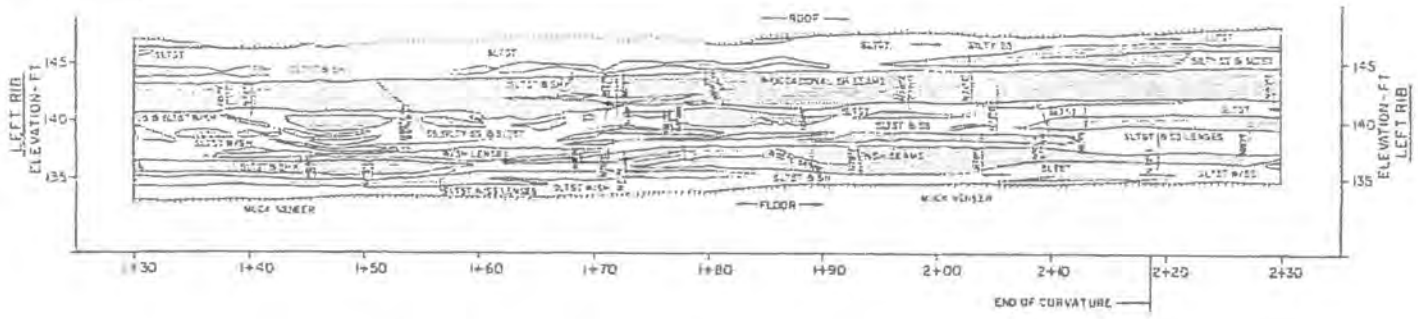
FIGURE 2H-77

GEOLOGIC MAPPING—LEFT RIB, FLOOR & RIGHT RIB OF LAKE WATER TUNNEL NO.2

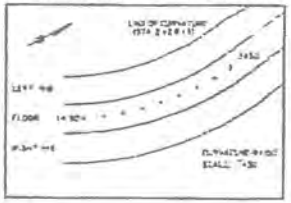
NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT-UNIT 2

FINAL SAFETY ANALYSIS REPORT



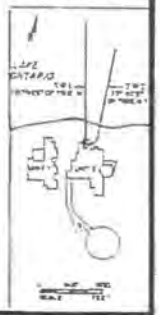
KEY TO ORIENTATION OF TUNNEL CURVATURE



NOTES:

1. TUNNEL ROOF AND LEFT RIB WERE MAPPED CONTINUOUSLY WHILE FLOOR AND RIGHT RIB WERE MAPPED ONLY IN SHEAR ZONES.
2. RIBS IN TUNNEL CURVATURE ARE APPROXIMATED ON THIS DRAWING AS PLANE SURFACES.

KEY TO LOCATION OF TUNNELS



LEGEND:

- SANDSTONE
- VERTICAL JOINT WITH STRIKE ORIENTATION, UNLESS OTHERWISE NOTED.
- JOINT WITH DIRECTION & ANGLE OF DIP, AND STRIKE ORIENTATION.
- SS SANDSTONE — CALC CALCAREOUS
- SLTST SILTSTONE — FOSS. FOSSILIFEROUS
- SH SHALE
- TRANSITIONAL LITHOLOGIC BOUNDARY

SCALE IN FEET

FIGURE 2H-78

GEOLOGIC MAPPING—LEFT RIB, FLOOR & RIGHT RIB OF LAKE WATER TUNNEL NO.2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

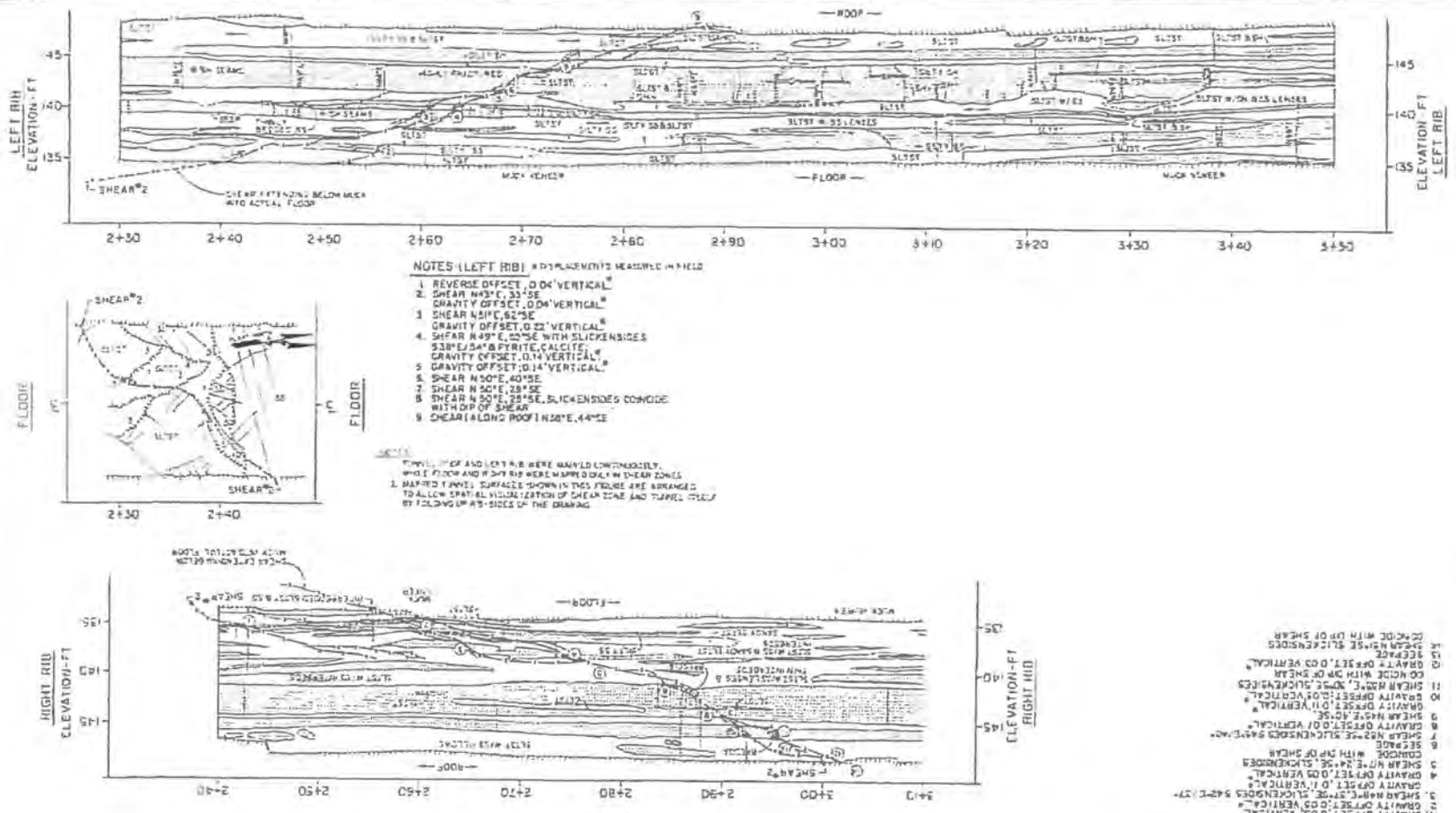
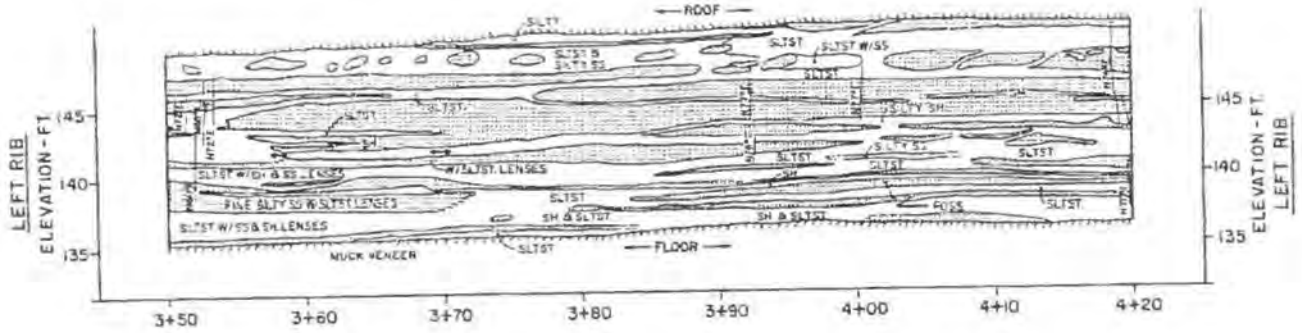


FIGURE 2H-79

GEOLOGIC MAPPING—LEFT RIB, FLOOR & RIGHT RIB OF LAKE WATER TUNNEL NO.2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



LEGEND

- SANDSTONE
- VERTICAL JOINT WITH STRIKE ORIENTATION, UNLESS OTHERWISE NOTED.
- JOINT WITH DIRECTION OF DIP, AND STRIKE ORIENTATION
- SS SANDSTONE
- SLTST. SILTSTONE
- SH. SHALE
- CALC. CALCAREOUS
- FOSS. FOSSILIFERDUS
- TRANSITIONAL LITHOLOGIC BOUNDARY

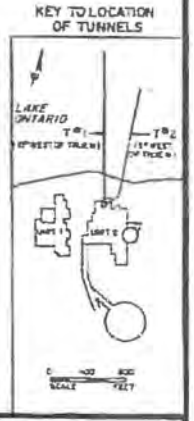
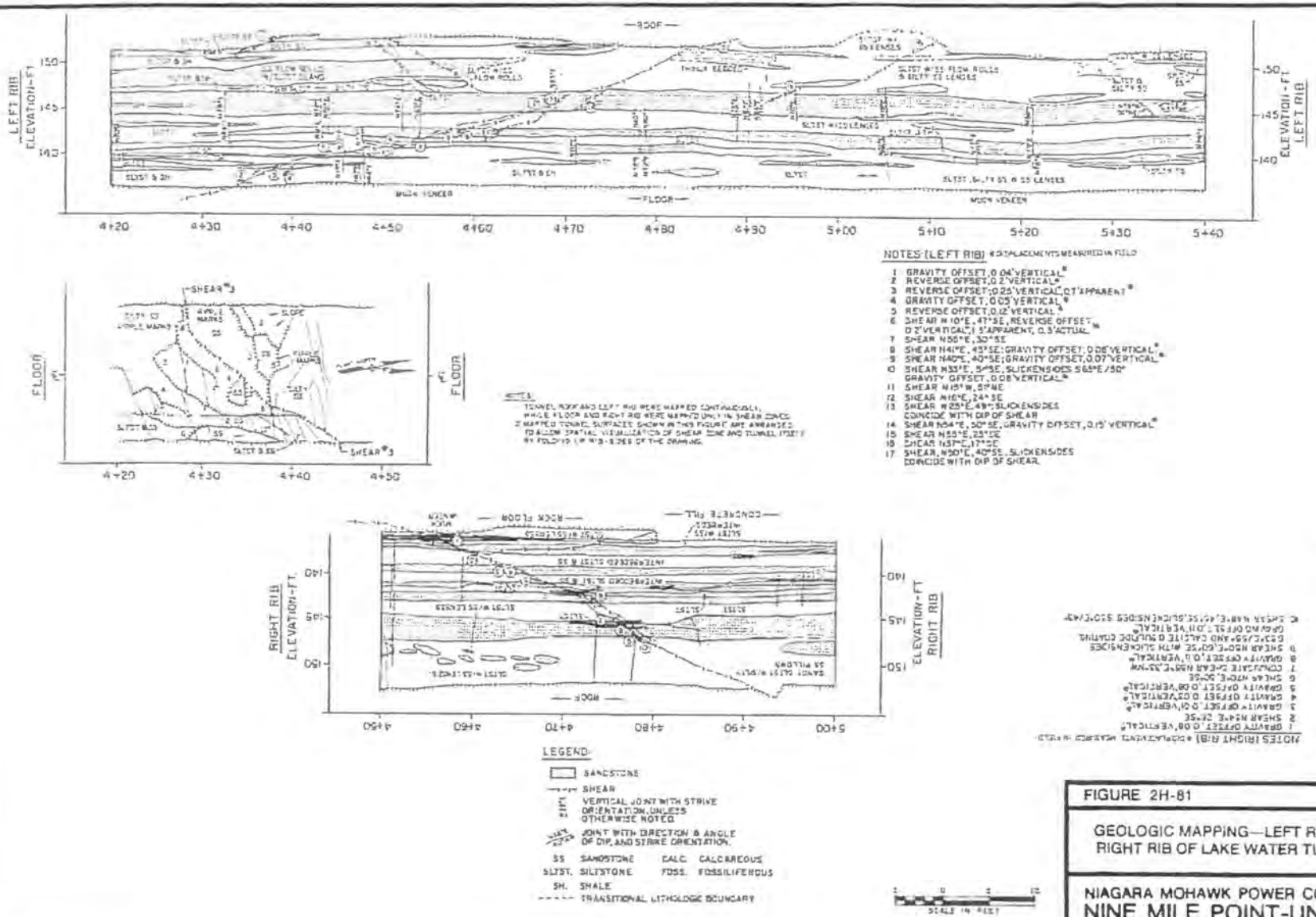


FIGURE 2H-80

GEOLOGIC MAPPING—LEFT RIB OF LAKE WATER TUNNEL NO.2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



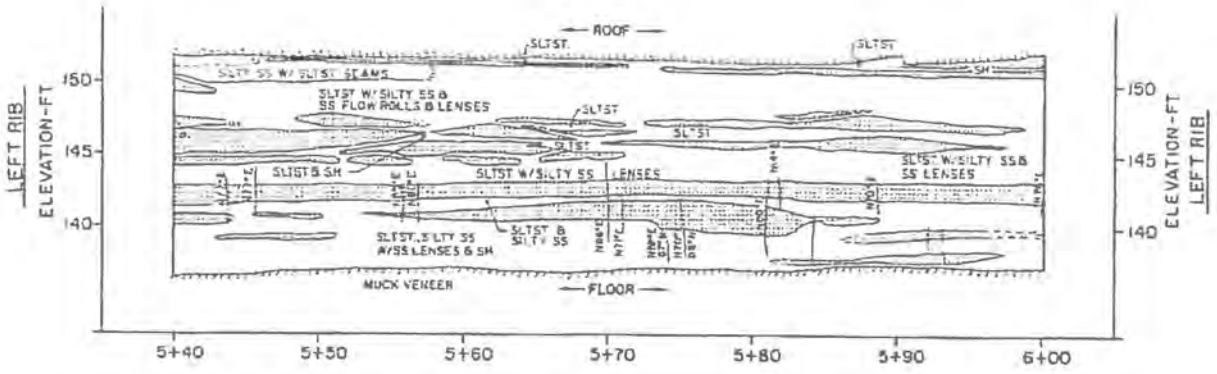
NOTES: (LEFT RIB) * DISPLACEMENTS MEASURED IN FIELD

1. GRAVITY OFFSET, 0.04' VERTICAL*
2. REVERSE OFFSET, 0.2' VERTICAL*
3. REVERSE OFFSET; 0.25' VERTICAL, 0.1' APPARENT*
4. GRAVITY OFFSET; 0.05' VERTICAL*
5. REVERSE OFFSET, 0.12' VERTICAL*
6. SHEAR N 10°E, 41°SE, REVERSE OFFSET 0.2' VERTICAL*; 3' APPARENT, 0.5' ACTUAL
7. SHEAR N56°E, 30°SE
8. SHEAR N41°E, 43°SE; GRAVITY OFFSET; 0.06' VERTICAL*
9. SHEAR N40°E, 40°SE; GRAVITY OFFSET, 0.07' VERTICAL*
10. SHEAR N33°E, 54°SE, SLICKENSIDES S65°E/50° GRAVITY OFFSET, 0.08' VERTICAL*
11. SHEAR N15°W, 51°NE
12. SHEAR N16°E, 24°SE
13. SHEAR #25 E 48°; SLICKENSIDES COINCIDE WITH DIP OF SHEAR
14. SHEAR N54°E, 50°SE, GRAVITY OFFSET, 0.15' VERTICAL*
15. SHEAR N55°E, 25°SE
16. SHEAR N37°E, 17°SE
17. SHEAR, N50°E, 40°SE, SLICKENSIDES COINCIDE WITH DIP OF SHEAR.

FIGURE 2H-81

GEOLOGIC MAPPING—LEFT RIB, FLOOR & RIGHT RIB OF LAKE WATER TUNNEL NO.2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



LEGEND:

- SANDSTONE
- VERTICAL JOINT WITH STRIKE ORIENTATION, UNLESS OTHERWISE NOTED.
- JOINT WITH DIRECTION & ANGLE OF DIP, AND STRIKE ORIENTATION.
- SS SANDSTONE — CALC. CALCAREOUS
- SLTST. SILTSTONE — FOSS. FOSSILIFEROUS
- SH. SHALE
- ----- TRANSITIONAL LITHOLOGIC BOUNDARY

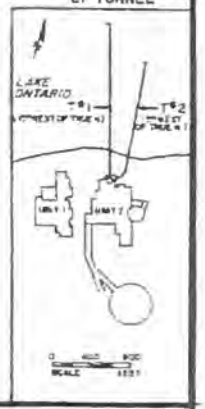


FIGURE 2H-82

GEOLOGIC MAPPING—LEFT RIB OF LAKE WATER TUNNEL NO.2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

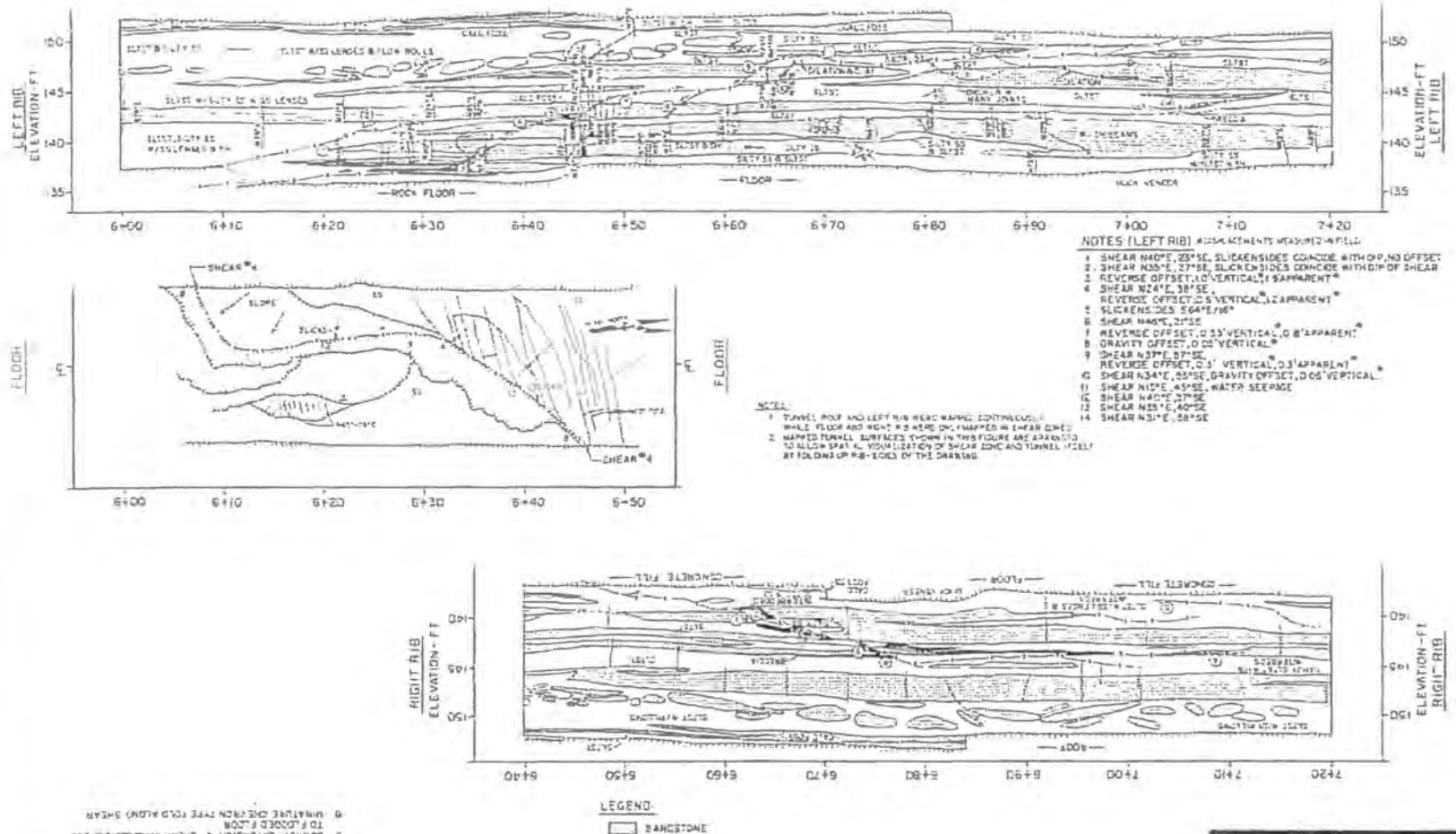
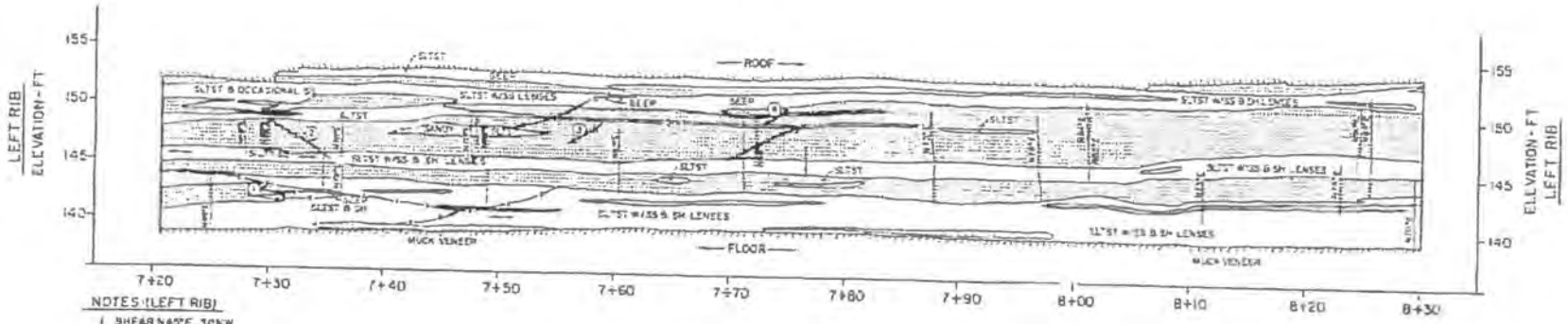


FIGURE 2H-83

GEOLOGIC MAPPING—LEFT RIB, FLOOR & RIGHT RIB OF LAKE WATER TUNNEL NO.2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



NOTES (LEFT RIB)

1. SHEAR N45°E, 31°NW
2. SHEAR N13°E, 38°NW
3. SHEAR N38°E, 33°SE
4. SHEAR N46°E, 64°SE

LEGEND:

- SANDSTONE
- SHEAR
- VERTICAL JOINT WITH STRIKE ORIENTATION, UNLESS OTHERWISE NOTED.
- JOINT WITH DIRECTION & ANGLE OF DIP, AND STRIKE ORIENTATION.
- SS SANDSTONE
- SLTST. SILTSTONE
- SH. SHALE
- CALC. CALCAREOUS
- FOSS. FOSSILIFEROUS
- TRANSITIONAL LITHOLOGIC BOUNDARY

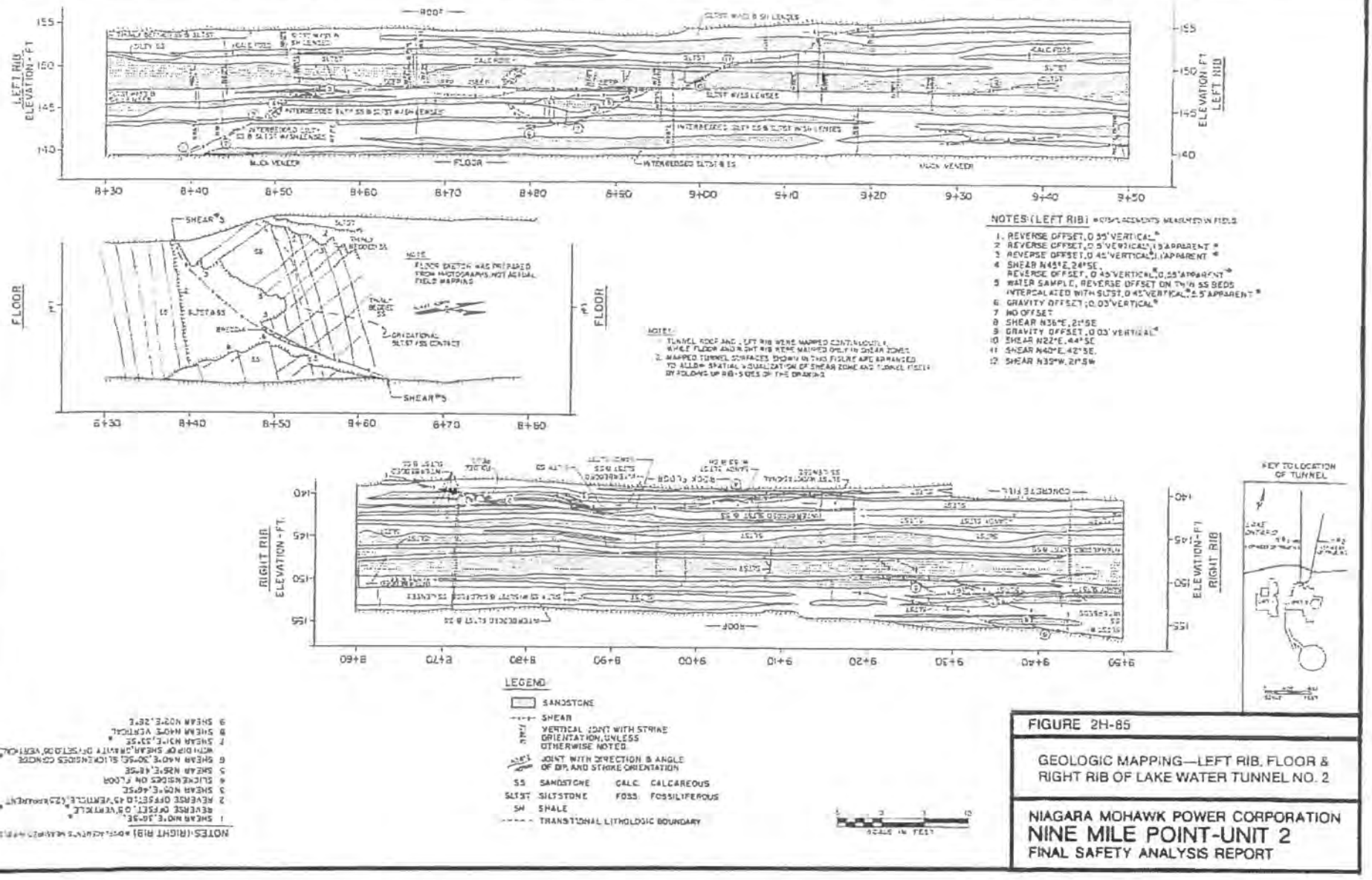
SCALE IN FEET

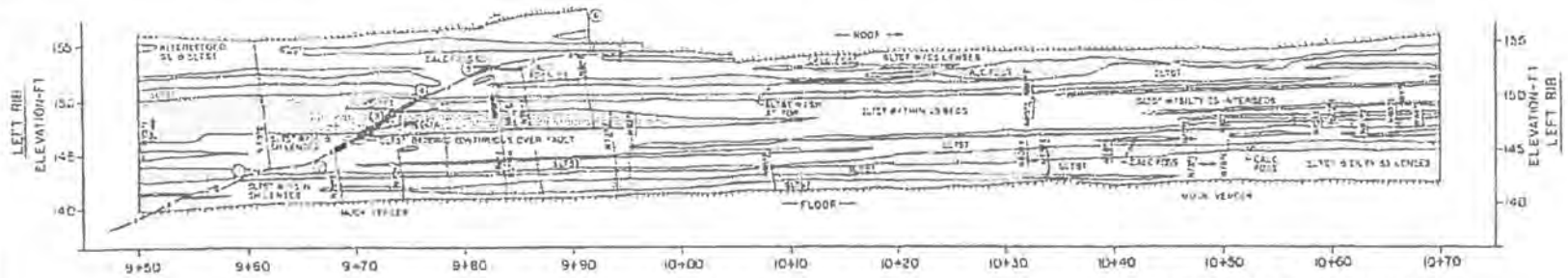
KEY TO LOCATION OF TUNNEL

FIGURE 2H-84

GEOLOGIC MAPPING—LEFT RIB OF LAKE WATER TUNNEL NO. 2

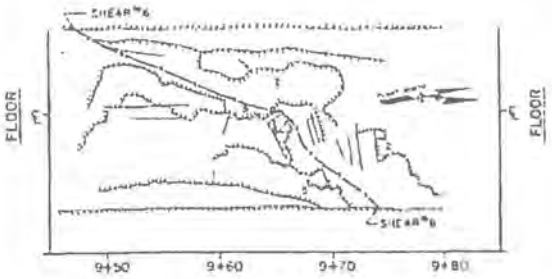
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT


LEFT RIB ELEVATION - FT
ROOF
FLOOR
INTERBEDDED SLTST & SS
MUDSTONE VENEER
SILTST W/SS LENSES
CALC FOSS
8+30
8+40
8+50
8+60
8+70
8+80
8+90
9+00
9+10
9+20
9+30
9+40
9+50
FLOOR
SHEAR #5
SS
SLTST
NOTE
FLOOR SKETCH WAS PREPARED FROM PHOTOGRAPHS, NOT ACTUAL FIELD MAPPING
ERODED SS
ERODED SLTST
ORIGINAL SLTST/SS CONTACT
NOTES: (LEFT RIB) * DENOTES ELEMENTS MEASURED IN FIELD
1. REVERSE OFFSET, 0.35' VERTICAL*
2 REVERSE OFFSET, 0.5' VERTICAL, 1.5' APPARENT *
3 REVERSE OFFSET, 0.45' VERTICAL, 1' APPARENT *
4 SHEAR N48°E, 24°SE, REVERSE OFFSET, 0.45' VERTICAL*, 0.55' APPARENT *
5 WATER SAMPLE, REVERSE OFFSET ON THIN SS BEDS INTERCALATED WITH SLTST, 0.45' VERTICAL*, 2.5' APPARENT *
6 GRAVITY OFFSET; 0.03' VERTICAL*
7 NO OFFSET
8 SHEAR N36°E, 21°SE
9 GRAVITY OFFSET, 0.03' VERTICAL*
10 SHEAR N22°E, 44°SE
11 SHEAR N40°E, 42°SE.
12 SHEAR N32°W, 21°SW
NOTE:
1. TUNNEL ROOF AND LEFT RIB WERE MAPPED CONTINUOUSLY; RIGHT FLOOR AND RIGHT RIB WERE MAPPED ONLY IN SHEAR ZONES.
2. MAPPED TUNNEL SURFACES SHOWN IN THIS FIGURE ARE ARRANGED TO ALLOW SPATIAL VISUALIZATION OF SHEAR ZONE AND TUNNEL FEATURES BY FOLDING UP RIB-SIDES OF THE DRAWING.
RIGHT RIB ELEVATION - FT.
CONCRETE RIB
BLOCK FLOOR
SLTST W/SS LENSES
INTERBEDDED SLTST & SS
SS CHANNEL
SLTST W/SS LENSES
SLTST W/SS LENSES & SS CHANNEL
INTERBEDDED SLTST & SS
SLTST W/SS LENSES & SS CHANNEL
SLTST W/SS LENSES
SLTST W/SS LENSES & SS CHANNEL
SLTST W/SS LENSES & SS CHANNEL
SLTST W/SS LENSES & SS CHANNEL

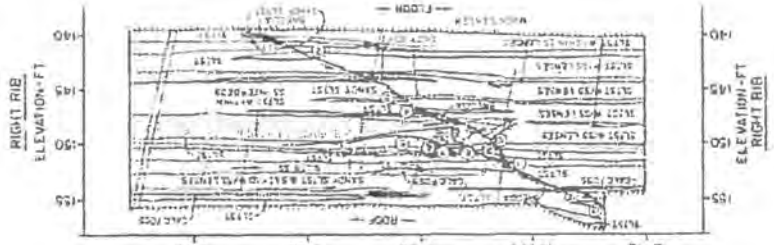


NOTES: (LEFT RIB) * DISPLACEMENTS MEASURED IN FIELD

1 SHEAR N70°E, 35°SE, REVERSE OFFSET, 0.55'ACTUAL*, 0.0'APPARENT*
2 SHEAR N28°E, 30°SE; SLICKENSIDES COINCIDE WITH OF SHEAR
3 SHEAR N20°E, 84°SE
4 REVERSE OFFSET, 0.25'VERTICAL*, 0.5'APPARENT*, 0.0'ACTUAL*
5 SHEAR N45°E, 62°SE
6 SHEAR N25°E, 27°SE

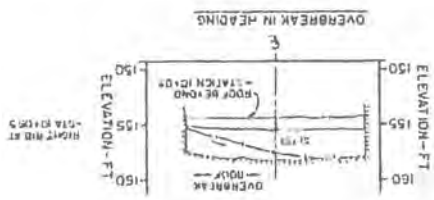


NOTES:
1. TUNNEL ROOF AND LEFT WERE MAPPED CONTINUOUSLY, WHILE FLOOR AND RIGHT RIB WERE MAPPED ONLY IN SHEAR ZONES
2. MAPPED TUNNEL SURFACES SHOWN IN THIS FIGURE ARE ARRANGED TO ALLOW SPATIAL VISUALIZATION OF SHEAR ZONE AND TUNNEL (BELT) BY FOLDING UP RIB SIDES OF THE DRAWING



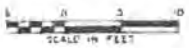
NOTES (RIGHT RIB) * DISPLACEMENTS MEASURED IN FIELD

1 REVERSE OFFSET, 0.45'VERTICAL*
2 REVERSE OFFSET, 0.38'VERTICAL*, 1.1'APPARENT*
3 SHEAR N25°E, 39°SE, REVERSE OFFSET, 0.35'VERTICAL*, 0.25'APPARENT*
4 REVERSE OFFSET, 0.3'APPARENT*
5 SHEAR N37°E, 28°SE, SLICKENSIDES COINCIDE WITH OF SHEAR
6 REVERSE OFFSET, 0.12'VERTICAL*, N32°E, 40°SE, SLICKENSIDES STRIKE/DIP
7 SHEAR N32°E, 40°SE, REVERSE OFFSET 0.1'VERTICAL*
8 SHEAR N25°E, 76°SE
9 SHEAR OFFSET, 0.12'VERTICAL*
10 SHEAR N20°E, 36°SE, SLICKENSIDES COINCIDE WITH DIP OF SHEAR
GRAVITY OFFSET, 0.1'VERTICAL*
11 REVERSE OFFSET, 0.4'VERTICAL*, 1.0'APPARENT*
12 REVERSE OFFSET, 0.7'VERTICAL*
13 SHEAR N25°E, 34°SE, SLICKENSIDES DIP/DIP DIRECTION WITH
REVERSE OFFSET, 0.3'VERTICAL*, 0.5'APPARENT*
(CALCITE - SILTSTONE - SAMPLE



LEGEND:

- SANDSTONE
- SHEAR
- VERTICAL JOINT WITH STRIKE ORIENTATION, UNLESS OTHERWISE NOTED
- JOINT WITH DIRECTION & ANGLE OF DIP, AND STRIKE ORIENTATION
- SS SANDSTONE
- SLTST SILTSTONE
- SH SHALE
- CALC CALCAREOUS
- FOSS FOSSILIFEROUS
- TRANSITIONAL LITHOLOGIC BOUNDARY



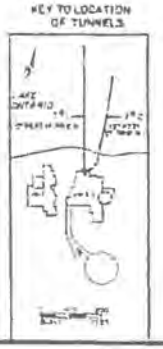


FIGURE 2H-86

GEOLOGIC MAPPING—LEFT RIB, FLOOR & RIGHT RIB OF LAKE WATER TUNNEL NO. 2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

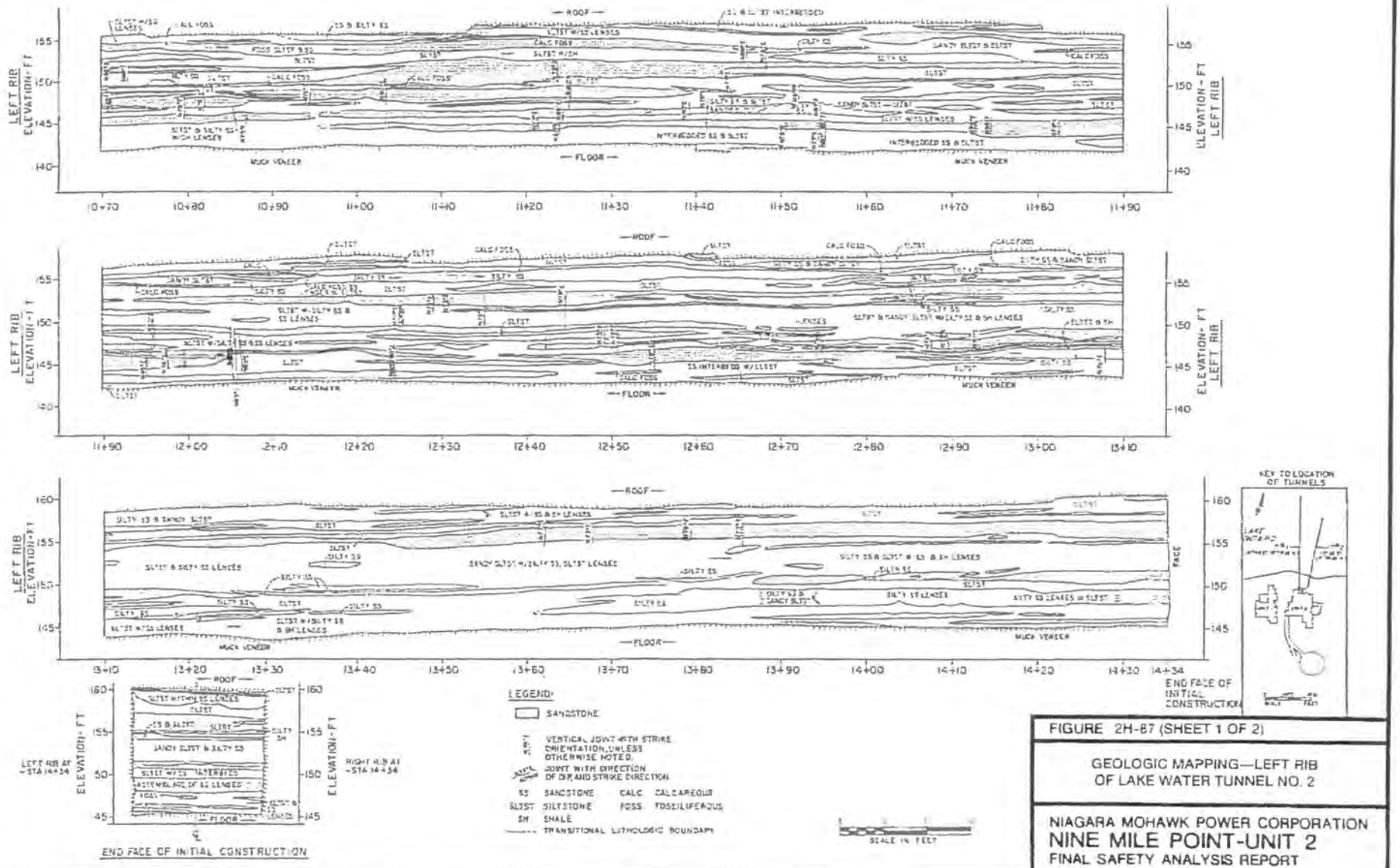
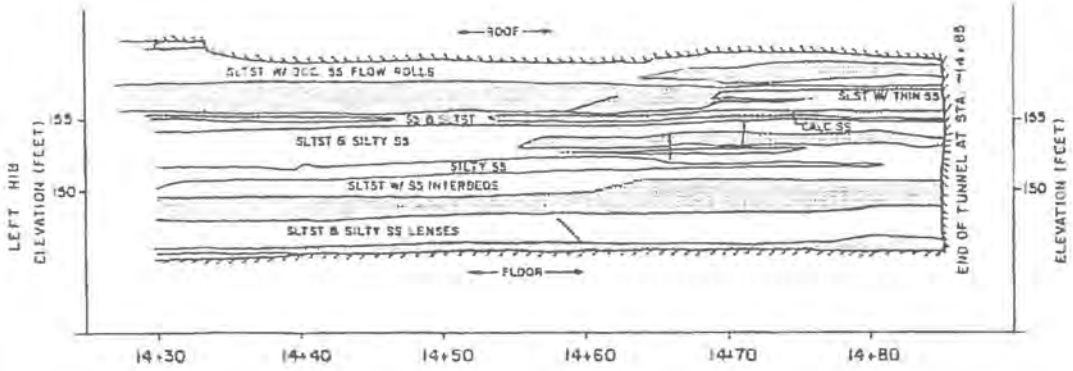
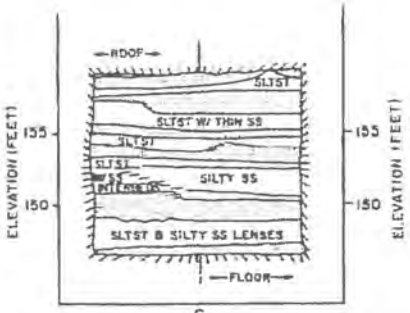


FIGURE 2H-87 (SHEET 1 OF 2)

GEOLOGIC MAPPING—LEFT RIB OF LAKE WATER TUNNEL NO. 2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT





END FACE OF FINAL CONSTRUCTION
STA -14+85

LEGEND

SANDSTONE

JOINT

SS SANDSTONE CALC CALCAREOUS
SLTST SILTSTONE SH SHALE
TRANSITIONAL LITHOLOGIC BOUNDARY

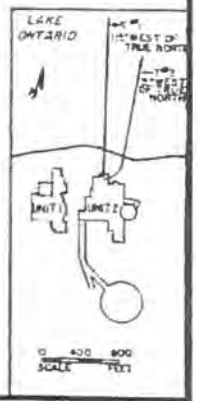


FIGURE 2H-87 (SHEET 2 OF 2)

GEOLOGIC MAPPING—LEFT RIB, & END FACE OF LAKE WATER TUNNEL NO. 2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

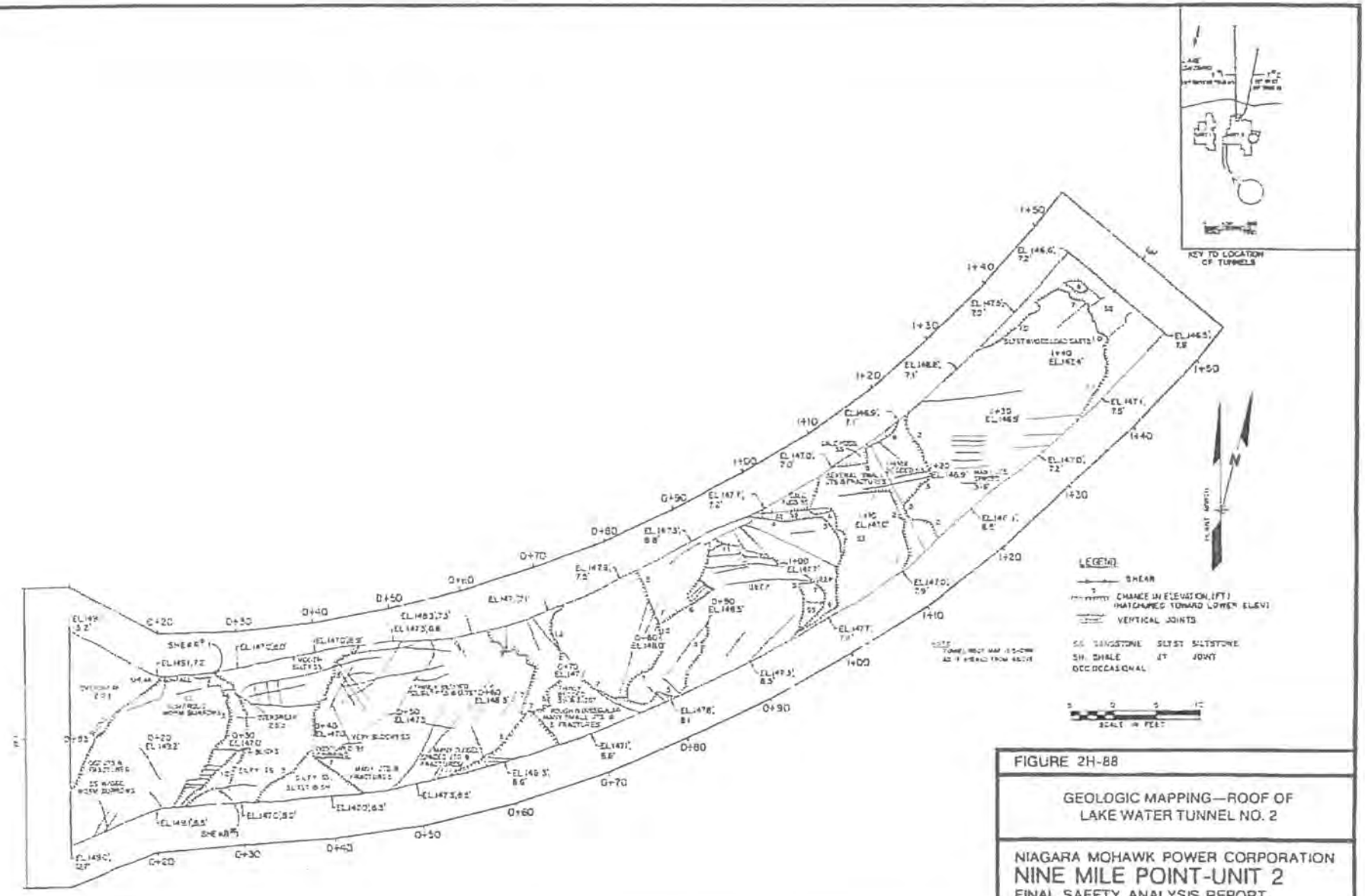


FIGURE 2H-88

GEOLOGIC MAPPING—ROOF OF LAKE WATER TUNNEL NO. 2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

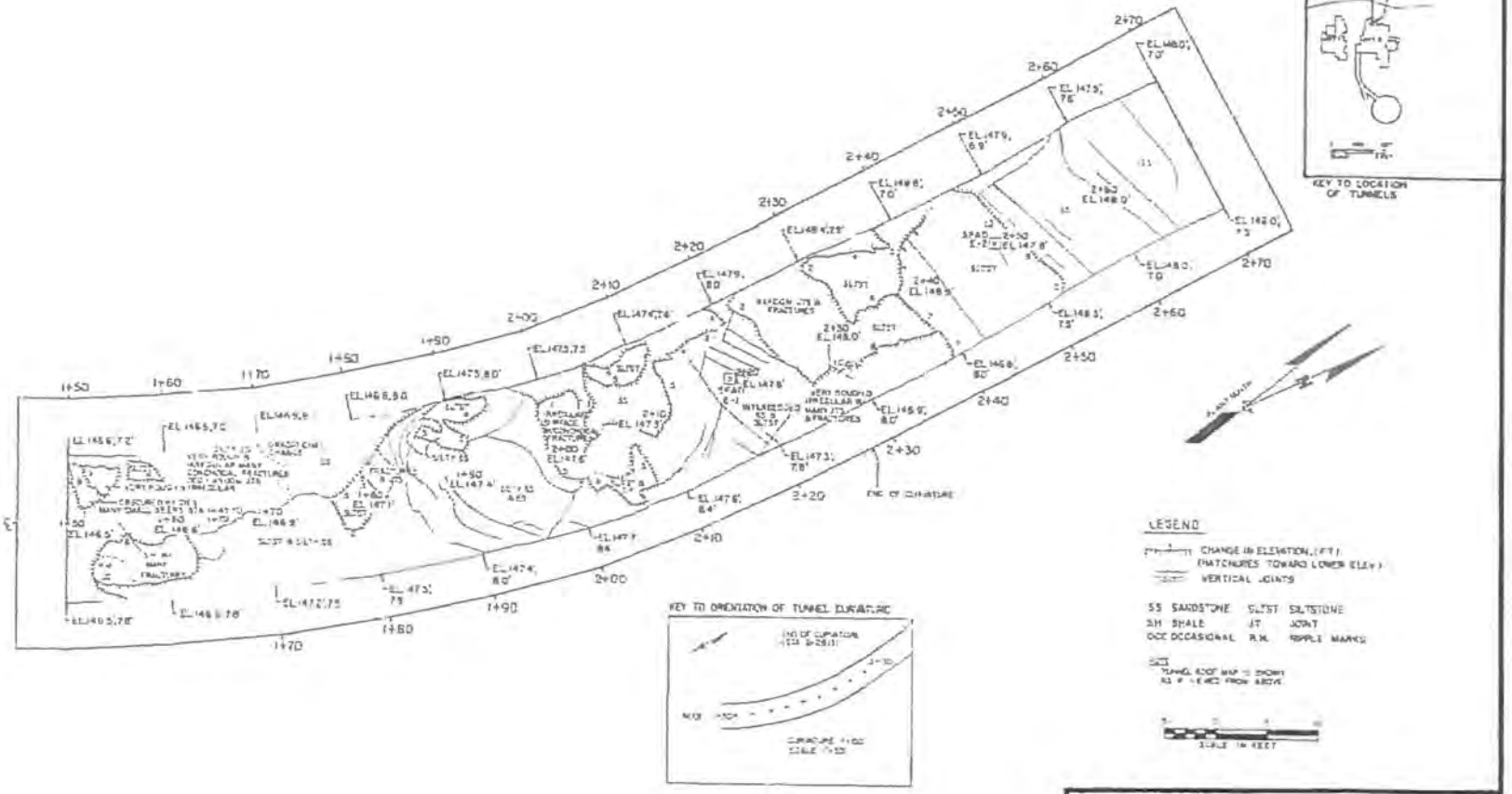


FIGURE 2H-89

GEOLOGIC MAPPING—ROOF OF LAKE WATER TUNNEL NO. 2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

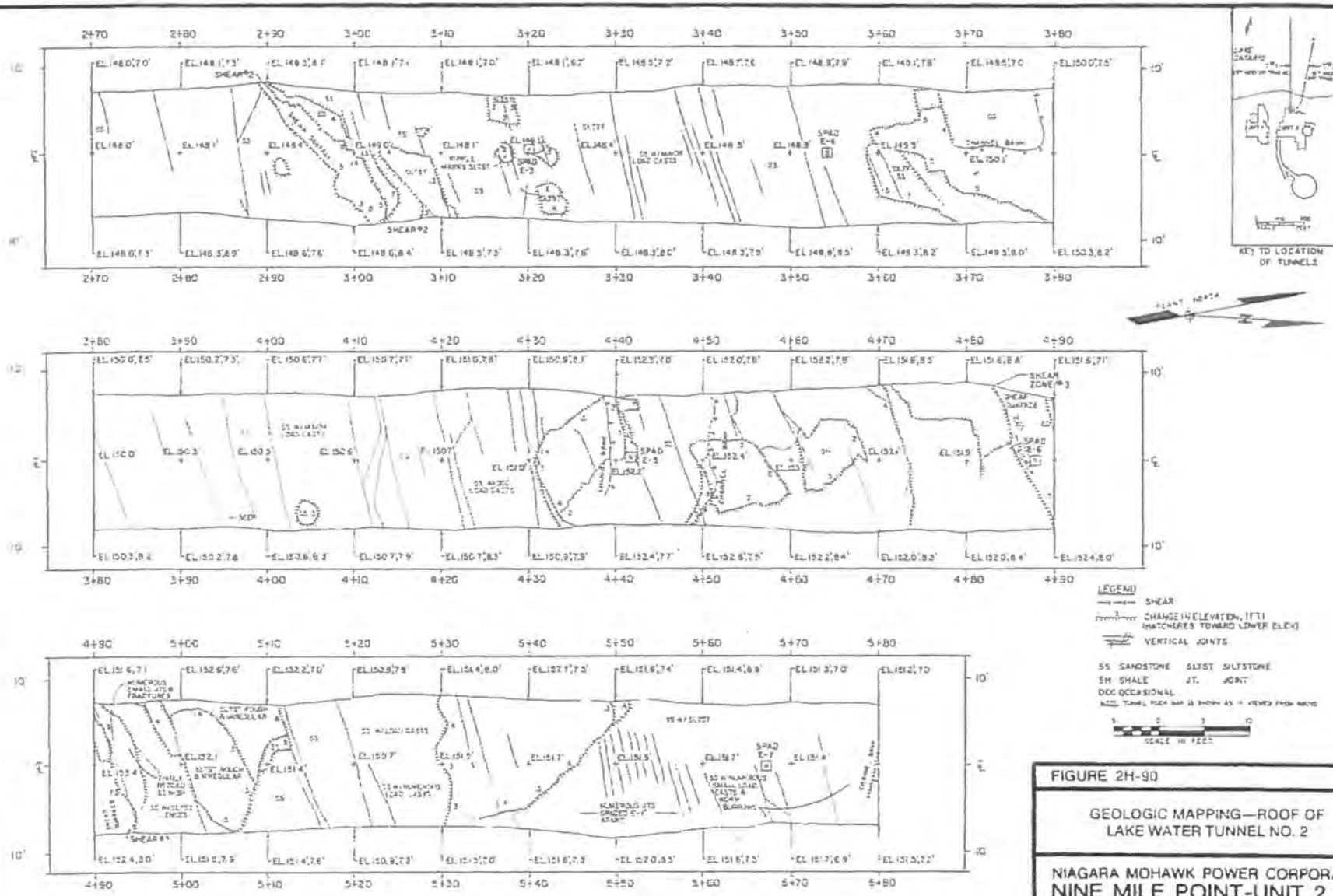


FIGURE 2H-90

GEOLOGIC MAPPING—ROOF OF LAKE WATER TUNNEL NO. 2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

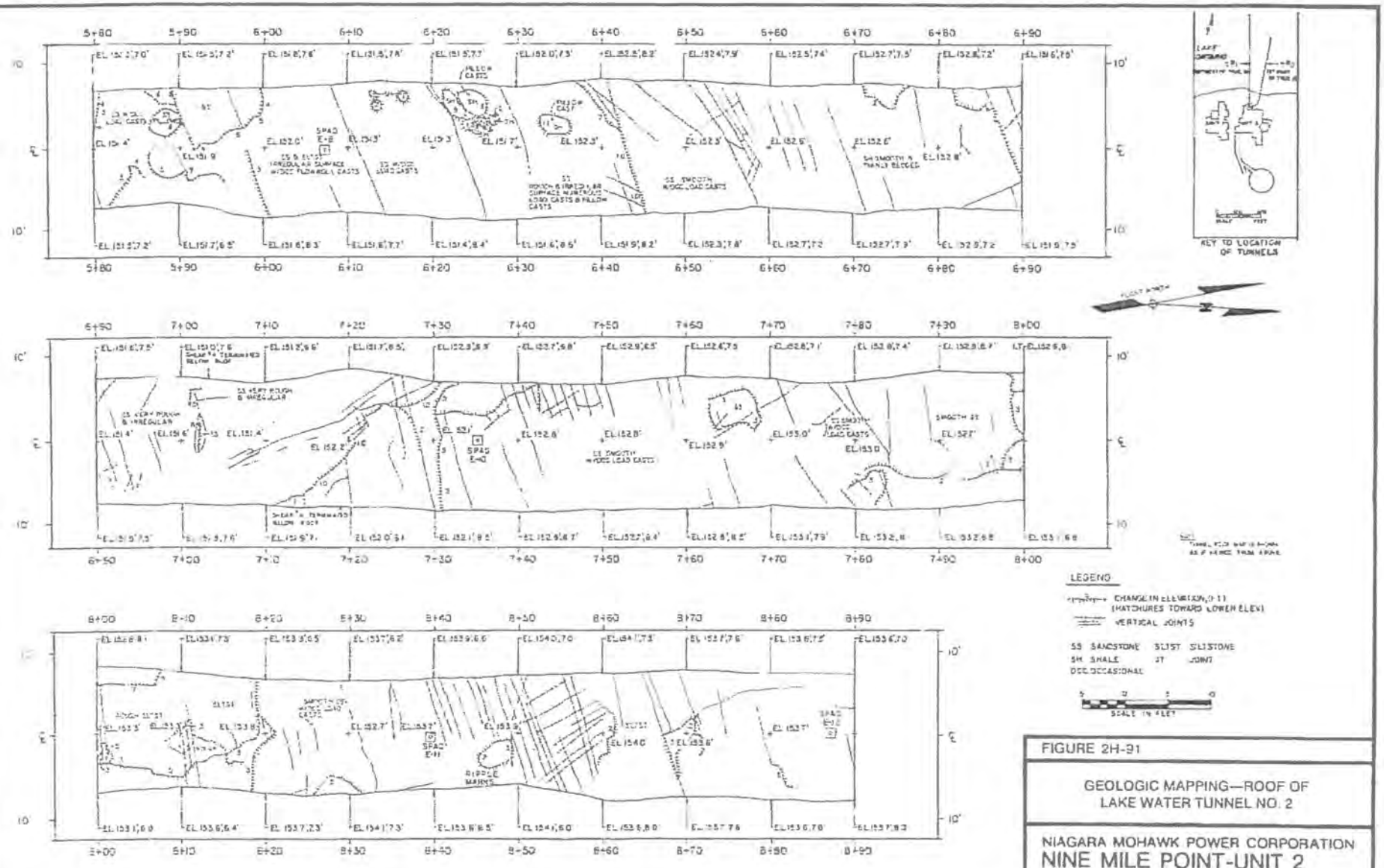


FIGURE 2H-31

GEOLOGIC MAPPING—ROOF OF LAKE WATER TUNNEL NO. 2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

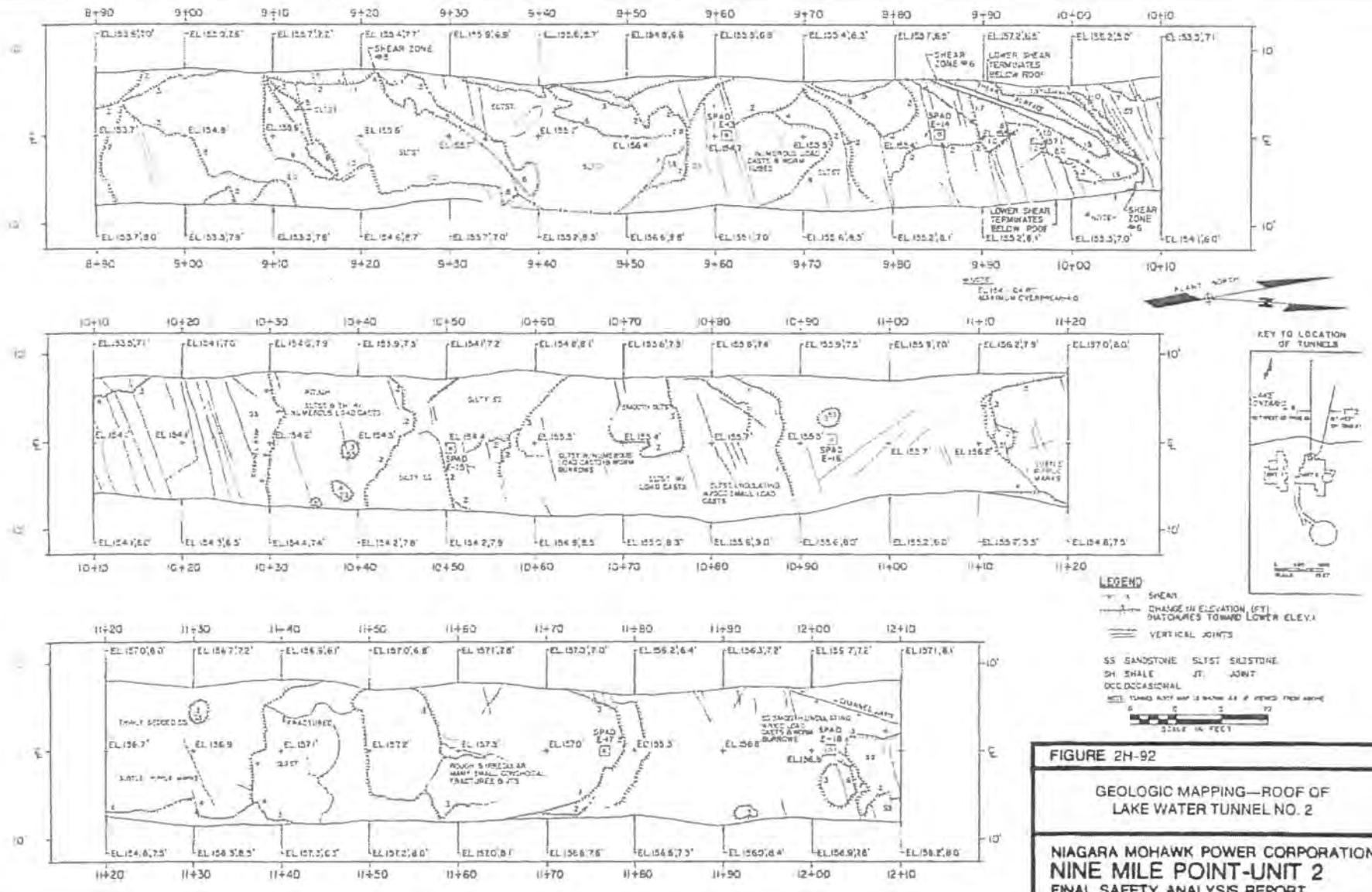


FIGURE 2H-92

GEOLOGIC MAPPING—ROOF OF LAKE WATER TUNNEL NO. 2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

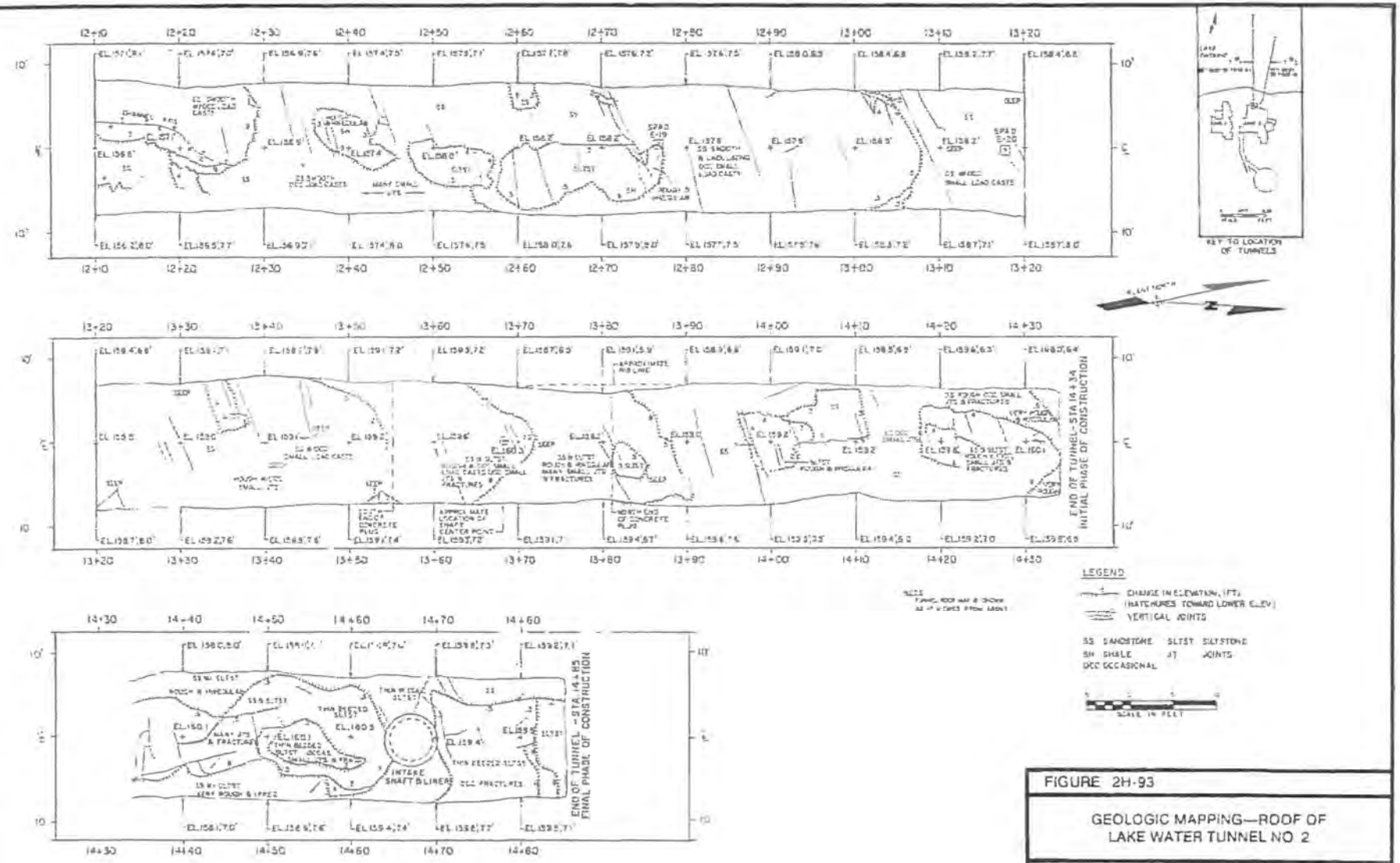
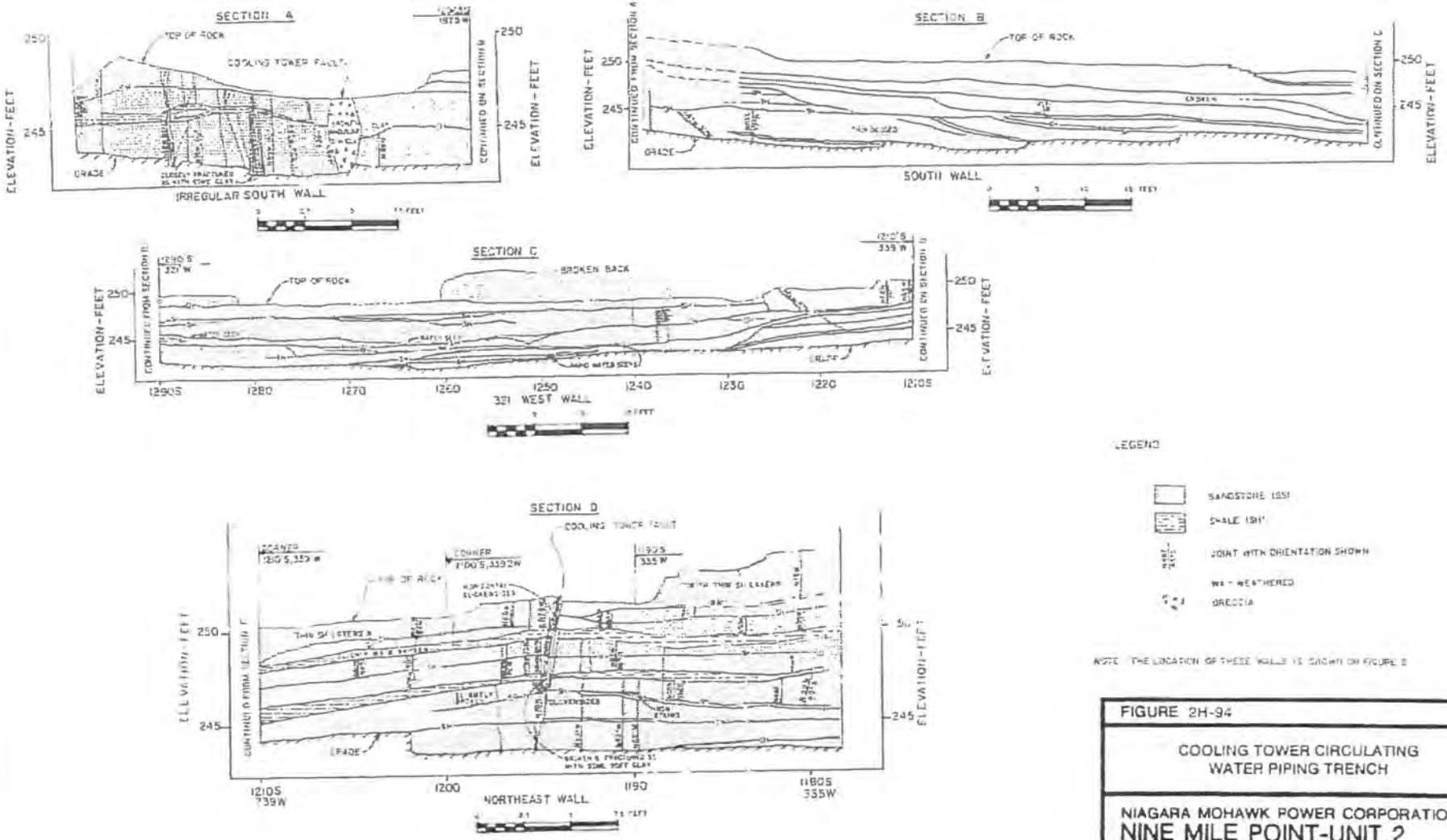


FIGURE 2H-93

GEOLOGIC MAPPING—ROOF OF LAKE WATER TUNNEL NO 2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



NOTE: THE LOCATION OF THESE WALLS IS SHOWN ON FIGURE 2

FIGURE 2H-94

COOLING TOWER CIRCULATING WATER PIPING TRENCH

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

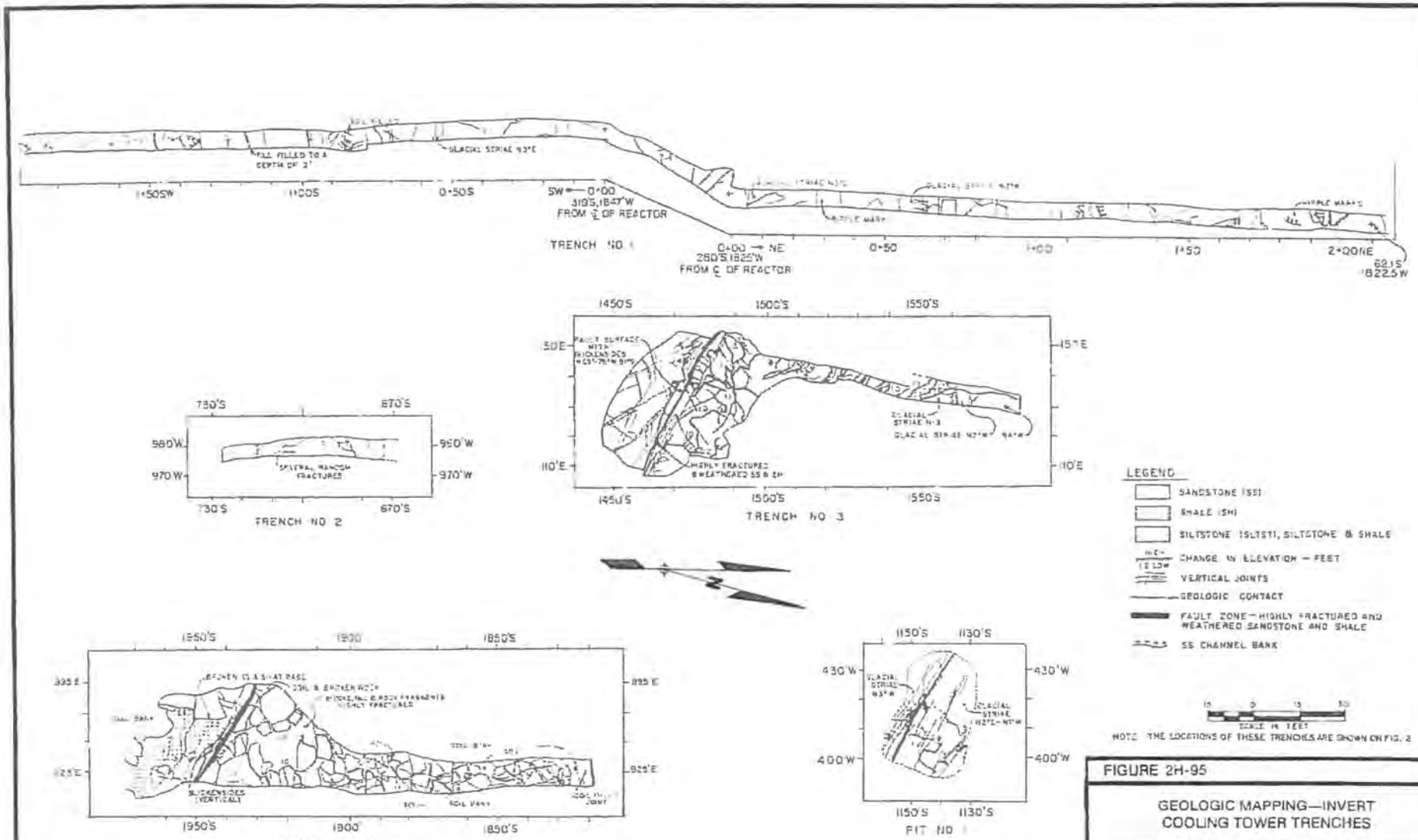
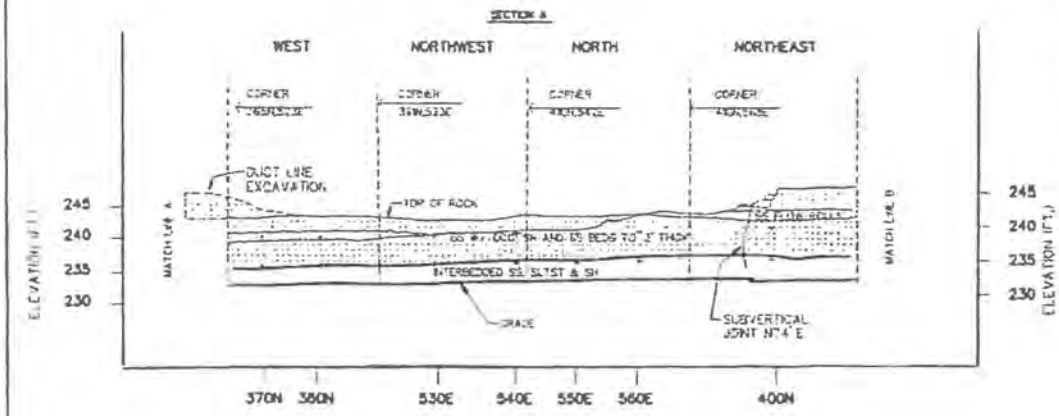


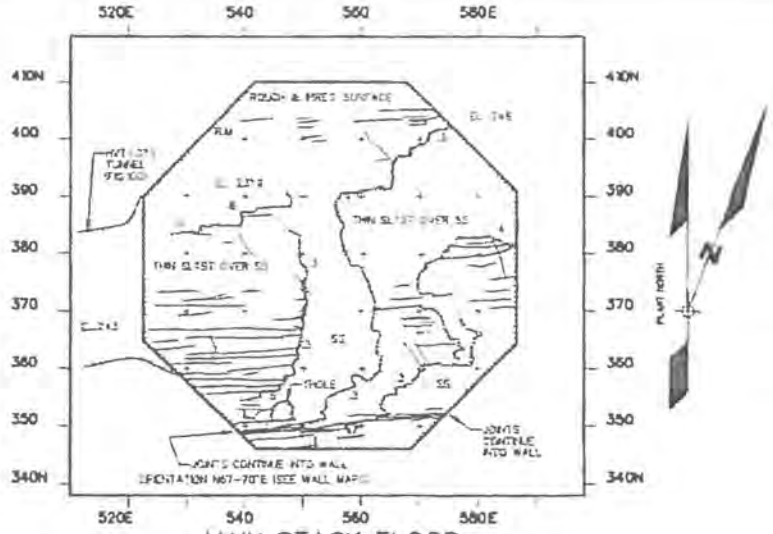
FIGURE 2H-95

GEOLOGIC MAPPING—INVERT
COOLING TOWER TRENCHES

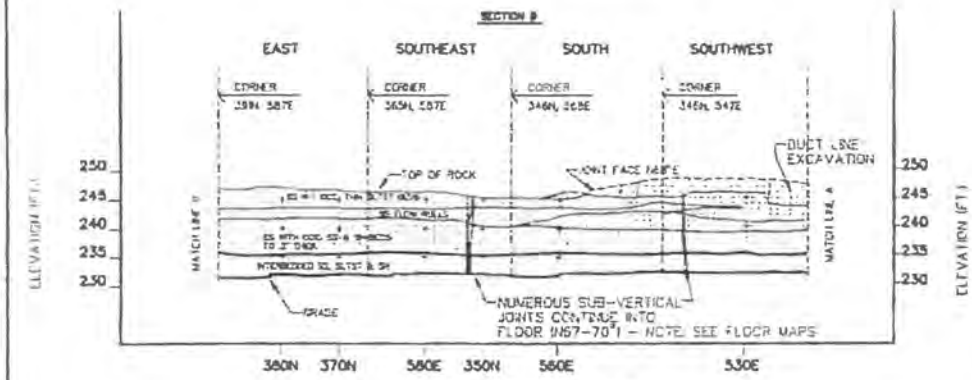
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



MAIN STACK WALLS



MAIN STACK FLOOR



MAIN STACK WALLS

LEGEND

SANDSTONE (SS)

SH – SHALE

OCC – OCCASIONAL

RM – RIPPLE MARKS

CHANGE IN ELEVATION (FT.)

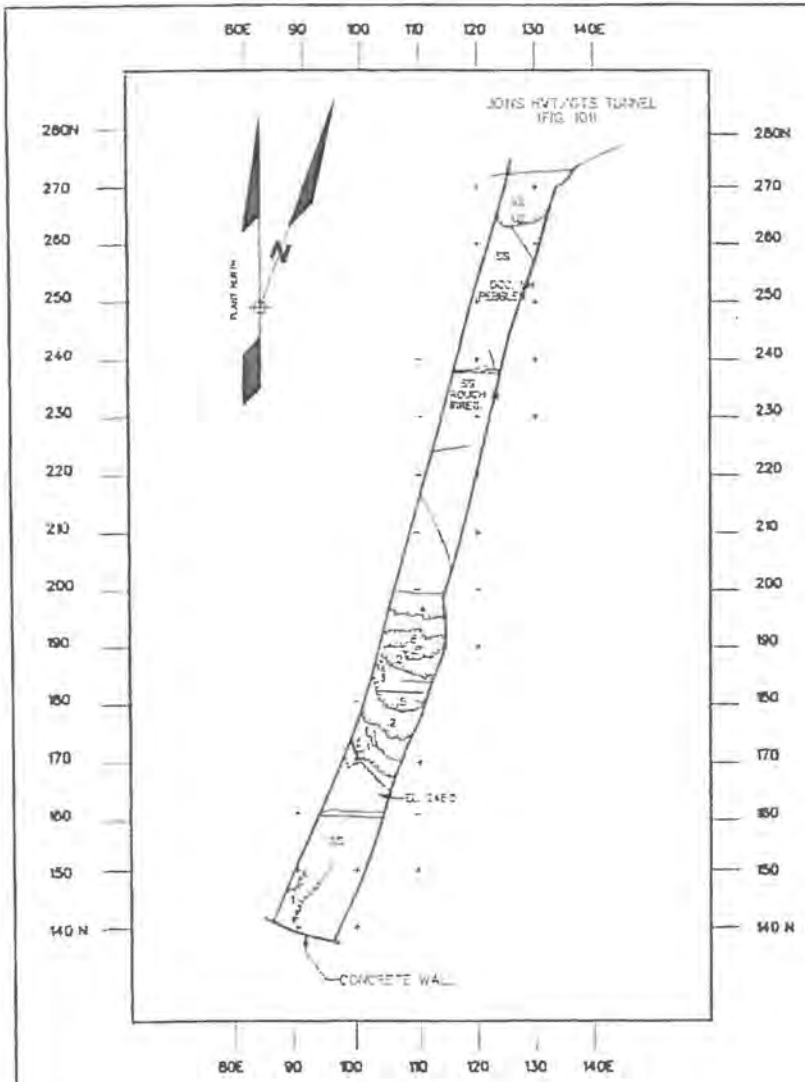
VERTICAL JOINTS, PLAN VIEW

SCALE IN FEET

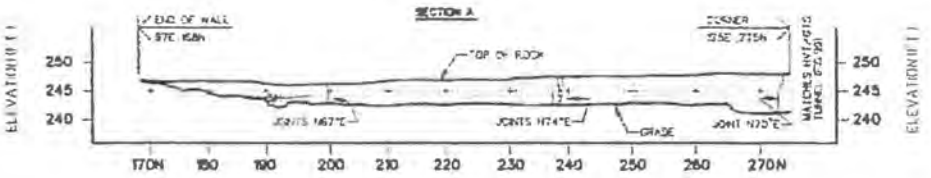
FIGURE 2H-96

MAIN STACK — WALLS & FLOOR

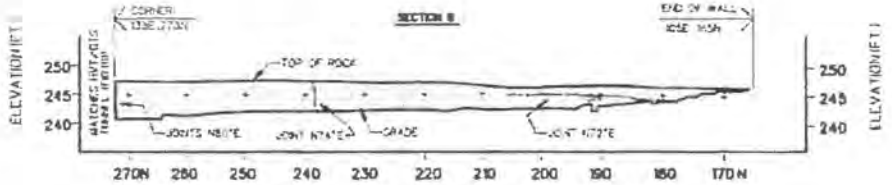
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



GTS TUNNEL FLOOR



GTS TUNNEL – WEST WALL



GTS TUNNEL – EAST WALL

LEGEND

SANDSTONE (SS)

SH – SHALE

CHANGE IN ELEVATION (FT.)

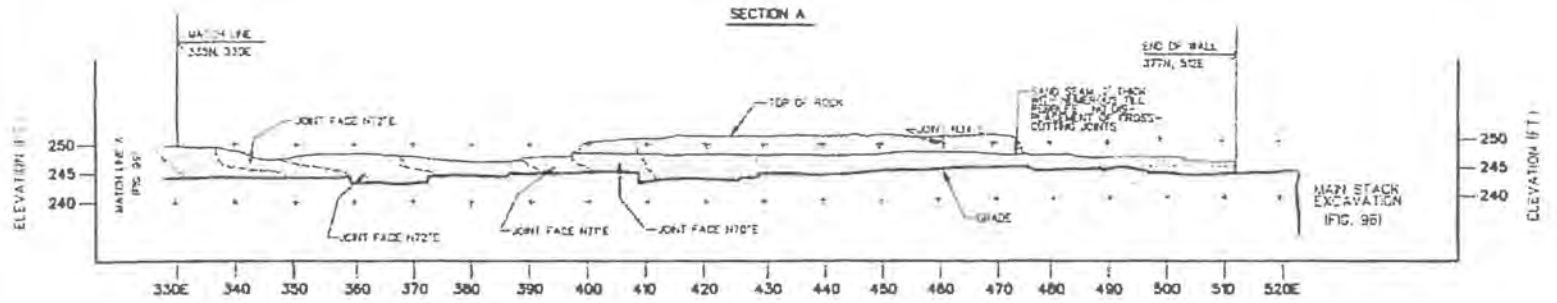
OCC – OCCASIONAL

VERTICAL JOINTS, PLAN VIEW

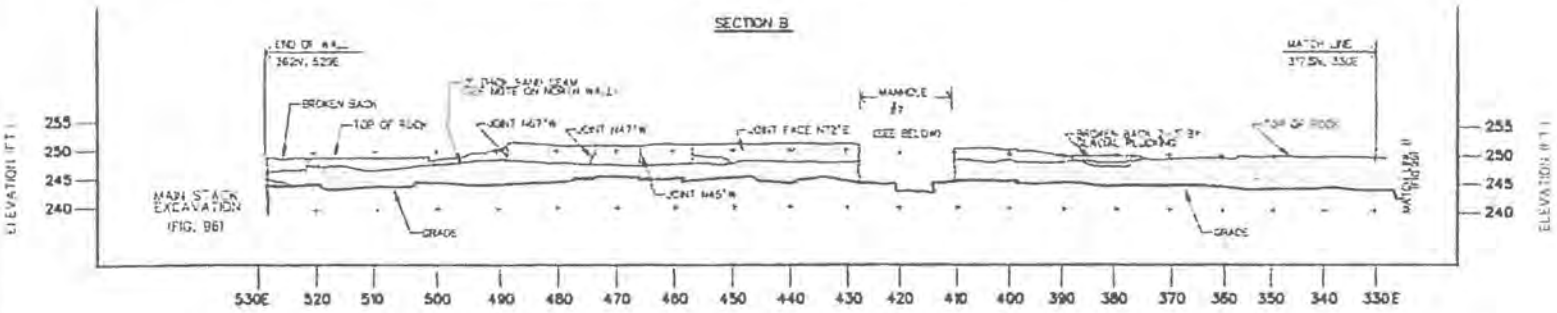
FIGURE 2H-97

GTS TUNNEL — WALLS & FLOOR

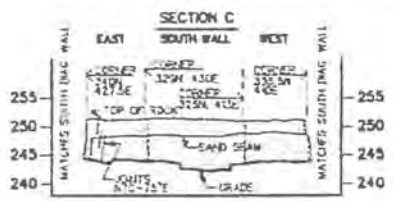
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



HVT/GTS TUNNEL – NORTH DIAGONAL WALL



HVT/GTS TUNNEL – SOUTH DIAGONAL WALL



MANHOLE #7

LEGEND

SANDSTONE (EL)

FIGURE 2H-98

HVT/GTS TUNNEL
DIAGONAL WALLS
(N.E. PORTION)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

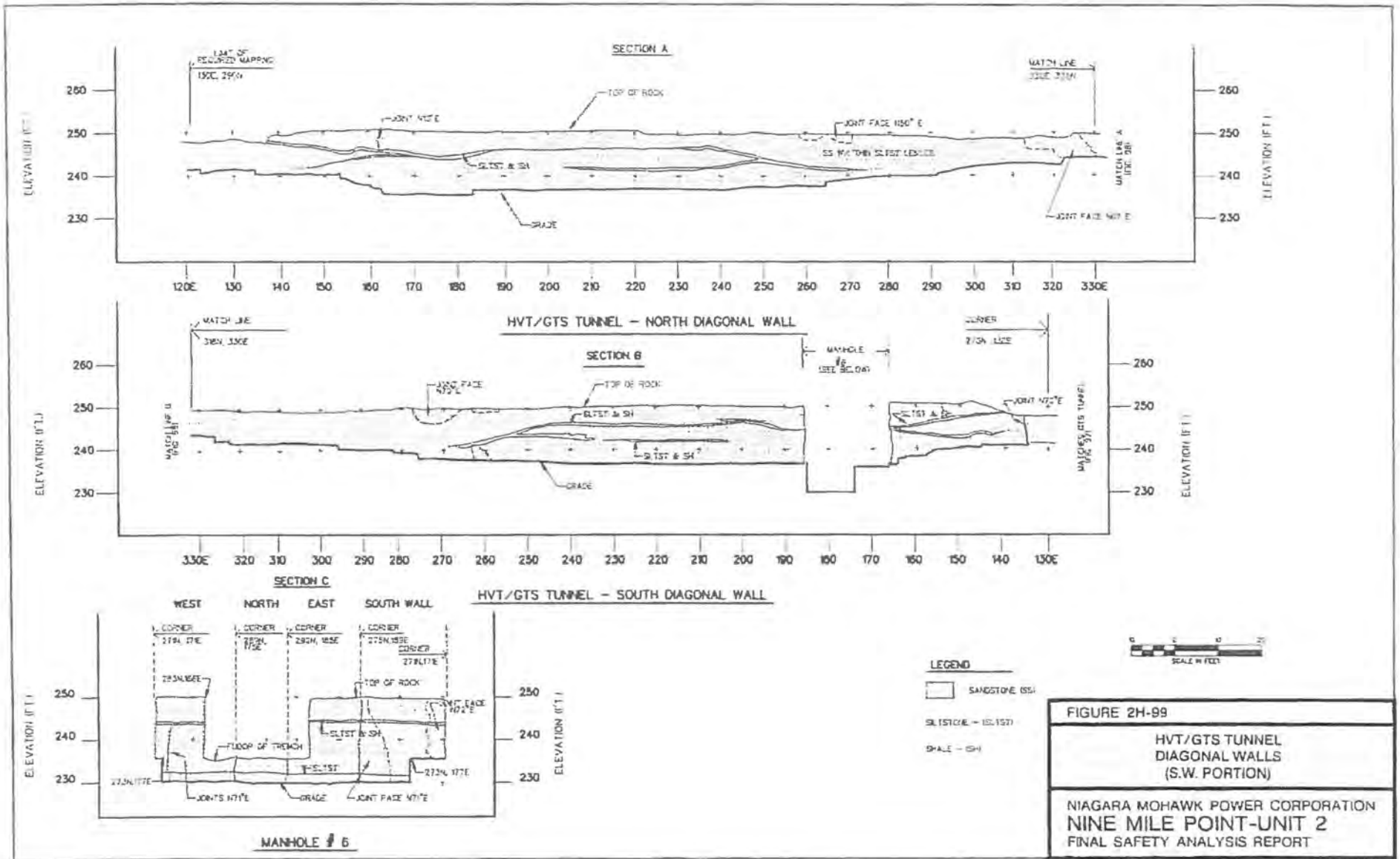


FIGURE 2H-99

HVT/GTS TUNNEL
DIAGONAL WALLS
(S.W. PORTION)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

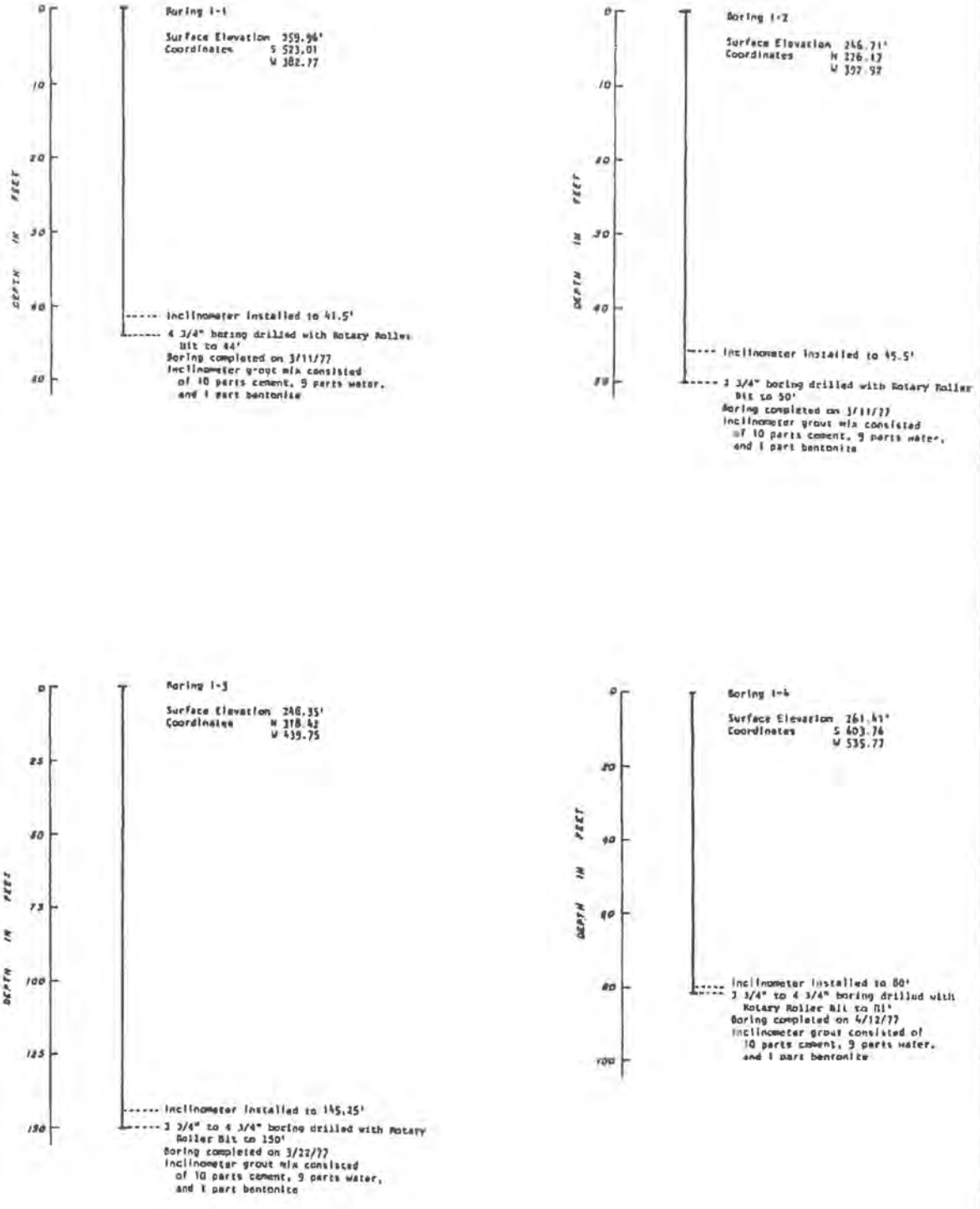
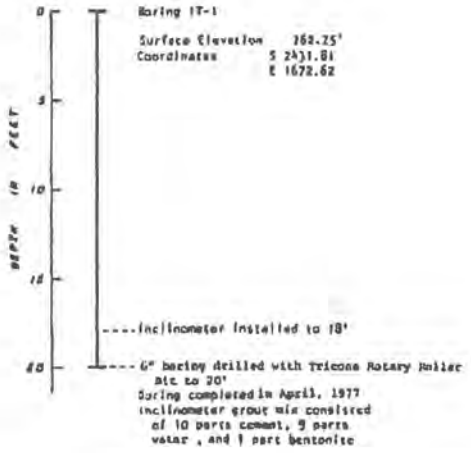
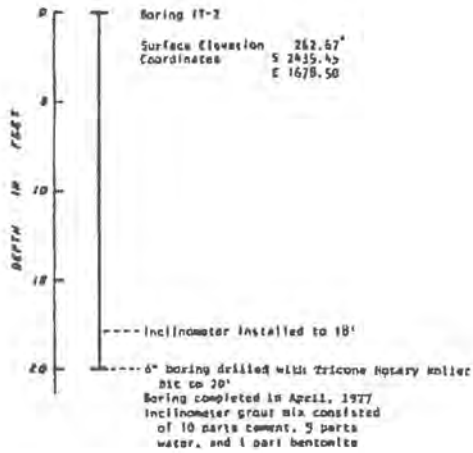


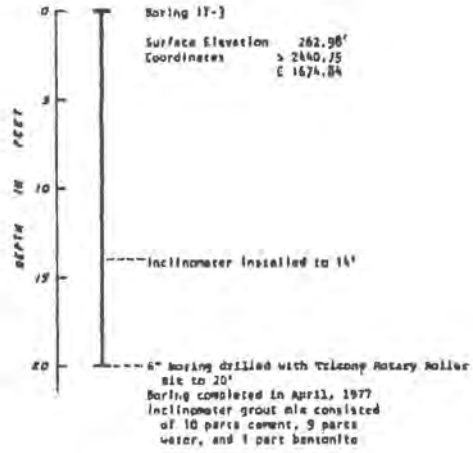
FIGURE 2E-1

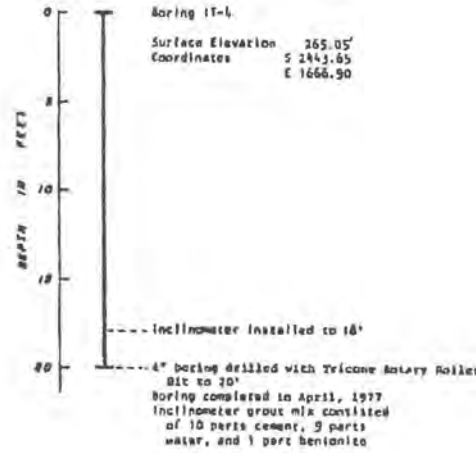
LOGS OF BORINGS I-1, I-2, I-3, AND I-4

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT









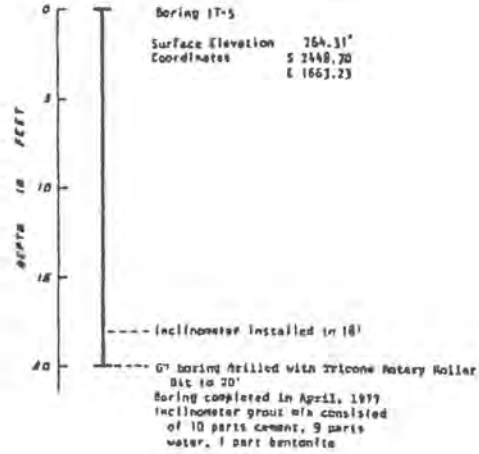


FIGURE 2K-2

LOGS OF BORINGS IT-1, IT-2, IT-3, IT-4, AND IT-5

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

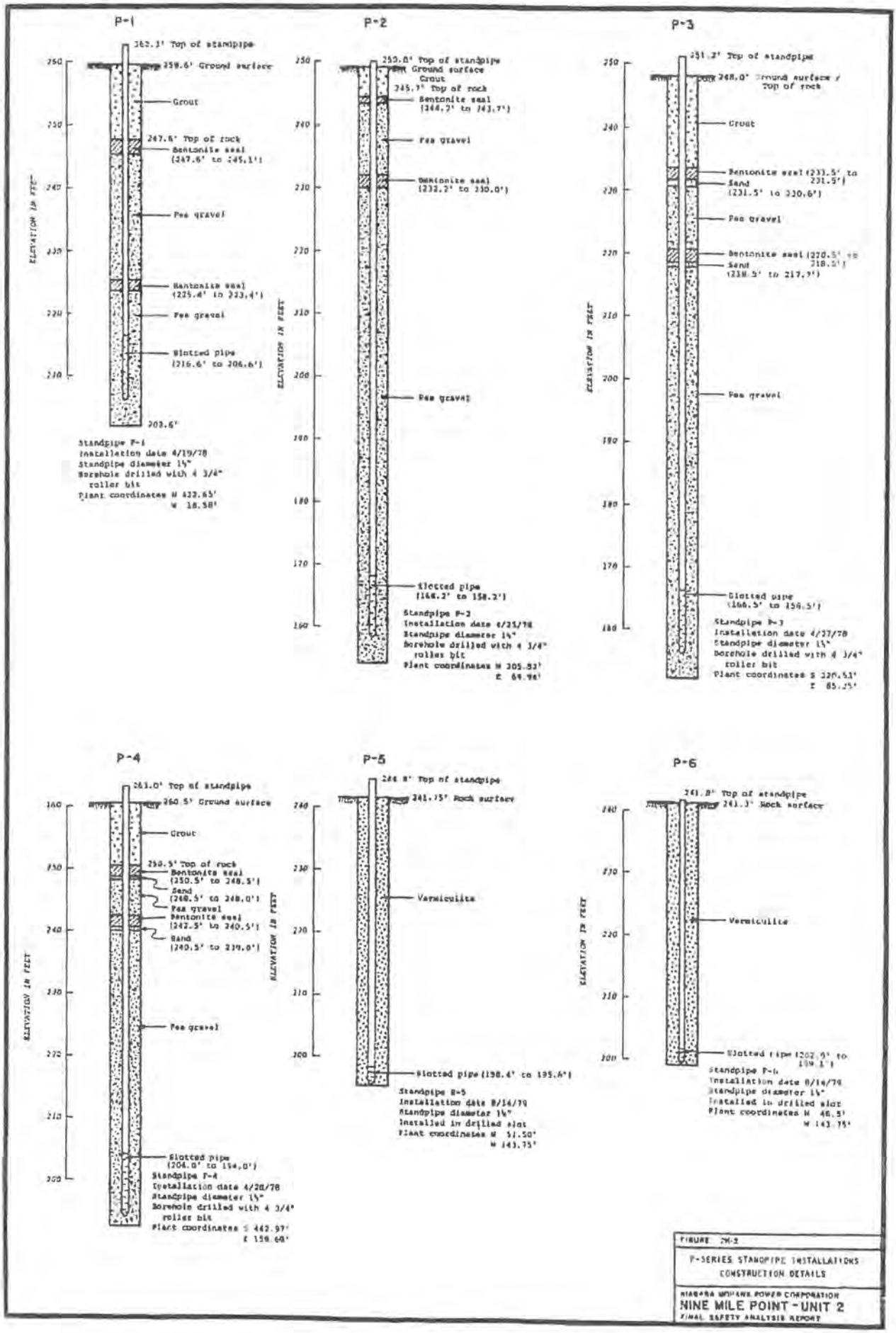


FIGURE 2M-2

P-SERIES STANDPIPE INSTALLATIONS CONSTRUCTION DETAILS

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT

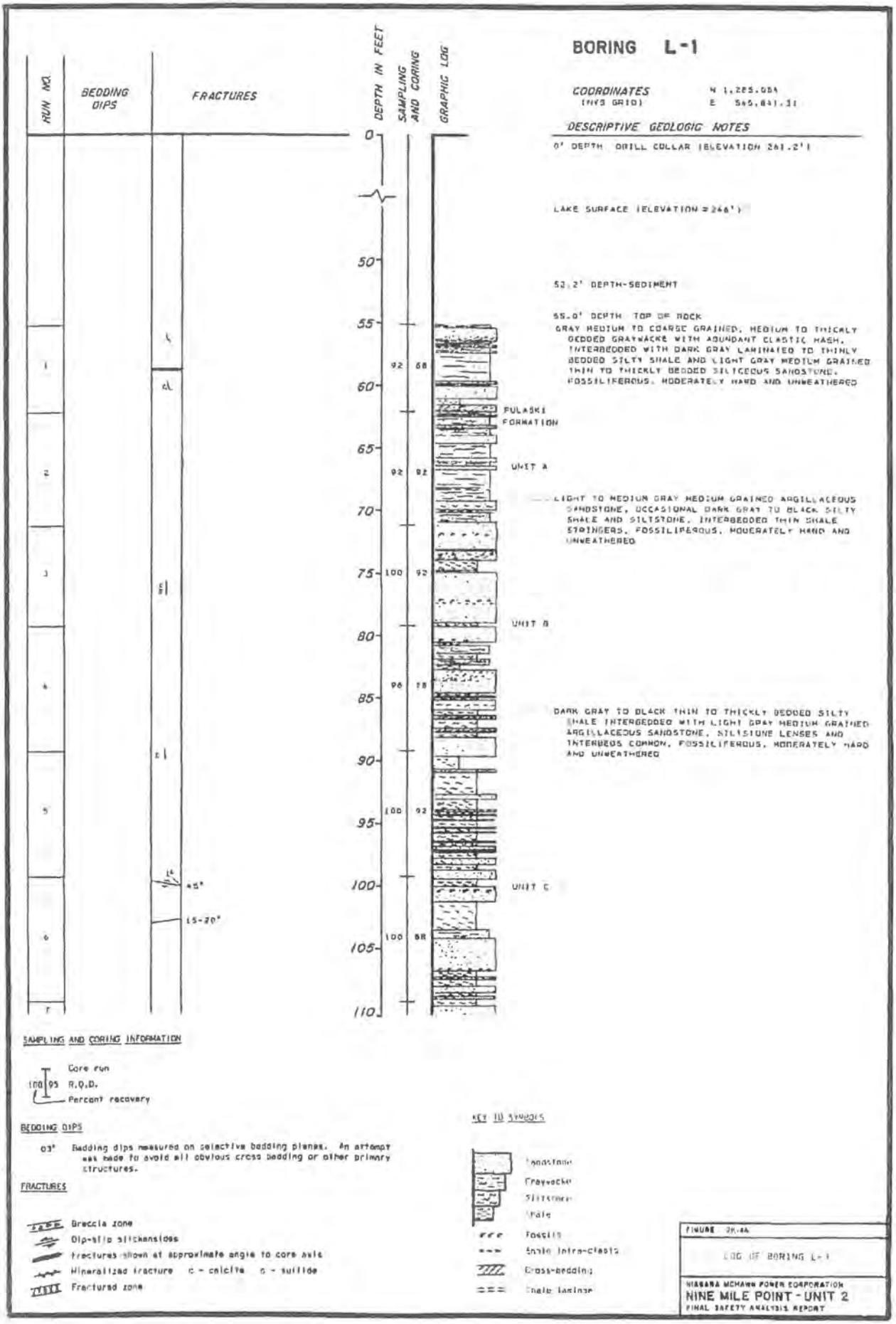
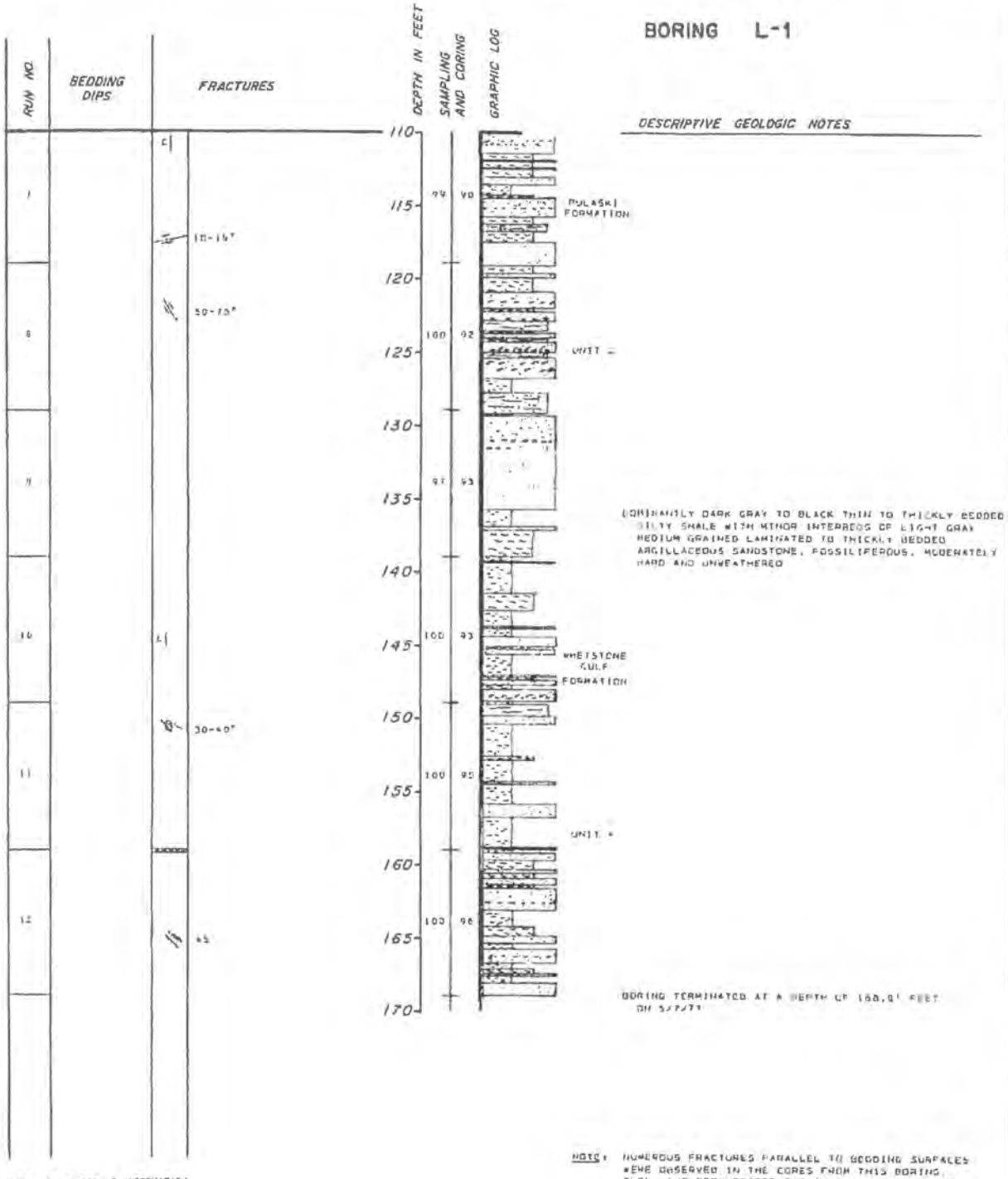


FIGURE 2K-4A

LOG OF BORING L-1

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING L-1



DESCRIPTIVE GEOLOGIC NOTES

(ORIGINALLY DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE WITH MINOR INTERBEDS OF LIGHT GRAY MEDIUM GRAINED LAMINATED TO THICKLY BEDDED ARGILLACEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

BORING TERMINATED AT A DEPTH OF 168.9' FEET ON 5/27/71

NOTE: NUMEROUS FRACTURES PARALLEL TO BEDDING SURFACES WERE OBSERVED IN THE CORES FROM THIS BORING. THEY HAVE BEEN EDITED OUT IN THE PRODUCTION OF THIS LOG UNLESS THEY COULD BE IDENTIFIED AS NATURALLY OCCURRING FRACTURES. HOWEVER, THE FREQUENCY OF OCCURRENCE OF THESE SUBHORIZONTAL FRACTURES IS REFLECTED IN THE ROD VALUES SHOWN

SAMPLING AND CORING INFORMATION

Core run
100 | 95 R.C.D.
Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c = calcite s = sulfide
- Fractured zone

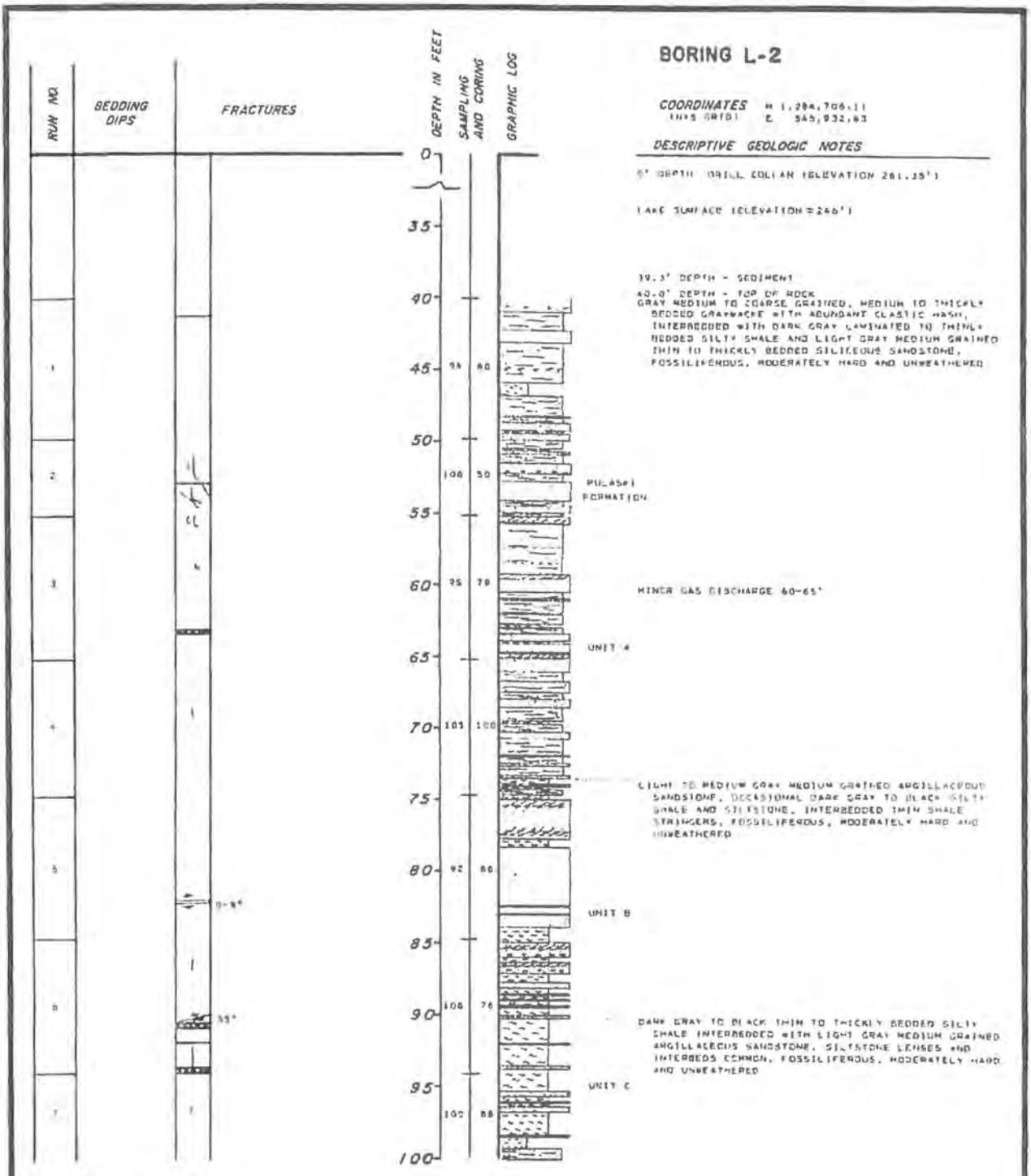
KEY TO SYMBOLS

- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intraclasts
- Cross-bedding
- Shale laminae

FIGURE 2A-4B

LOG OF BORING L-1

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



BORING L-2

COORDINATES (NYS GRID) N 1,284,706.11
E 545,932.83

DESCRIPTIVE GEOLOGIC NOTES

0' DEPTH - DRILL COLLAR (ELEVATION 281.25')

LAKE SURFACE (ELEVATION = 246')

39.3' DEPTH - SEDIMENT

40.0' DEPTH - TOP OF ROCK
GRAY MEDIUM TO COARSE GRAINED, MEDIUM TO THICKLY BEDDED GRAYWACKE WITH ABUNDANT CLASTIC HASH, INTERBEDDED WITH DARK GRAY LAMINATED TO THINLY BEDDED SILTY SHALE AND LIGHT GRAY MEDIUM GRAINED THIN TO THICKLY BEDDED SILICEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

PULASKI FORMATION

MINOR GAS DISCHARGE 60-65'

UNIT A

LIGHT TO MEDIUM GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, OCCASIONAL DARK GRAY TO BLACK SILTY SHALE AND SILTSTONE, INTERBEDDED THIN SHALE STRINGERS, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

UNIT B

DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE INTERBEDDED WITH LIGHT GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, SILTSTONE LENSES AND INTERBEDS COMMON, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

UNIT C

SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Slip-slip slickensides
- Fractures shown at approximate angle to core axis
- Mineralized fracture (c = calcite, s = sulfide)
- Fractured zone

KEY TO SYMBOLS

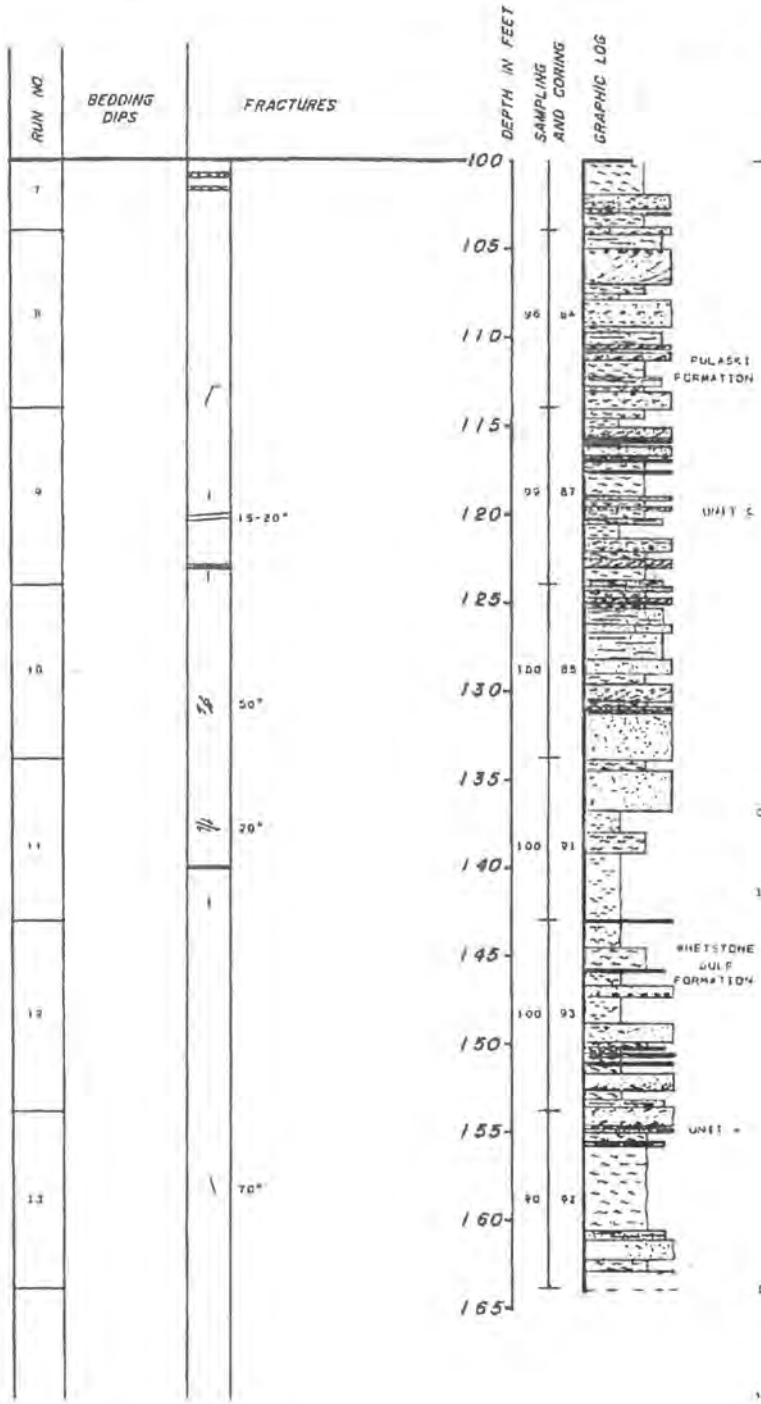
- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

FIGURE 2.5-A

LOG OF BORING L-2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING L-2



DESCRIPTIVE GEOLOGIC NOTES

DOMINANTLY DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE WITH MINOR INTERBEDS OF LIGHT GRAY MEDIUM GRAINED LAMINATED TO THICKLY BEDDED ARGILLACEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

139.0' LOSS OF DRILLING CIRCULATION

BORING TERMINATED AT A DEPTH OF 163.8 FEET ON 5/10/77

NOTE: NUMEROUS FRACTURES PARALLEL TO BEDDING SURFACES WERE OBSERVED IN THE LIFE FROM THIS BORING. THEY HAVE BEEN OMITTED OUT IN THE PRODUCTION OF THIS LOG UNLESS THEY COULD BE IDENTIFIED AS NATURALLY OCCURRING FRACTURES. HOWEVER, THE FREQUENCY OF OCCURRENCE OF THESE SUB-HORIZONTAL FRACTURES IS REFLECTED IN THE RQD VALUES SHOWN.

SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

83° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone

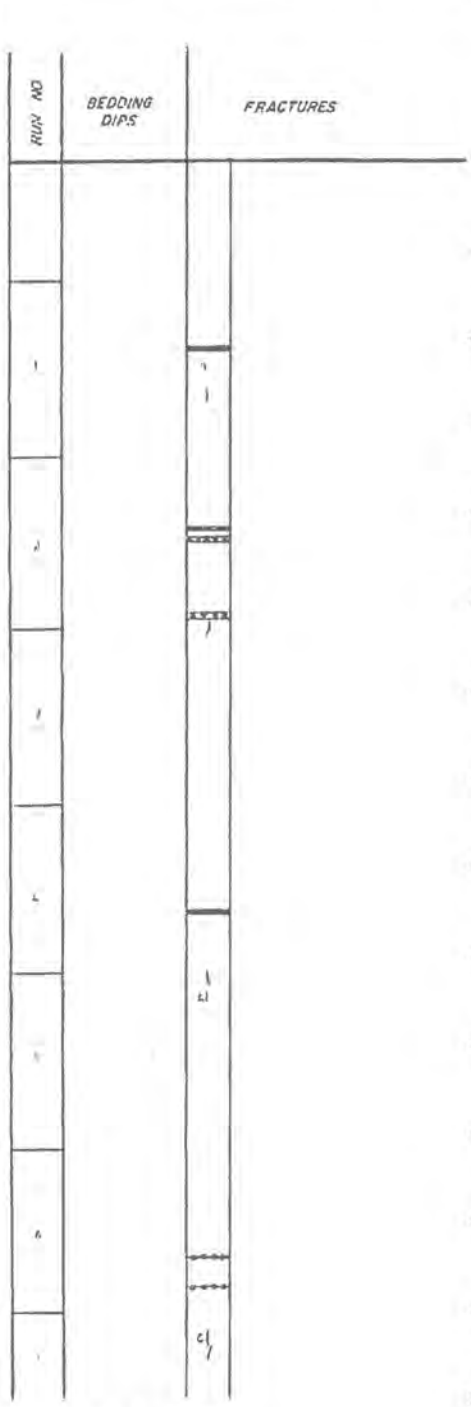
KEY TO SYMBOLS

- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intraclasts
- Cross-bedding
- Shale laminae

FIGURE 2K-58

LOG OF BORING L-2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



BORING L-3

COORDINATES (NYS GRID) N 1,284,399.72 E 566,015.83

DESCRIPTIVE GEOLOGIC NOTES

0' DEPTH - DRILL COLLAR ELEVATION 261.0'±

LAKE SURFACE ELEVATION 246'±

31.4' DEPTH - TOP OF ROCK

TRANSITION ZONE

GRAY MEDIUM TO COARSE GRAINED, MEDIUM TO THICKLY BEDDED GRAYWACKE WITH ABUNDANT CLASTIC MASH, INTERBEDDED WITH DARK GRAY LAMINATED TO THINLY BEDDED SILTY SHALE AND LIGHT GRAY MEDIUM GRAINED THIN TO THICKLY BEDDED SILICEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

PULASKI FORMATION

UNIT A

UNIT B

LIGHT TO MEDIUM GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, OCCASIONAL DARK GRAY TO BLACK SILTY SHALE AND SILTSTONE, INTERBEDDED THIN SHALE STRINGERS, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

93° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone

KEY TO SYMBOLS

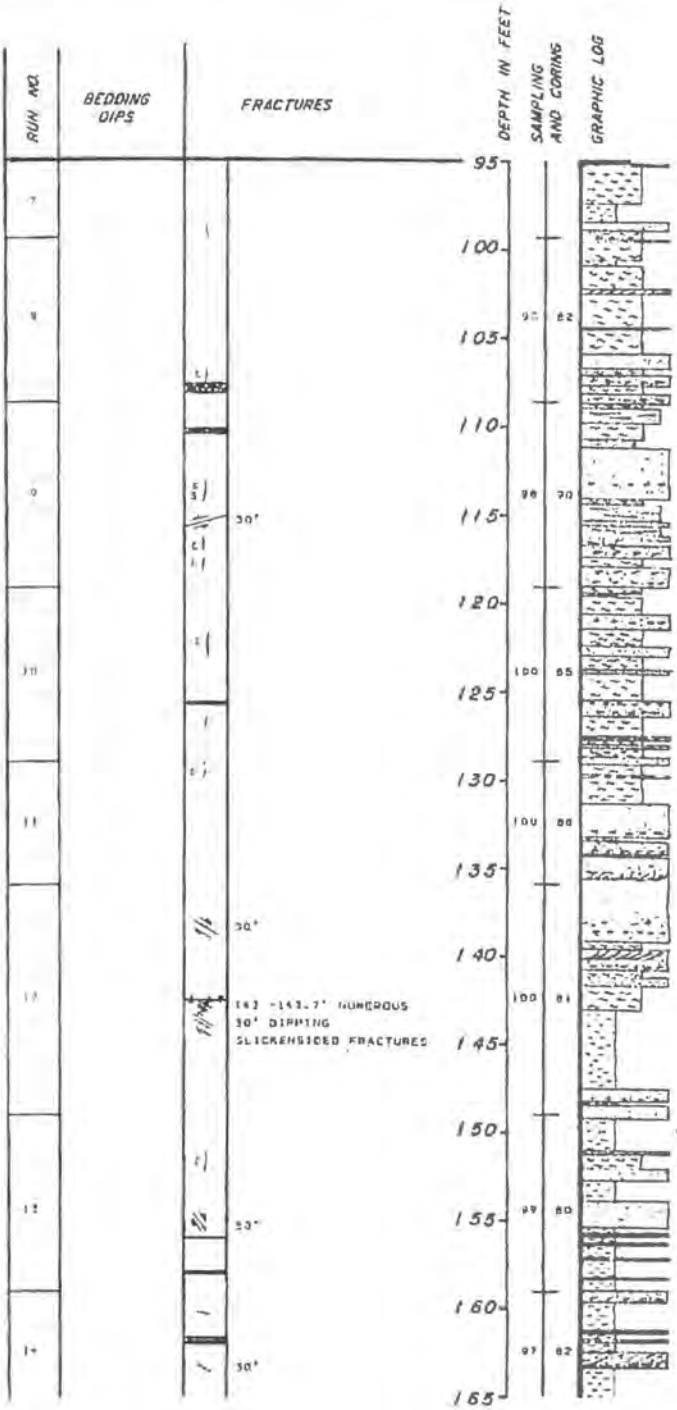
- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

FIGURE 2K-EA

LOG OF BORING L-3

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING L-3



DESCRIPTIVE GEOLOGIC NOTES

DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE INTERBEDDED WITH LIGHT GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, SILTSTONE LENSES AND INTERBEDS COMMON, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

[illegible] PREDOMINANTLY DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE WITH MINOR INTERBEDS OF LIGHT GRAY MEDIUM GRAINED LAMINATED TO THICKLY BEDDED ARGILLACEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

142 -143.7' NUMEROUS 30° DIPPING SLICKENSIDED FRACTURES

SAMPLING AND CORING INFORMATION

Core run
100 95 R.Q.D.
Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

Breccia zone
Dip-slip slickensides
Fractures-shown at approximate angle to core axis
Mineralized fracture c - calcite s - sulfide
Fractured zone

KEY TO SYMBOLS

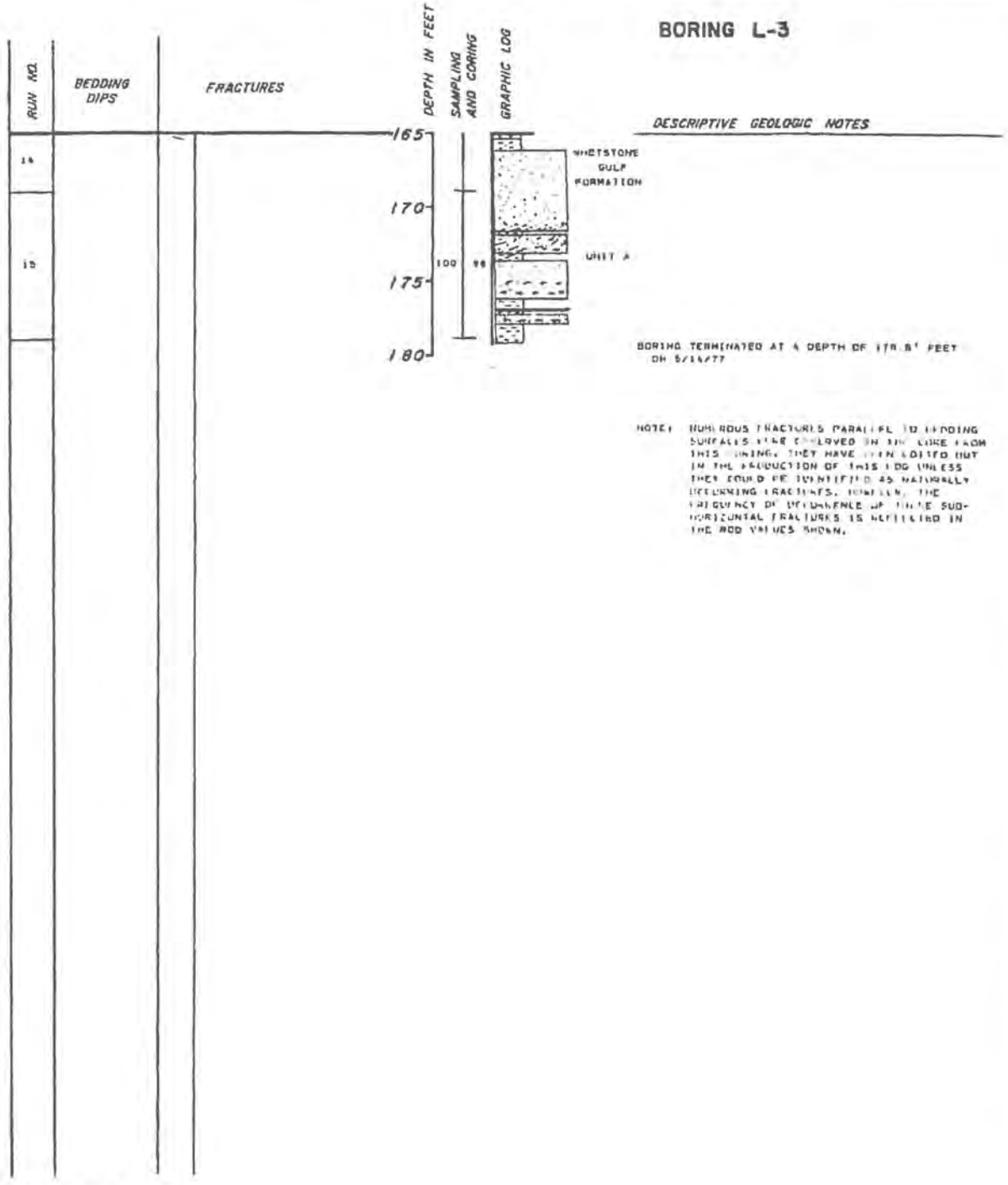
Sandstone
Graywacke
Siltstone
Shale
Fossils
Shale intraclasts
Cross-bedding
Drill fissure

FIGURE [illegible]

LOG OF BORING L-3

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING L-3



SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite p - sulfide
- Fracture zone

KEY TO SYMBOLS

- Sandstone
- Graywacke
- Siltstone
- Shale
- fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

FIGURE 2K-6C

LOG OF BORING L-3

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

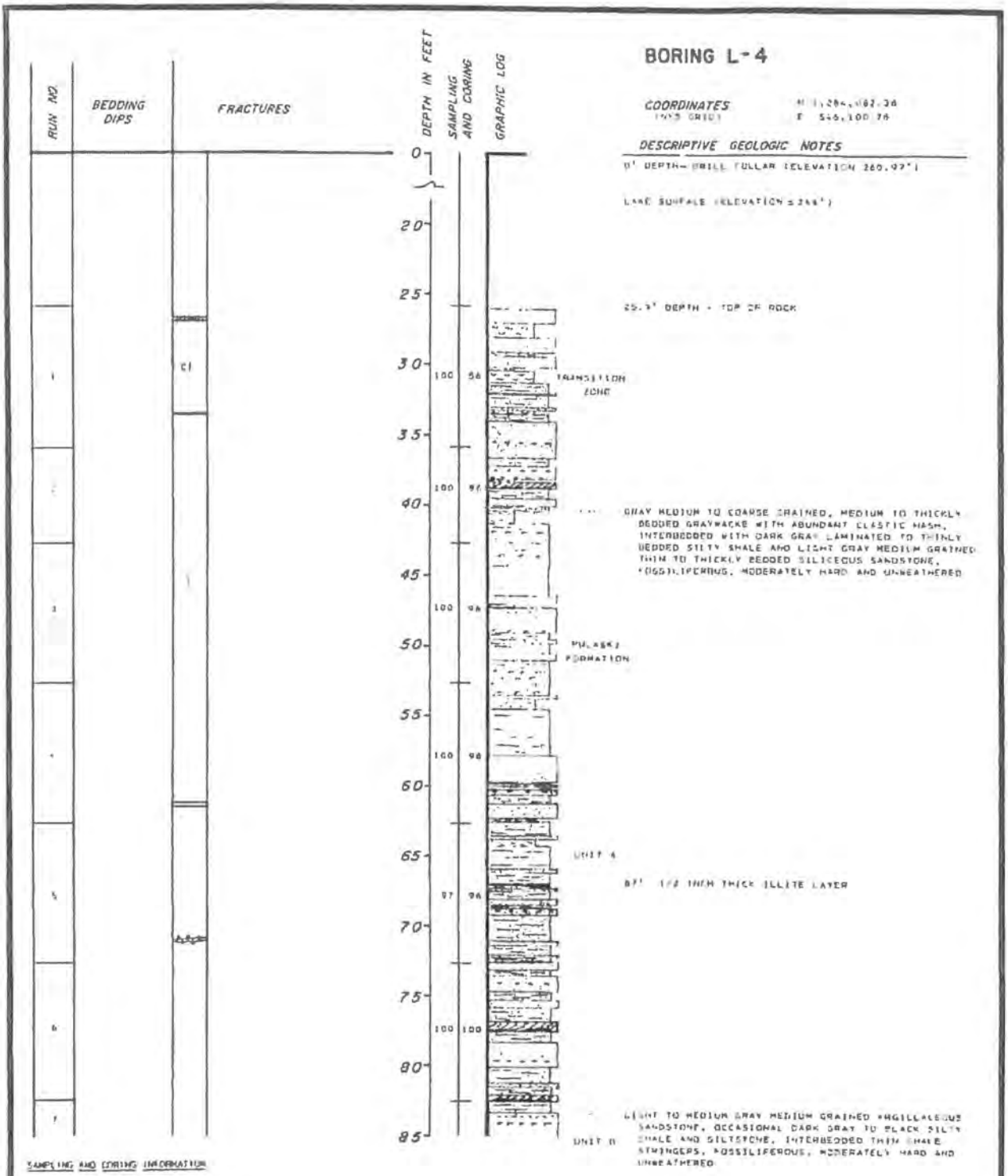
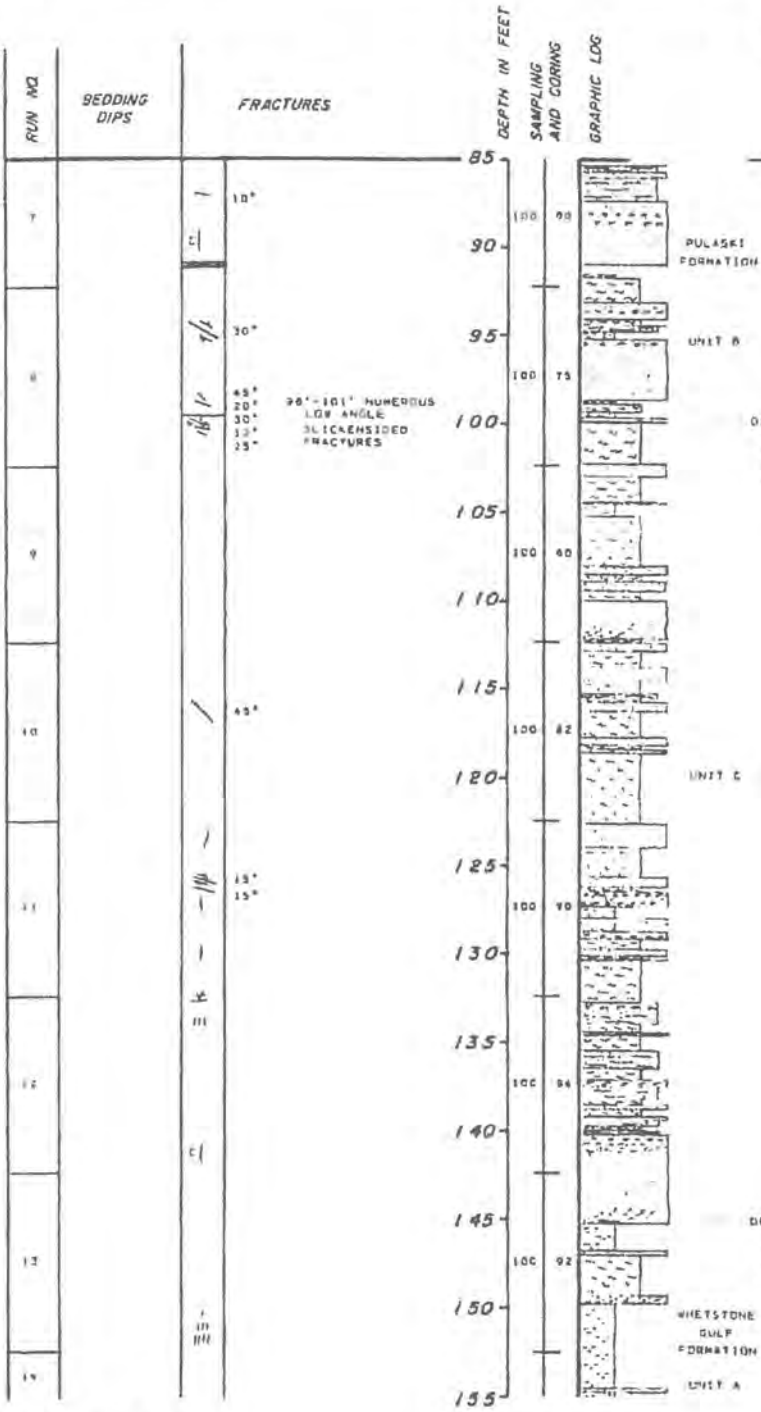


FIGURE 2K-7A

LOG OF BORING L-4

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING L-4



DESCRIPTIVE GEOLOGIC NOTES

DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE INTERBEDDED WITH LIGHT GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, SILTSTONE LENSES AND INTERBEDS COMMON, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

PREDOMINANTLY DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE WITH MINOR INTERBEDS OF LIGHT GRAY MEDIUM GRAINED LAMINATED TO THICKLY BEDDED ARGILLACEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

SAMPLING AND BORING INFORMATION

100 | 95 — Core run
P.Q.D.
Percent recovery

BEDDING DIPS

93° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Slip-slip slickensides
- Fractures shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone

KEY TO SYMBOLS

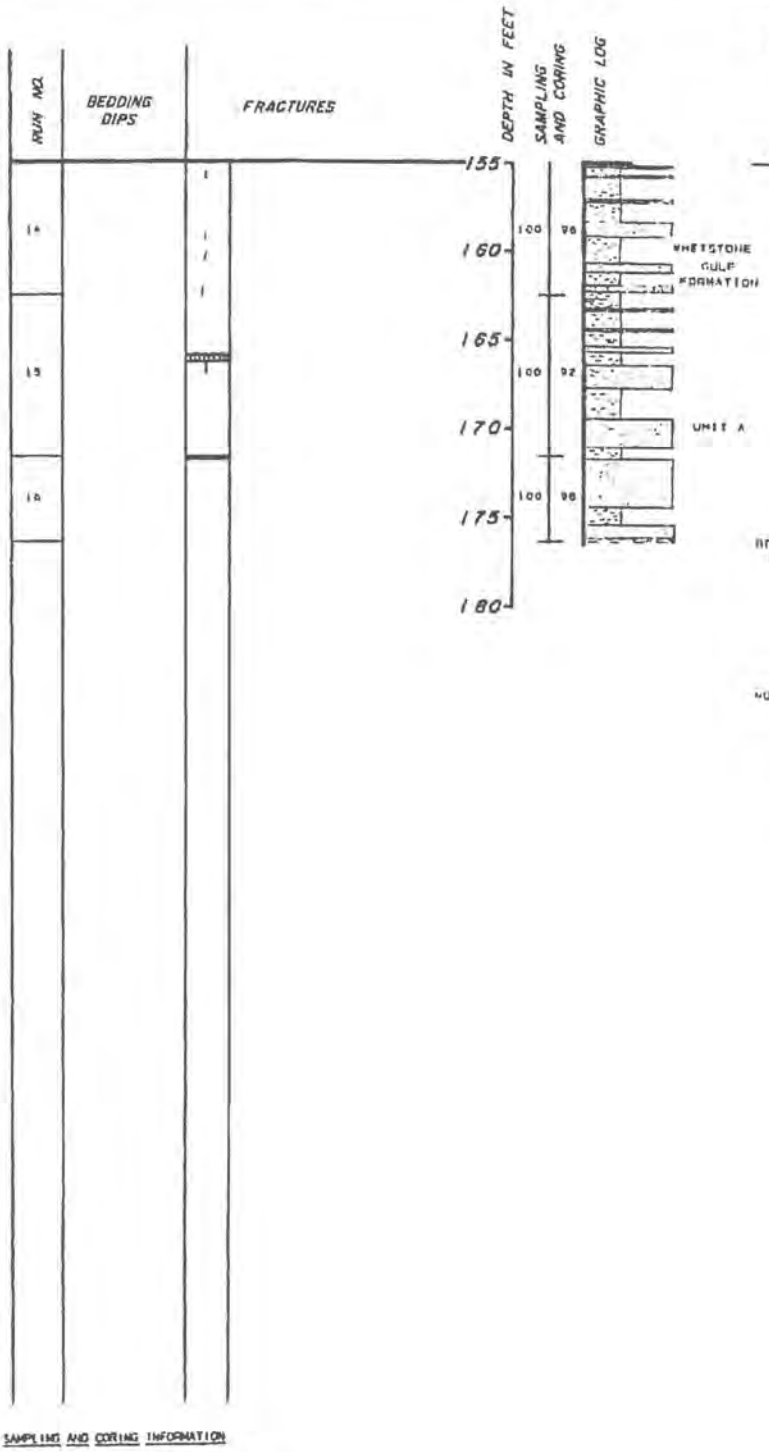
- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intraclasts
- Cross-bedding
- Shale laminae

FIGURE 2K-70

BORING L-4

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING L-4



DESCRIPTIVE GEOLOGIC NOTES

BORING TERMINATED AT A DEPTH OF 176.3' FEET ON 5/17/77

NOTE: NUMEROUS FRACTURES PARALLEL TO BEDDING SURFACES WERE OBSERVED IN THE CORE FROM THIS BORING. THEY HAVE BEEN EDITED OUT IN THE PRODUCTION OF THIS LOG UNLESS THEY COULD BE IDENTIFIED AS NATURALLY OCCURRING FRACTURES. HOWEVER, THE FREQUENCY OF OCCURRENCE OF THESE SUB-HORIZONTAL FRACTURES IS REFLECTED IN THE ROD VALUES SHOWN.

SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone

KEY TO SYMBOLS

- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

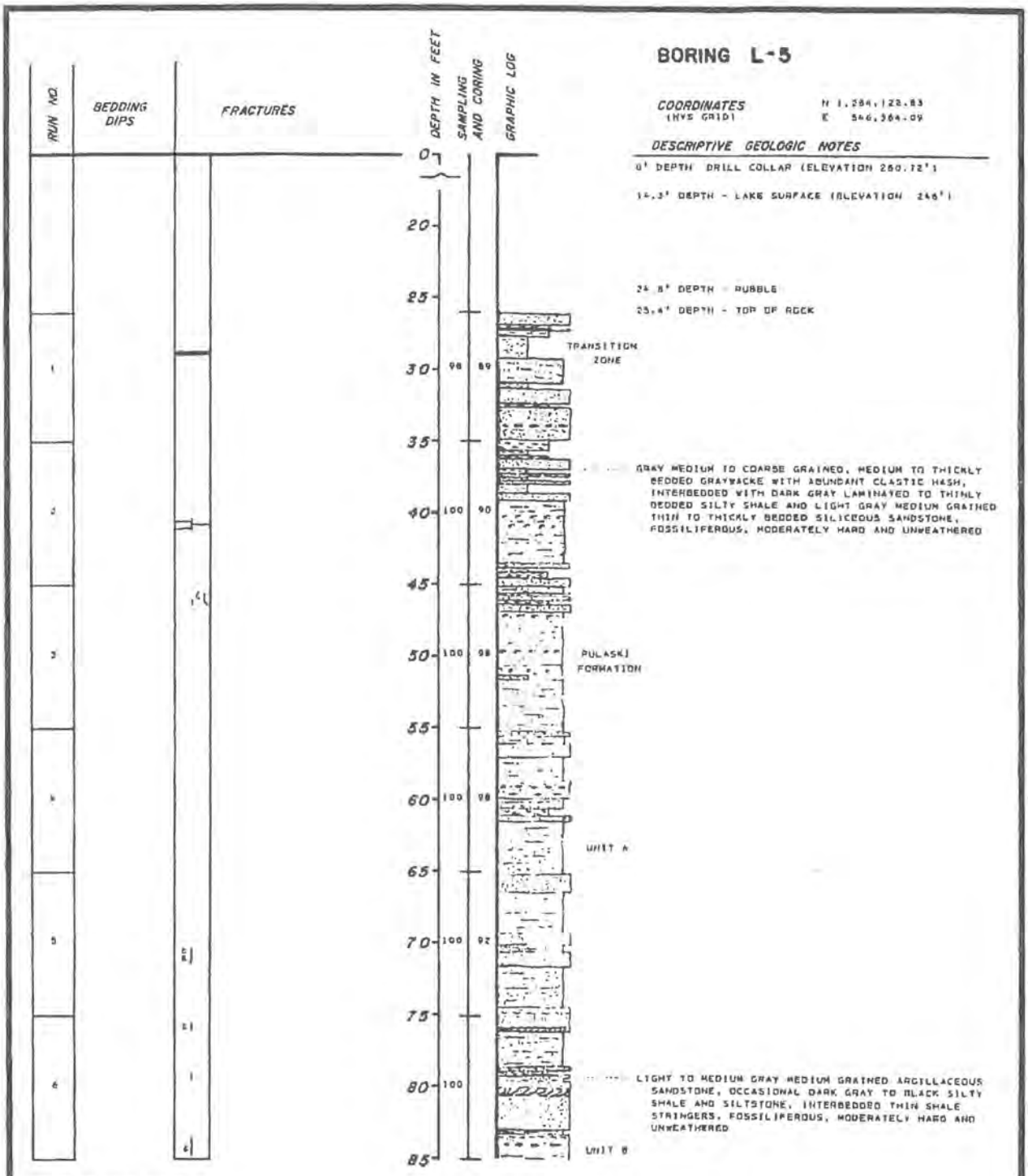
FIGURE 2K-1C

LOG OF BORING L-4

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT



SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone

KEY TO SYMBOLS

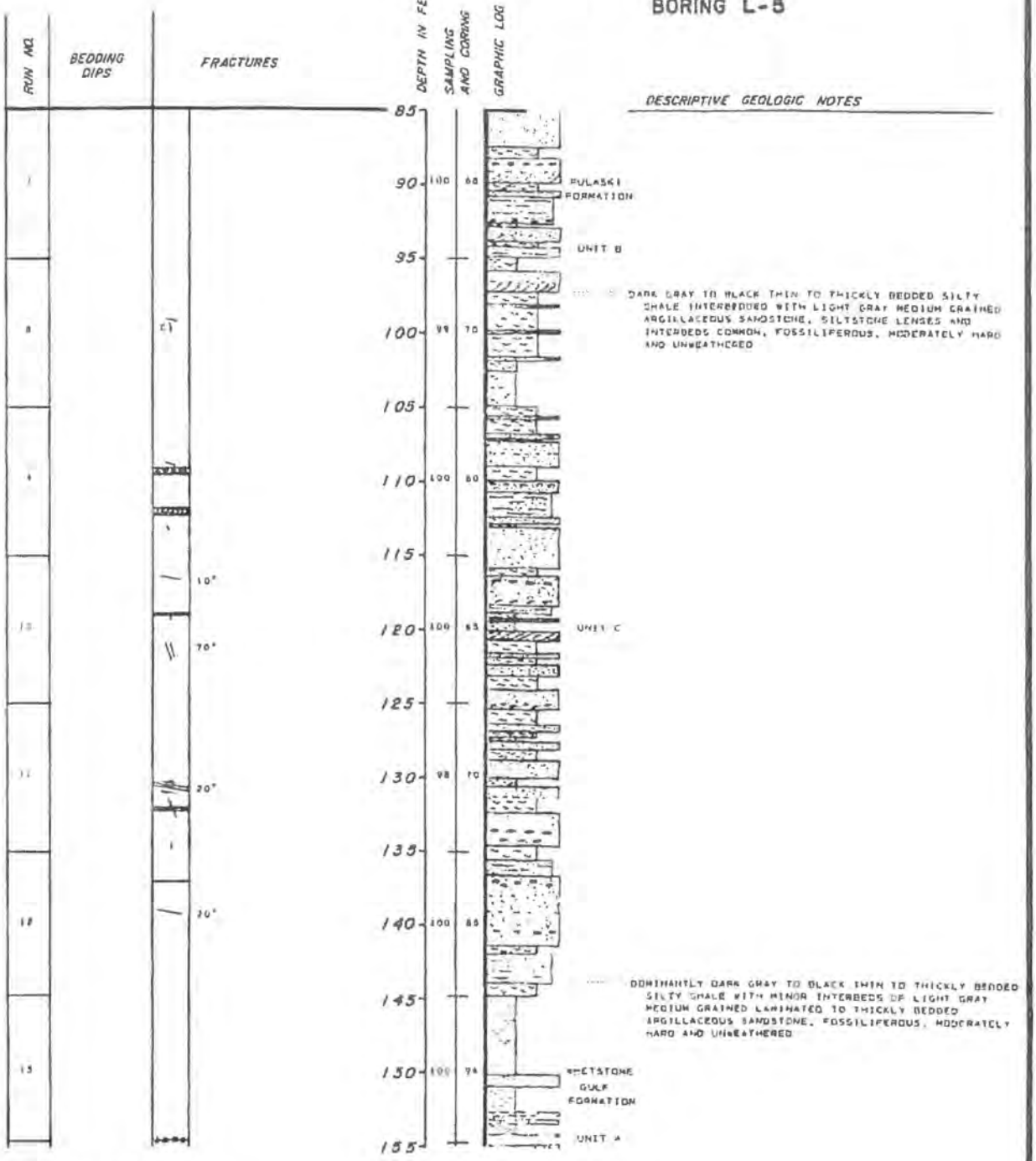
- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

FIGURE SK-8A

LOG OF BORING L 5

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING L-5



SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures shown at approximate angle to core axis
- Mineralized fracture: c = calcite, s = sulfide
- Fractured zone

KEY TO SYMBOLS

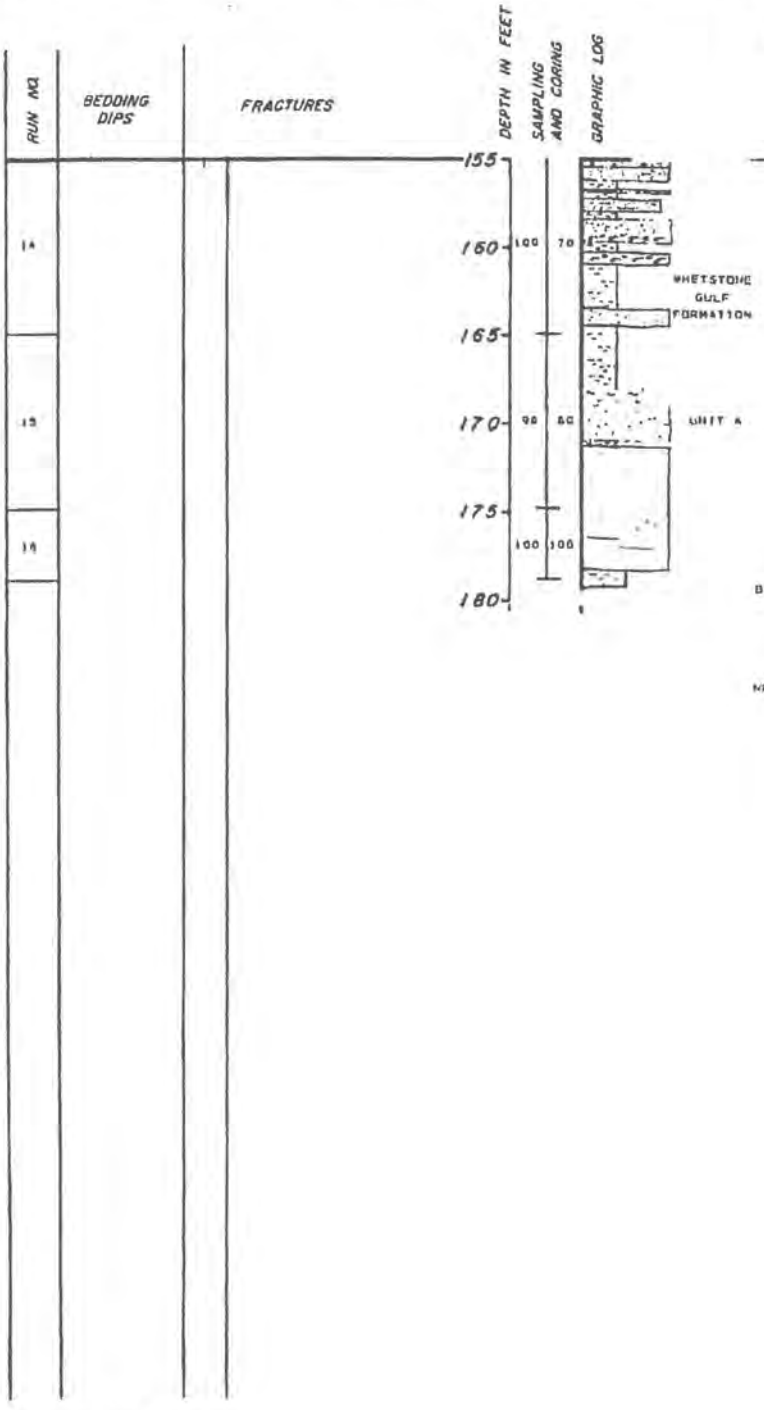
- Sandstone
- Greywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

FIGURE 2R-88

LOG OF BORING L-5

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING L-5



DESCRIPTIVE GEOLOGIC NOTES

BORING TERMINATED AT A DEPTH OF 178.7' FEET ON 5/19/77

NOTE: NUMEROUS FRACTURES PARALLEL TO BEDDING SURFACES WERE OBSERVED IN THE CORE FROM THIS BORING. THEY HAVE BEEN EDITED OUT IN THE PRODUCTION OF THIS LOG UNLESS THEY COULD BE IDENTIFIED AS NATURALLY OCCURRING FRACTURES. HOWEVER, THE FREQUENCY OF OCCURRENCE OF THESE SUB-HORIZONTAL FRACTURES IS REFLECTED IN THE RQD VALUES SHOWN.

SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

63° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c = calcite s = sulfide
- Fractured zone

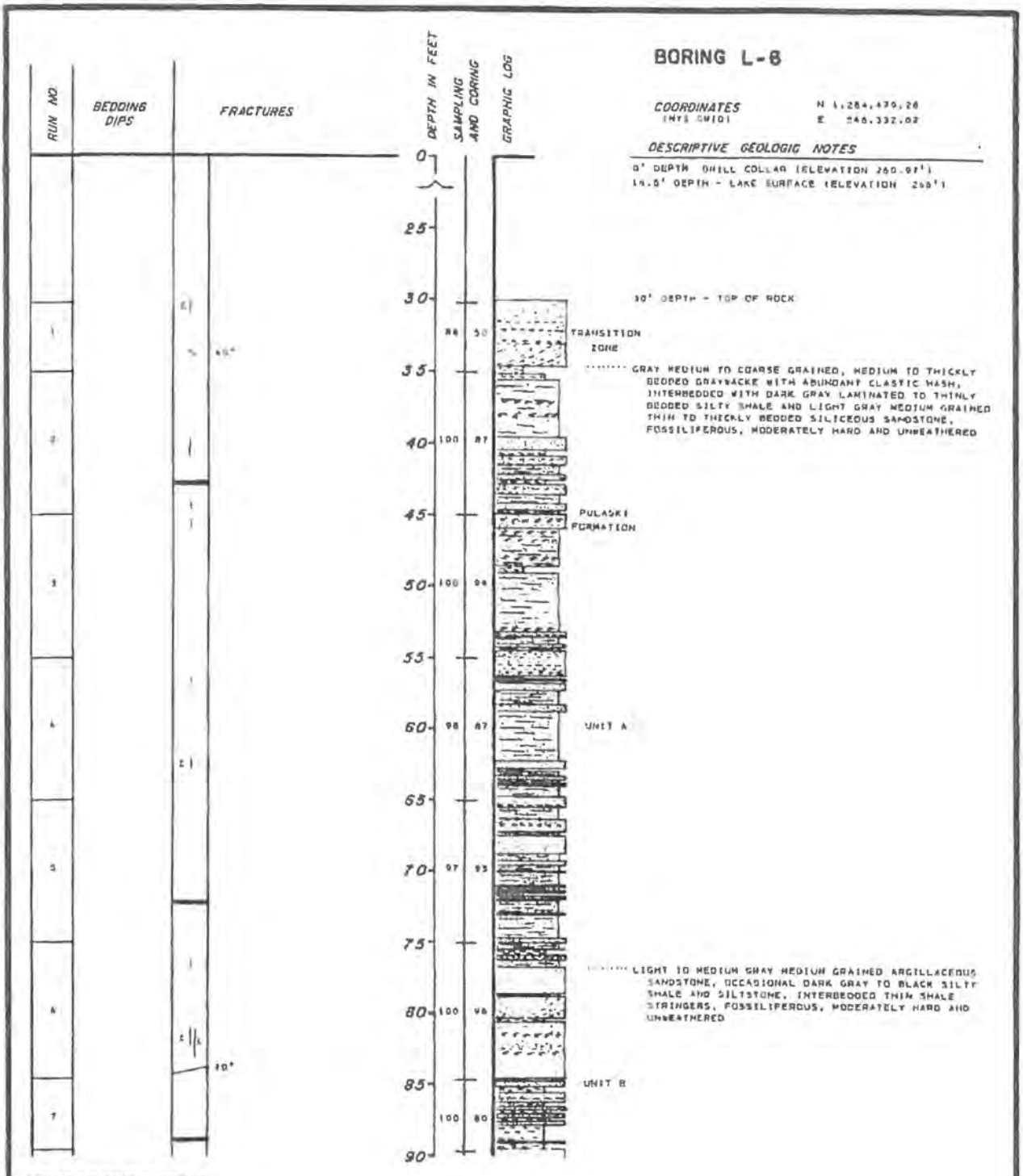
KEY TO SYMBOLS

- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

FIGURE 2N-8C

LOG OF BORING L-5

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



BORING L-8

COORDINATES (NYS GRID) N 1,284,479.28
E 548,332.02

DESCRIPTIVE GEOLOGIC NOTES

0' DEPTH DRILL COLLAR (ELEVATION 260.97')
14.5' DEPTH - LAKE SURFACE (ELEVATION 246')

GRAY MEDIUM TO COARSE GRAINED, MEDIUM TO THICKLY BEDDED GRAYWACKE WITH ABUNDANT CLASTIC MASH, INTERBEDDED WITH DARK GRAY LAMINATED TO THINLY BEDDED SILTY SHALE AND LIGHT GRAY MEDIUM GRAINED THIN TO THICKLY BEDDED SILICEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

LIGHT TO MEDIUM GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, OCCASIONAL DARK GRAY TO BLACK SILTY SHALE AND SILTSTONE, INTERBEDDED THIN SHALE STRINGERS, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone

KEY TO SYMBOLS

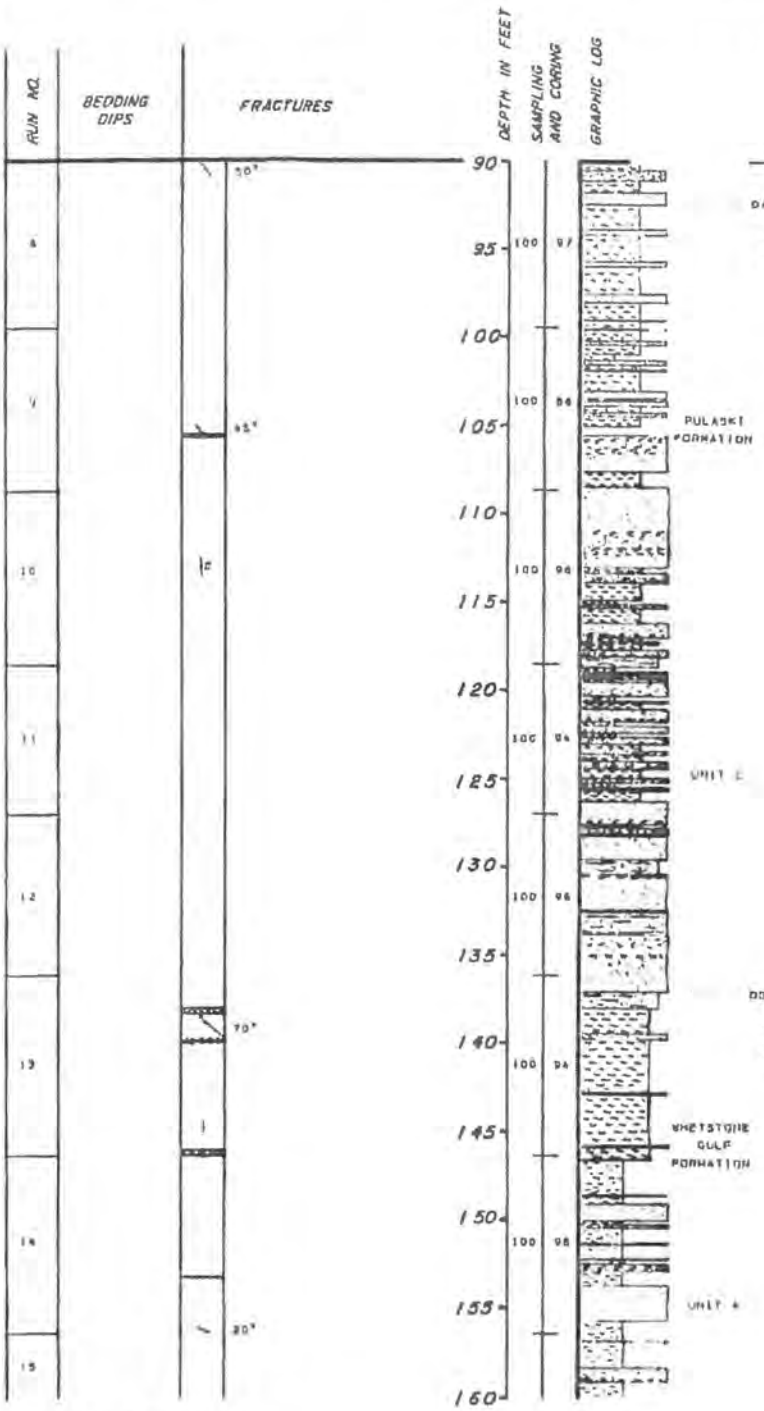
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding

FIGURE 2.4-8A

LOG OF BORING L-8

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING L-6



DESCRIPTIVE GEOLOGIC NOTES

DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE INTERBEDDED WITH LIGHT GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, SILTSTONE LENSES AND INTERBEDS COMMON, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

PREDOMINANTLY DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE WITH MINOR INTERBEDS OF LIGHT GRAY MEDIUM GRAINED LAMINATED TO THICKLY BEDDED ARGILLACEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

SAMPLING AND CORING INFORMATION

100 | 98 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Slickensides
- Fractures shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone

KEY TO SYMBOLS

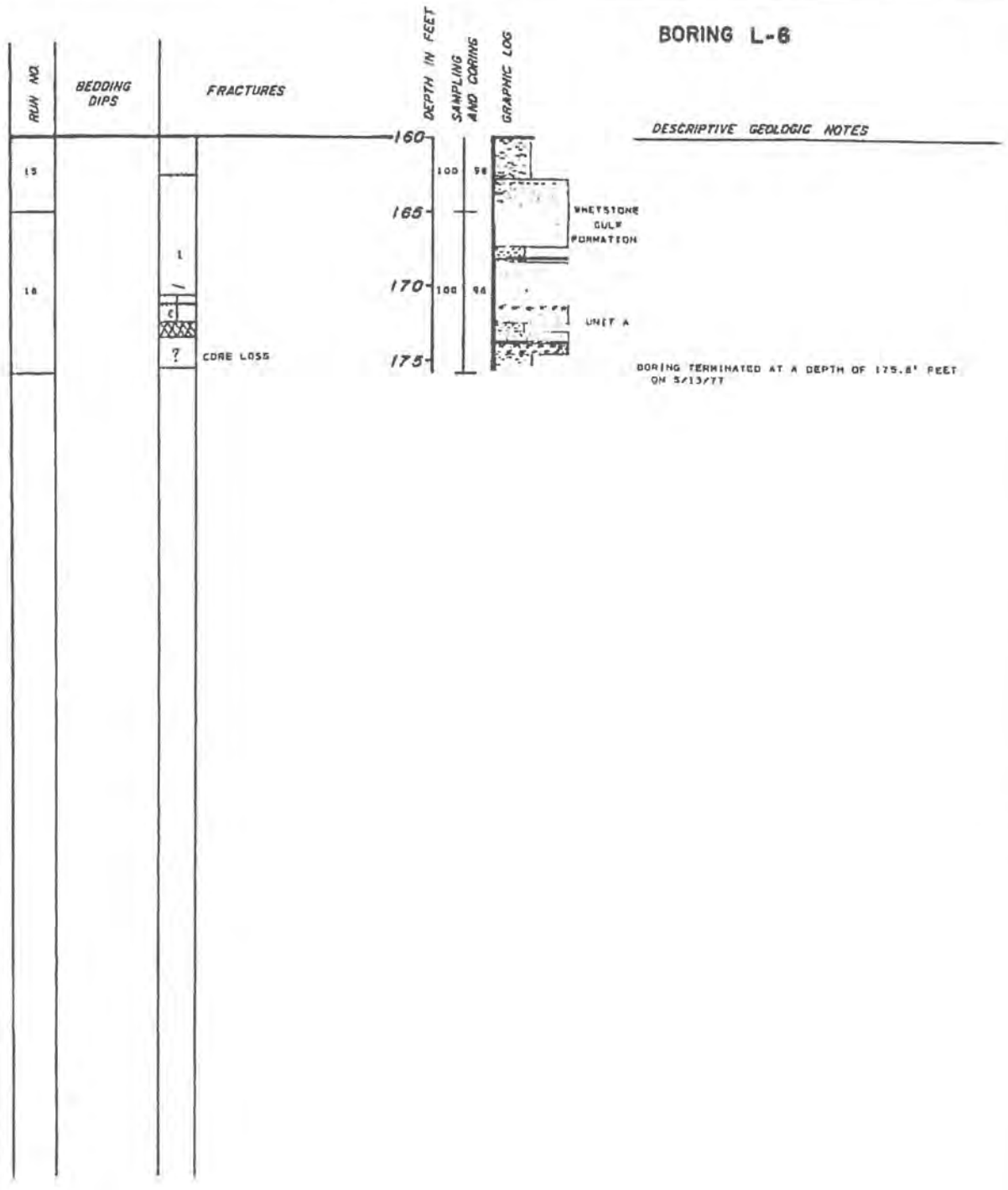
- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

FIGURE 2K 98

LOG OF BORING L-6

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING L-6



SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt [illegible] to yield [illegible] obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c = calcite z = sulfide
- Fractured zone

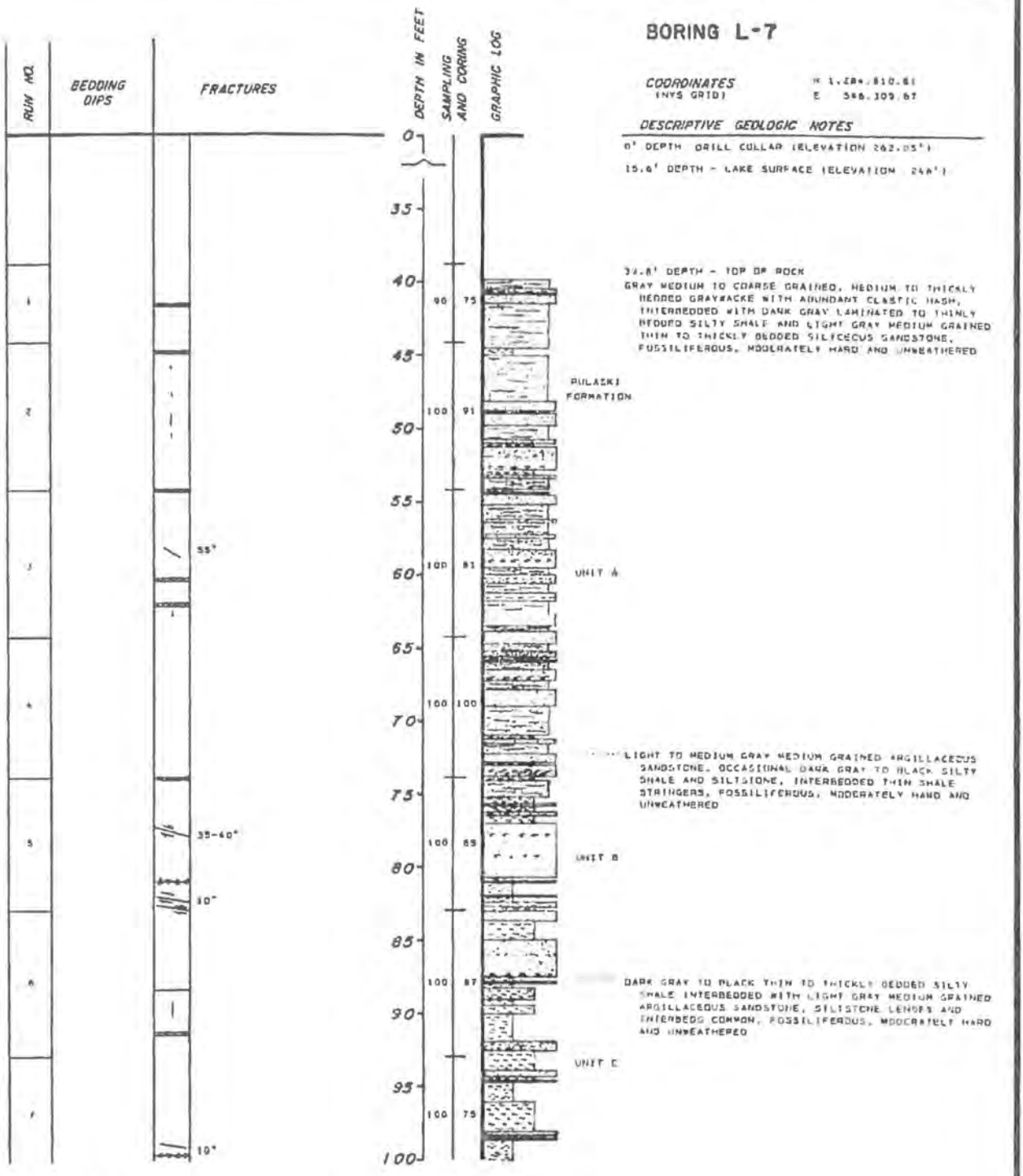
KEY TO SYMBOLS

- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intraclasts
- Cross-bedding
- Shale laminae

FIGURE 2K-9C

LOG OF BORING L-6

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Used [illegible] dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone

KEY TO SYMBOLS

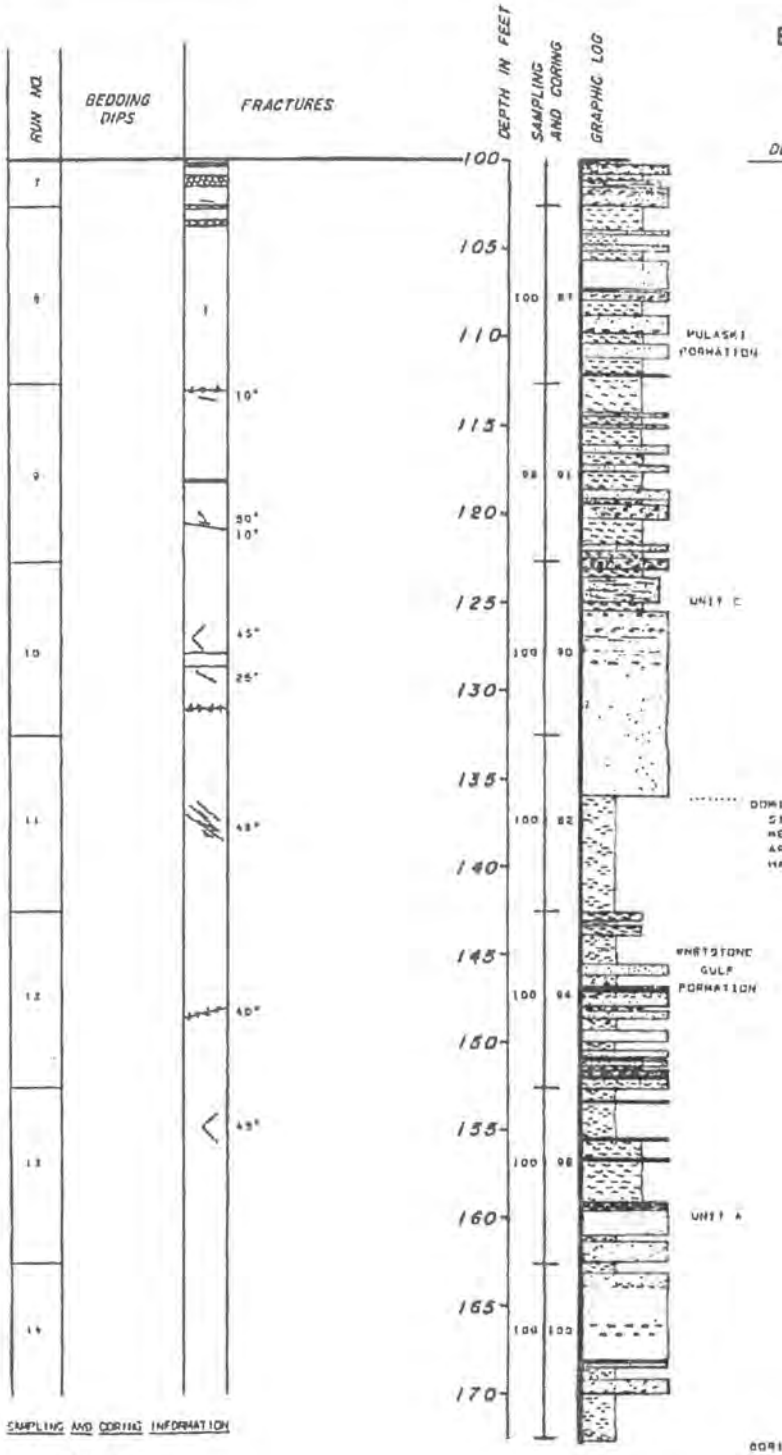
- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

FIGURE [illegible]

LOG OF BORING L-7

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING L-7



DESCRIPTIVE GEOLOGIC NOTES

..... DOMINANTLY DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE WITH MINOR INTERBEDS OF LIGHT GRAY MEDIUM GRAINED LAMINATED TO THICKLY BEDDED ARGILLACEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

BORING TERMINATED AT A DEPTH OF 172.5' FEET ON 5/12/77

NOTE: NUMEROUS FRACTURES PARALLEL TO BEDDING SURFACES ARE OBSERVED IN THE CORE FROM THIS BORING. THEY HAVE BEEN EDITED OUT IN THE PRODUCTION OF THIS LOG UNLESS THEY COULD BE IDENTIFIED AS NATURALLY OCCURRING FRACTURES. HOWEVER, THE FREQUENCY OF OCCURRENCE OF THESE MID-HORIZONTAL FRACTURES IS REFLECTED IN THE RQD VALUES SHOWN.

SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures - shown at approximate angle to core axis
- Mineralized fracture c = calcite s = sulfide
- Fractured zone

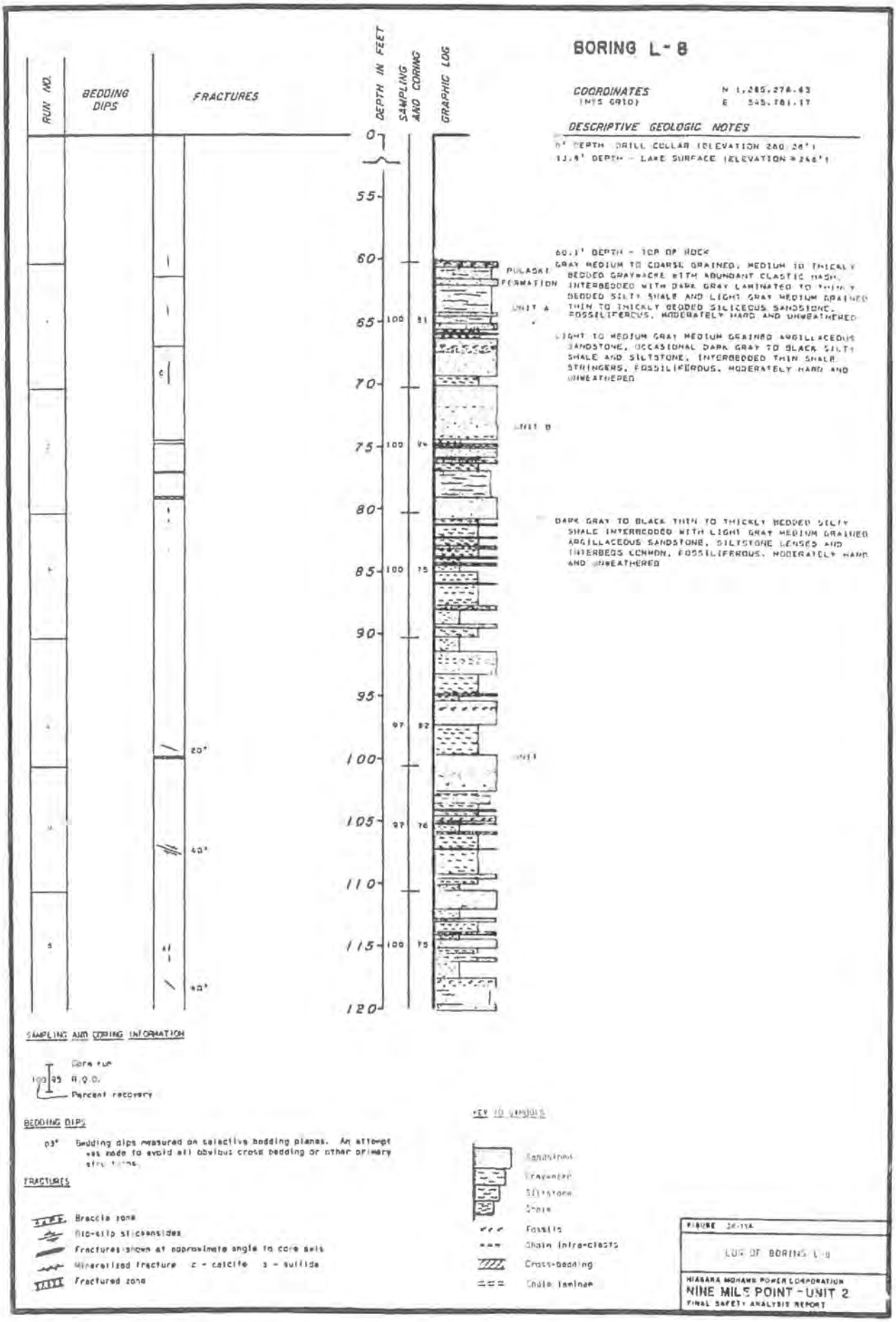
KEY TO SYMBOLS

- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale laminae
- Cross-bedding

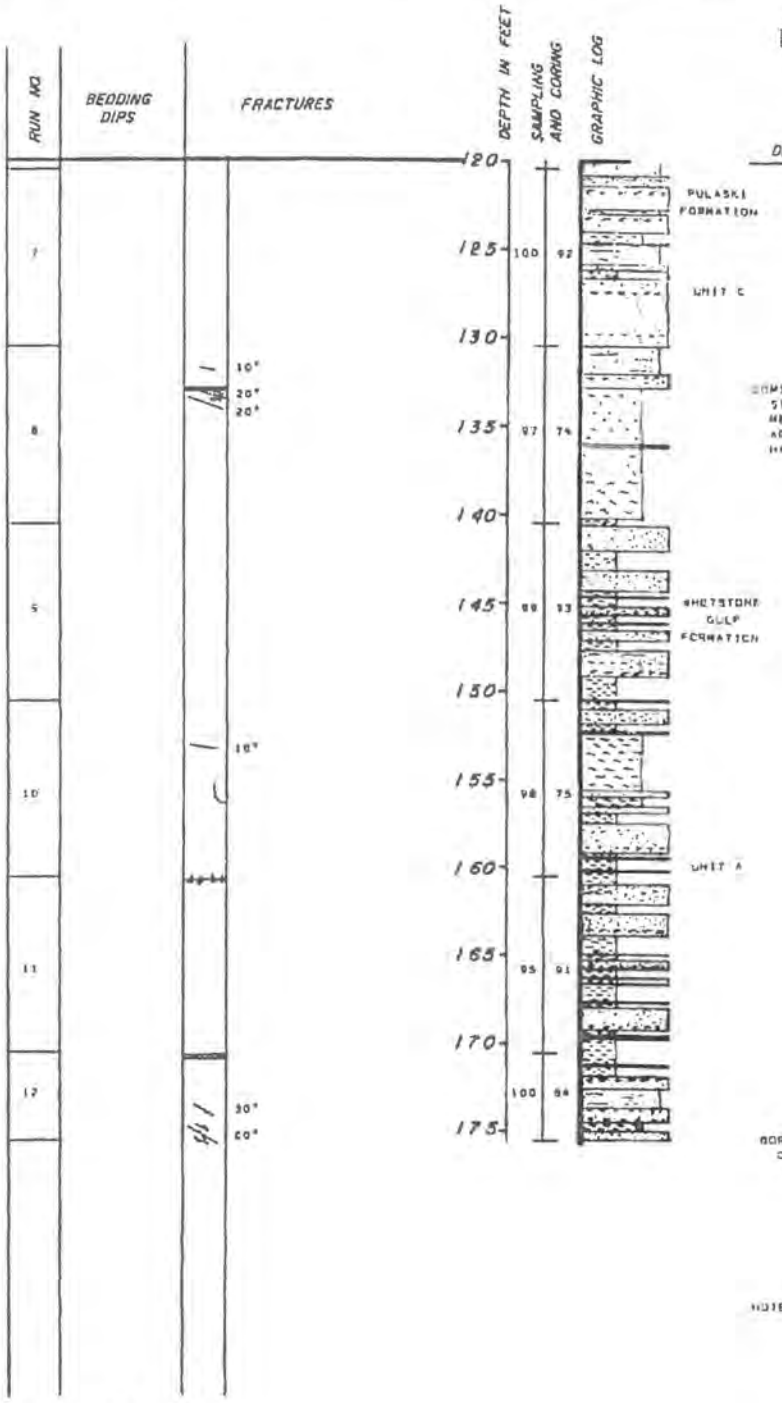
FIGURE 2.5-103

LOG OF BORING L-7

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT


BORING L-8
COORDINATES (NYS GRID)
N 1,285,278.43
E 545,781.17
DESCRIPTIVE GEOLOGIC NOTES
0' DEPTH - DRILL COLLAR (ELEVATION 260.26')
11.8' DEPTH - LAKE SURFACE (ELEVATION = 248')
60.1' DEPTH - TOP OF ROCK
GRAY MEDIUM TO COARSE GRAINED, MEDIUM TO THICKLY BEDDED GRAYWACKE WITH ABUNDANT CLASTIC MASH, INTERBEDDED WITH DARK GRAY LAMINATED TO THINLY BEDDED SILTY SHALE AND LIGHT GRAY MEDIUM GRAINED THIN TO THICKLY BEDDED SILICEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED
LIGHT TO MEDIUM GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, OCCASIONAL DARK GRAY TO BLACK SILTY SHALE AND SILTSTONE, INTERBEDDED THIN SHALE STRINGERS, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED
DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE INTERBEDDED WITH LIGHT GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, SILTSTONE LENSES AND INTERBEDS COMMON, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED
PULASKI FORMATION
UNIT A
UNIT B
UNIT
RUN NO.
BEDDING DIPS
FRACTURES
DEPTH IN FEET
SAMPLING AND CORING
GRAPHIC LOG
0
55
60
65
70
75
80
85
90
95
100
105
110
115
120
100 81
100 94
100 75
97 82
97 76
100 75
20°
40°
40°
SAMPLING AND CORING INFORMATION
Core run
100 95 R.Q.D.
Percent recovery
BEDDING DIPS
03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.
FRACTURES
Breccia zone
Slickensides
Fractures shown at approximate angle to core axis
Mineralized fracture c - calcite s - sulfide
Fractured zone
KEY TO SYMBOLS
Sandstone
Graywacke
Siltstone
Shale
Fossils
Shale intra-clasts
Cross-bedding
Shale laminae
FIGURE 2.6-11A
LOG OF BORING L-8
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING L-8



DESCRIPTIVE GEOLOGIC NOTES

PREDOMINANTLY DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE WITH MINOR INTERBEDS OF LIGHT GRAY MEDIUM GRAINED LAMINATED TO THICKLY BEDDED ARGILLACEOUS SANDSTONE. FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

BORING TERMINATED AT A DEPTH OF 175.5' FEET ON 5/13/77

NOTE: NUMEROUS FRACTURES PARALLEL TO BEDDING SURFACES WERE OBSERVED IN THE CORE FROM THIS BORING. THEY HAVE BEEN EDITED OUT IN THE PRODUCTION OF THIS LOG UNLESS THEY COULD BE IDENTIFIED AS NATURALLY OCCURRING FRACTURES. HOWEVER, THE FREQUENCY OF OCCURRENCE OF THESE SUB-HORIZONTAL FRACTURES IS REFLECTED IN THE RQD VALUES SHOWN.

SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone

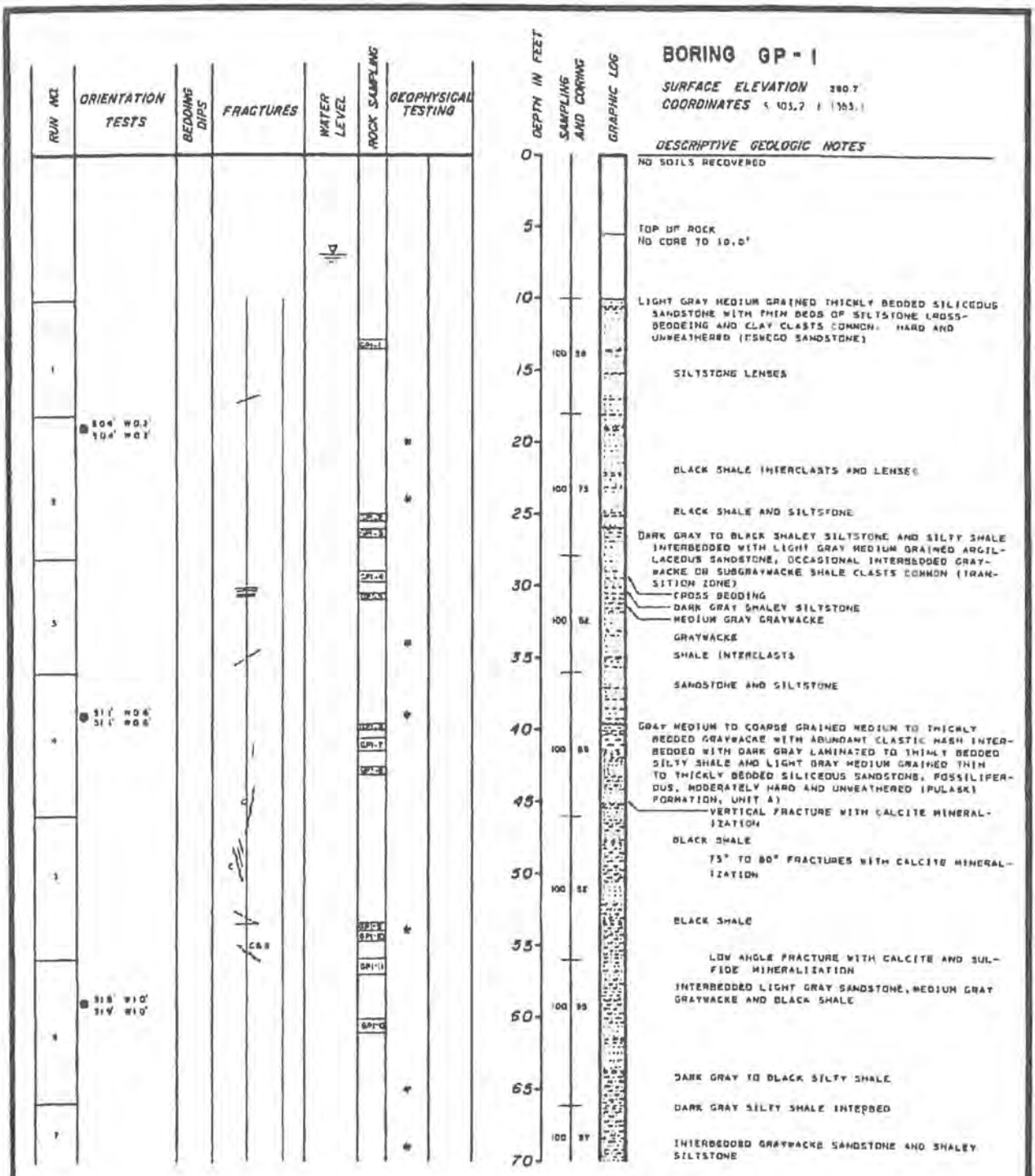
KEY TO SYMBOLS

- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

FIGURE 2K 11B

LOG OF BORING L-8

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT


RUN NO.
ORIENTATION TESTS
BEDDING DIPS
FRACTURES
WATER LEVEL
ROCK SAMPLING
GEOPHYSICAL TESTING
DEPTH IN FEET
SAMPLING AND CORING
GRAPHIC LOG
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
100 38
100 73
100 52
100 88
100 52
100 93
100 87
1
2
3
4
5
6
7
GPI-1
GPI-2
GPI-3
GPI-4
GPI-5
GPI-6
GPI-7
GPI-8
GPI-9
GPI-10
GPI-11
GPI-12
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GPI-32
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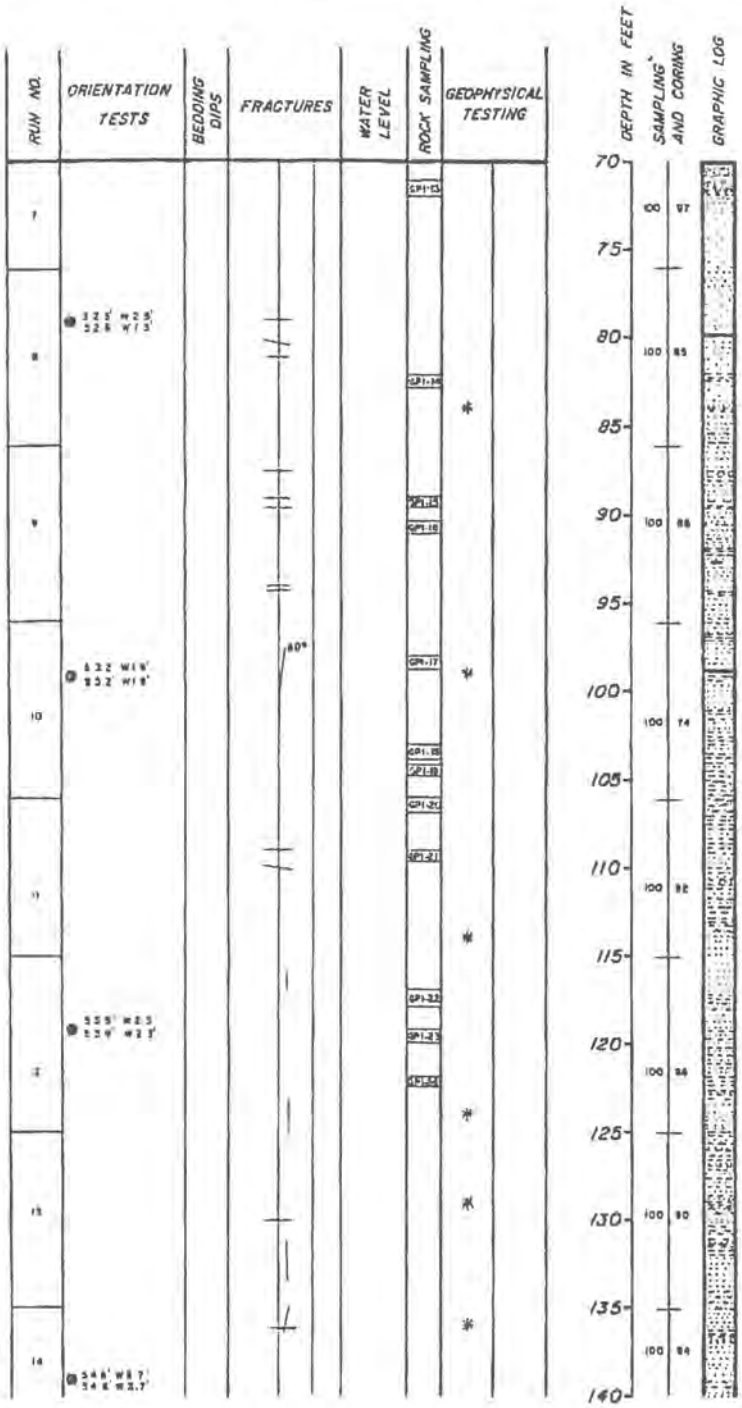
GPI-36
GPI-37
GPI-38
GPI-39
GPI-40

BORING GP-1



DESCRIPTIVE GEOLOGIC NOTES

INTERBEDDED SANDSTONE AND GRAYWACKE

MEDIUM TO DARK GRAY GRAYWACKE

LIGHT TO MEDIUM GRAY MEDIUM GRAINED SANDSTONE, OCCASIONAL DARK GRAY TO BLACK SILTY SHALE AND SILTSTONE INTERBED AND THIN SHALEY STRINGERS, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED (PULASKI FORMATION, UNIT B)

OCCASIONAL SHALE INTERCLASTS

BLACK SHALE

BLACK SHALE

BLACK SHALE

DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE INTERBEDDED WITH LIGHT GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, SILTSTONE LENSES AND INTERBEDS COMMON, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED (PULASKI FORMATION, UNIT C)

BLACK SHALE WITH SANDSTONE CLASTS

DARK GRAY GRAYWACKE

INTERBEDDED SANDSTONE AND SHALE

LIGHT GRAY SANDSTONE

INTERBEDDED SHALE AND SANDSTONE

DARK GRAY SHALE WITH SANDSTONE LENSES

ORIENTATION TESTS

△ Unsuccessful orientation tests

▲ N60°W 30°S Successful orientation test with strike and dip of bedding

● S8.4' W4.8' S4.4' W3.8' Location of Eastman Whipstock Borehole Subsurface Orientation Survey Station. Results show drift amount in plan view from a zero reference point (center of top of casing) based on a rectangular coordinate system oriented to Plant North. Upper coordinates represent Run #1 results, lower coordinates represent Run #2 results.

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

Zone of core loss

Breccia zone

Dip-slip slickensides

Fractures-shown at approximate angle to core axis

Mineralized fracture c - calcite s - sulfide

Fractured zone

Void

ROCK SAMPLE INFORMATION

SPI-1 Location of sample collected for laboratory evaluation of seismic velocity

GEOPHYSICAL TESTING

* Location of cross hole geophysical survey

Location of standard penetration test using a split spoon sampler driven with a 140 lb. hammer falling 30 in.

Core run of 2" (NX) diameter core.

100 | 95 R.Q.D.

Percent recovery

FIGURE [illegible]

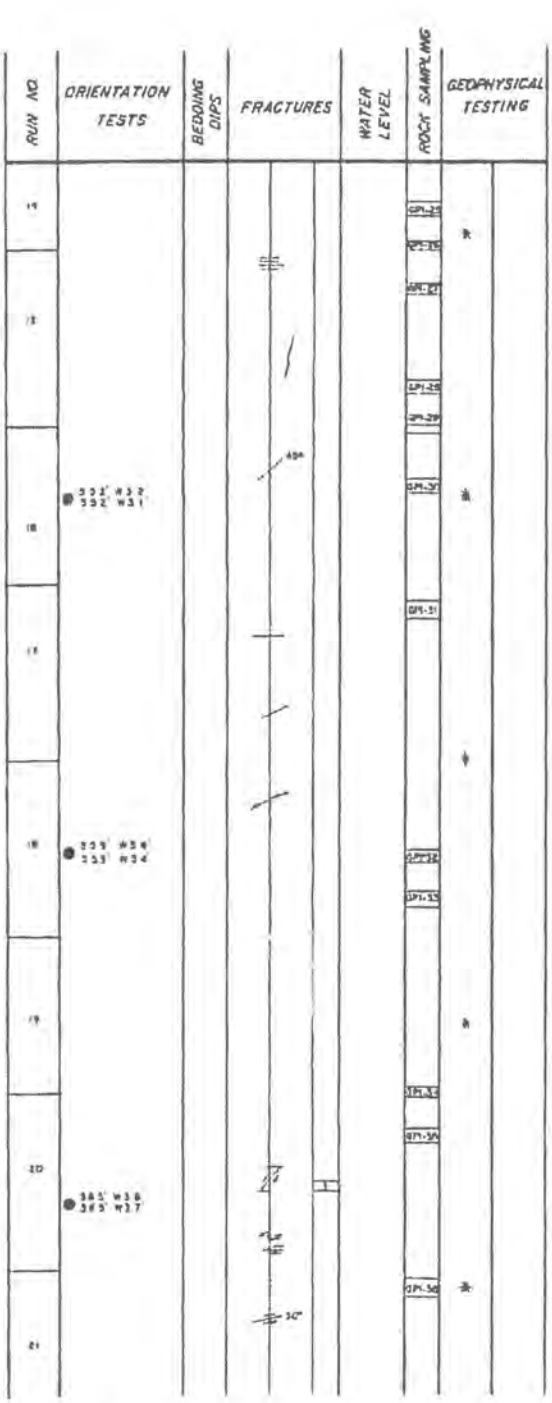
LOG OF BORING GP-1

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT

BORING GP-1


RUN NO
ORIENTATION TESTS
BEDDING DIPS
FRACTURES
WATER LEVEL
ROCK SAMPLING
GEOPHYSICAL TESTING
DEPTH IN FEET
SAMPLING AND CORING
GRAPHIC LOG
140
145
150
155
160
165
170
175
180
185
190
195
200
205
210
100 94
100 93
100 94
100 93
100 95
100 96
100 92
100 89
GPI-25
GPI-26
GPI-27
GPI-28
GPI-29
GPI-30
GPI-31
GPI-32
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GPI-35
GPI-36
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GPI-39
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GPI-41
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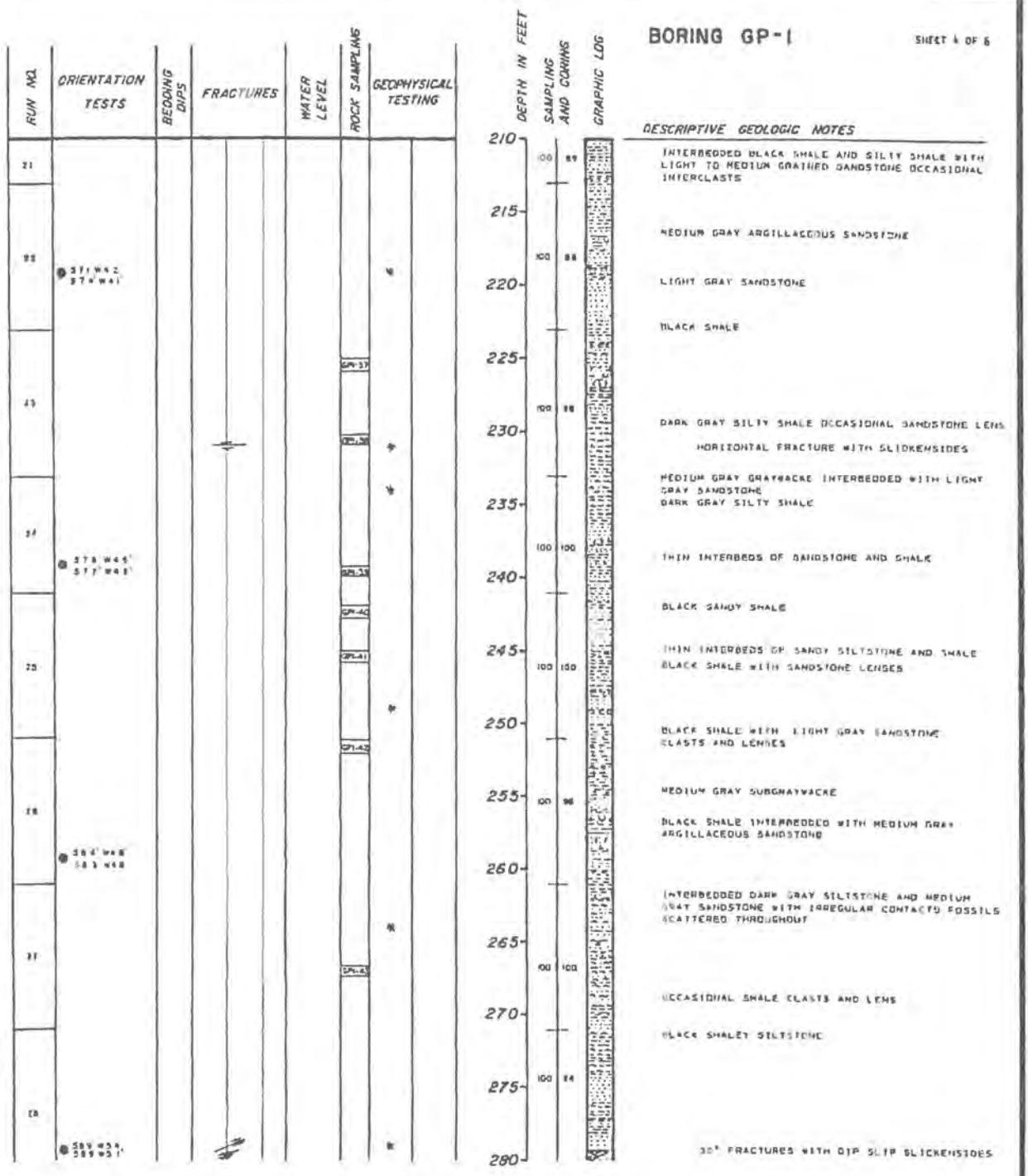
GPI-62
GPI-63
GPI-64



ORIENTATION TESTS

△ Unsuccessful orientation tests

▲ N60°W 30°S Successful orientation test with strike and dip of bedding

● 384' W48 383' W48 Location of Eastman whipstock Borehole Subsurface Orientation Survey station. Results show drift amount in plan view from a zero reference point (center of top of casing) based on a rectangular coordinate system oriented to Plant North. Upper coordinates represent Run #1 results, lower coordinates represent Run #2 results.

03° Bedding dips measured on selective bedding planes. An attempt was made to obtain all obvious cross bedding or other primary [illegible]

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures shown at approximate angle to core axis
- Mineralized fracture c = calcite s = sulfide
- Fractured zone
- Void

ROCK SAMPLE INFORMATION

GP1-1 Location of sample collected for laboratory evaluation of seismic velocity

GEOPHYSICAL TESTING

* Location of cross hole geophysical survey

[illegible]

■ Location of standard penetration test using a split spoon sampler driven with a 140 lb. hammer falling 30 in.

Core run or 2" (NX) diameter core.

100 95 R.Q.D.

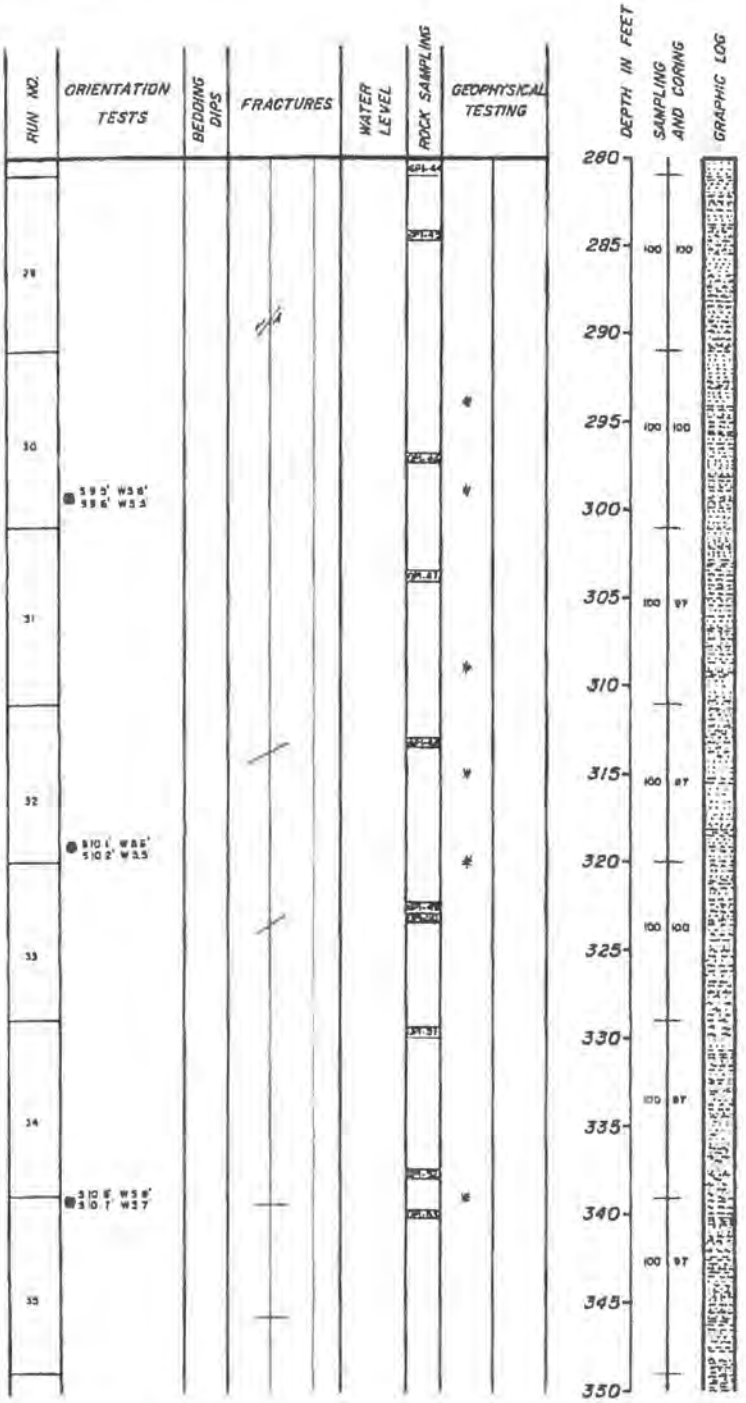
Percent recovery

FIGURE 2K-320

LOG OF BORING GP-1

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING GP-1



DESCRIPTIVE GEOLOGIC NOTES

DARK GRAY GRAYWACKE INTERBEDDED WITH LIGHT GRAY ARGILLACEOUS SANDSTONE THINLY BEDDED, OCCASIONAL BLACK SILTY SHALE INTERBED, FOSSILIFEROUS

88° FRACTURE WITH DIP SLIP SLICKENSIDES

BLACK SHALE

THINLY INTERBEDDED DARK GRAY SHALE, SILTSTONE AND LIGHT GRAY SANDSTONE

DARK GRAY TO BLACK SILTY SHALE WITH THIN SANDSTONE LENSES

THINLY INTERBEDDED BLACK SHALE AND MEDIUM GRAY ARGILLACEOUS SANDSTONE

MEDIUM GRAY SANDSTONE WITH THIN INTERBEDS AND LENSES OF SHALE

DARK GRAY GRAYWACKE

THINLY INTERBEDDED SANDSTONE, SILTSTONE AND SHALE

MEDIUM GRAY GRAYWACKE

DARK GRAY SILTSTONE

MEDIUM GRAY SANDY SILTSTONE

DARK GRAY SILTY SHALE

DARK GRAY SANDY SILTSTONE WITH SANDSTONE LENSES

DARK GRAY SILTY SHALE WITH SANDSTONE LENSES

ORIENTATION TESTS

△ Unsuccessful orientation tests

▲ N60°W 30°S — Successful orientation test with strike and dip of bedding

● S 9.4° W 4.8° / S 9.3° W 4.8° — Location of Eastman Whipstock Borehole Subsurface Orientation Survey Station. Results show drift amount in plan view from a zero reference point (center of top of casing) based on a rectangular coordinate system oriented to Plant North. Upper coordinates represent Run #1 results, lower coordinates represent Run #2 results.

62° — Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone
- Joint

ROCK SAMPLE INFORMATION

GP-1 Location of sample collected for laboratory evaluation of seismic velocity

GEOPHYSICAL TESTING

+ Location of cross hole geophysical survey

SAMPLING AND CORING INFORMATION

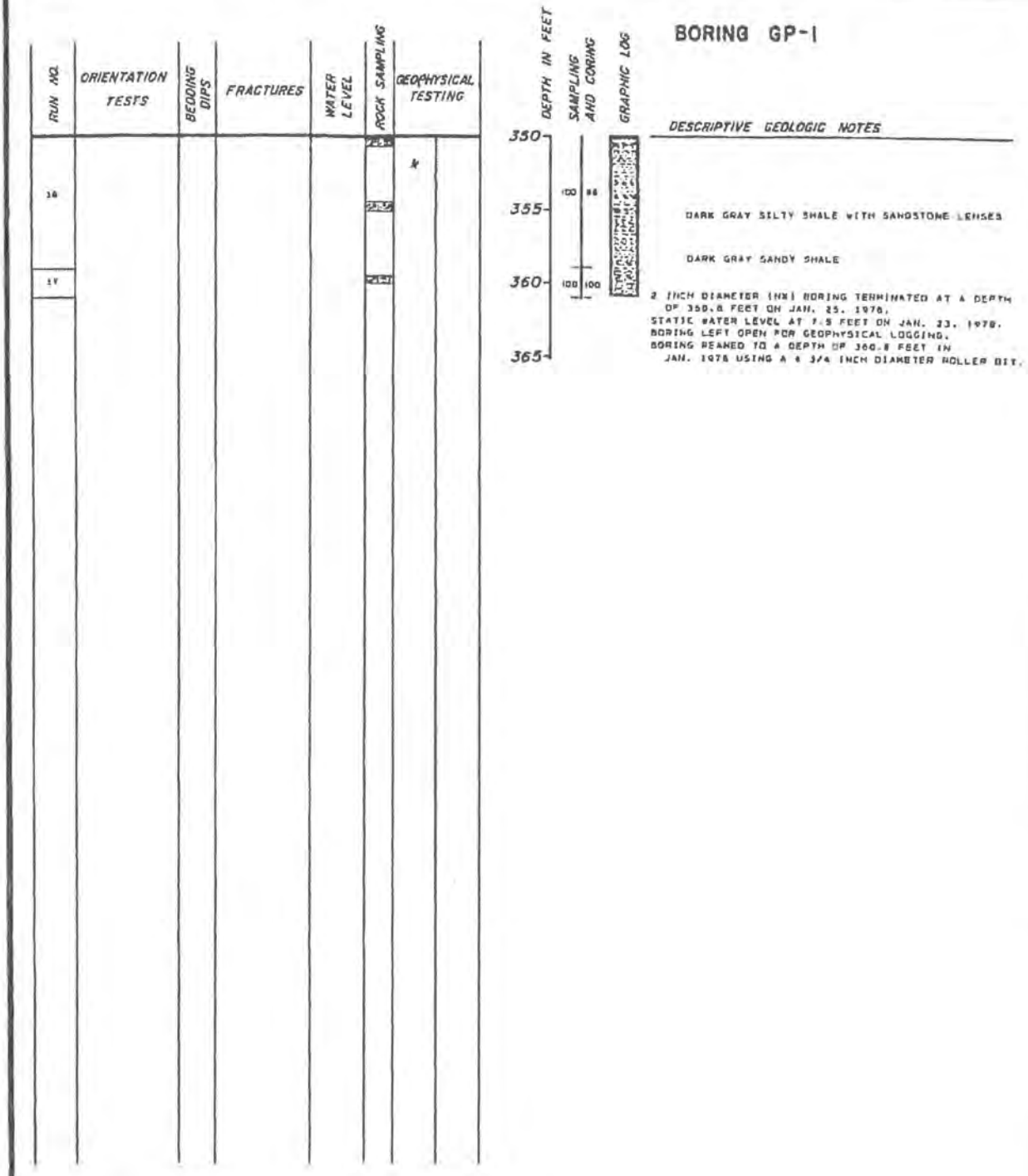
- Location of standard penetration test using a split spoon sampler driven with a 140 lb. hammer falling 30 in.
- Core run of 2" (NX) diameter core.
- 100 | 95 R.Q.D.
- Percent recovery

FIGURE 2K-12E

LOG OF BORING GP-1

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING GP-1



ORIENTATION TESTS

△ Unsuccessful orientation tests

▲ N60°W 30°S Successful orientation test with strike and dip of bedding

● 384 W48 583 W48 Location of Eastman whipstock (borehole Subsurface Orientation Survey Station. Results show drift amount in plan view from a zero reference point (center of top of casing) based on a rectangular coordinate system oriented to Plant North. Upper coordinates represent Run #1 results, lower coordinates represent Run #2 results.

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone
- Void

SAMPLING AND CORING INFORMATION

- Location of standard penetration test using a split spoon sampler driven with a 140 lb. hammer falling 30 in.
- Core run of 2" (NX) diameter core.
- 100 | 95 R.Q.D.
- Percent recovery

ROCK SAMPLE INFORMATION

GP1-1 Location of sample collected for laboratory evaluation of seismic velocity

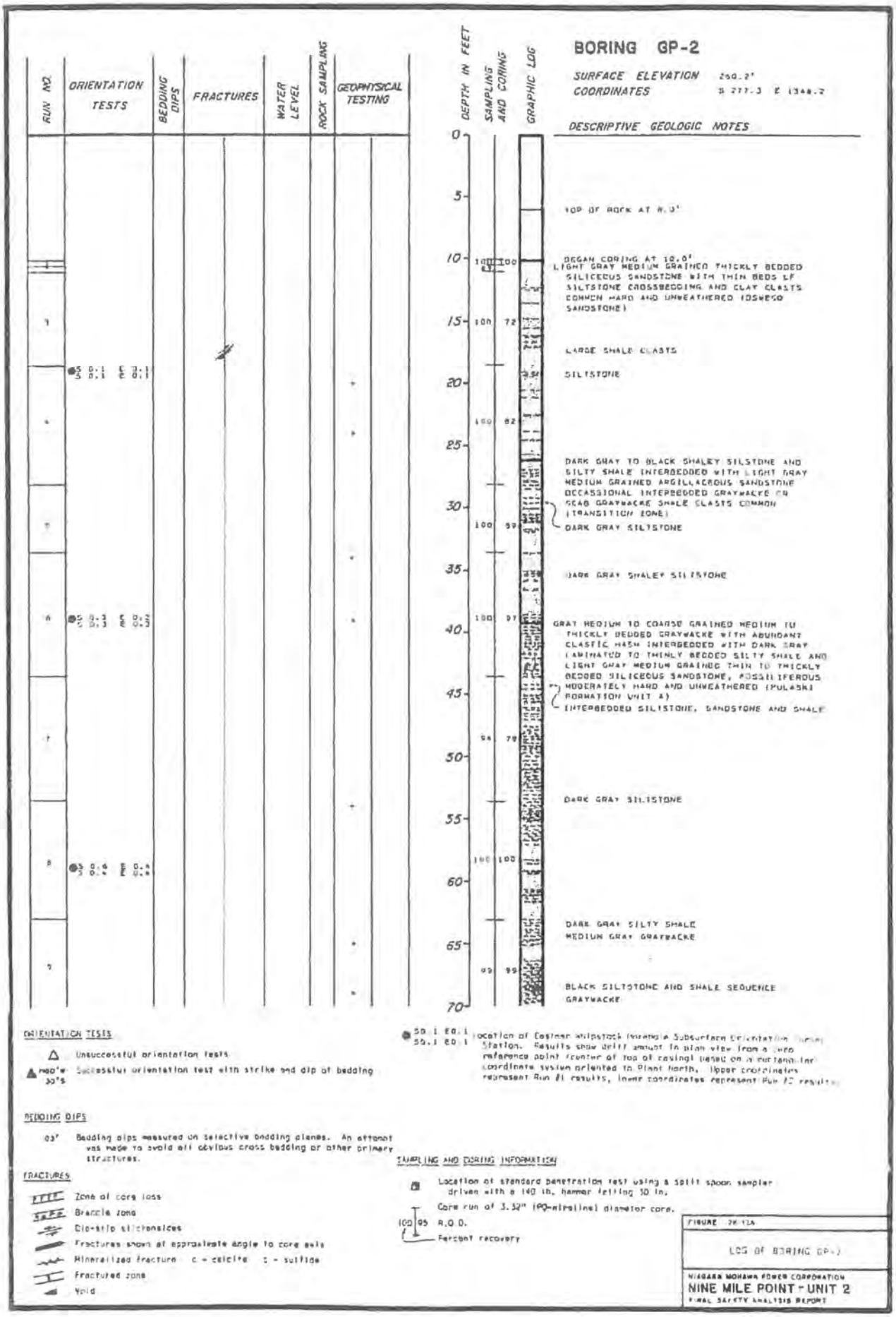
GEOPHYSICAL TESTING

- Location of cross hole geophysical survey

FIGURE 2R-12F

LOG OF BORING GP-1

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



ORIENTATION TESTS

△ Unsuccessful orientation tests

▲ 000's 00's Successful orientation test with strike and dip of bedding

S0.1 E0.1 / S0.1 E0.1 Location of Eastman whipstock (Vertical Subsurface Orientation Tool) Station. Results show drift angle in plan view from a true reference point (center of top of casing base) on a rectangular coordinate system oriented to Plant North. Upper coordinates represent Run #1 results, lower coordinates represent Run #2 results.

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Zone of core loss
- Breccia zone
- Clay-slip slickensides
- Fractures shown at approximate angle to core axis
- Mineralized fracture c = calcite s = sulfide
- Fractured zone
- Void

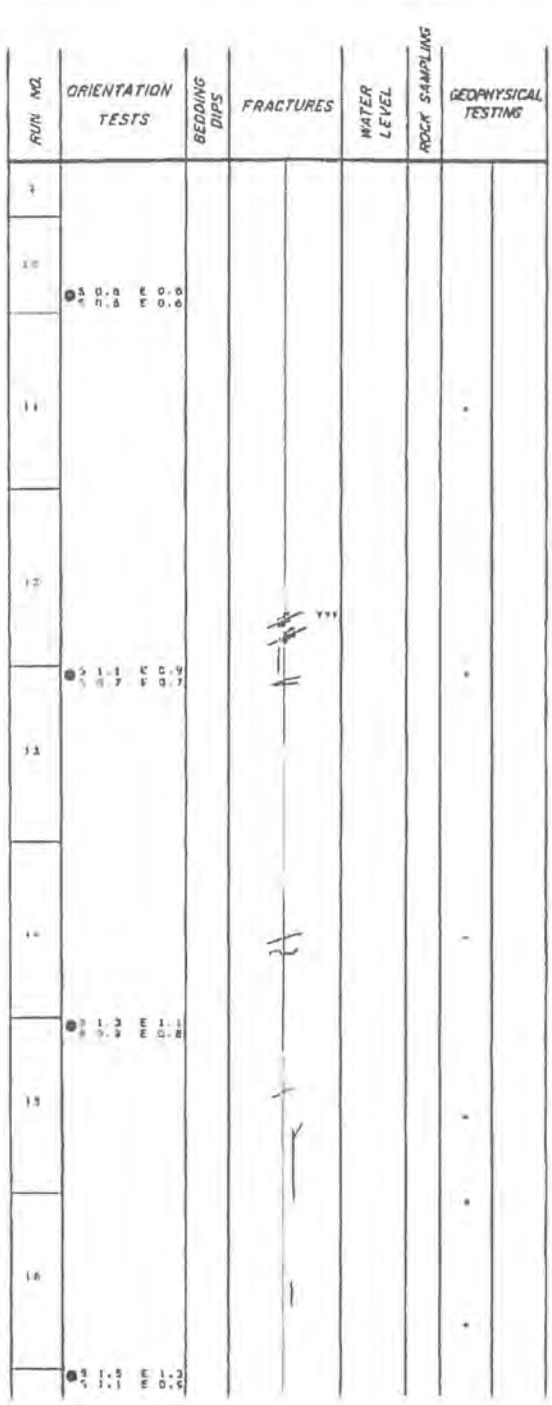
SAMPLING AND CORING INFORMATION

- Location of standard penetration test using a split spoon sampler driven with a 140 lb. hammer falling 30 in.
- Core run of 3.52" (90-millimeter) diameter core.
- 100 | 95 R.Q.D.
- Percent recovery

FIGURE 2A-12A

LOG OF BORING GP-2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



BORING GP-2

DESCRIPTIVE GEOLOGIC NOTES

LIGHT GRAY SANDSTONE WITH SILTSTONE LENSES

MEDIUM GRAY GRAYWACKE

INTERBEDDED SILTSTONE AND SHALE WITH SANDSTONE INTERBEDS

LIGHT TO MEDIUM GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE OCCASSIONAL DARK GRAY TO BLACK SILTY SHALES AND SILTSTONE INTERBEDS AND THIN SHALE STRINGERS, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED (PULASKI FORMATION UNIT B)

BLACK SHALE

POSSIBLE ZONE OF CORE LOSS
20° FRACTURE WITH DIP SLIP SLICKENSIDES
25° FRACTURE WITH DIP SLIP SLICKENSIDES

DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE INTERBEDDED WITH LIGHT GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, SILTSTONE LENSES AND INTERBEDS COMMON, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED (PULASKI FORMATION UNIT C)

GRAY SILTSTONE

GRAY SILTSTONE

LIGHT GRAY SILICEOUS SANDSTONE WITH OCCASIONAL SHALE CLASTS

BLACK SHALE WITH FOSSIL HASH

INTERBEDDED BLACK SHALE AND MEDIUM GRAY SANDSTONE

VERTICAL FRACTURE — HEALED

GRAY SILTSTONE
BLACK SHALE

LIGHT GRAY SILICEOUS SANDSTONE

SHALE INTERCLASTS

DOMINANTLY DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE WITH MINOR INTERBEDS OF LIGHT GRAY MEDIUM GRAINED LAMINATED TO THICKLY BEDDED ARGILLACEOUS SANDSTONE FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED (WHETSTONE GULF FORMATION UNIT A)

ORIENTATION TESTS

△ Unsuccessful orientation tests

▲ N60°W 30°S Successful orientation test with strike and dip of bedding

BEDDING DIPS

23° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c = calcite s = sulfide
- Fractured zone
- Clay

●30.1 E0.1
50.1 E9.1 Location of Eastman Whipstock Borehole Subsurface Orientation Survey Station. Results show drill stem in plan view from a true reference point (center of top of casing) posed on a rectangular coordinate system oriented to Plant North. Upper coordinates represent Run #1 results, lower coordinates represent Run #2 results.

SAMPLING AND CORING INFORMATION

■ Location of standard penetration test using a split spoon sampler driven with a 140 lb. hammer falling 30 in.

Core run of 3.32" (90-nominal) diameter core.

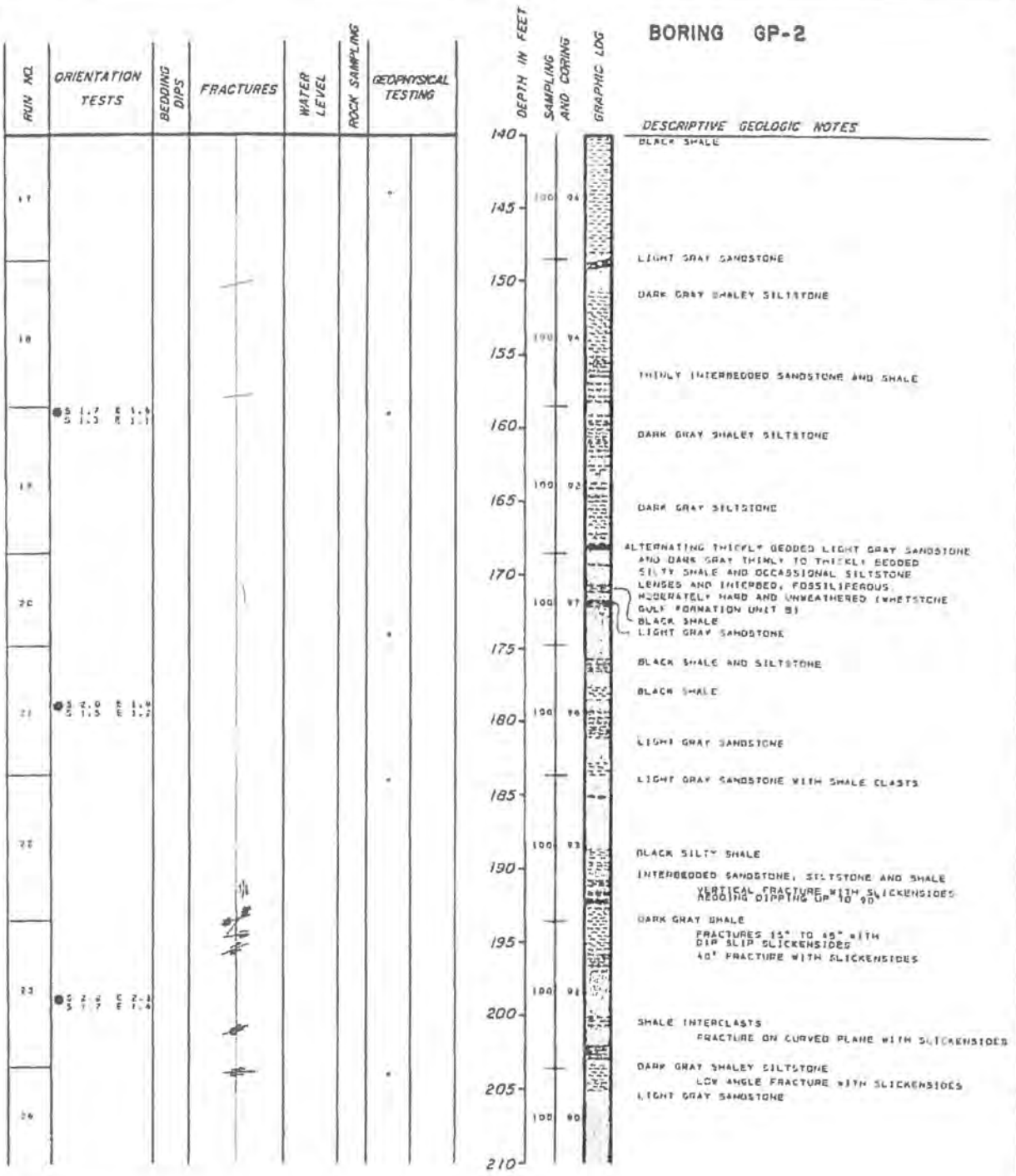
100 95 R.Q.D.
Percent recovery

FIGURE 2A-12A

LOG OF BORING GP-2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING GP-2



ORIENTATION TESTS

△ Unsuccessful orientation tests

▲ N40°W 30°S Successful orientation test with strike and dip of bedding

BEDDING DIPS

05° Bedding dips measured on selective bedding planes. An attempt was made to avoid silt obvious cross bedding or other primary structures

FRACTURES

- Zone of core loss
- Breccia zone
- Slip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture C - calcite S - sulfide
- Fractured zone
- Vein

S 10.1 E 0.1
S 9.1 E 0.1 Location of Eastman multishot borehole subsurface orientation survey station. Results show drift about the plan view from a zero reference point (center of top of casing) based on a rectangular coordinate system oriented to P ant North. Upper coordinates represent Run #1 results, lower coordinates represent Run #2 results

SAMPLING AND CORING INFORMATION

Location of standard penetration test using a split spoon sampler driven with a 140 lb. hammer falling 30 in.

Core run of 3.32" (PQ-wireline) diameter core.

100 93 R.Q.D.

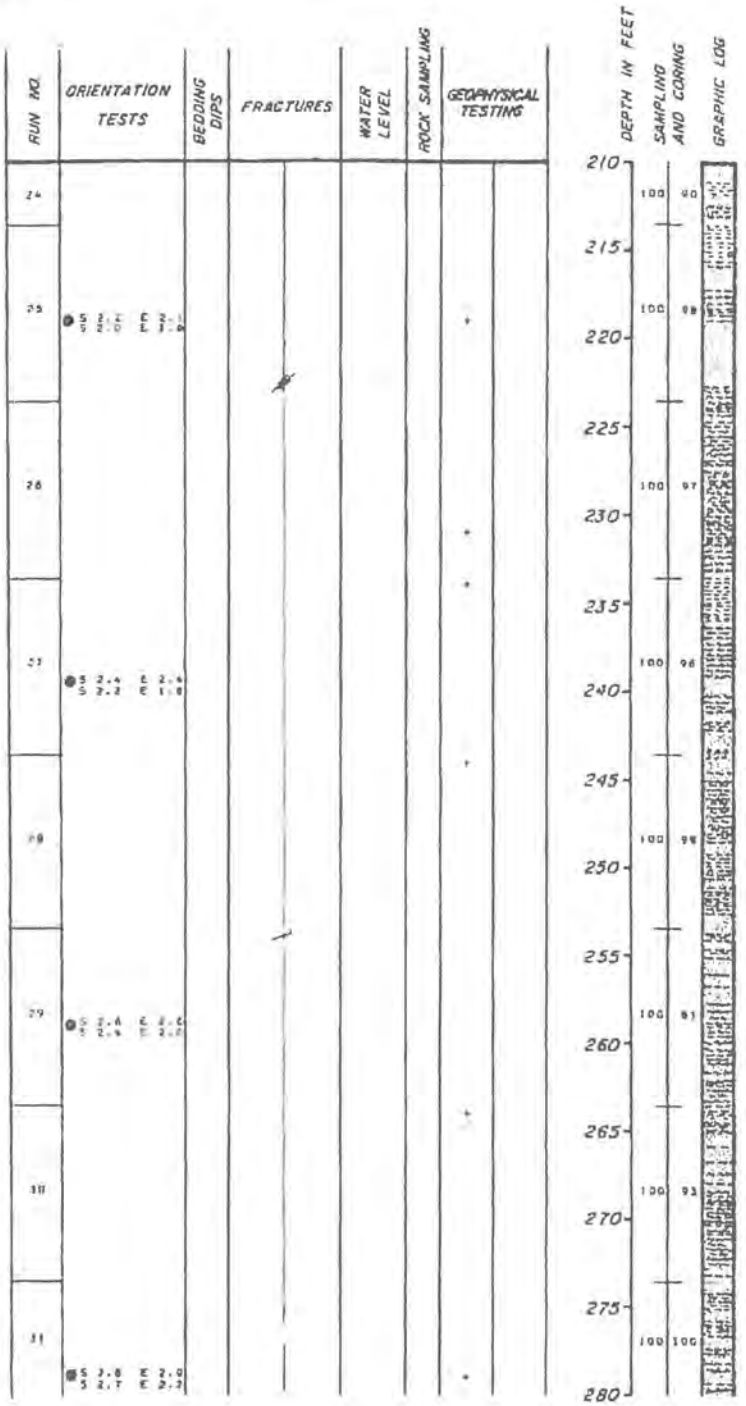
Percent recovery

FIGURE 2K-15C

LOG OF BORING GP-2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING GP-2



DESCRIPTIVE GEOLOGIC NOTES

DARK GRAY SILTY SHALE WITH OCCASSIONAL SANDSTONE INTERBED

LIGHT GRAY SANDSTONE

LIGHT GRAY SANDSTONE

45° FRACTURE WITH DIP SLIP SLICKENSIDES

INTERBEDDED SILTSTONE AND SHALE WITH OCCASSIONAL INTERBED OF SANDSTONE

DARK GRAY SILTSTONE WITH OCCASSIONAL SHALE AND SANDSTONE INTERBEDS

INTERBEDDED SILTSTONE, SHALE AND SANDSTONE

FOSSIL HASH AND PYRITE CLASTS

MEDIUM GRAY GRAYWACKE

BLACK SHALE

DARK GRAY SILTSTONE OCCASSIONAL INTERBED

GRADING WITH SANDSTONE INTERBEDS

BLACK SHALE TO DARK GRAY SILTSTONE

GRAY SANDSTONE

DARK GRAY SILTSTONE WITH SHALE INTERBEDS

GRAY SANDSTONE

BLACK SHALE

BLACK SHALE AND SILTSTONE WITH OCCASSIONAL SANDSTONE LENSES

ORIENTATION TESTS

△ Unsuccessful orientation tests

▲ N60°W 30°S Successful orientation test with strike and dip of bedding

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all inclined cross bedding or other primary structures.

FRACTURES

Zone of core loss

Breccia zone

Dip-slip slickensides

Fractures-shown at approximate angle to core axis

Mineralized fracture c - calcite p - pyrite

Fractured zone

Void

S0.1 E0.1
S0.1 E0.1 Location of Eastern Seismotech Borehole Televiewer Orientation Survey Station. Results show drill amount in plan view from a zero reference point (center of top of casing) based on a rectangular coordinate system oriented to Plant North. Upper coordinates represent Run #1 results, lower coordinates represent Run #2 results.

Location of standard penetration test using a split spoon sampler driven with a 140 lb. hammer falling 30 in.

Core run of 5.32" (PQ-Wireline) diameter core.

100 95 R.Q.D.

Percent recovery

FIGURE 2.4-103

LOG OF BORING GP-2

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT

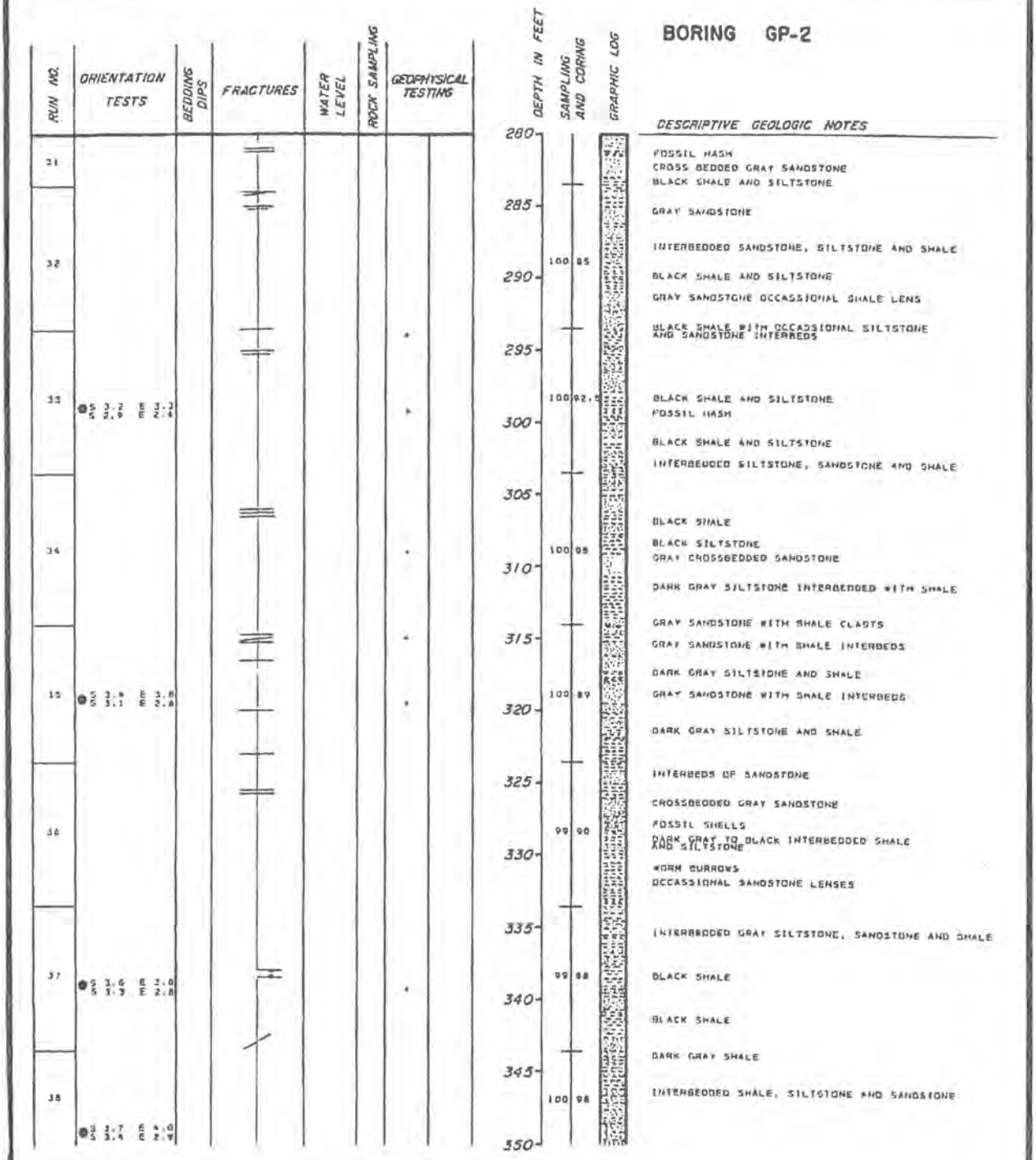
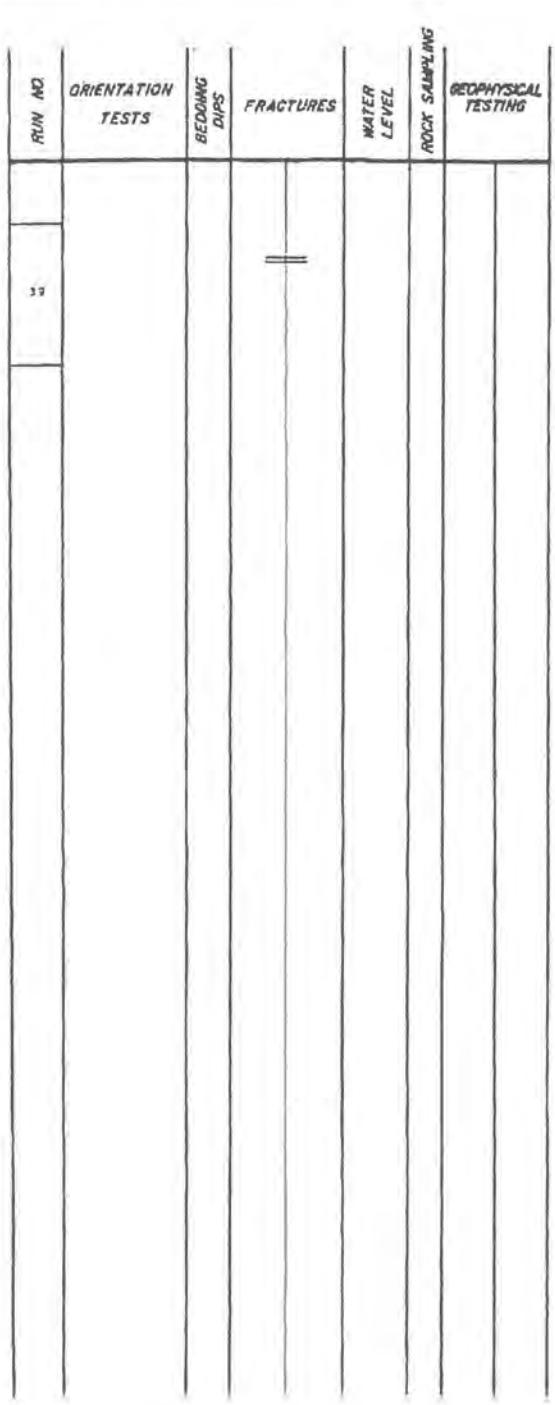


FIGURE 2K-13E

LOG OF BORING GP-2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING GP-2



DESCRIPTIVE GEOLOGIC NOTES

INTERBEDDED SILTSTONE AND SHALE WITH OCCASSIONAL SANDSTONE INTERBED

FOSSIL HASH

3.32 INCH DIAMETER BORING TERMINATED AT A DEPTH OF 361.5 FEET ON MARCH 2, 1978.
BORING LEFT OPEN FOR GEOPHYSICAL LOGGING.
NATURAL GAS ENCOUNTERED AT A DEPTH OF 360.0 FEET.

ORIENTATION TESTS

△ Unsuccessful orientation tests

▲ N60°W 30°S Successful orientation test with strike and dip of bedding

BEDDING DIPS

33° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

Zone of core loss

Breccia zone

Dip-slip slickensides

Fractures-shown at approximate angle to core axis

Mineralized fracture c = calcite s = sulfide

Fractured zone

Void

●50.1 E0.1
50.1 E0.1 Location of Eastman whipstock Borehole Subsurface Orientation Survey Station. Results show drift amount in plan view from a zero reference point (center of top of casing) based on a rectangular coordinate system oriented to Plant North. Upper coordinates represent Run #1 results, lower coordinates represent Run #2 results.

Location and Strike Inclination

■ Location of standard penetration test using a split spoon sampler driven with a 140 lb. hammer falling 30 in.

Core run of 3.32" (PQ-Wireline) diameter core.

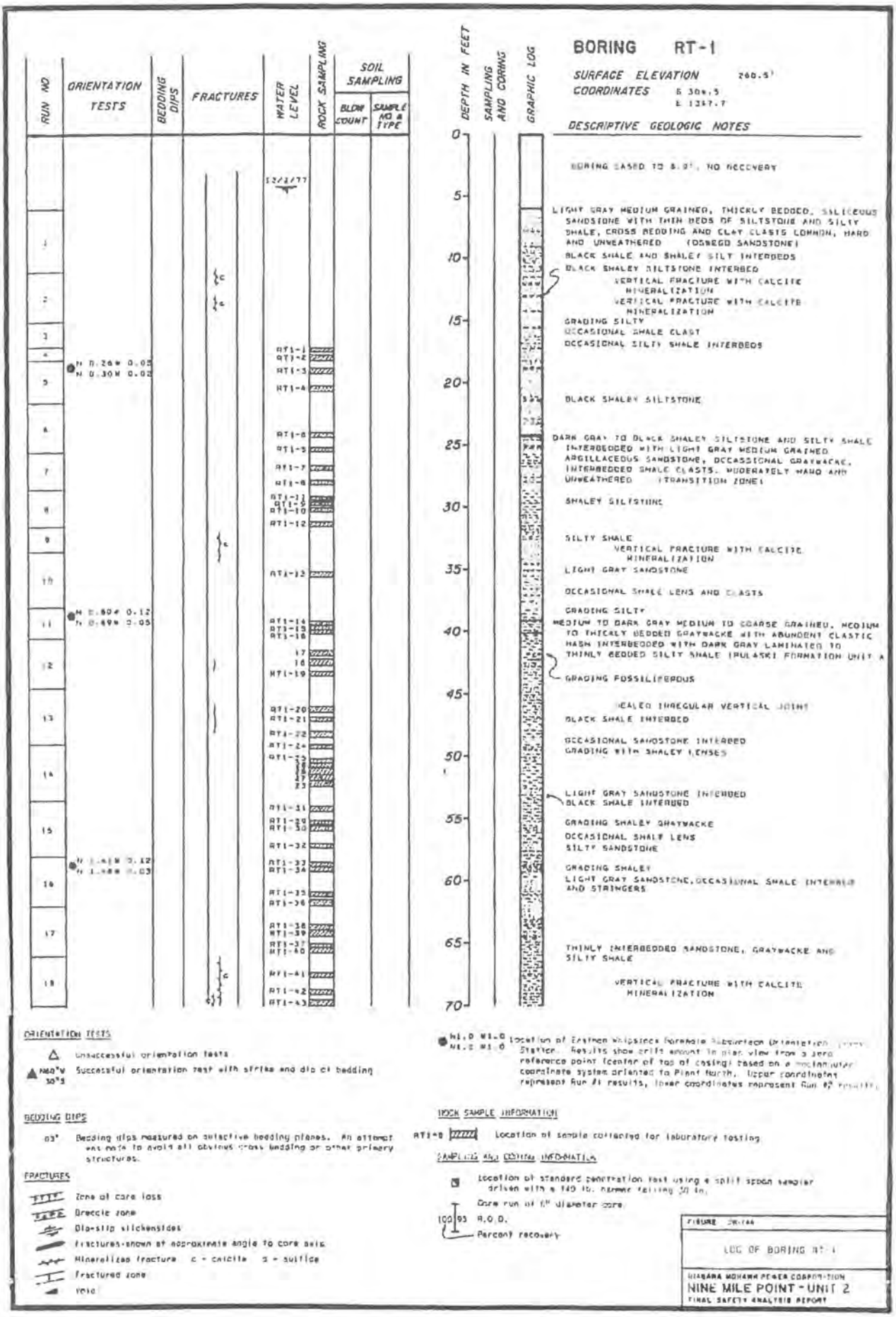
100 95 R.Q.D.

Percent recovery

FIGURE 2K-13F

LOG OF BORING GP-2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



ORIENTATION TESTS

△ Unsuccessful orientation tests

▲ N60°W 30°S Successful orientation test with strike and dip of bedding

BEDDING DIPS

03° Bedding dips measured on distinctive bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c = calcite s = sulfide
- Fractured zone
- Void

N1.0 W1.0 / N1.2 W1.0 Location of Eastman Whipstock Formation Subsurface Orientation [illegible] Station. Results show drift amount in plan view from a zero reference point (center of top of casing) based on a magnetic/gyro coordinate system oriented to Plant North. Upper coordinates represent Run #1 results, lower coordinates represent Run #2 results.

ROCK SAMPLE INFORMATION

RT1-8 Location of sample collected for laboratory testing

SAMPLING AND CORING INFORMATION

Location of standard penetration test using a split spoon sampler driven with a 140 lb. hammer falling 30 in.

Core run of 5" diameter core.

100 | 93 R.Q.D.

Percent recovery

FIGURE 2R-1.44

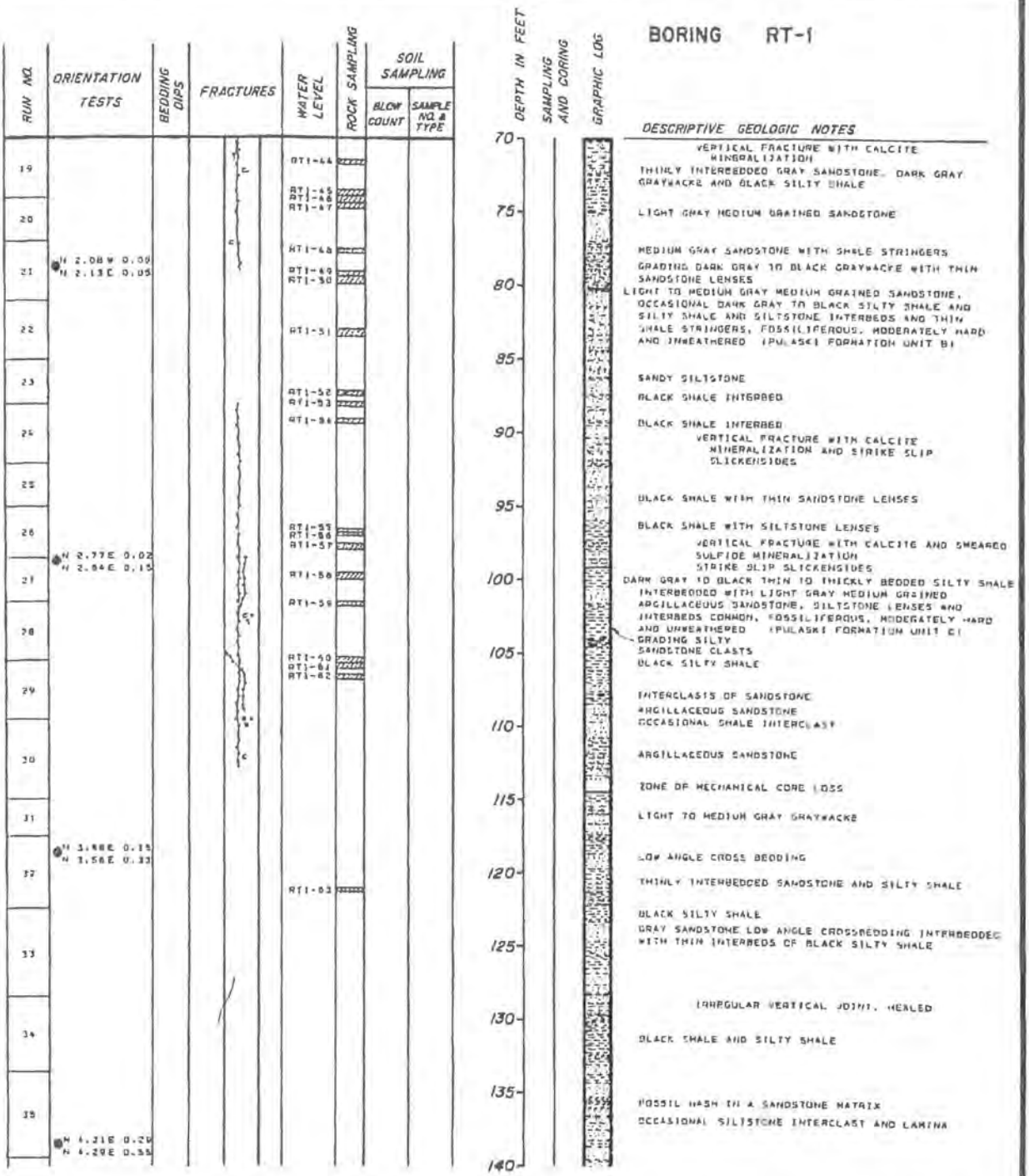
LOG OF BORING RT-1

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT

BORING RT-1



DESCRIPTIVE GEOLOGIC NOTES

VERTICAL FRACTURE WITH CALCITE MINERALIZATION
THINLY INTERBEDDED GRAY SANDSTONE, DARK GRAY GRAYWACKE AND BLACK SILTY SHALE

LIGHT GRAY MEDIUM GRAINED SANDSTONE

MEDIUM GRAY SANDSTONE WITH SHALE STRINGERS

GRADING DARK GRAY TO BLACK GRAYWACKE WITH THIN SANDSTONE LENSES

LIGHT TO MEDIUM GRAY MEDIUM GRAINED SANDSTONE, OCCASIONAL DARK GRAY TO BLACK SILTY SHALE AND SILTY SHALE AND SILTSTONE INTERBEDS AND THIN SHALE STRINGERS, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED (PULASKI) FORMATION UNIT B1

SANDY SILTSTONE

BLACK SHALE INTERBED

BLACK SHALE INTERBED
VERTICAL FRACTURE WITH CALCITE MINERALIZATION AND STRIKE SLIP SLICKENSIDES

BLACK SHALE WITH THIN SANDSTONE LENSES

BLACK SHALE WITH SILTSTONE LENSES
VERTICAL FRACTURE WITH CALCITE AND SMEARED SULFIDE MINERALIZATION
STRIKE SLIP SLICKENSIDES

DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE INTERBEDDED WITH LIGHT GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, SILTSTONE LENSES AND INTERBEDS COMMON, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED (PULASKI FORMATION UNIT C1

GRADING SILTY SANDSTONE CLASTS
BLACK SILTY SHALE

INTERCLASTS OF SANDSTONE
ARGILLACEOUS SANDSTONE
OCCASIONAL SHALE INTERCLAST

ARGILLACEOUS SANDSTONE

ZONE OF MECHANICAL CORE LOSS

LIGHT TO MEDIUM GRAY GRAYWACKE

LOW ANGLE CROSS BEDDING

THINLY INTERBEDDED SANDSTONE AND SILTY SHALE

BLACK SILTY SHALE
GRAY SANDSTONE LOW ANGLE CROSSBEDDING INTERBEDDED WITH THIN INTERBEDS OF BLACK SILTY SHALE

IRREGULAR VERTICAL JOINT, HEALED

BLACK SHALE AND SILTY SHALE

FOSSIL HASH IN A SANDSTONE MATRIX
OCCASIONAL SILTSTONE INTERCLAST AND LAMINA

ORIENTATION TESTS

△ Unsuccessful orientation tests

▲ N60°W 30°S Successful orientation test with strike and dip of bedding

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Zone of core loss
- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone
- Void

●N1.0 W1.0 / N1.0 W1.0 Location of Eastman Whipstock borehole Subsurface Orientation Survey Station. Results show drift azimuth in plan view from a zero reference point (center of top of casing) based on a rectangular coordinate system oriented to Plant North. Upper coordinates represent run #1 results, lower coordinates represent run #2 results.

ROCK SAMPLE INFORMATION

RT1-5 Location of sample collected for laboratory testing

SAMPLING AND CORING INFORMATION

Location of standard penetration test using a split spoon sampler driven with a 140 lb. hammer falling 30 in.

Core run of 5' diameter core.

100 | 95 R.Q.D.

Percent recovery

FIGURE 2K-14B

LOG OF BORING RT-1

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING RT-1

RUN NO.	ORIENTATION TESTS	BEDDING DIPS	FRACTURES	WATER LEVEL	ROCK SAMPLING	SOIL SAMPLING: BLOW COUNT	SOIL SAMPLING: SAMPLE NO. & TYPE
				RT1-84			
				RT1-85			
				RT1-86			
				RT1-87			
				RT1-88			

DEPTH IN FEET: 140, 145, 150

SAMPLING AND CORING

GRAPHIC LOG

DESCRIPTIVE GEOLOGIC NOTES

DOMINANTLY DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE WITH MINOR INTERBEDS OF LIGHT GRAY MEDIUM GRAINED, LAMINATED TO THICKLY BEDDED ARGILLACEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED (PHETSTONE GULP FORMATION UNIT A)

6 INCH BORING TERMINATED AT 148.2' ON DEC. 20, 1977.
BORING REAMED TO DEPTH OF 350' ON JAN. 25, 1978 USING A A 3/4 INCH DIAMETER ROLLER BIT.
STATIC WATER LEVEL 5.3 FT. BELOW GROUND SURFACE ON JAN. 27, 1978.
BORING GEOPHYSICALLY LOGGED BY DAMES & MOORE ON JAN. 31, 1978.
BORING GEOPHYSICALLY LOGGED BY BIRDWELL DIVISION ON FEB. 2, 1978 AND MARCH 3, 1978.

ORIENTATION TESTS

△ Unsuccessful orientation tests

▲ N60°W 30°S Successful orientation test with strike and dip of bedding

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Zone of core loss
- Breccia zone
- Clay-silty stickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone
- Vein

● N1.0 W1.0 / N1.0 W1.0 Location of Eastman whipstock Gyrosyn Subsurface Orientation Survey Station. Results show drift amount in plan view from a zero reference point (center of top of casing) based on a rectangular coordinate system oriented to Plant North. Upper coordinates represent Run #1 results, lower coordinates represent Run #2 results. Stations below cored depth not shown.

ROCK SAMPLE INFORMATION

RT1-S Location of sample collected for laboratory testing

SAMPLING AND CORING OPERATION

■ Location of standard penetration test using a split spoon sampler driven with a 140 lb. hammer falling 30 in.

Core run at 6" diameter core.

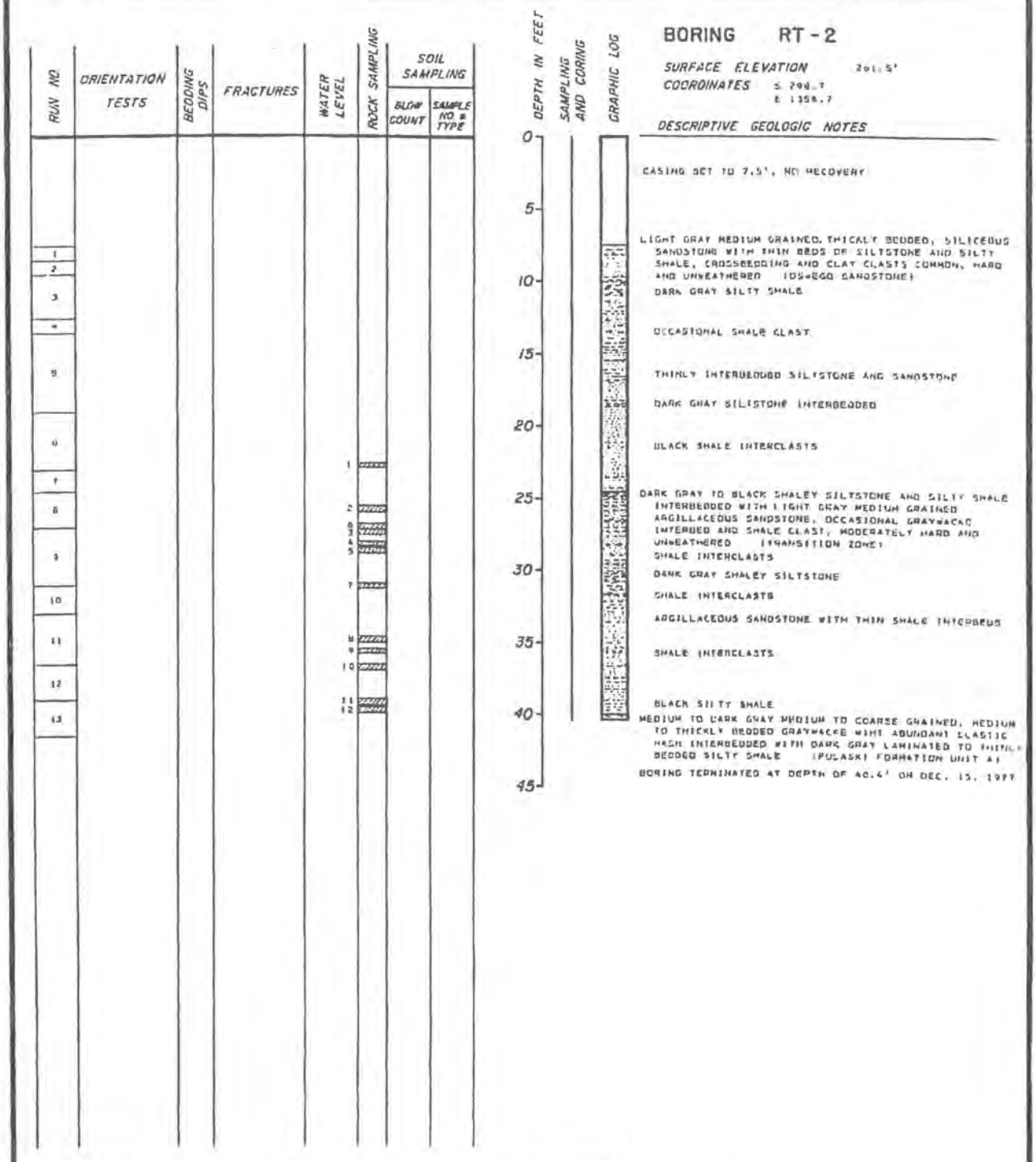
100 | 95 R.Q.D.

Percent recovery

FIGURE 2A.14C

LOG OF BORING RT-1

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



BORING RT-2

SURFACE ELEVATION 201.5'
COORDINATES S 290.7
E 1358.7

DESCRIPTIVE GEOLOGIC NOTES

CASING SET TO 7.5', NO RECOVERY

LIGHT GRAY MEDIUM GRAINED, THICKLY BEDDED, SILICEOUS SANDSTONE WITH THIN BEDS OF SILTSTONE AND SILTY SHALE, CROSSBEDDING AND CLAY CLASTS COMMON, HARD AND UNWEATHERED (DS=GGG SANDSTONE)

DARK GRAY SILTY SHALE

OCCASIONAL SHALE CLAST

THINLY INTERBEDDED SILTSTONE AND SANDSTONE

DARK GRAY SILTSTONE INTERBEDDED

BLACK SHALE INTERCLASTS

DARK GRAY TO BLACK SHALEY SILTSTONE AND SILTY SHALE INTERBEDDED WITH LIGHT GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, OCCASIONAL GRAYWACKE INTERBED AND SHALE CLAST, MODERATELY HARD AND UNWEATHERED (TRANSITION ZONE)

SHALE INTERCLASTS

DARK GRAY SHALEY SILTSTONE

SHALE INTERCLASTS

ARGILLACEOUS SANDSTONE WITH THIN SHALE INTERBEDS

SHALE INTERCLASTS

BLACK SILTY SHALE

MEDIUM TO DARK GRAY MEDIUM TO COARSE GRAINED, MEDIUM TO THICKLY BEDDED GRAYWACKE WITH ABUNDANT CLASTIC MASH INTERBEDDED WITH DARK GRAY LAMINATED TO THINLY BEDDED SILTY SHALE (PULASKI FORMATION UNIT A)

BORING TERMINATED AT DEPTH OF 40.4' ON DEC. 15, 1977

ORIENTATION TESTS

△ Unsuccessful orientation tests

▲ N40°W 30°S Successful orientation test with strike and dip of bedding

● Borehole inclination test

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

Zone of core loss

Breccia zone

Dip-slip slickensides

Fractures-shown at approximate angle to core axis

Mineralized fracture C = calcite G = sulfide

Fractured zone

Void

ROCK SAMPLE INFORMATION

1 Location of sample collected for laboratory testing

SAMPLING AND CORING INFORMATION

Location of standard penetration test using a split spoon sampler driven with a 140 lb. hammer falling 30 in.

Core run

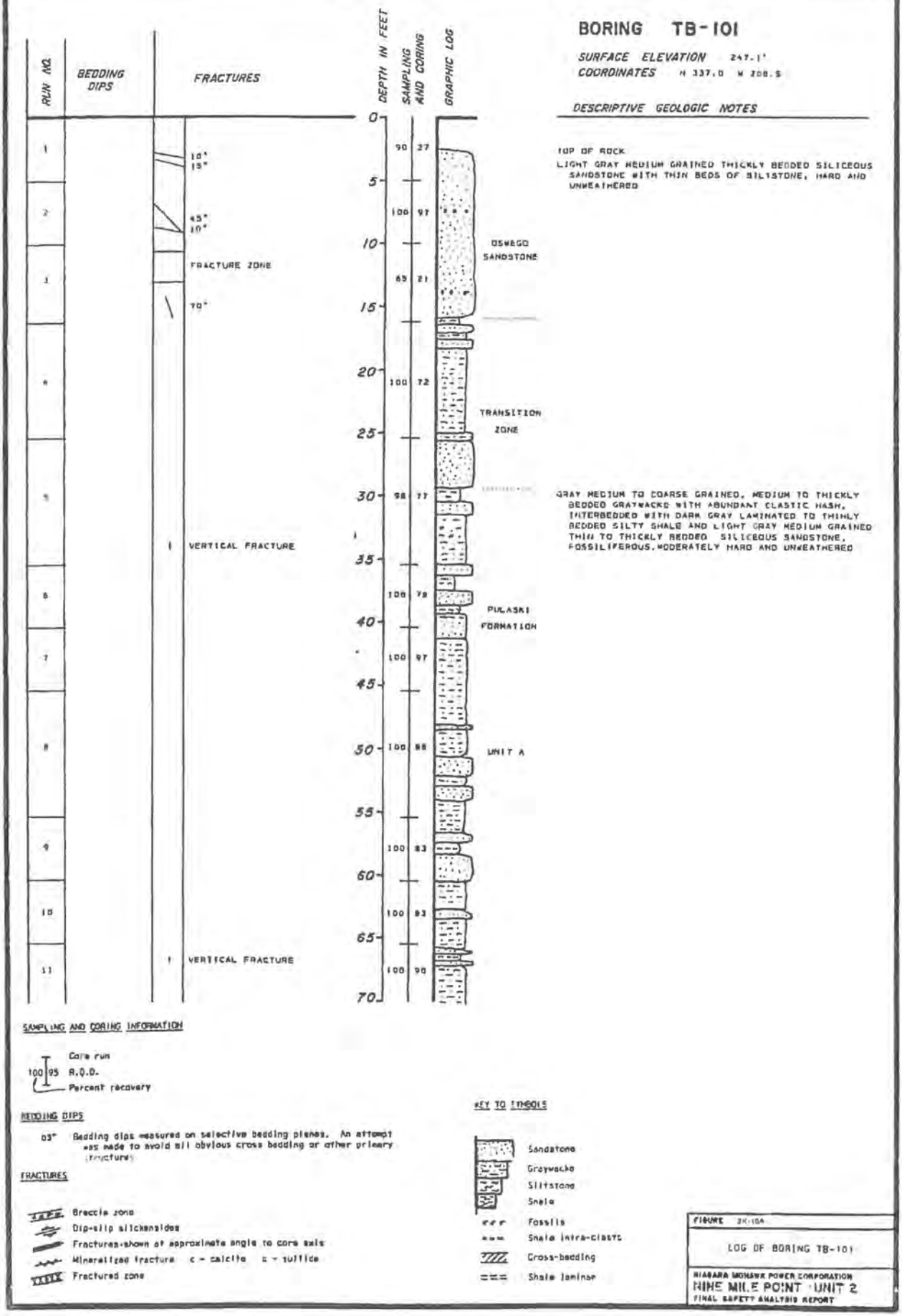
97/95 R.Q.D.

Percent recovery

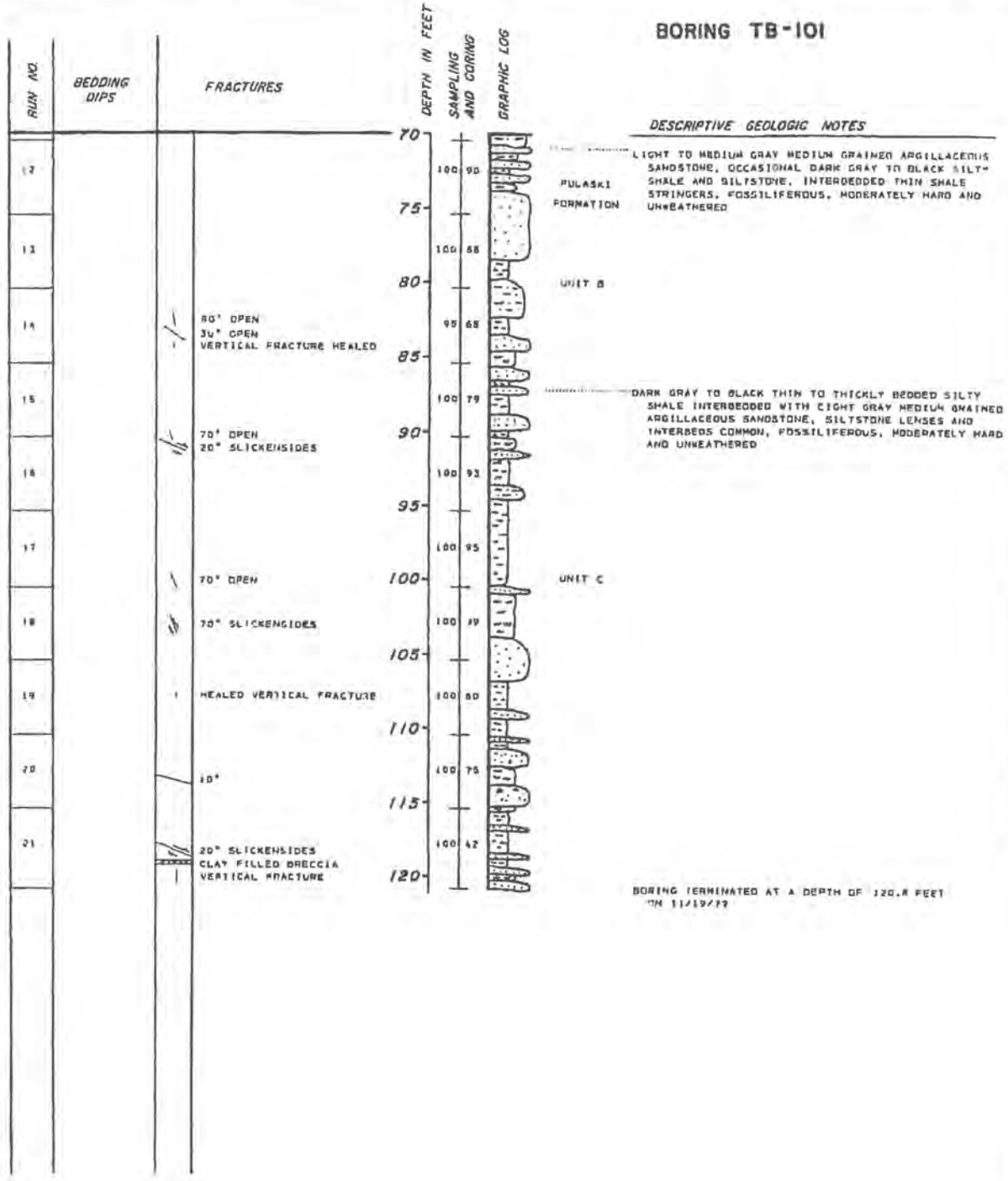
FIGURE 2RT2

LOG OF BORING RT-2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT


BORING TB-101
SURFACE ELEVATION 247.1'
COORDINATES N 337.0 W 208.5
DESCRIPTIVE GEOLOGIC NOTES
RUN NO.
BEDDING DIPS
FRACTURES
DEPTH IN FEET
SAMPLING AND CORING
GRAPHIC LOG
10°
15°
45°
10°
FRACTURE ZONE
70°
VERTICAL FRACTURE
VERTICAL FRACTURE
90 27
100 97
85 21
100 72
98 77
100 78
100 97
100 88
100 83
100 93
100 90
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
OSWEGO SANDSTONE
TRANSITION ZONE
PULASKI FORMATION
UNIT A
TOP OF ROCK
LIGHT GRAY MEDIUM GRAINED THICKLY BEDDED SILICEOUS SANDSTONE WITH THIN BEDS OF SILTSTONE, HARD AND UNWEATHERED
GRAY MEDIUM TO COARSE GRAINED, MEDIUM TO THICKLY BEDDED GRAYWACKE WITH ABUNDANT CLASTIC HASH, INTERBEDDED WITH DARK GRAY LAMINATED TO THINLY BEDDED SILTY SHALE AND LIGHT GRAY MEDIUM GRAINED THIN TO THICKLY BEDDED SILICEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED
SAMPLING AND CORING INFORMATION
Core run
100 95 R.Q.D.
Percent recovery
BEDDING DIPS
03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures
FRACTURES
Breccia zone
Dip-slip slickensides
Fractures-shown at approximate angle to core axis
Mineralized fracture c = calcite s = sulfide
Fractured zone
KEY TO SYMBOLS
Sandstone
Graywacke
Siltstone
Shale
Fossils
Shale intra-clasts
Cross-bedding
Shale laminae
FIGURE 2K-10A
LOG OF BORING TB-101
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING TB-101



SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone

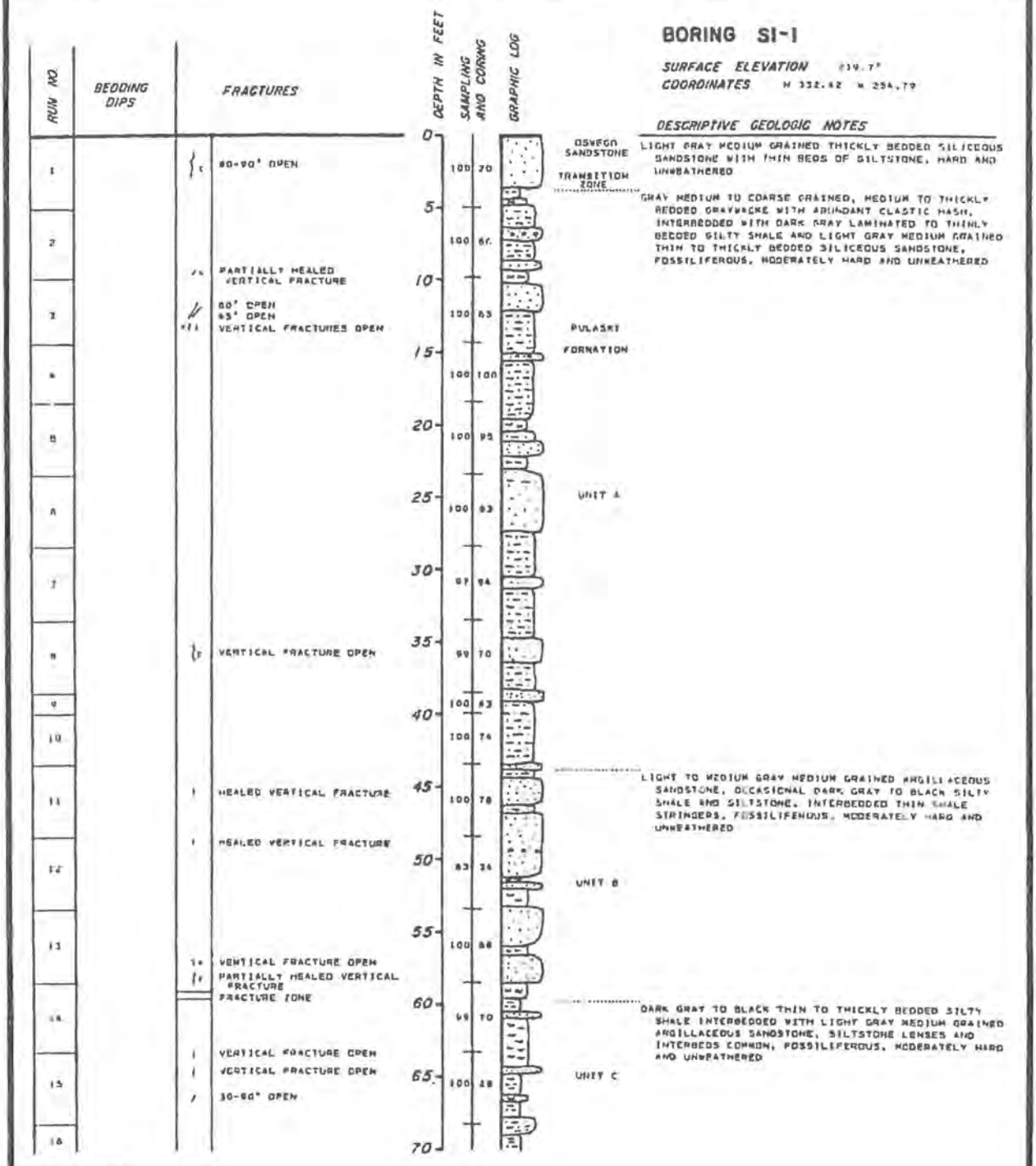
KEY TO SYMBOLS

- Sandstone
- Greywacke
- Siltstone
- Shale
- Fossils
- Shale intraclasts
- Cross-bedding
- Shale laminae

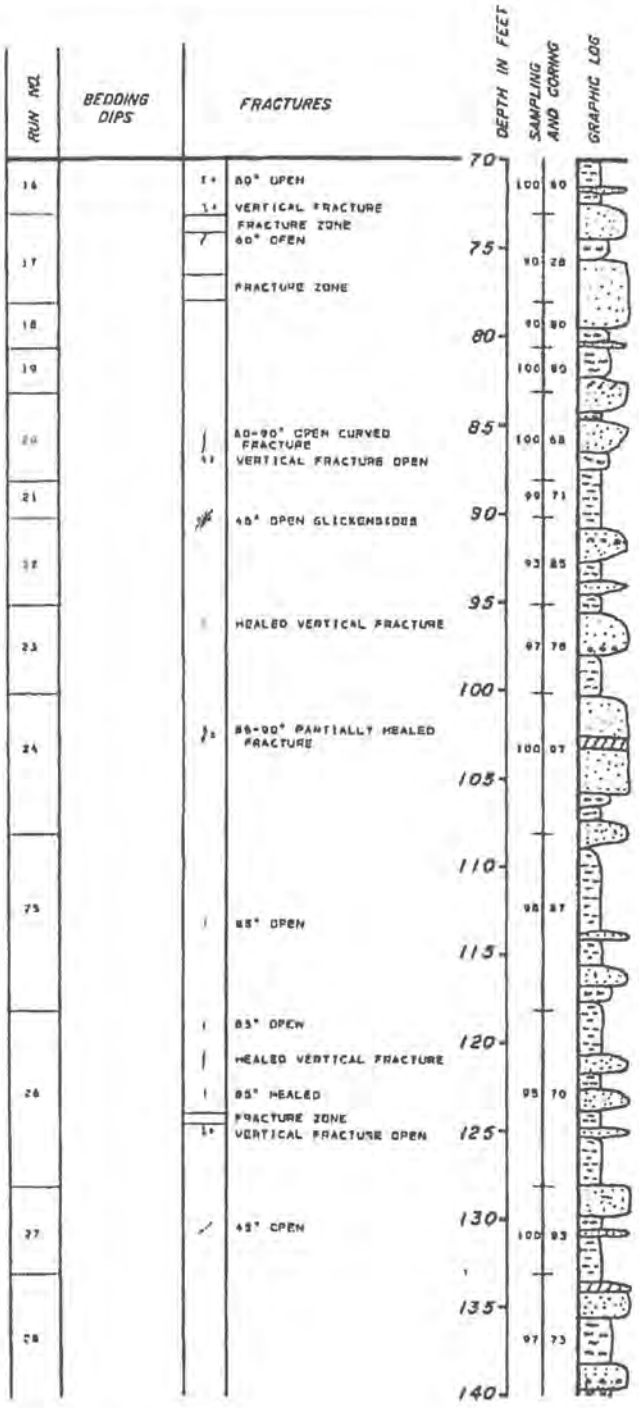
FIGURE 2A.1-60

LOG OF BORING TB-101

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT


BORING SI-1
SURFACE ELEVATION 619.7'
COORDINATES N 332.42 W 254.79
DESCRIPTIVE GEOLOGIC NOTES
RUN NO
BEDDING DIPS
FRACTURES
DEPTH IN FEET
SAMPLING AND CORING
GRAPHIC LOG
OSWEGO SANDSTONE
TRANSITION ZONE
LIGHT GRAY MEDIUM GRAINED THICKLY BEDDED SILICEOUS SANDSTONE WITH THIN BEDS OF SILTSTONE, HARD AND UNWEATHERED
GRAY MEDIUM TO COARSE GRAINED, MEDIUM TO THICKLY BEDDED GRAYWACKE WITH ABUNDANT CLASTIC MASH, INTERBEDDED WITH DARK GRAY LAMINATED TO THINLY BEDDED SILTY SHALE AND LIGHT GRAY MEDIUM GRAINED THIN TO THICKLY BEDDED SILICEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED
PULASKI FORMATION
UNIT A
UNIT B
LIGHT TO MEDIUM GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, OCCASIONAL DARK GRAY TO BLACK SILTY SHALE AND SILTSTONE, INTERBEDDED THIN SHALE STRINGERS, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED
UNIT C
DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE INTERBEDDED WITH LIGHT GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, SILTSTONE LENSES AND INTERBEDS COMMON, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED
60-90° OPEN
PARTIALLY HEALED VERTICAL FRACTURE
60° OPEN
45° OPEN
VERTICAL FRACTURES OPEN
VERTICAL FRACTURE OPEN
HEALED VERTICAL FRACTURE
HEALED VERTICAL FRACTURE
VERTICAL FRACTURE OPEN
PARTIALLY HEALED VERTICAL FRACTURE
FRACTURE ZONE
VERTICAL FRACTURE OPEN
VERTICAL FRACTURE OPEN
30-60° OPEN
SAMPLING AND CORING INFORMATION
Core run
100 95 R.Q.D.
Percent recovery
BEDDING DIPS
63° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.
FRACTURES
Breccia zone
Dip-slip slickensides
Fractures shown at approximate angle to core axis
Mineralized fracture c - calcite s - sulfide
Fractured zone
KEY TO SYMBOLS
Sandstone
Graywacke
Siltstone
Shale
Fossils
Shale intra-clasts
Cross-bedding
Shale laminae
FIGURE 2K-17A
LOG OF BORING SI-1
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING SI-1



DESCRIPTIVE GEOLOGIC NOTES

PULASKI FORMATION

UNIT C

DOMINANTLY DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE WITH MINOR INTERBEDS OF LIGHT GRAY MEDIUM GRAINED LAMINATED TO THICKLY BEDDED ARGILLACEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

BRETSTONE GULF FORMATION

UNIT A

ALTERNATING THICKLY BEDDED LIGHT GRAY SANDSTONE AND DARK GRAY THIN TO THICKLY BEDDED SILTY SHALE OCCASIONAL SILTSTONE LENS & INTERBEDS, MODERATELY HARD AND UNWEATHERED, FOSSILIFEROUS

UNIT B

SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary [illegible]

FRACTURES

- Breccia zone
- Slip-slip slickensides
- Fractures shown at approximate angle to core axis
- Mineralized fracture c - calcite p - pyrite
- Fractured zone

KEY TO SYMBOLS

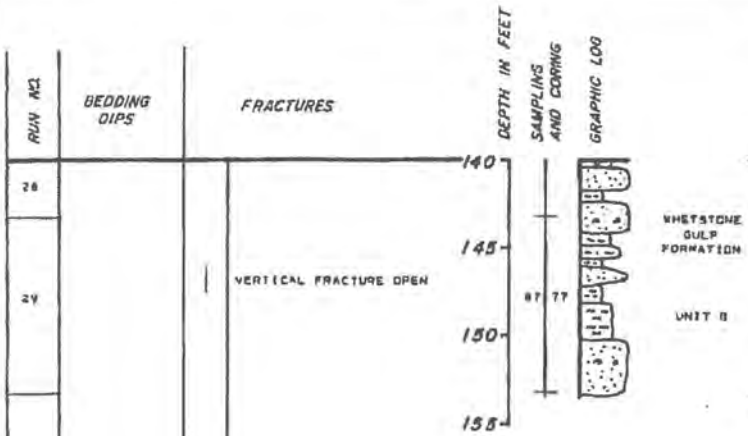
- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

FIGURE 2R-17B

LOG OF BORING SI-1

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING SI-1



DESCRIPTIVE GEOLOGIC NOTES

BORING TERMINATED AT A DEPTH OF 153.25 FEET ON 10/15/79

SAMPLING AND CORING INFORMATION

100 95 Core run
R.Q.D.
Percent recovery

BEDDING DIPS

63° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone

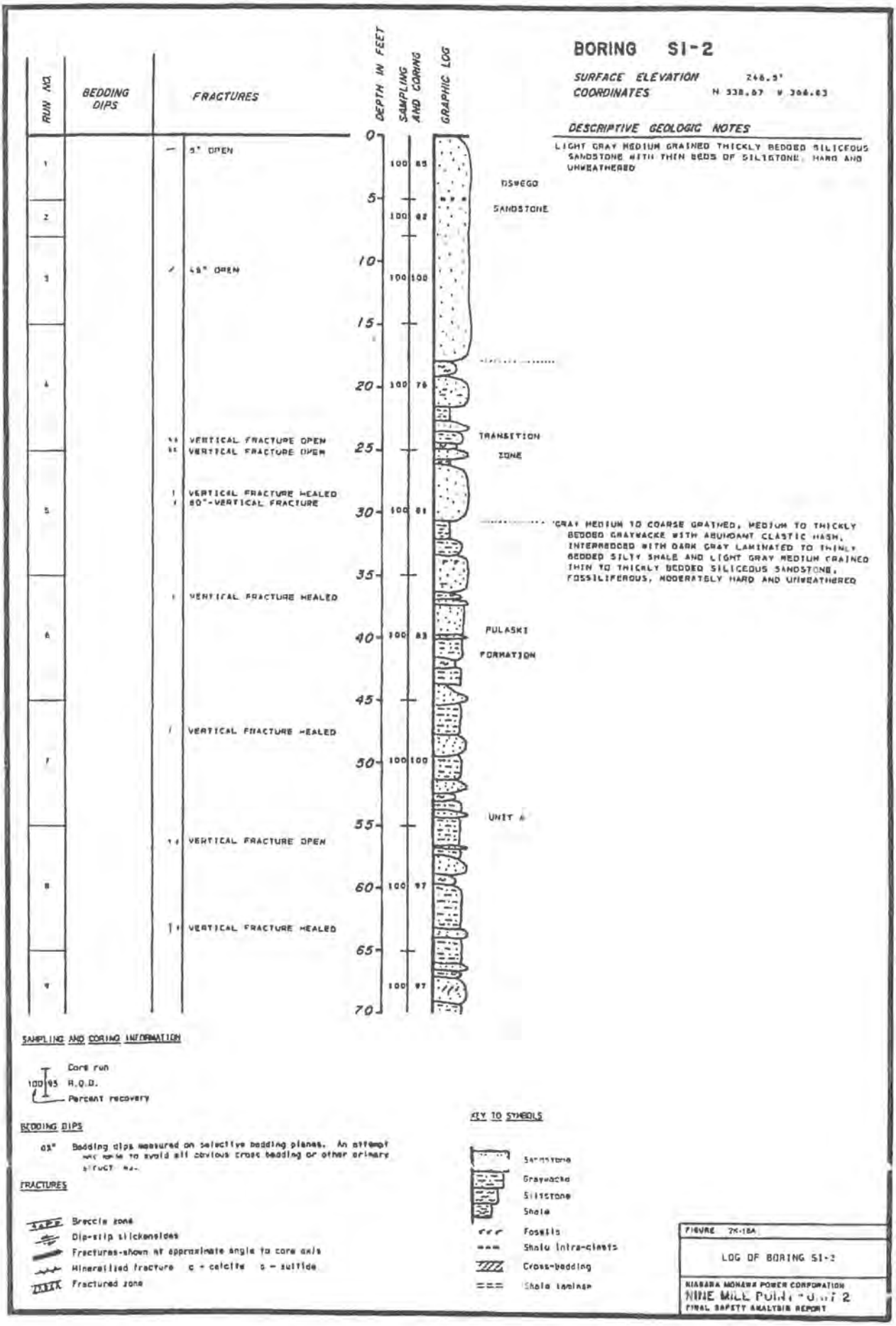
KEY TO SYMBOLS

- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

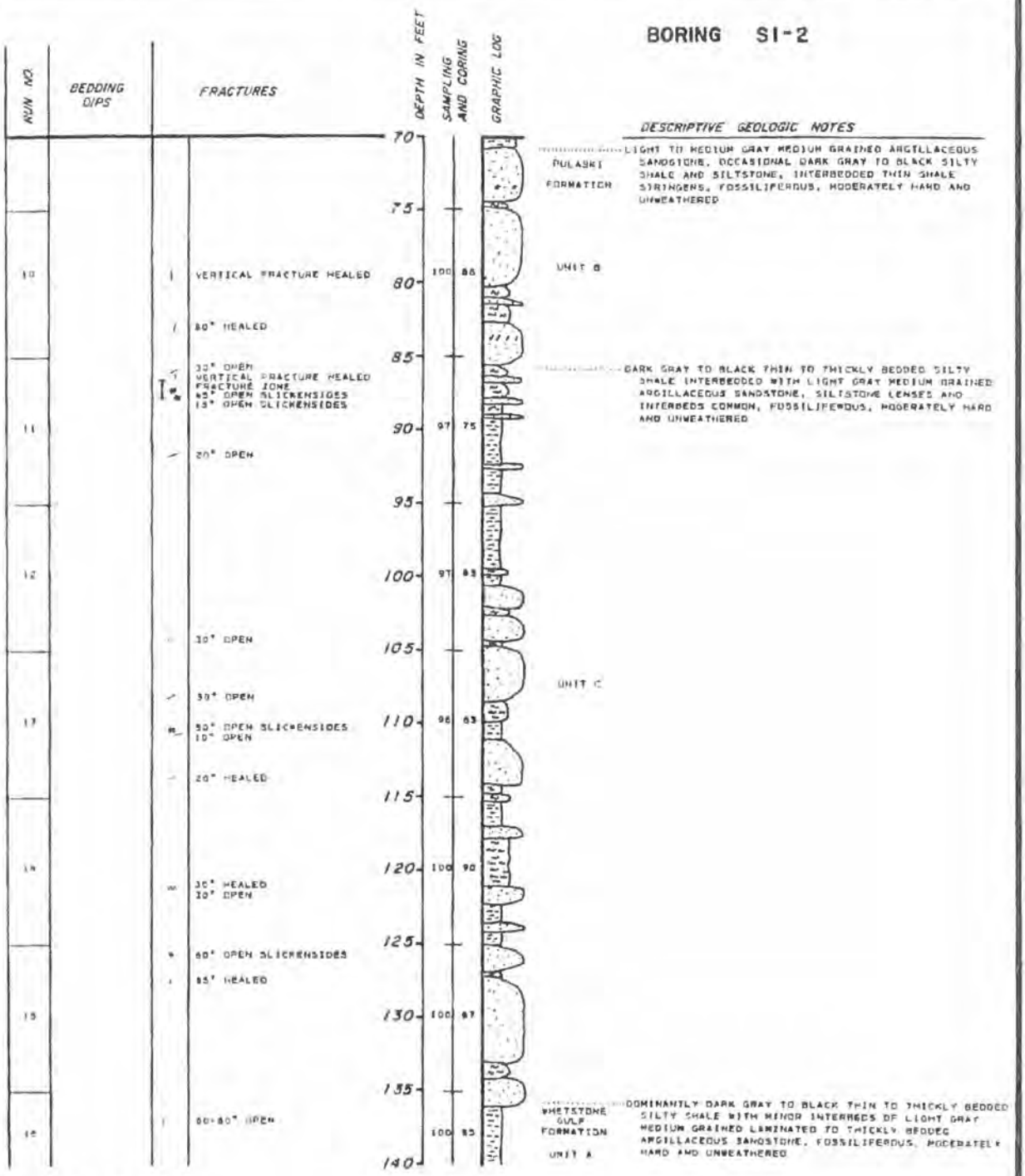
FIGURE 2E-17C

LOG OF BORING SI-1

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT


BORING SI-2
SURFACE ELEVATION 248.5'
COORDINATES N 338.67 W 306.83
DESCRIPTIVE GEOLOGIC NOTES
LIGHT GRAY MEDIUM GRAINED THICKLY BEDDED SILICEOUS SANDSTONE WITH THIN BEDS OF SILTSTONE; HARD AND UNWEATHERED
OSWEGO SANDSTONE
TRANSITION ZONE
GRAY MEDIUM TO COARSE GRAINED, MEDIUM TO THICKLY BEDDED GRAYWACKE WITH ABUNDANT CLASTIC HASH, INTERBEDDED WITH DARK GRAY LAMINATED TO THINLY BEDDED SILTY SHALE AND LIGHT GRAY MEDIUM GRAINED THIN TO THICKLY BEDDED SILICEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED
PULASKI FORMATION
UNIT A
RUN NO.
BEDDING DIPS
FRACTURES
DEPTH IN FEET
SAMPLING AND CORING
GRAPHIC LOG
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
100 85
100 82
100 100
100 76
100 81
100 83
100 100
100 97
100 97
1
2
3
4
5
6
7
8
9
5° OPEN
45° OPEN
VERTICAL FRACTURE OPEN
VERTICAL FRACTURE OPEN
VERTICAL FRACTURE HEALED
80°-VERTICAL FRACTURE
VERTICAL FRACTURE HEALED
VERTICAL FRACTURE HEALED
VERTICAL FRACTURE OPEN
VERTICAL FRACTURE HEALED
SAMPLING AND CORING INFORMATION
Core run
100 85 R.Q.D.
Percent recovery
BEDDING DIPS
05° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.
FRACTURES
Breccia zone
Dip-slip slickensides
Fractures-shown at approximate angle to core axis
Mineralized fracture c = calcite s = sulfide
Fractured zone
KEY TO SYMBOLS
Sandstone
Graywacke
Siltstone
Shale
Fossils
Shale intra-clasts
Cross-bedding
Shale laminae
FIGURE 2K-18A
LOG OF BORING SI-2
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING SI-2



SAMPLING AND CORING INFORMATION

100 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c = calcite s = sulfide
- Fractured zone

KEY TO SYMBOLS

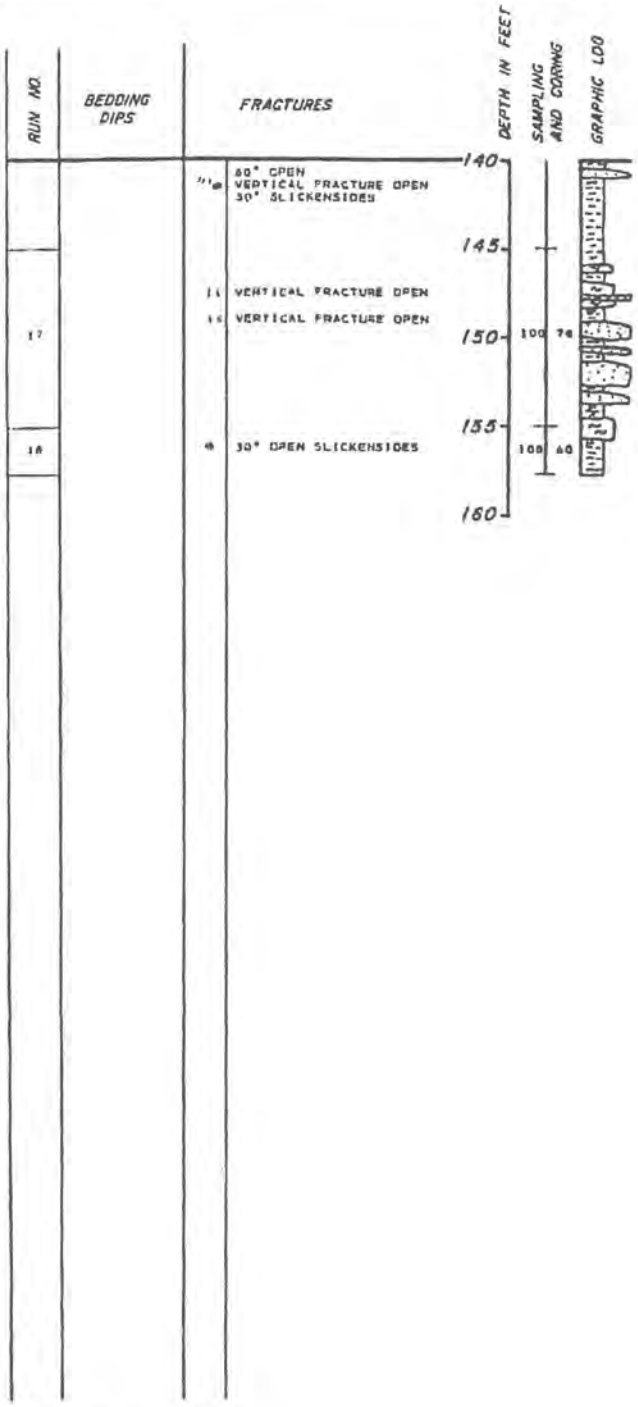
- Sandstone
- Graywacke
- Siltstone
- Shale
- fossils
- Shale intraclasts
- Cross-bedding
- Shale laminae

FIGURE 2.5-18

LOG OF BORING SI-2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING SI-2



DESCRIPTIVE GEOLOGIC NOTES

BORING TERMINATED AT A DEPTH OF 157.6 FEET ON 10/23/79

SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone

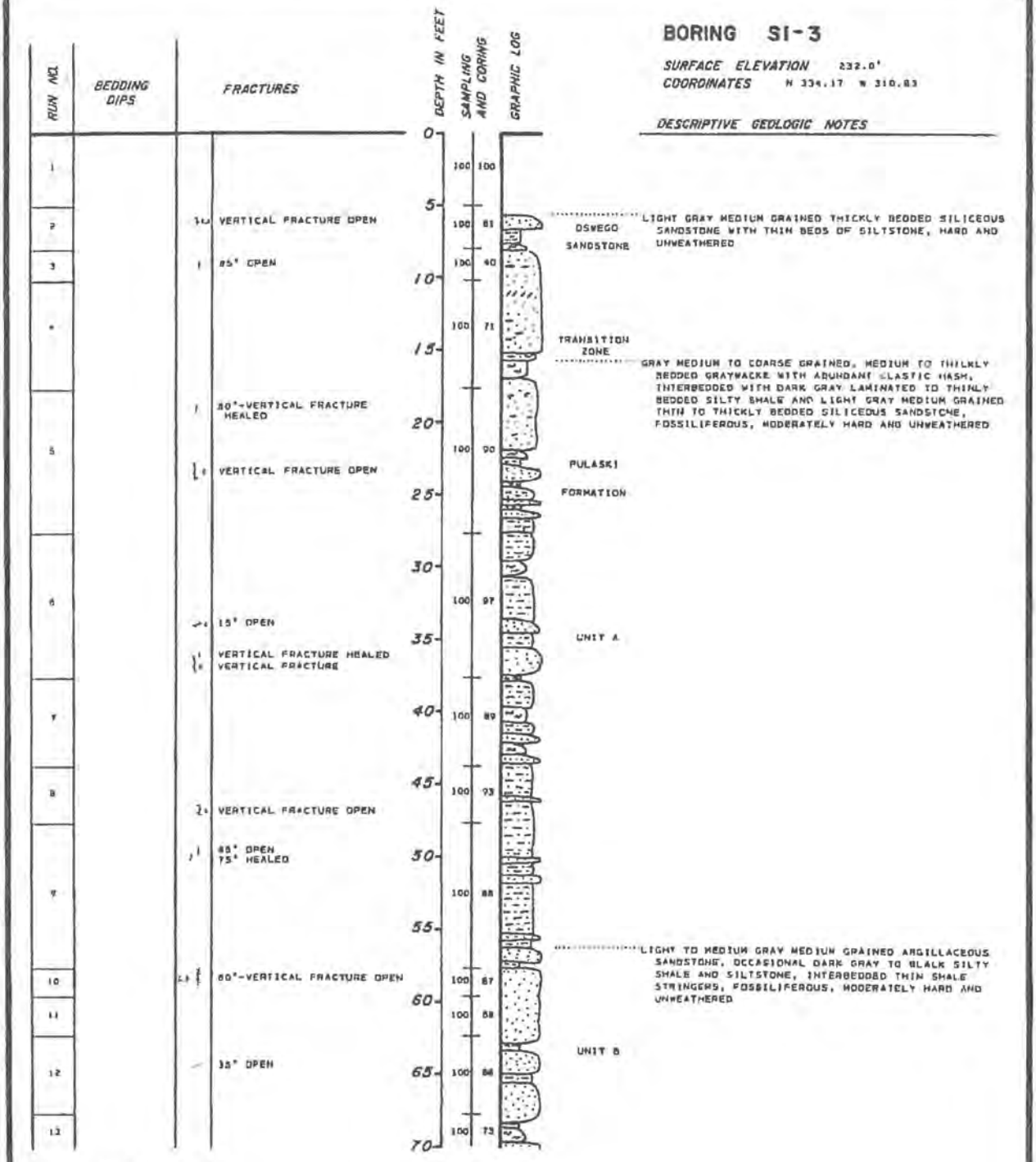
KEY TO SYMBOLS

- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale interbeds
- Cross-bedding
- Shale laminae

FIGURE 2K-18C

LOG OF BORING SI-2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone

KEY TO SYMBOLS

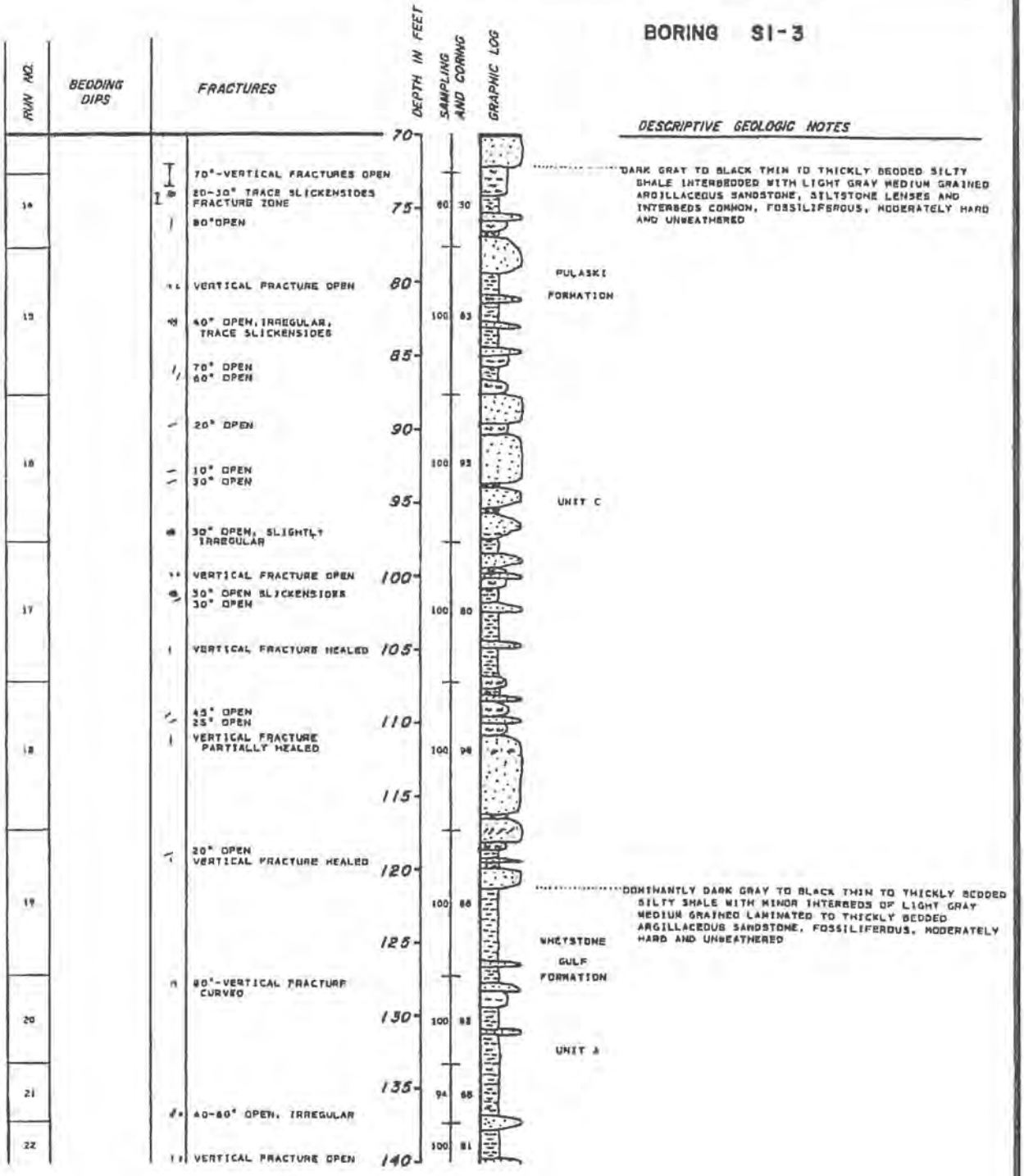
- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

FIGURE 2K-10A

LOG OF BORING SI-3

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING SI-3



SAMPLING AND CORING INFORMATION

Core run

100 | 95 R.Q.D.

Percent recovery

BEDDING DIPS

Bedding dips measured on selective bedding planes. An attempt ... structures.

FRACTURES

- Breccia zone
- Dip-slip slickenslide
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite p - sulfide
- Fractured zone

KEY TO SYMBOLS

- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

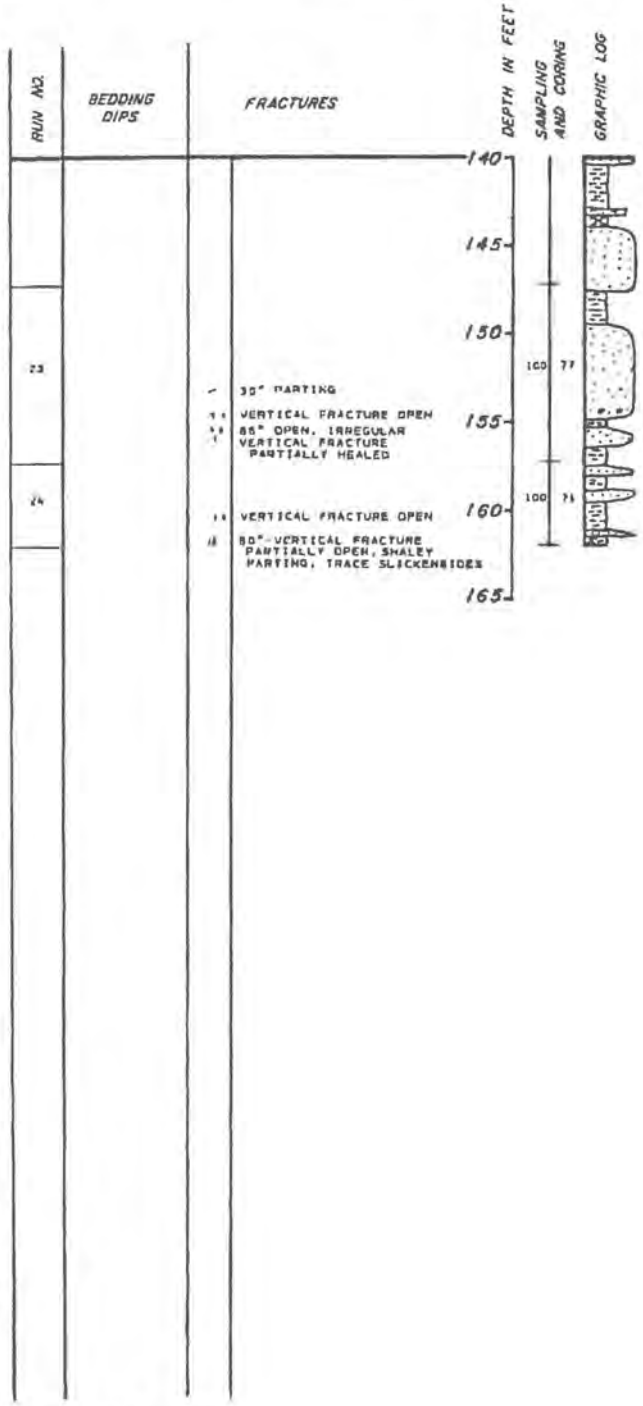
FIGURE 2K-10B

LOG OF BORING SI-3

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT

BORING S1-3



DESCRIPTIVE GEOLOGIC NOTES

WHETSTONE GULF FORMATION

UNIT 8

ALTERNATING THICKLY BEDDED LIGHT GRAY SANDSTONE AND DARK GRAY THIN TO THICKLY BEDDED SILTY SHALE OCCASIONAL SILTSTONE LENS & INTERBEDS, MODERATELY HARD AND UNWEATHERED, FOSSILIFEROUS

BORING TERMINATED AT A DEPTH OF 161.95 FEET ON 11/6/79

SAMPLING AND CORING INFORMATION

100 95 Core run
R.Q.D.
Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all involve cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c = calcite s = sulfide
- Fractures zone

KEY TO SYMBOLS

- Limestone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

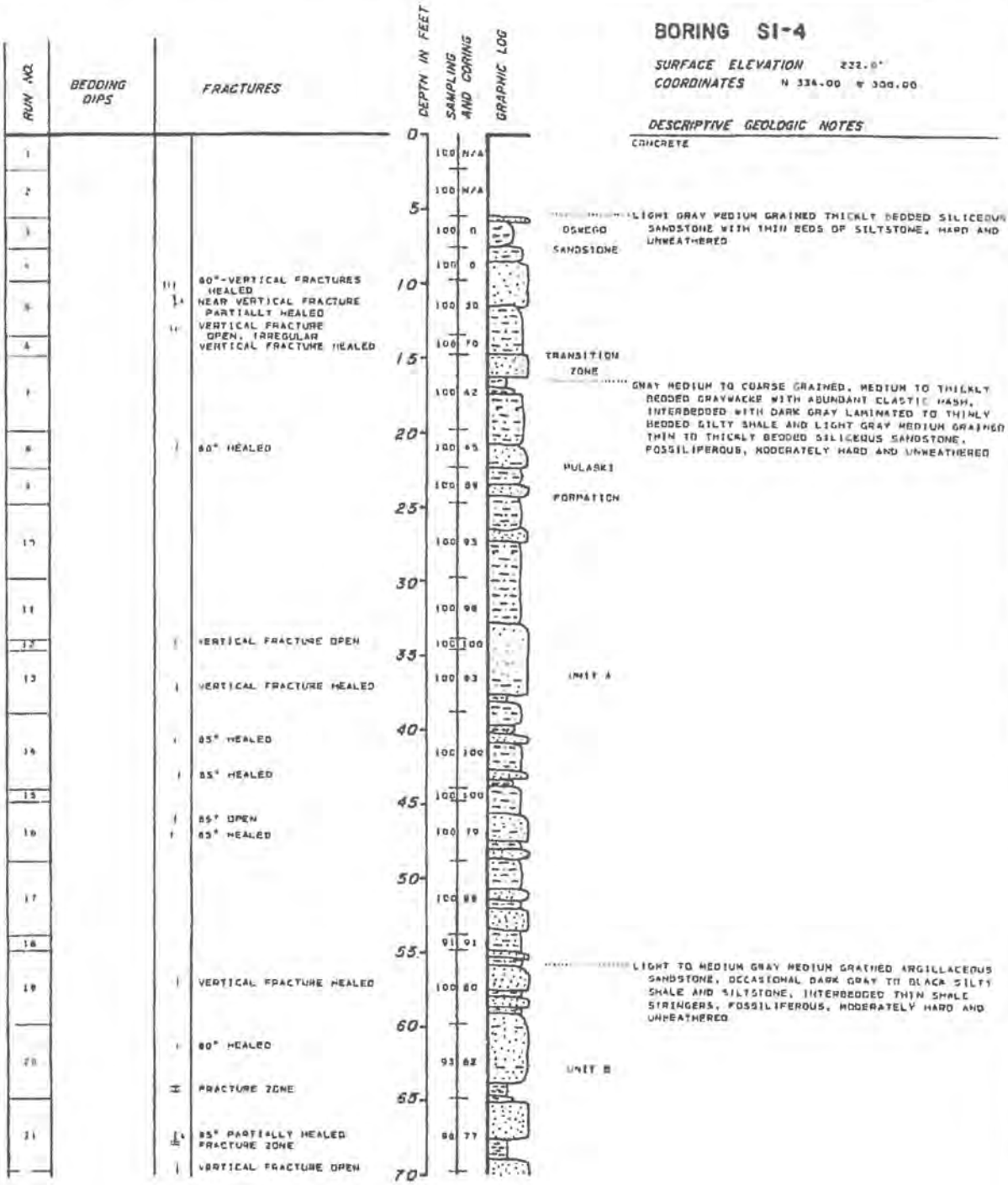
FIGURE 2K.19C

LOG OF BORING S1-3

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING SI-4

SURFACE ELEVATION 232.0'
COORDINATES N 334.00 E 300.00



SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

85° Bedding dips measured on selective bedding planes. An attempt is made to use well-defined cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c = calcite s = sulfide
- Fractured zone

KEY TO SYMBOLS

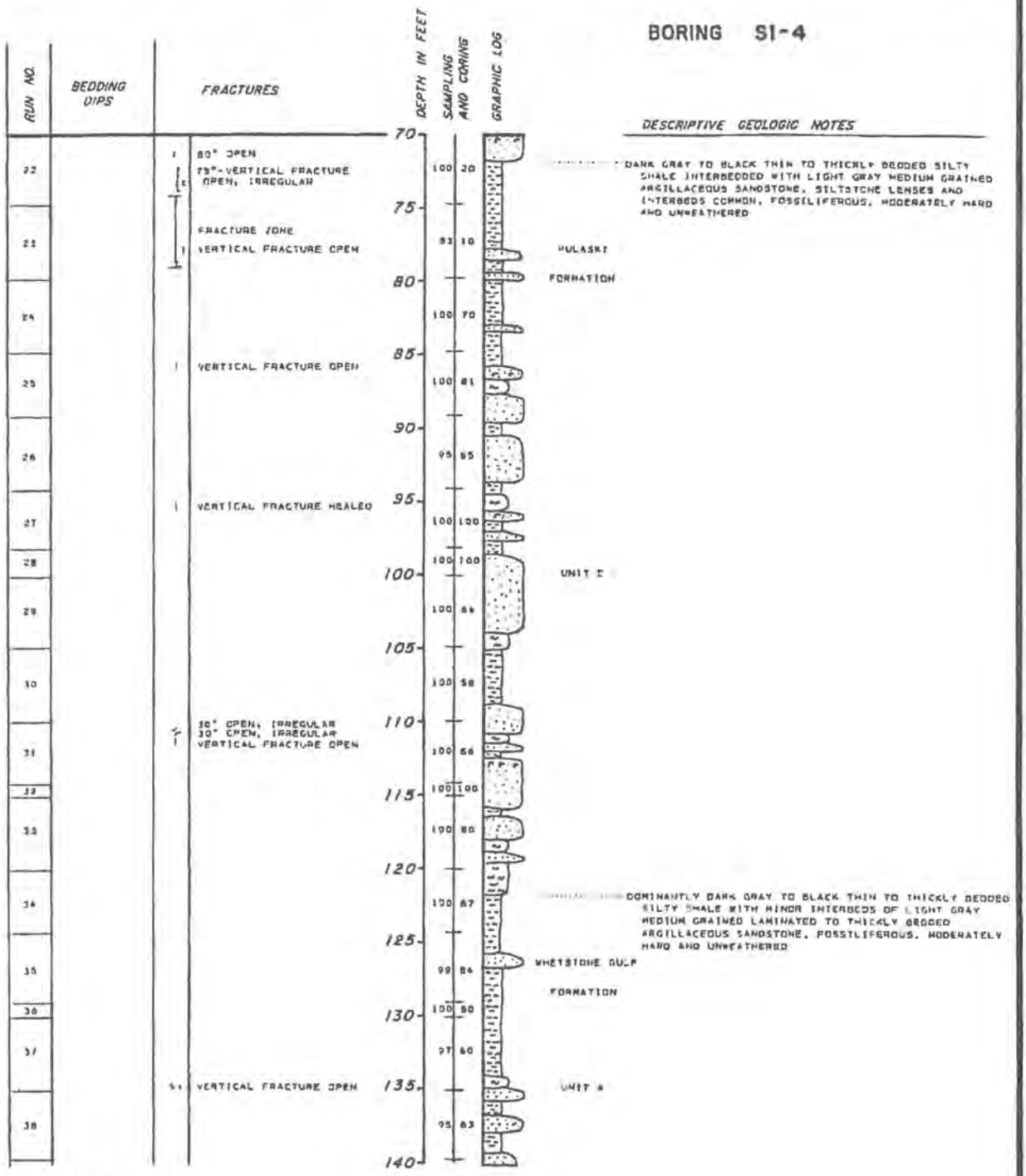
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intraclasts
- Cross-bedding
- Shale laminae

FIGURE 2K-20A

LOG OF BORING SI-4

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING S1-4



SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures shown at approximate angle to core axis
- Mineralized fracture: c = calcite, s = sulfide
- Fractured zone

KEY TO SYMBOLS

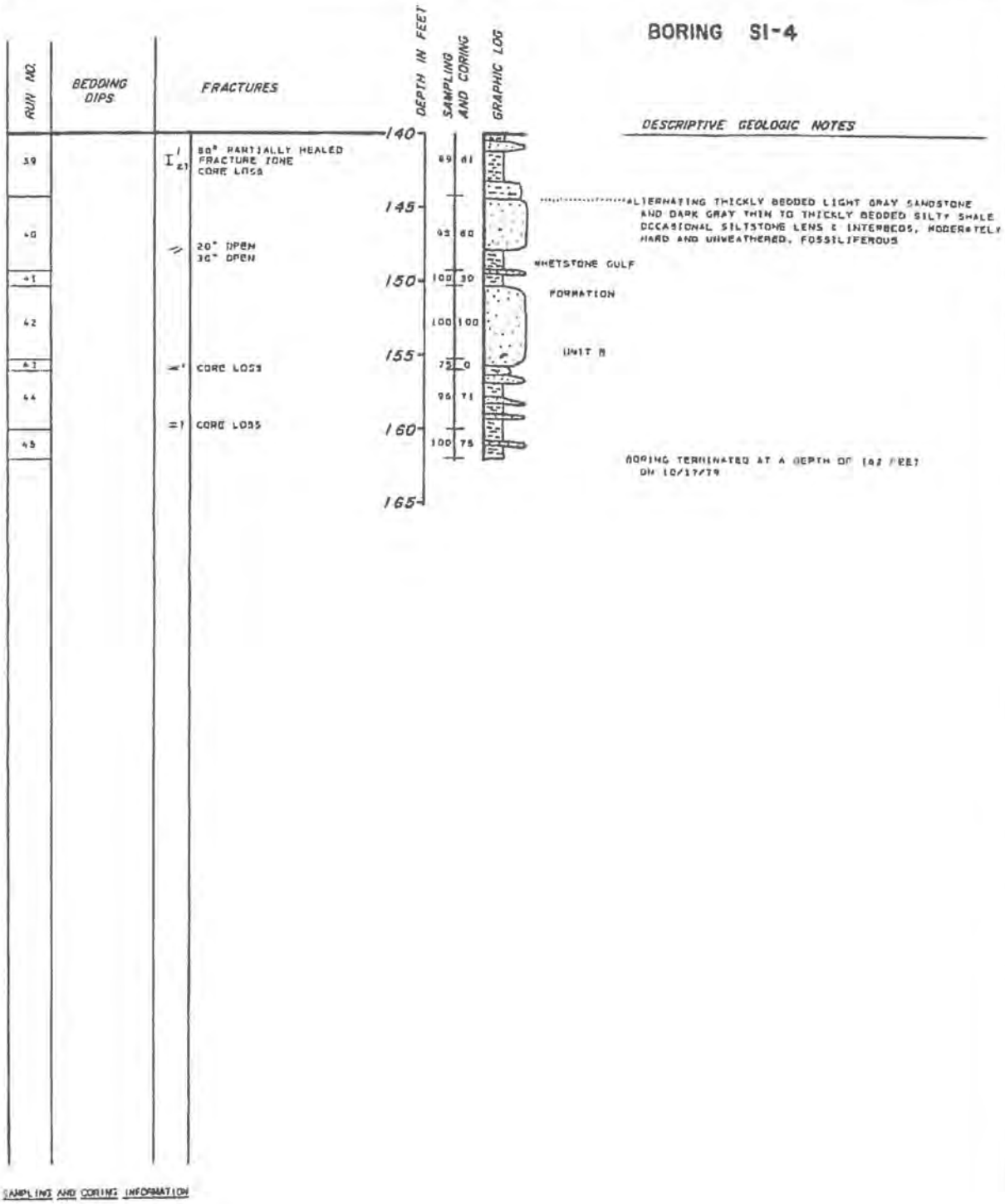
- Sandstone
- Greywacke
- Siltstone
- Shale
- Fossils
- Shale intraclasts
- Cross-bedding
- Shale laminae

FIGURE 2M-209

LOG OF BORING S1-4

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING SI-4



SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

63° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other ordinary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c = calcite z = zeolite
- Fractured zone

KEY TO SYMBOLS

- Till
- Graywacke
- Siltstone
- Shale
- fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

FIGURE 2K-29C

LOG OF BORING SI-4

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

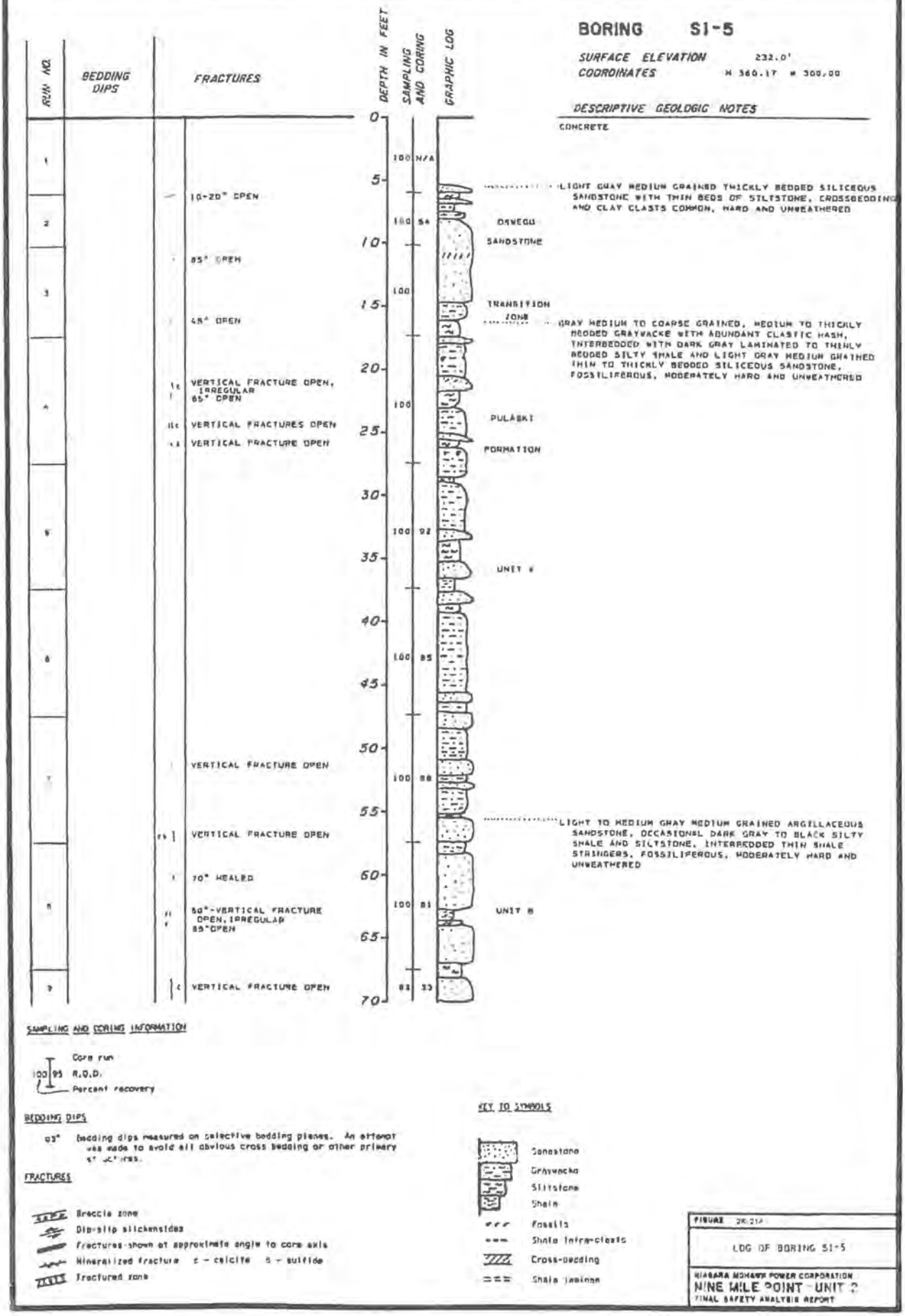
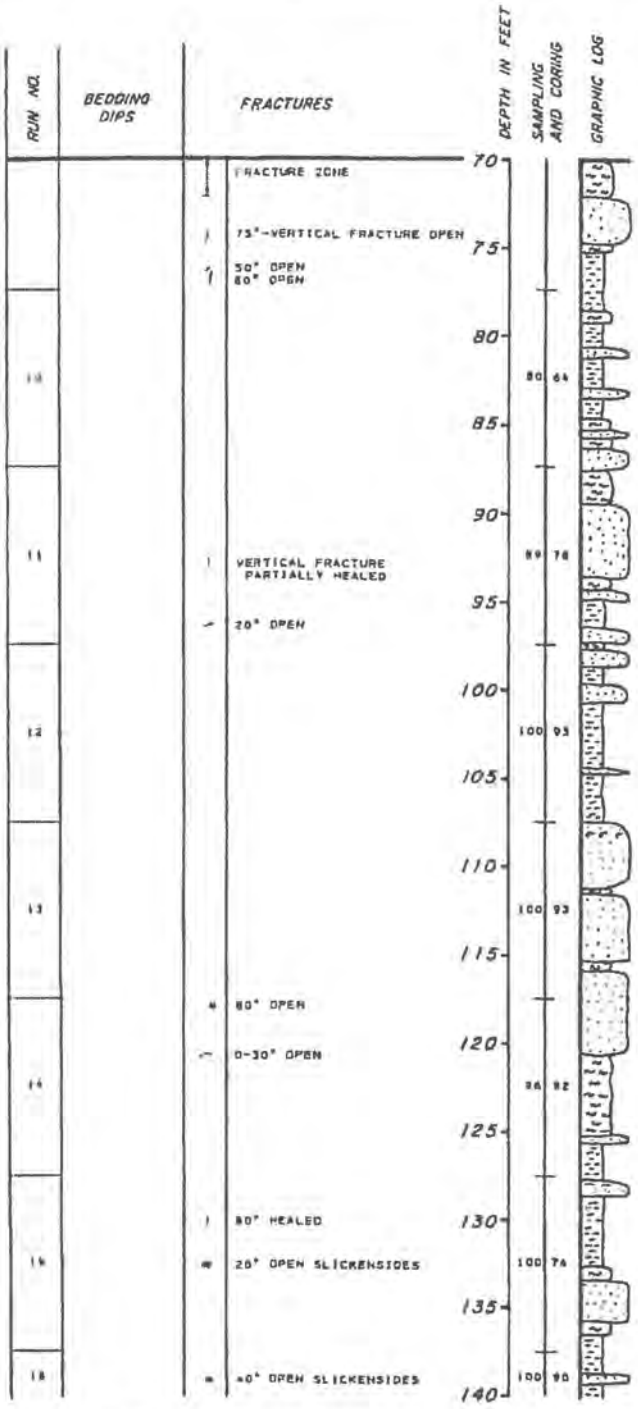


FIGURE 2R-21A

LOG OF BORING S1-5

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING SI-5



DESCRIPTIVE GEOLOGIC NOTES

DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE INTERBEDDED WITH LIGHT GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, SILTSTONE LENSES AND INTERBEDS COMMON. FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

PREDOMINANTLY DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE WITH MINOR INTERBEDS OF LIGHT GRAY MEDIUM GRAINED LAMINATED TO THICKLY BEDDED ARGILLACEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary [illegible]

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture C - calcite S - sulfide
- Fractured zone

KEY TO SYMBOLS

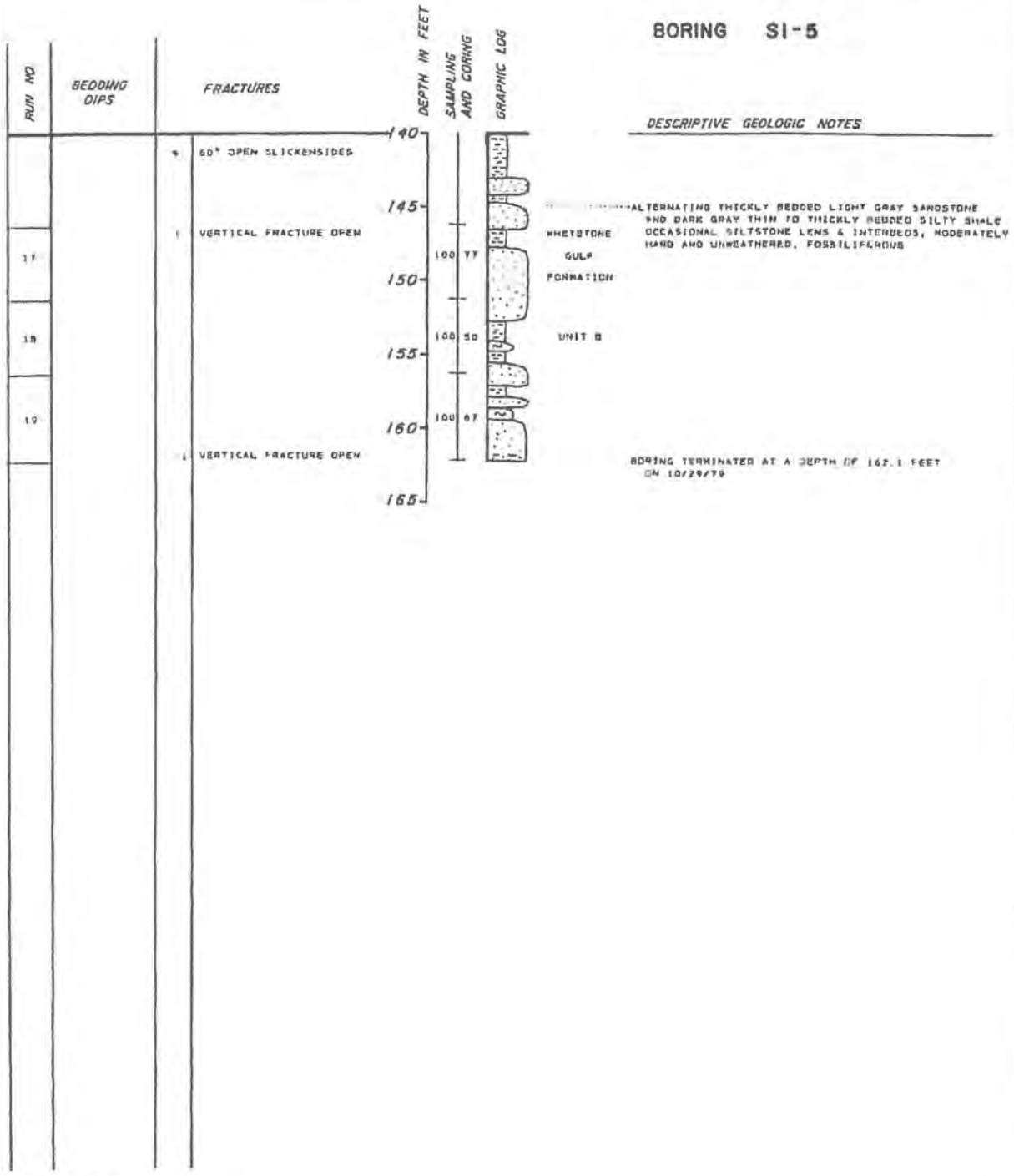
- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

FIGURE 2K-21B

LOG OF BORING SI-5

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING SI-5



SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures shown at approximate angle to core axis
- Mineralized fracture c – calcite s – sulfide
- Fractured zone

KEY TO SYMBOLS

- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

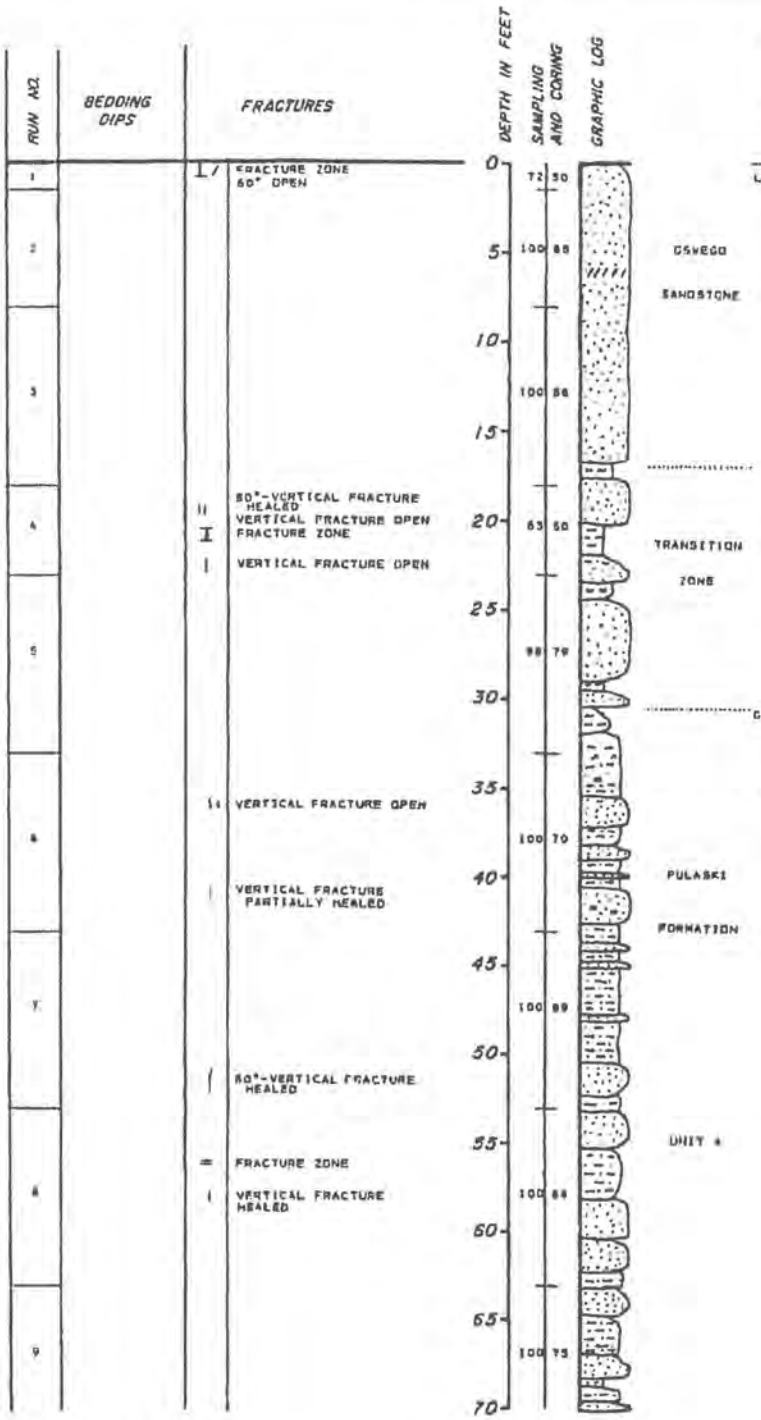
FIGURE 2.5-21C

LOG OF BORING SI-5

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING SI-6

SURFACE ELEVATION 248.0'
COORDINATES N 395.00 W 329.82



DESCRIPTIVE GEOLOGIC NOTES

LIGHT GRAY MEDIUM GRAINED THICKLY BEDDED SILICEOUS SANDSTONE WITH THIN BEDS OF SILTSTONE, HARD AND UNWEATHERED

GRAY MEDIUM TO COARSE GRAINED, MEDIUM TO THICKLY BEDDED GRAYWACKE WITH ABUNDANT CLASTIC MASH, INTERBEDDED WITH DARK GRAY LAMINATED TO THINLY BEDDED SILTY SHALE AND LIGHT GRAY MEDIUM GRAINED THIN TO THICKLY BEDDED SILICEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

SAMPLING AND CORING INFORMATION

Core run
100 | 95 R.Q.D.
Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone

KEY TO SYMBOLS

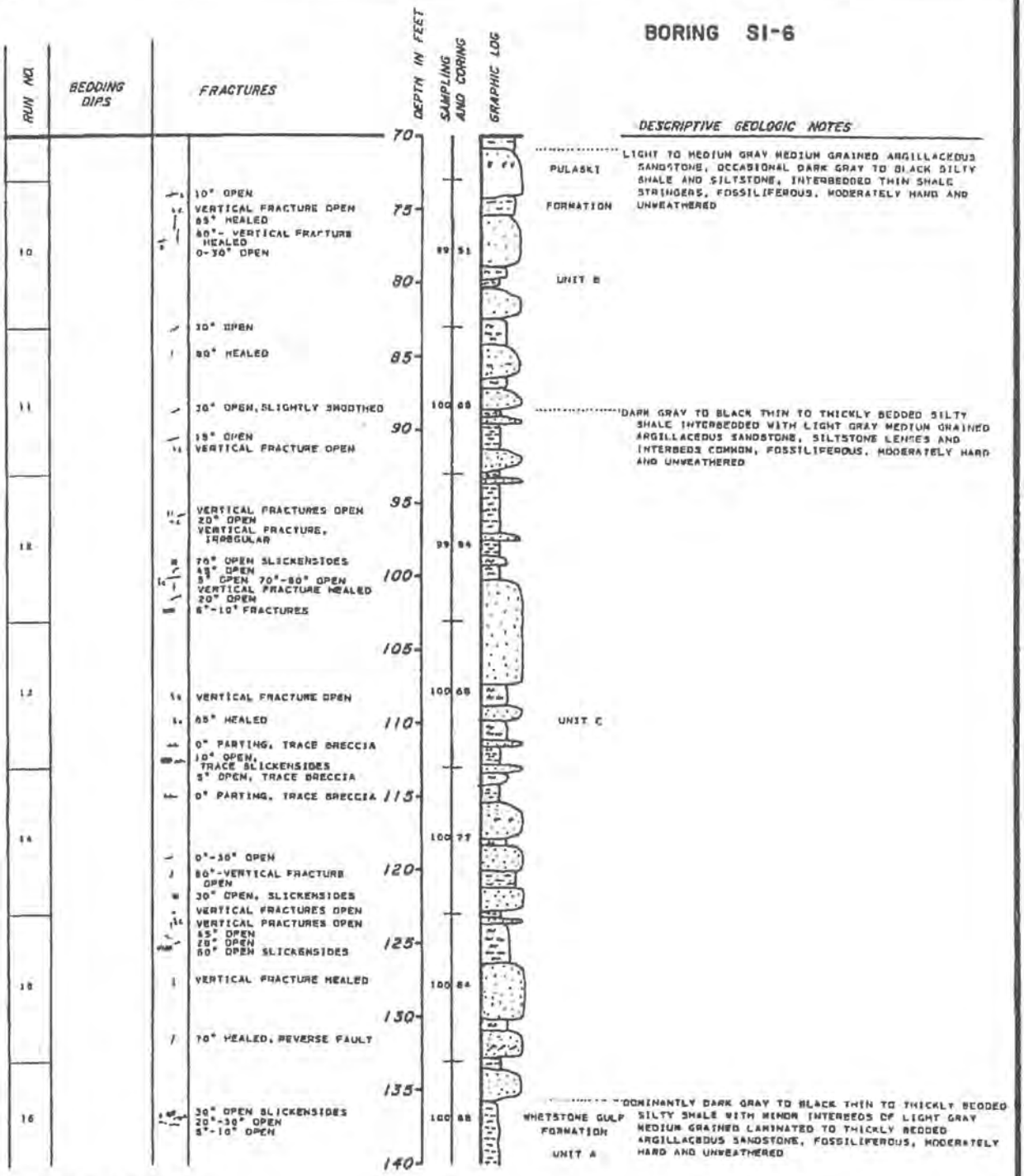
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

FIGURE 2K-22A

LOG OF BORING SI-6

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING SI-6



SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding pieces. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Slip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone

KEY TO SYMBOLS

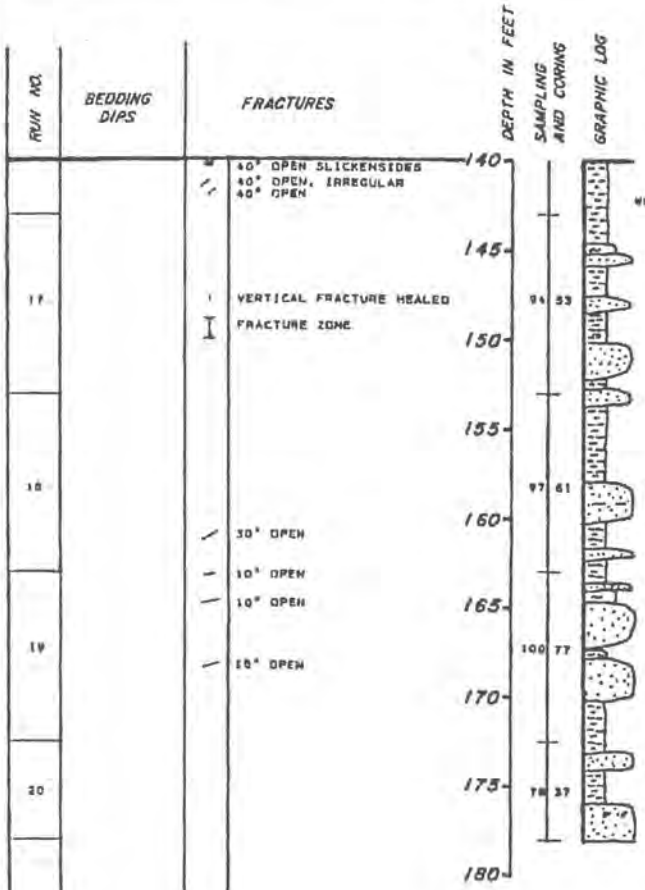
- Greywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

FIGURE 2K-22B

LOG OF BORING SI-6

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING SI-6



DESCRIPTIVE GEOLOGIC NOTES

WHETSTONE GULF FORMATION

UNIT A

ALTERNATING THICKLY BEDDED LIGHT GRAY SANDSTONE AND DARK GRAY THIN TO THICKLY BEDDED SILTY SHALE OCCASIONAL SILTSTONE LENS & INTERBEDS, MODERATELY HARD AND UNWEATHERED, FOSSILIFEROUS

UNIT B

BORING TERMINATED AT A DEPTH OF 178 FEET ON 10/30/78

SAMPLING AND CORING INFORMATION

Core run
100|95 R.Q.D.
Percent recovery

BEDDING DIPS

83° Bedding dips measured on selective bedding planes. An attempt [illegible] structures.

FRACTURES

Breccia zone
Dip-slip slickensides
Fractures-shown at approximate angle to core axis
Mineralized fracture C - calcite S - sulfide
Fractured zone

KEY TO SYMBOLS

Sandstone
Graywacke
Siltstone
Shale
Fossils
Shale intra-clasts
Cross-bedding
Slump feature

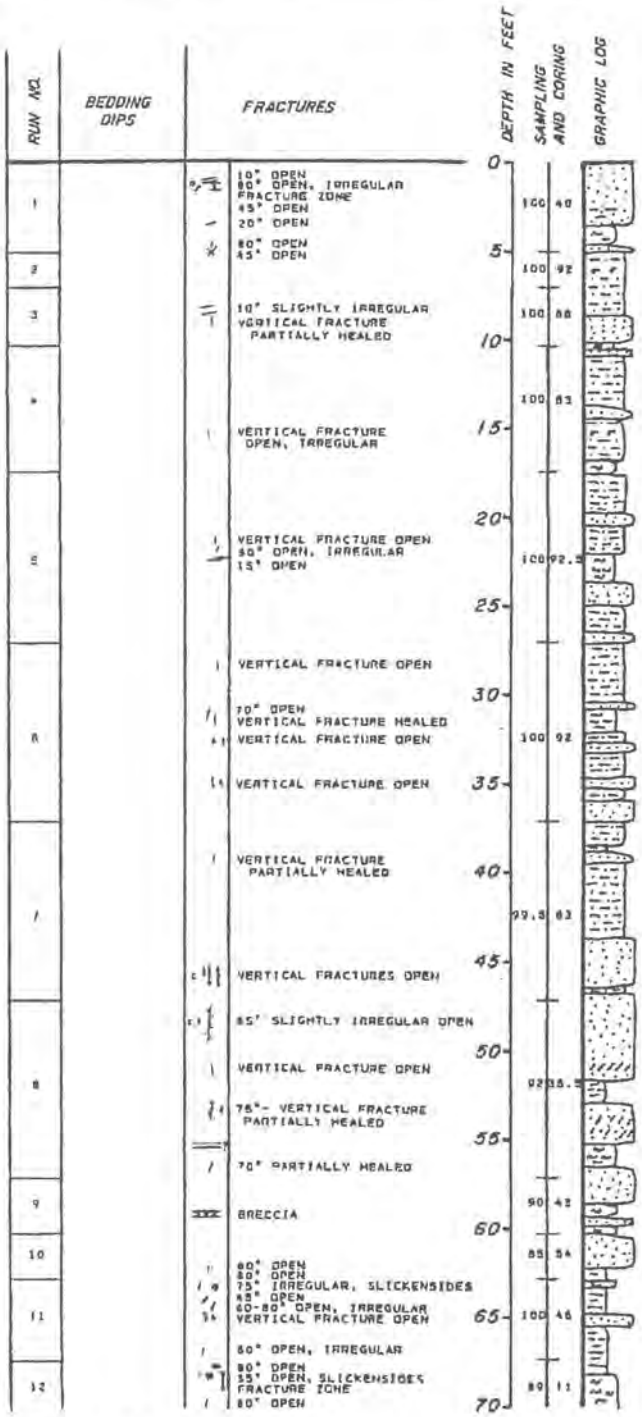
FIGURE 2R-22C

LOG OF BORING SI-6

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING SI-7

SURFACE ELEVATION 219.8'
COORDINATES N 342.50
W 265.50



DESCRIPTIVE GEOLOGIC NOTES

OSWEGO SANDSTONE — LIGHT GRAY MEDIUM GRAINED THICKLY BEDDED SILICEOUS SANDSTONE WITH THIN BEDS OF SILTSTONE, HARD AND UNWEATHERED

TRANSITION ZONE — GRAY MEDIUM TO COARSE GRAINED, MEDIUM TO THICKLY BEDDED GRAYWACKE WITH ABUNDANT CLASTIC MASH, INTERBEDDED WITH DARK GRAY LAMINATED TO THINLY BEDDED SILTY SHALE AND LIGHT GRAY MEDIUM GRAINED THIN TO THICKLY BEDDED SILICEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

PULASKI FORMATION

UNIT A

UNIT B — LIGHT TO MEDIUM GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, OCCASIONAL DARK GRAY TO BLACK SILTY SHALE AND SILTSTONE, INTERBEDDED THIN SHALE STRINGERS, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

UNIT C — DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE INTERBEDDED WITH LIGHT GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, SILTSTONE LENSES AND INTERBEDS COMMON, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone

KEY TO SYMBOLS

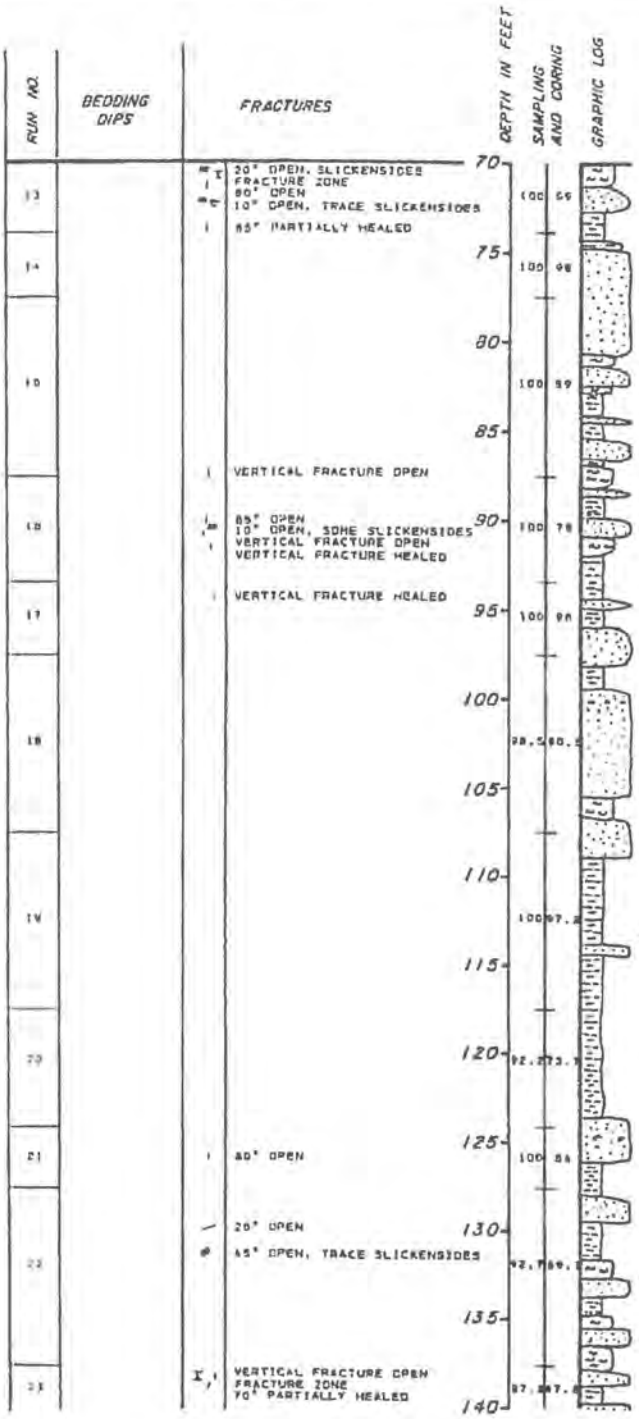
- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

FIGURE 2K 21A

LOG OF BORING SI-7

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING SI-7



DESCRIPTIVE GEOLOGIC NOTES

DOMINANTLY DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE WITH MINOR INTERBEDS OF LIGHT GRAY MEDIUM GRAINED LAMINATED TO THICKLY BEDDED ARGILLACEOUS SANDSTONE. FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

ALTERNATING THICKLY BEDDED LIGHT GRAY SANDSTONE AND DARK GRAY THIN TO THICKLY BEDDED SILTY SHALE OCCASIONAL SILTSTONE LENS & INTERBEDS, MODERATELY HARD AND UNWEATHERED, FOSSILIFEROUS

SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone

KEY TO SYMBOLS

- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intraclasts
- Cross-bedding
- Shale laminae

FIGURE 2K-23B

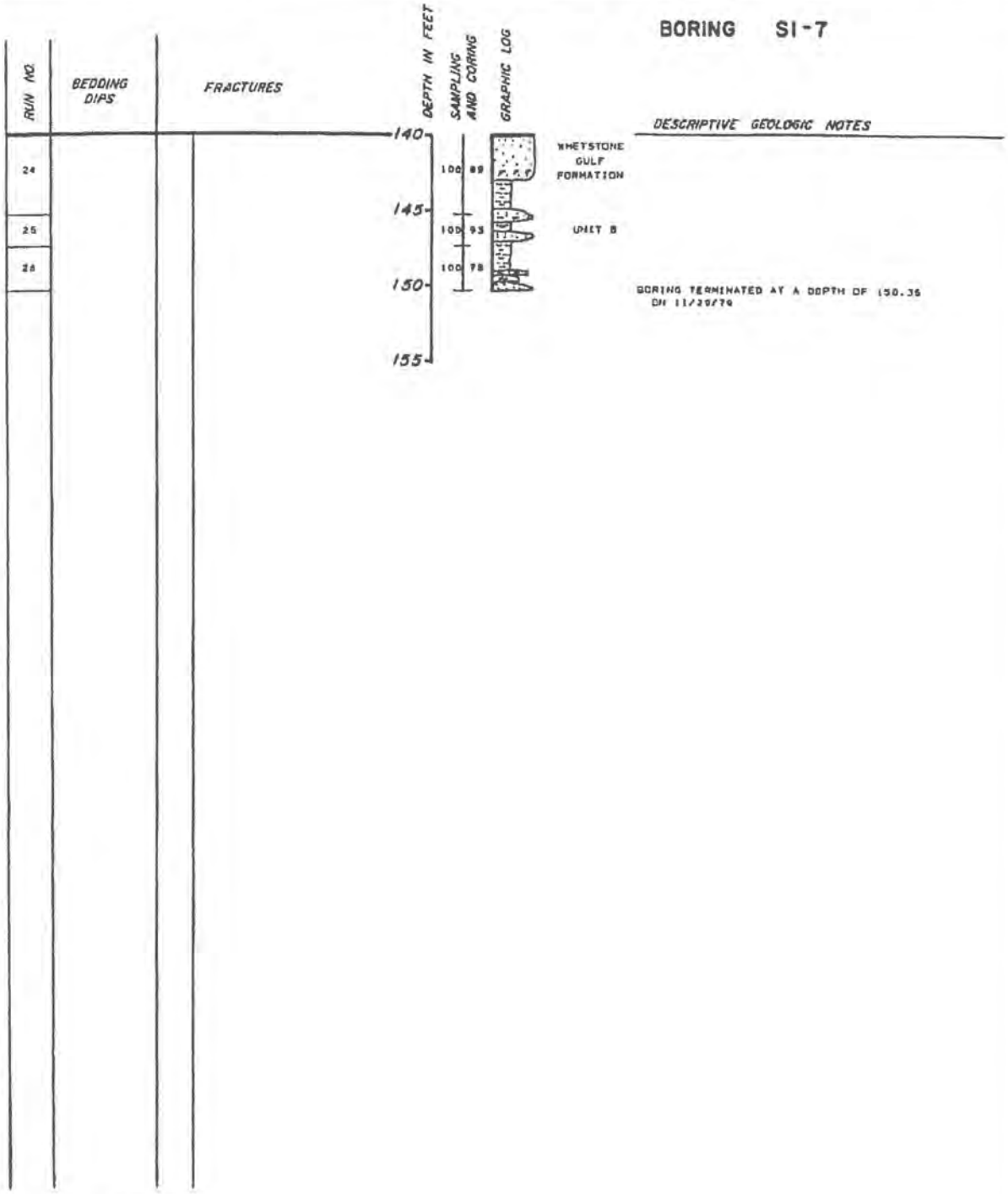
LOG OF BORING SI-7

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT

BORING SI-7



SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

αx° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone

KEY TO SYMBOLS

- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

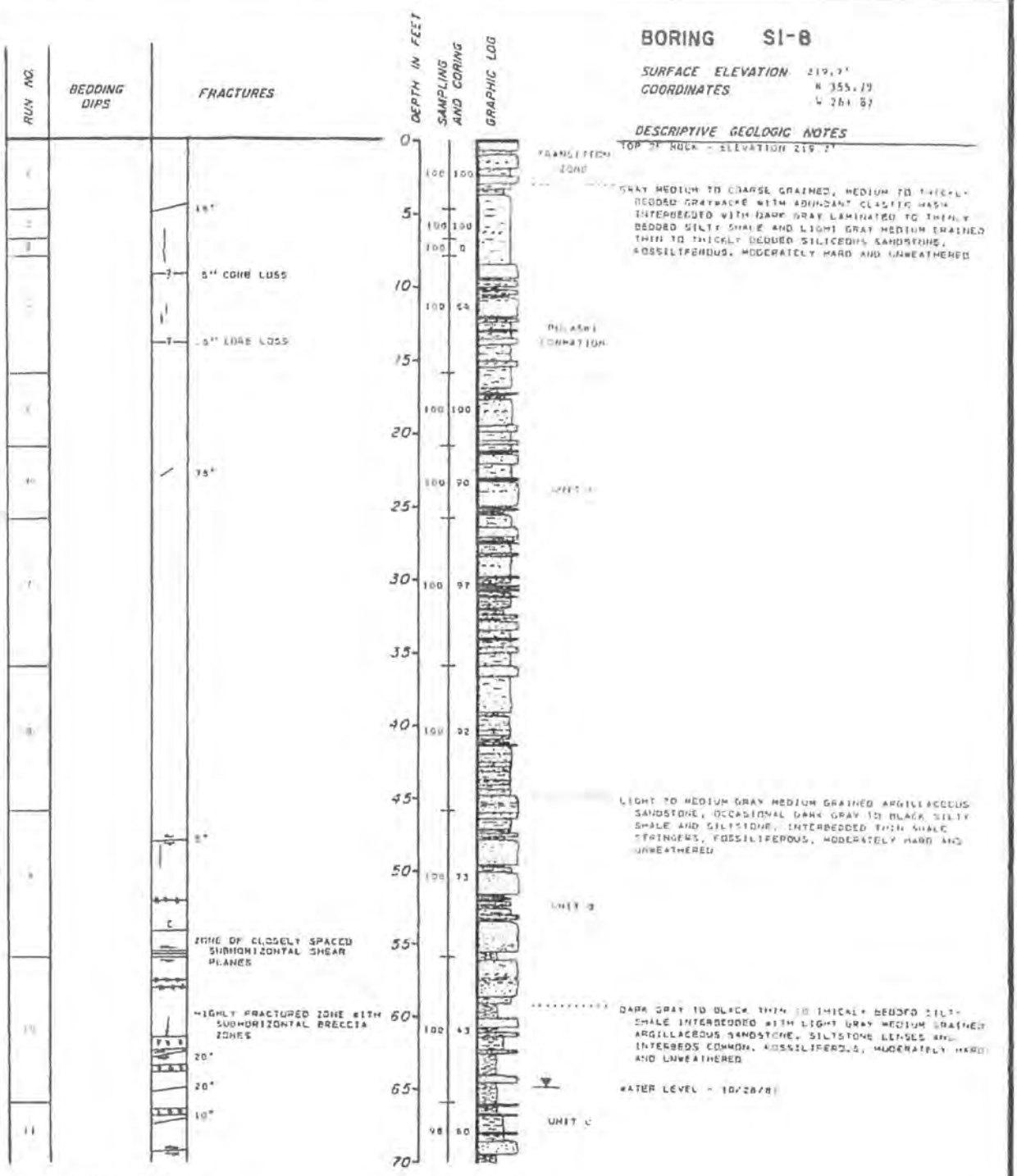
FIGURE 2K-23C

LOG OF BORING SI-7

MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT


BORING SI-8
SURFACE ELEVATION 219.2'
COORDINATES N 355.19
E 261.87
DESCRIPTIVE GEOLOGIC NOTES
RUN NO.
BEDDING DIPS
FRACTURES
DEPTH IN FEET
SAMPLING AND CORING
GRAPHIC LOG
TOP OF ROCK - ELEVATION 219.2'
TRANSITION ZONE
GRAY MEDIUM TO COARSE GRAINED, MEDIUM TO THICKLY BEDDED GRAYWACKE WITH ABUNDANT CLASTIC MASH INTERBEDDED WITH DARK GRAY LAMINATED TO THICKLY BEDDED SILTY SHALE AND LIGHT GRAY MEDIUM GRAINED THIN TO THICKLY BEDDED SILICEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED
PULASKI FORMATION
UNIT B
LIGHT TO MEDIUM GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, OCCASIONAL DARK GRAY TO BLACK SILTY SHALE AND SILTSTONE, INTERBEDDED THIN SHALE STRINGERS, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED
DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE INTERBEDDED WITH LIGHT GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, SILTSTONE LENSES AND INTERBEDS COMMON, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED
WATER LEVEL - 10/28/81
UNIT C
15°
5" CORE LOSS
5" CORE LOSS
75°
8°
ZONE OF CLOSELY SPACED SUBHORIZONTAL SHEAR PLANES
HIGHLY FRACTURED ZONE WITH SUBHORIZONTAL BRECCIA ZONES
20°
20°
10°
100 100
100 100
100 0
100 64
100 100
100 90
100 97
100 92
100 73
100 43
98 80
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
SAMPLING AND CORING INFORMATION
Core run
100 95 R.Q.D.
Percent recovery
BEDDING DIPS
85° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious small bedding or fracture surface structures.
FRACTURES
Breccia zone
Dia-clase slickensides
Fractures-shown at approximate angle to core axis
Mineralized fracture c = calcite s = sulfide
Fractured zone
KEY TO SYMBOLS
Graywacke
Siltstone
Shale
Fossils
Shale interbeds
Cross-bedding
FIGURE 2K-24A
LOG OF BORING SI-8
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING SI-8

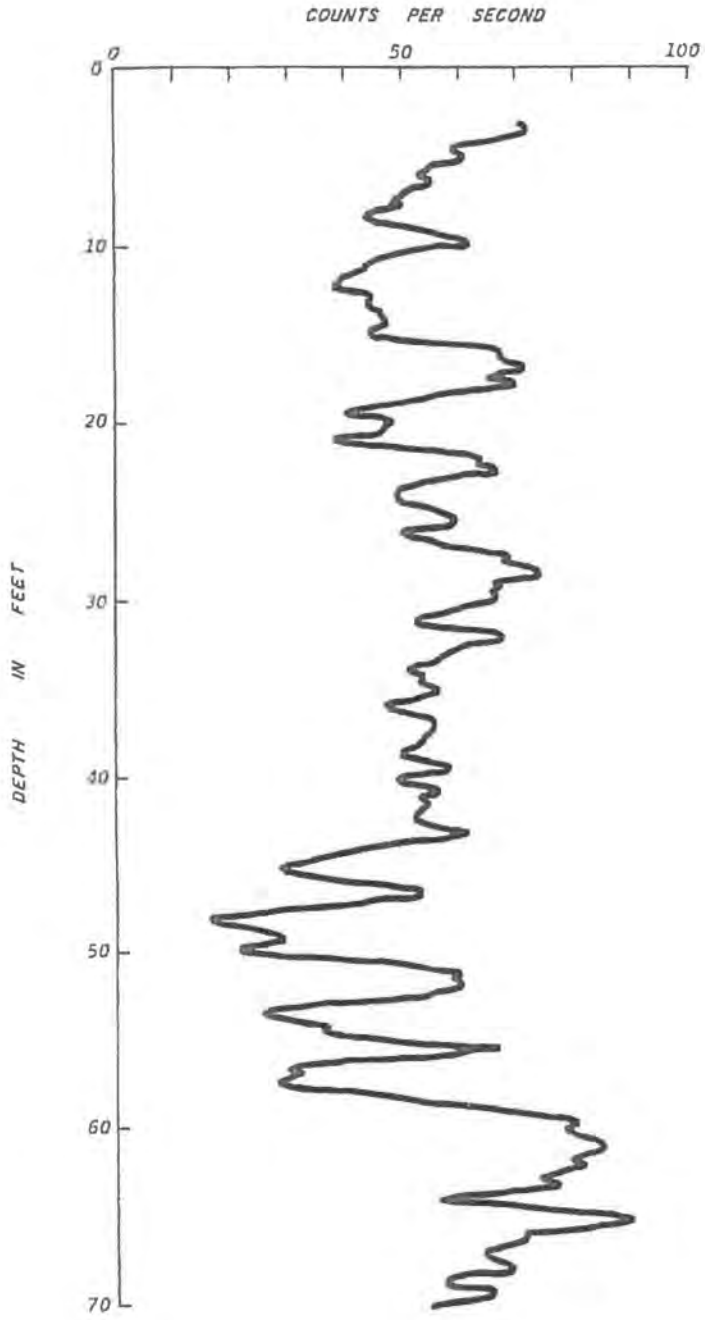
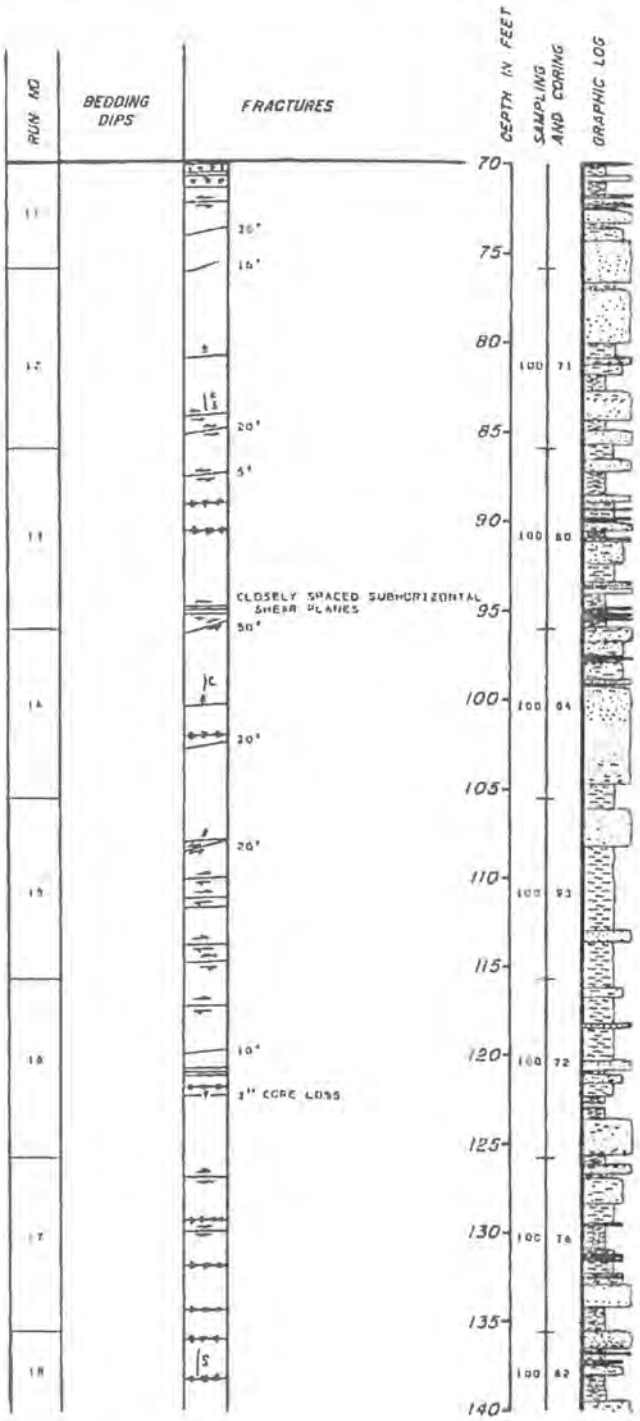


FIGURE 2K-24B

GAMMA RAY LOG OF BORING SI-8

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING S1-8



DESCRIPTIVE GEOLOGIC NOTES

[illegible] DOMINANTLY DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE WITH MINOR INTERBEDS OF LIGHT GRAY MEDIUM GRAINED LAMINATED TO THICKLY BEDDED ARGILLACEOUS SANDSTONE. FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

SAMPLING AND CORING INFORMATION

100|95 Core run
R.Q.D.
Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt [illegible] structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c = calcite s = sulfide
- Fractured zone

KEY TO SYMBOLS

- Interbedded siltstone shale
- Fossils
- Shale intraclasts
- Cross-bedding
- Shale laminae

FIGURE [illegible]

LOG OF BORING S1-8

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING SI-8

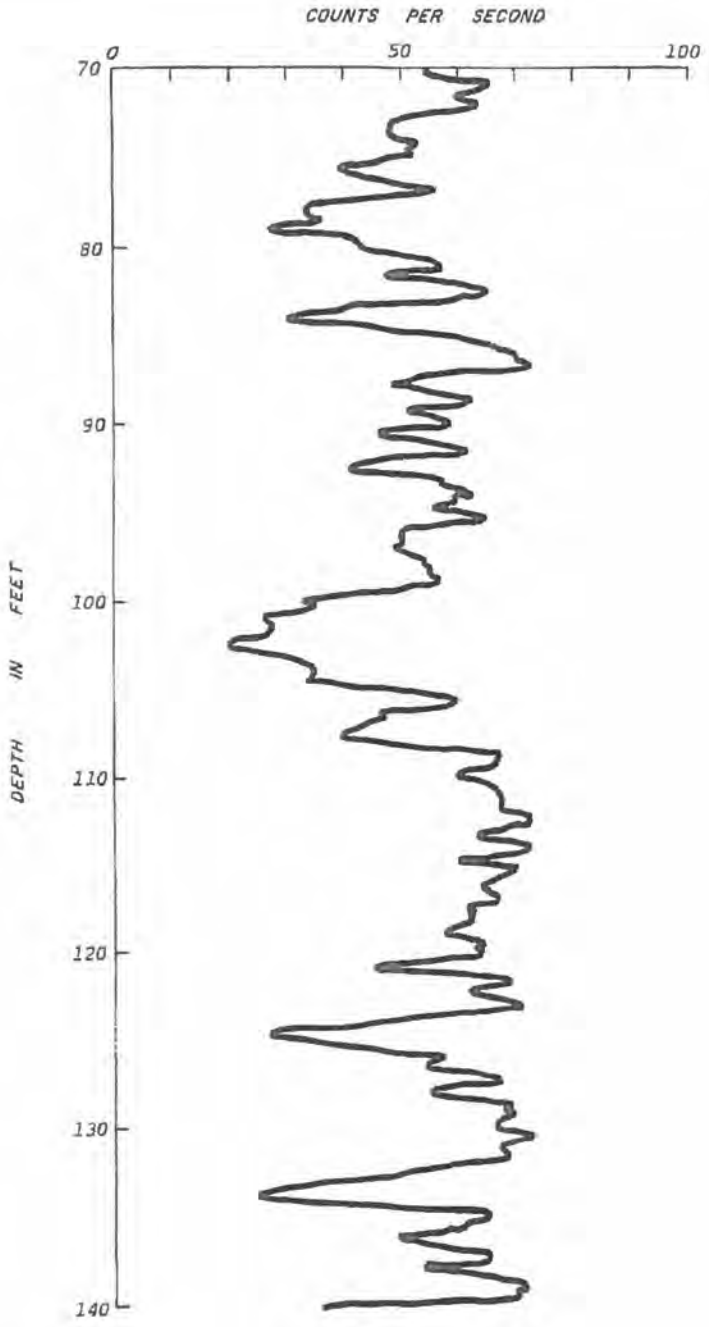
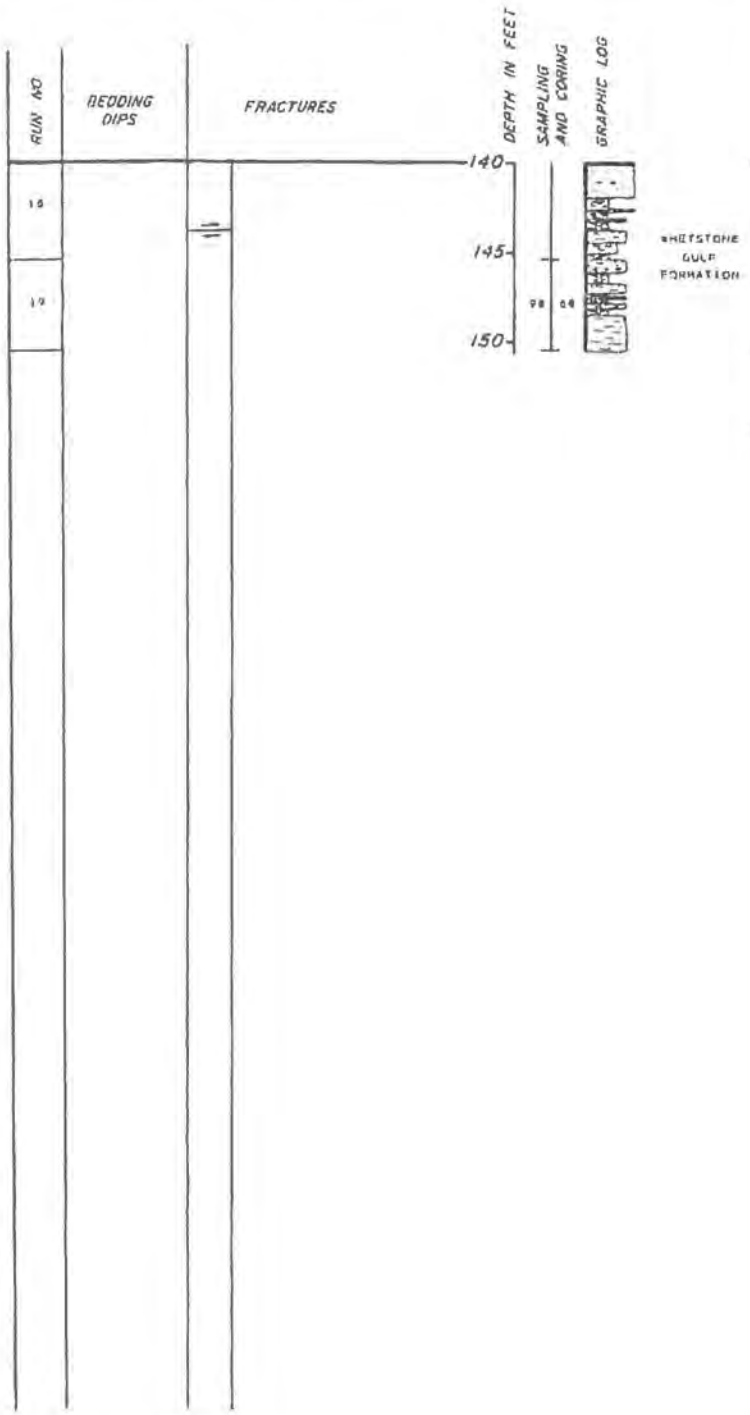


FIGURE 2.5-24D

GAMMA RAY LOG OF BORING SI-8

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING S1-8



DESCRIPTIVE GEOLOGIC NOTES

BORING TERMINATED AT A DEPTH OF 150.5 FEET ON 9/14/81 AND GEOPHYSICALLY LOGGED ON 9/15/81

NOTE: NUMEROUS FRACTURES PARALLEL TO BEDDING SURFACES WERE OBSERVED IN THE CORE FROM THIS BORING. THEY HAVE BEEN EDITED OUT IN THE PRODUCTION OF THIS LOG UNLESS THEY COULD BE IDENTIFIED AS NATURALLY-OCCURRING FRACTURES. HOWEVER, THE FREQUENCY OF OCCURRENCE OF THESE SUB-HORIZONTAL FRACTURES IS REFLECTED IN THE RQD VALUES SHOWN.

SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone

KEY TO SYMBOLS

- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intraclasts
- Cross-bedding
- Shale laminae

FIGURE [illegible]

LOG OF BORING S1-8

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT

BORING SI-8

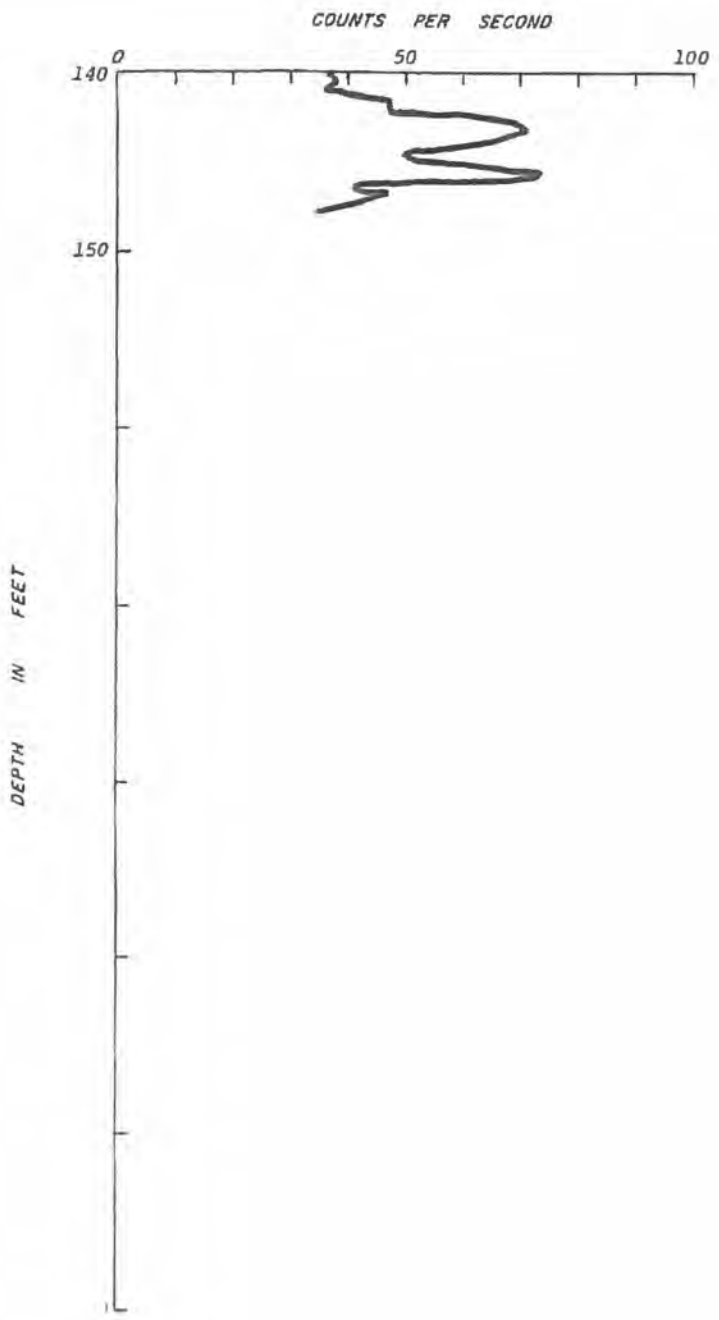
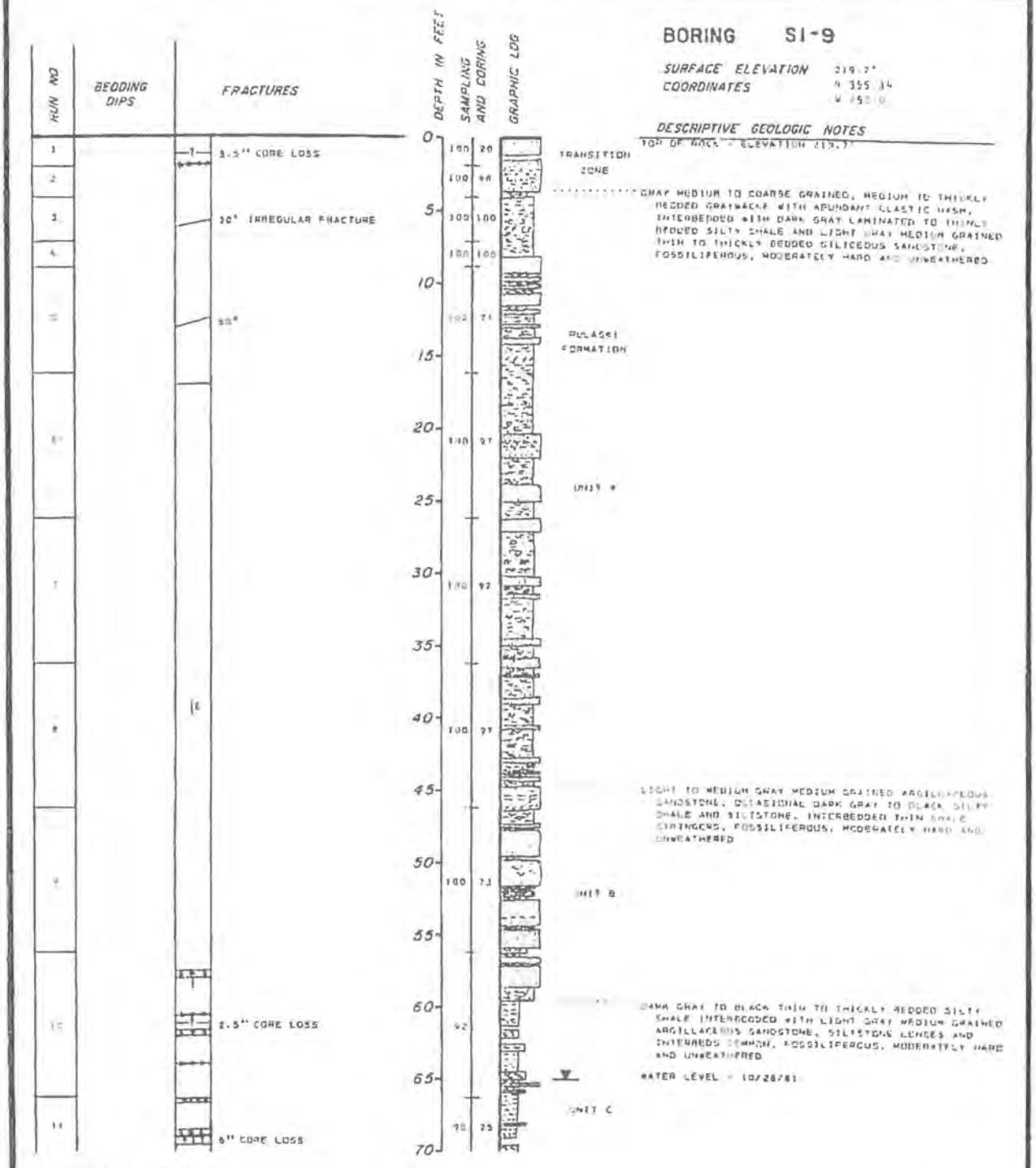


FIGURE 2II-24F

GAMMA RAY LOG OF BORING SI-8

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



BORING SI-9

SURFACE ELEVATION 319.7'
COORDINATES N 355 14
W 450 0

DESCRIPTIVE GEOLOGIC NOTES

TOP OF ROCK = ELEVATION 215.7'

GRAY MEDIUM TO COARSE GRAINED, MEDIUM TO THICKLY BEDDED GRAYWACKE WITH ABUNDANT CLASTIC WASH, INTERBEDDED WITH DARK GRAY LAMINATED TO THINLY BEDDED SILTY SHALE AND LIGHT GRAY MEDIUM GRAINED THIN TO THICKLY BEDDED SILICEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

LIGHT TO MEDIUM GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, OCCASIONAL DARK GRAY TO BLACK SILTY SHALE AND SILTSTONE, INTERBEDDED THIN SHALE STRINGERS, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE INTERBEDDED WITH LIGHT GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, SILTSTONE LENSES AND INTERBEDS COMMON, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

WATER LEVEL = 10/28/81

SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt [illegible] all cavities across boring or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c = calcite z = zeolite
- Fracture zone

(ET I) SYMBOLS

- Claystone
- Siltstone
- Shale
- Fossils
- Shale intraclasts
- Cross-bedding
- Fault angle

FIGURE 2A-28A

LOG OF BORING SI-9

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT

BORING SI-9

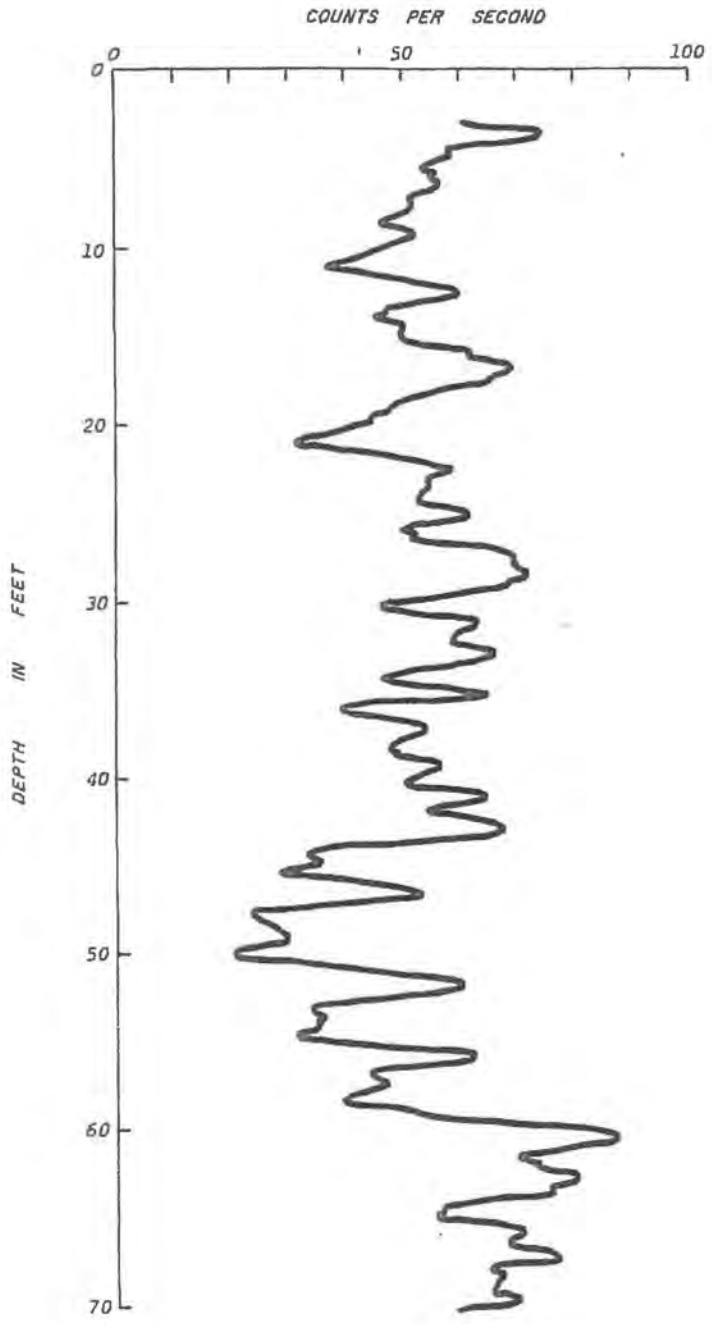
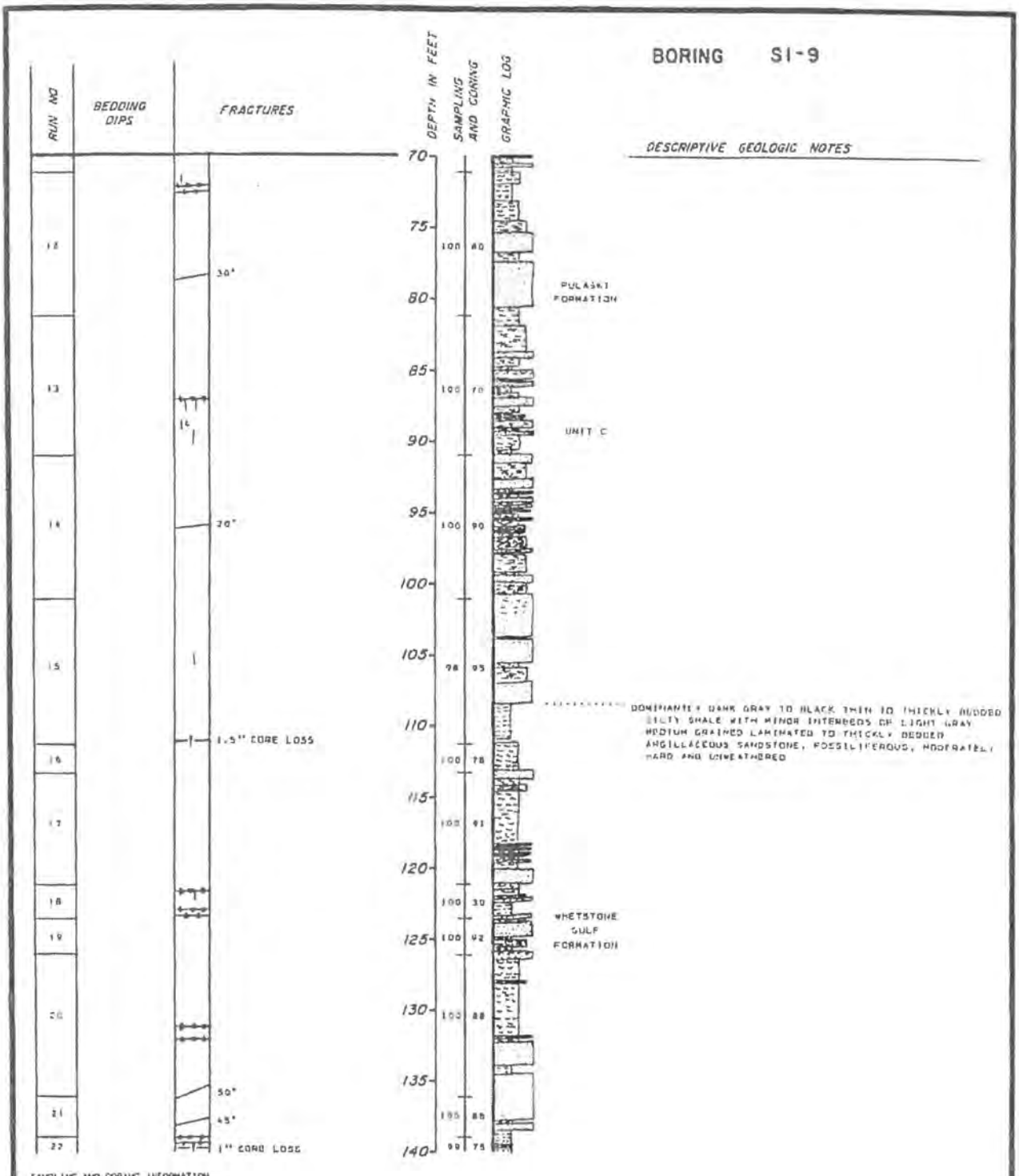


FIGURE 2K-28

GAMMA RAY LOG OF BORING SI-9

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT


BORING SI-9
RUN NO.
BEDDING DIPS
FRACTURES
DEPTH IN FEET
SAMPLING AND CORING
GRAPHIC LOG
DESCRIPTIVE GEOLOGIC NOTES
70
75
80
85
90
95
100
105
110
115
120
125
130
135
140
30°
20°
1.5" CORE LOSS
50°
45°
1" CORE LOSS
PULASKI FORMATION
UNIT C
WHETSTONE GULF FORMATION
DOMINANTLY DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE WITH MINOR INTERBEDS OF LIGHT GRAY MEDIUM GRAINED LAMINATED TO THICKLY BEDDED ARGILLACEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED
SAMPLING AND CORING INFORMATION
Core run
R.Q.D.
Percent recovery
BEDDING DIPS
FRACTURES
Breccia zone
Dip-slip slickensides
Fractures-shown at approximate angle to core axis
Mineralized fracture c - calcite s - sulfide
Fractured zone
KEY TO SYMBOLS
Greywacke
Siltstone
Shale
Fossils
Shale intra-clasts
Cross-bedding
FIGURE 2A-25C
LOG OF BORING SI-9
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING SI-9

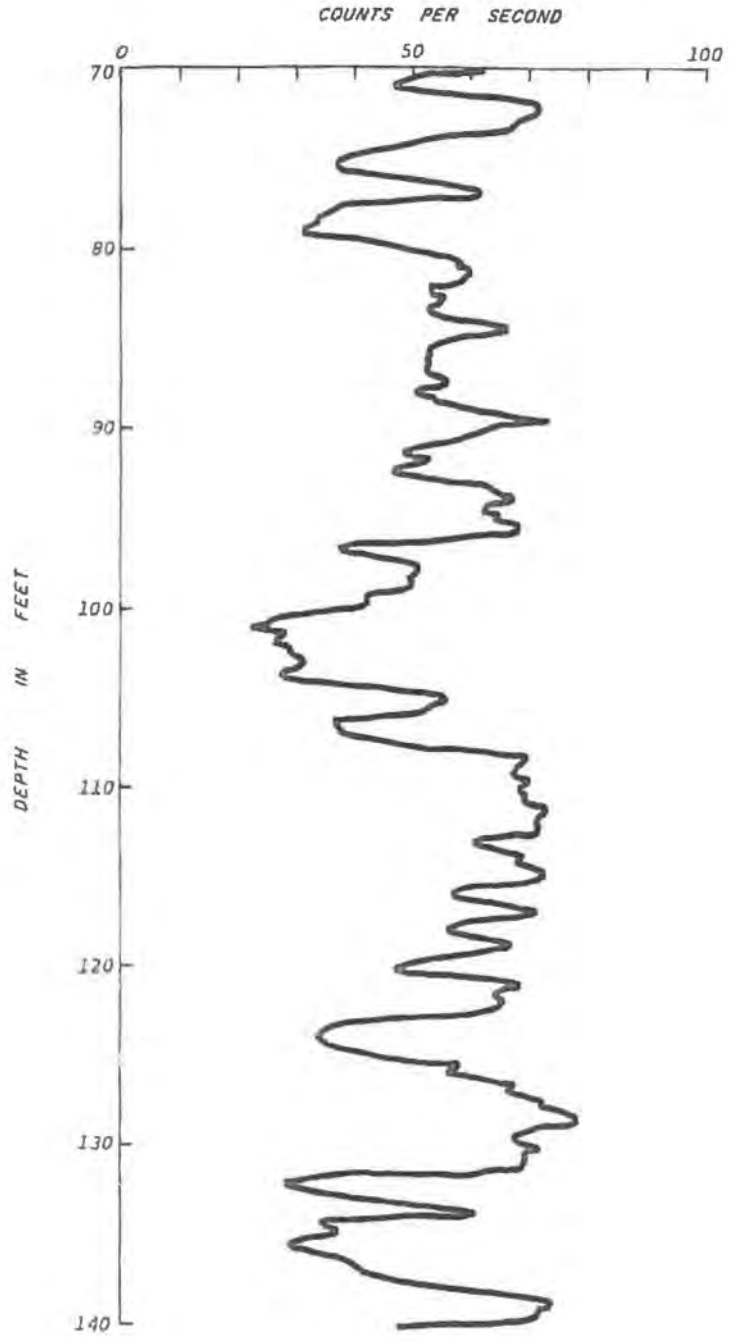
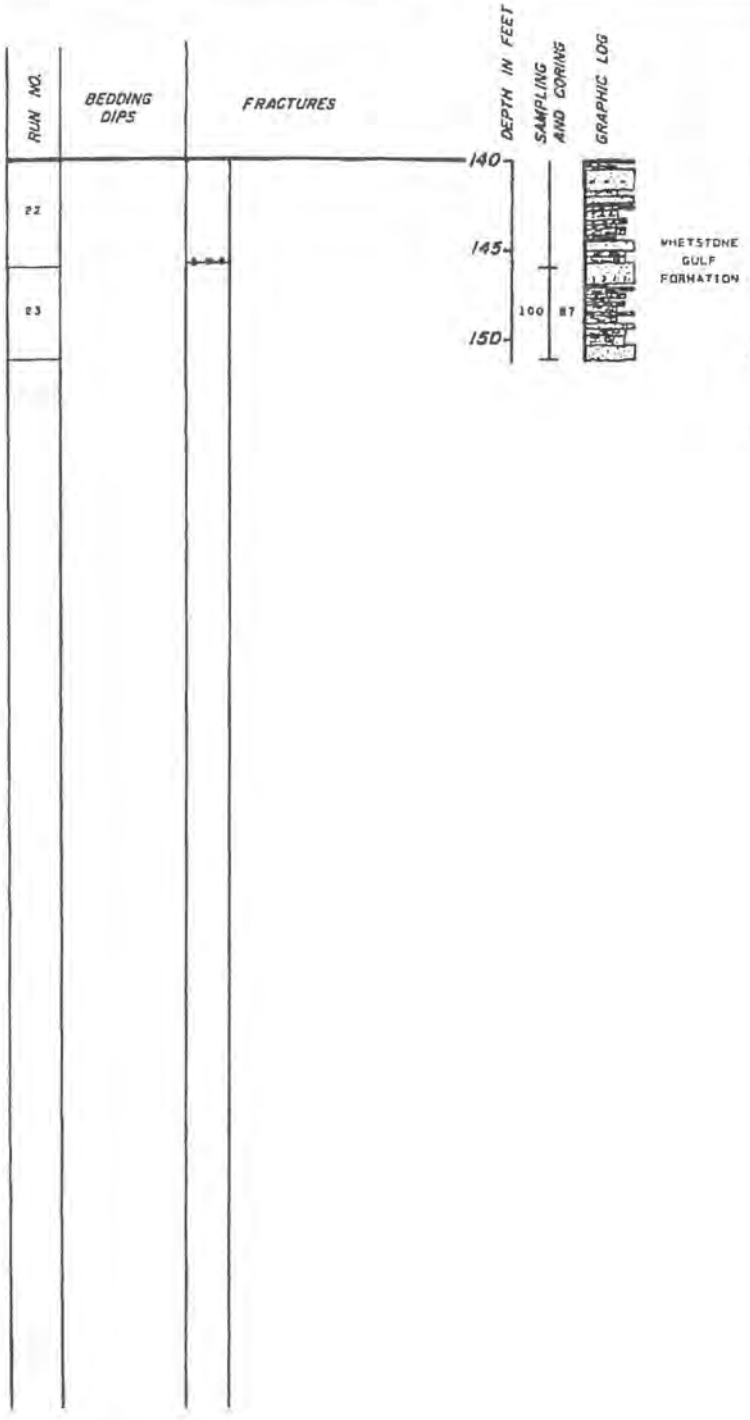


FIGURE 2K-25D

GAMMA RAY LOG OF BORING SI-9

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING SI-9



DESCRIPTIVE GEOLOGIC NOTES

BORING TERMINATED AT A DEPTH OF 157.0 FEET ON 10/9/81 AND GEOPHYSICALLY LOGGED ON 10/12/81

NOTE: NUMEROUS FRACTURES PARALLEL TO BEDDING SURFACES WERE OBSERVED IN THE CORE FROM THIS BORING. THEY HAVE BEEN EDITED OUT IN THE PRODUCTION OF THIS LOG UNLESS THEY COULD BE IDENTIFIED AS NATURALLY OCCURRING FRACTURES. HOWEVER, THE FREQUENCY OF OCCURRENCE OF THESE SUB-HORIZONTAL FRACTURES IS REFLECTED IN THE RQD VALUES SHOWN.

SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone

KEY TO SYMBOLS

- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

FIGURE 2A-20E

LOG OF BORING SI-9

NIAGARA MOHAWK POWER CORP.

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT

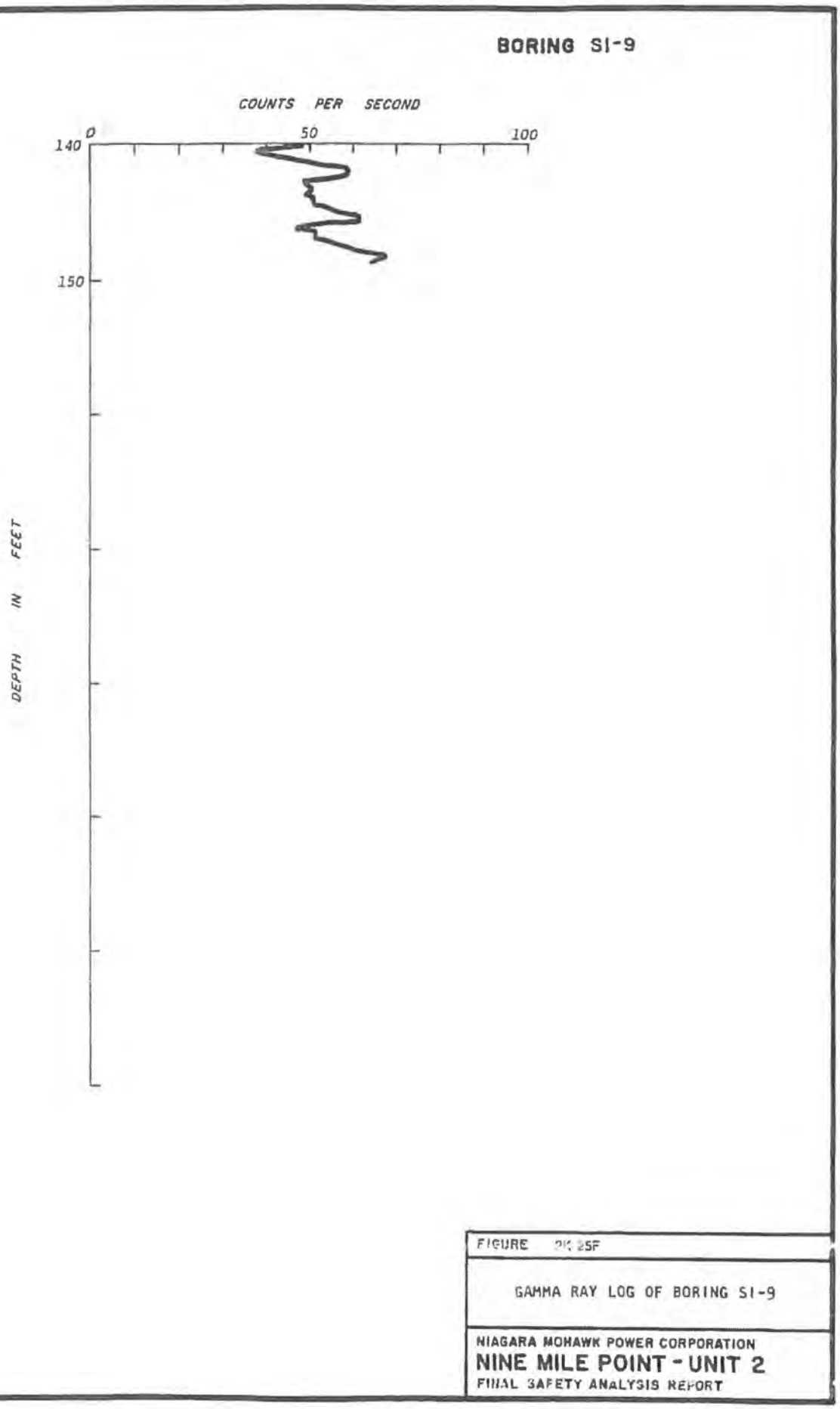
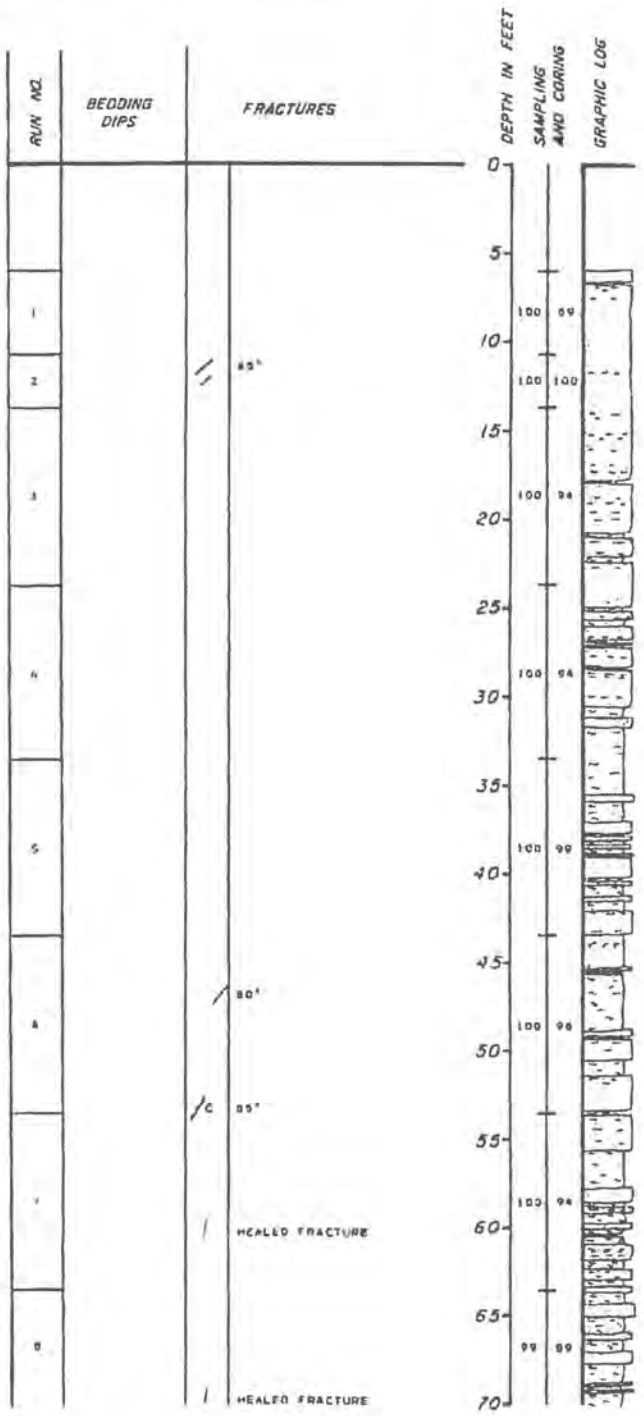


FIGURE 2K 25F

GAMMA RAY LOG OF BORING SI-9

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



BORING SI-10

COORDINATES N 379.8
W 752

DESCRIPTIVE GEOLOGIC NOTES

0' DEPTH = 248.45' ELEVATION
GROUND SURFACE ELEVATION = 247.57'

4.3' DEPTH = TOP OF ROCK

6' DEPTH = BEGIN CORING

LIGHT GRAY MEDIUM GRAINED THICKLY BEDDED SILICEOUS SANDSTONE WITH THIN BEDS OF SILTSTONE, HARD AND UNWEATHERED

GRAY MEDIUM TO COARSE GRAINED, MEDIUM TO THICKLY BEDDED GRAYWACKE WITH ABUNDANT CLASTIC HASH, INTERBEDDED WITH DARK GRAY LAMINATED TO THINLY BEDDED SILTY SHALE AND LIGHT GRAY MEDIUM GRAINED THIN TO THICKLY BEDDED SILICEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

SAMPLING AND CORING INFORMATION

100 | 95 — Core run
R.Q.D.
Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt [illegible] structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c = calcite s = sulfide
- Fractured zone

KEY TO SYMBOLS

- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intraclasts
- Cross-bedding
- Shale laminae

FIGURE 2R-25A

LOG OF BORING SI-10

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

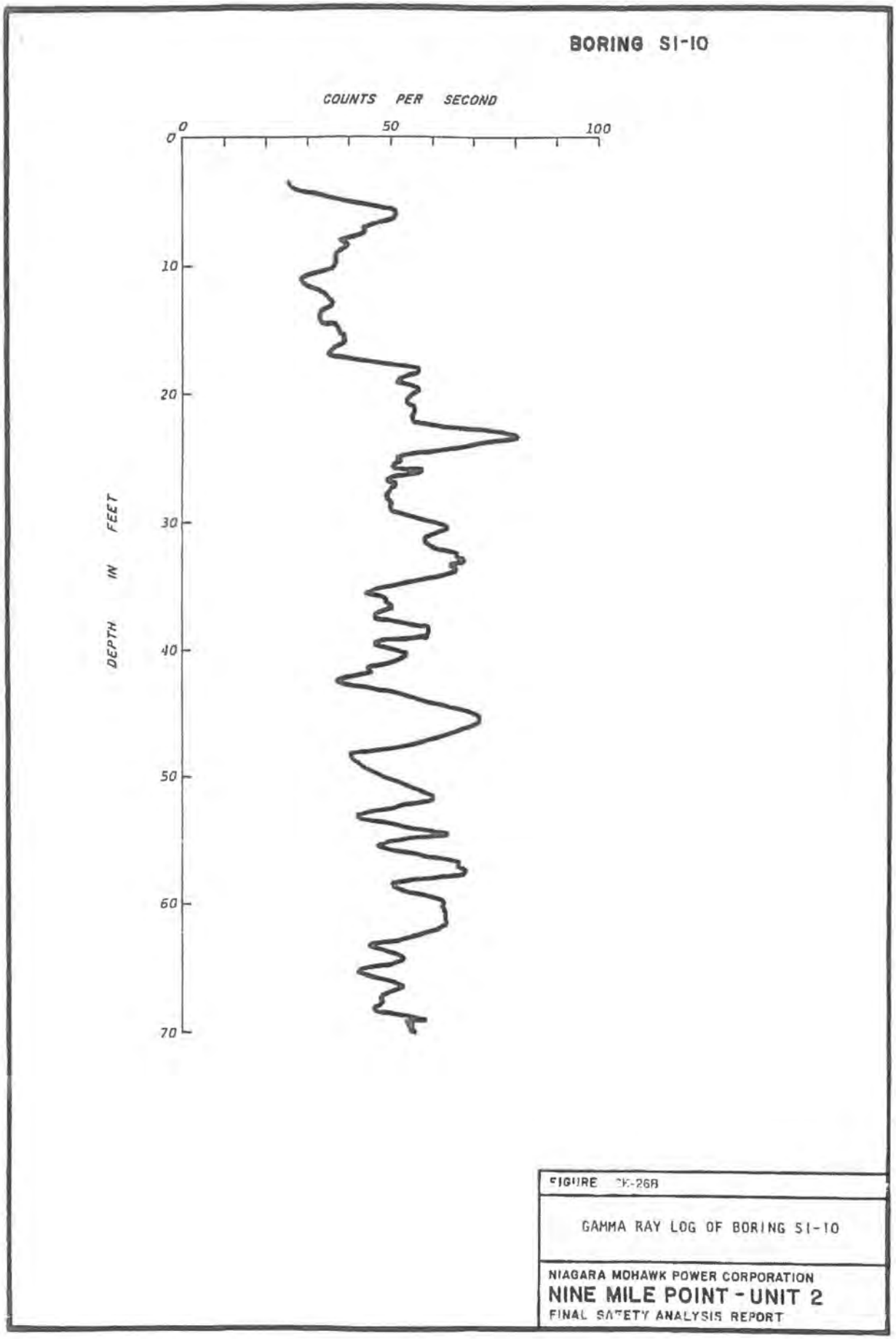
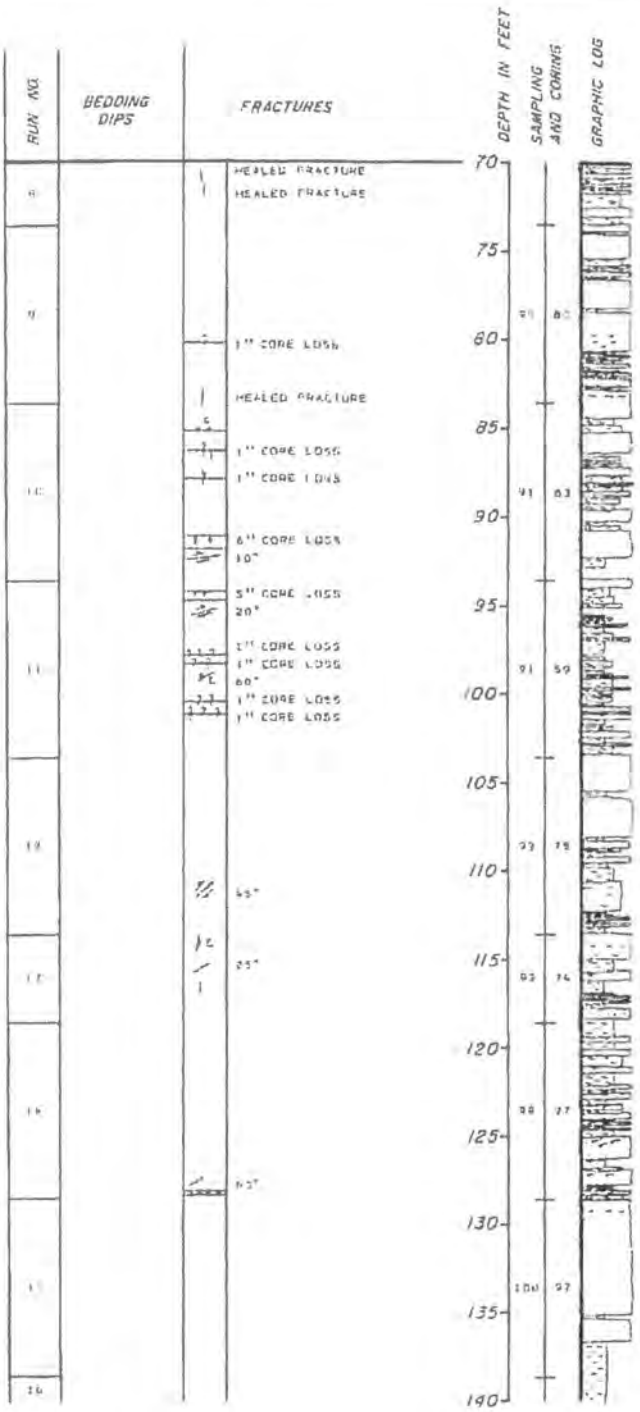


FIGURE 2K-26B

GAMMA RAY LOG OF BORING SI-10

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING S1-10



DESCRIPTIVE GEOLOGIC NOTES

UNIT A

LIGHT TO MEDIUM GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, OCCASIONAL DARK GRAY TO BLACK SILTY SHALE AND SILTSTONE, INTERBEDDED THIN SHALE STRINGERS, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

FULTON FORMATION

UNIT B

88.3' LOSS OF DRILLING CIRCULATION

DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE INTERBEDDED WITH LIGHT GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, SILTSTONE LENSES AND INTERBEDS COMMON, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

WATER LEVEL - 12/12/78

UNIT C

SILTSTONE GULF FORMATION

PREDOMINANTLY DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE WITH MINOR INTERBEDS OF LIGHT GRAY MEDIUM GRAINED LAMINATED TO THICKLY BEDDED ARGILLACEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

SAMPLING AND CORING INFORMATION

Core run
R.Q.D.
Percent recovery

BEDDING DIPS

83° Bedding dips measured on selected bedding planes. An attempt [illegible] structures.

FRACTURES

Breccia zone
Slip-slip slickensides
Fractures shown at approximate angle to core axis
Mineralized fracture C - calcite S - sulfide
Fractured zone

Key to Graphic Log

Limestone
Siltstone
Shale
Fossils
Fossil interbeds
Cross-bedding
Shale laminae

FIGURE 2A-28C

LOG OF BORING S1-10

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING SI-10

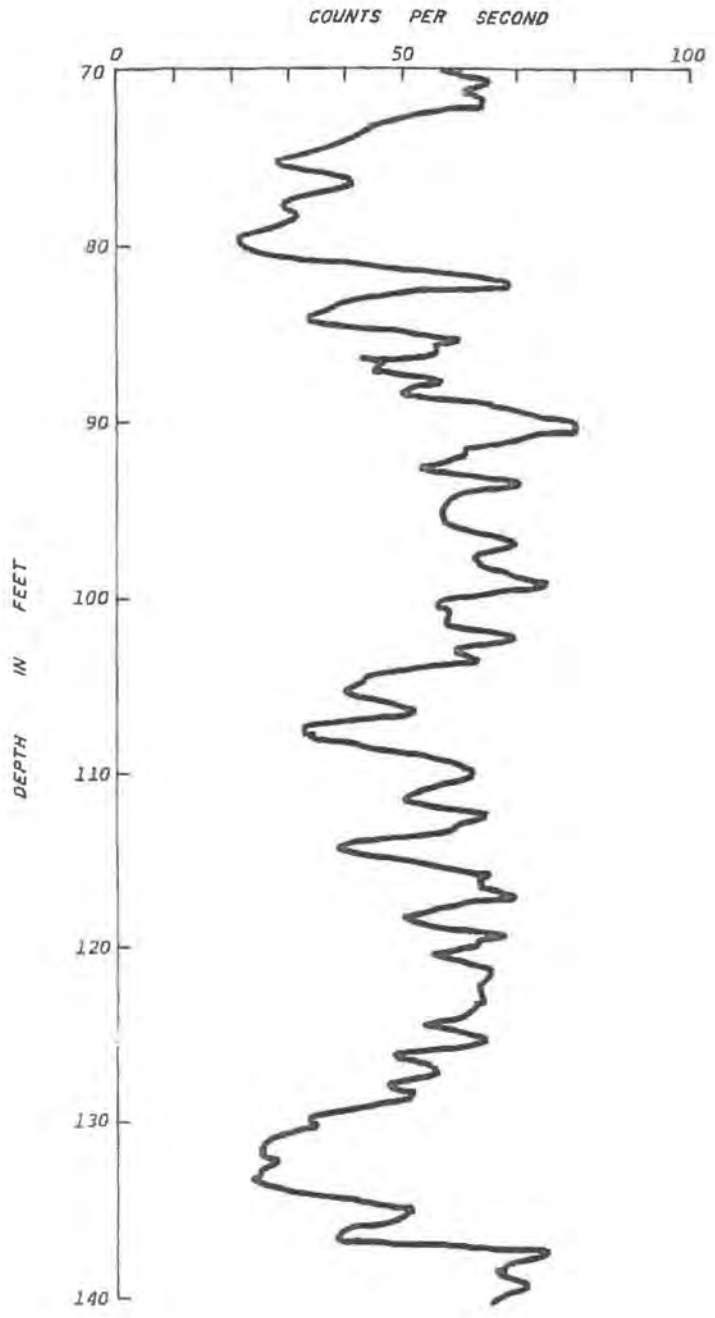
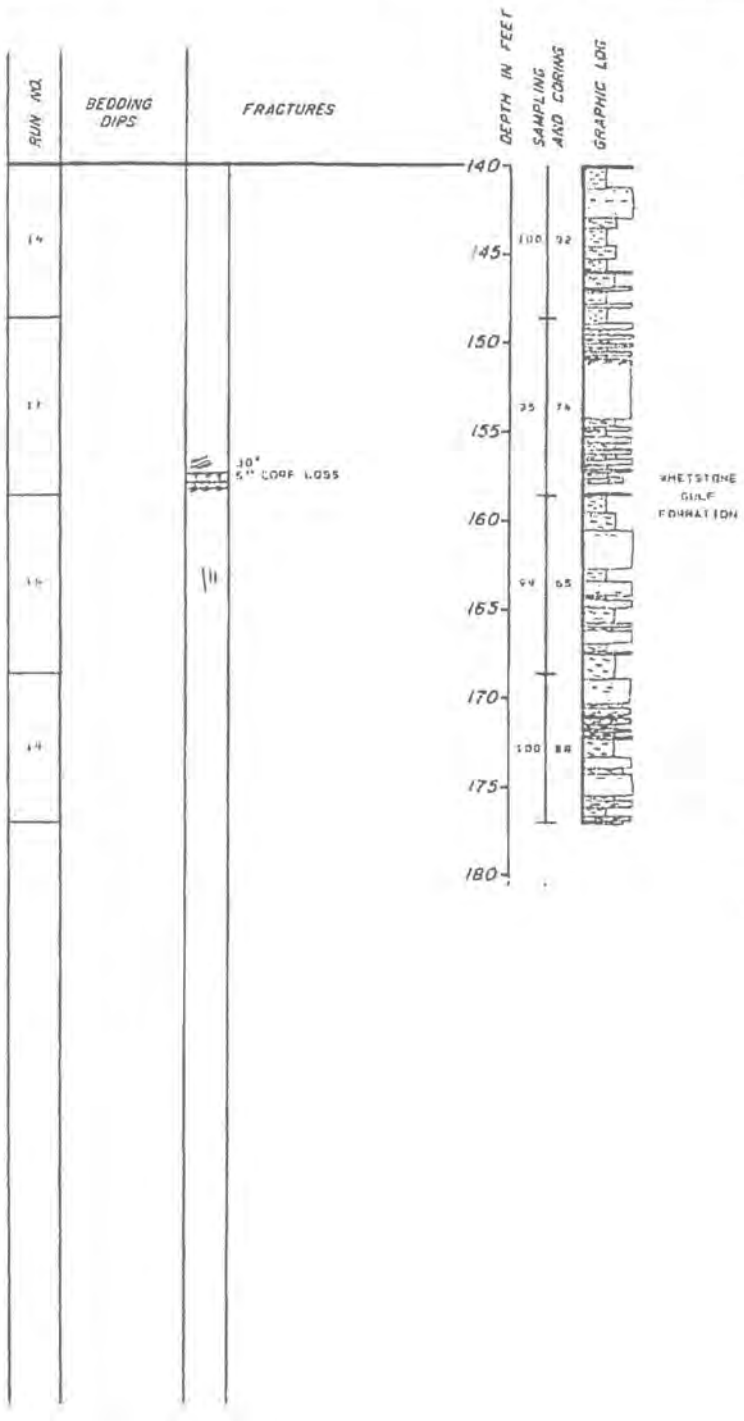


FIGURE 2.4-20

GAMMA RAY LOG OF BORING SI-10

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING SI-10



DESCRIPTIVE GEOLOGIC NOTES

BORING TERMINATED AT A DEPTH OF 177.0 FEET ON 10/10/81 AND GEOPHYSICALLY LOGGED ON 10/14/81

NOTE: NUMEROUS FRACTURES PARALLEL TO BEDDING PLANES WERE OBSERVED IN THE CORE FROM THIS BORING. THEY HAVE BEEN LEFT OUT IN THE PRODUCTION OF THIS LOG UNLESS THEY COULD BE IDENTIFIED AS NATURALLY OCCURRING FRACTURES. HOWEVER, THE FREQUENCY OF OCCURRENCE OF THESE SUB-HORIZONTAL FRACTURES IS REFLECTED IN THE RQD VALUES SHOWN.

SAMPLING AND CORING INFORMATION

160 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt [illegible] structures.

FRACTURES

- Breccia zone
- Slickenslip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture c - calcite z - zeolite
- Fractured zone

KEY TO SYMBOLS

- Fossils
- Shale intra-clasts
- Cross-bedding
- [illegible]

FIGURE 2A-20B

LOG OF BORING SI-10

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

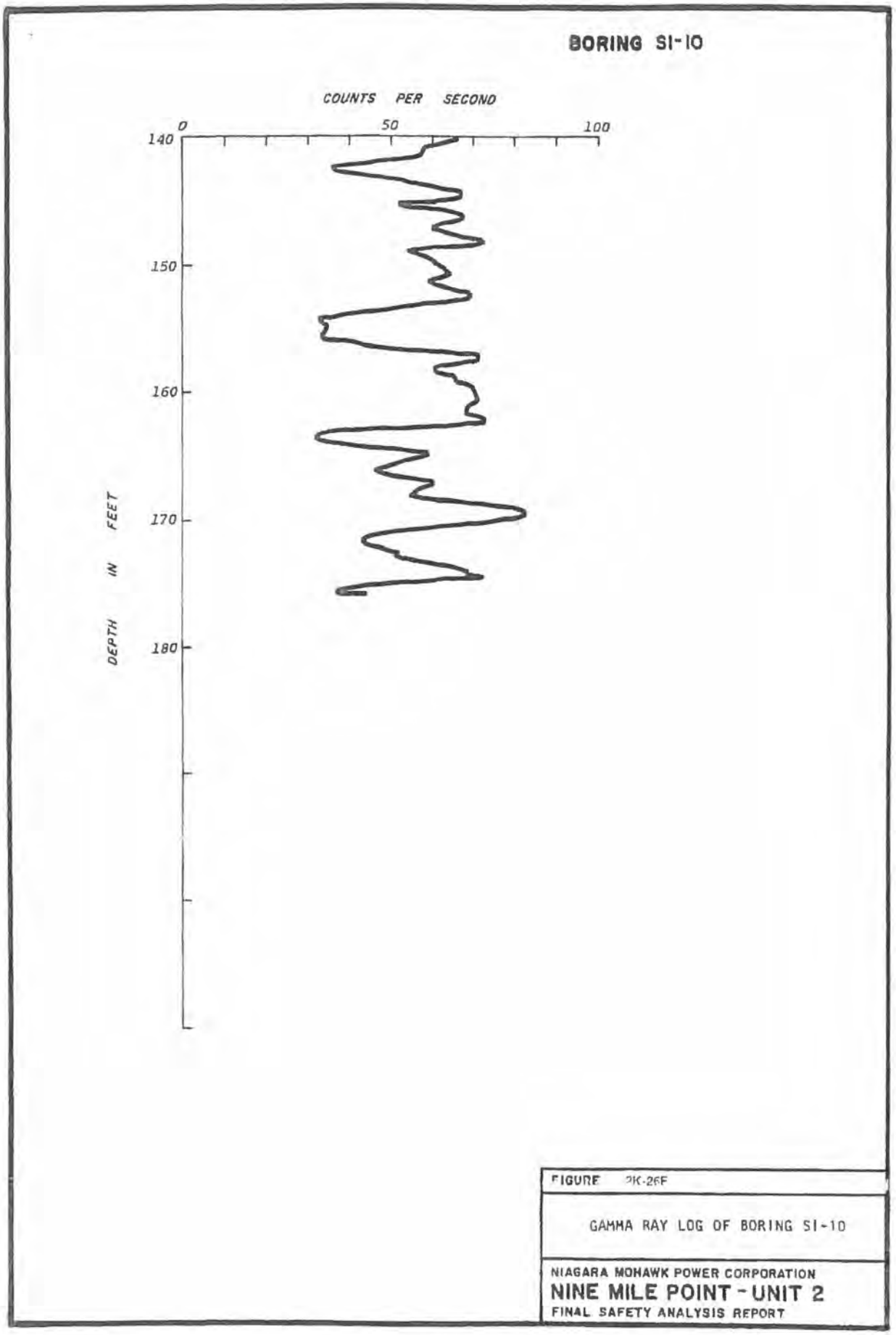


FIGURE 2K-26F

GAMMA RAY LOG OF BORING SI-10

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

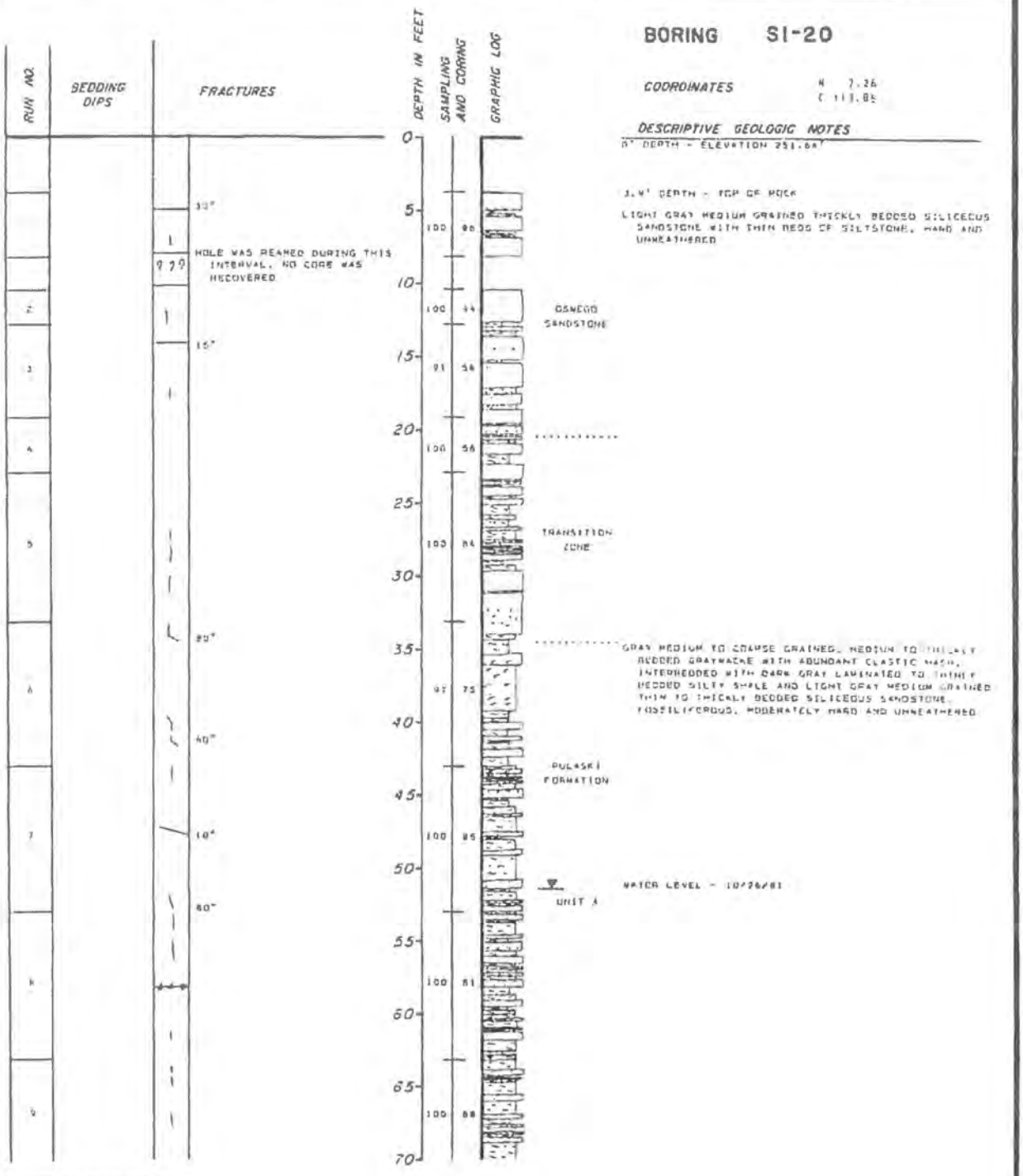


FIGURE 2A-22A

LOG OF BORING SI-20

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT UNIT 2
FINAL SAFETY ANALYSIS REPORT

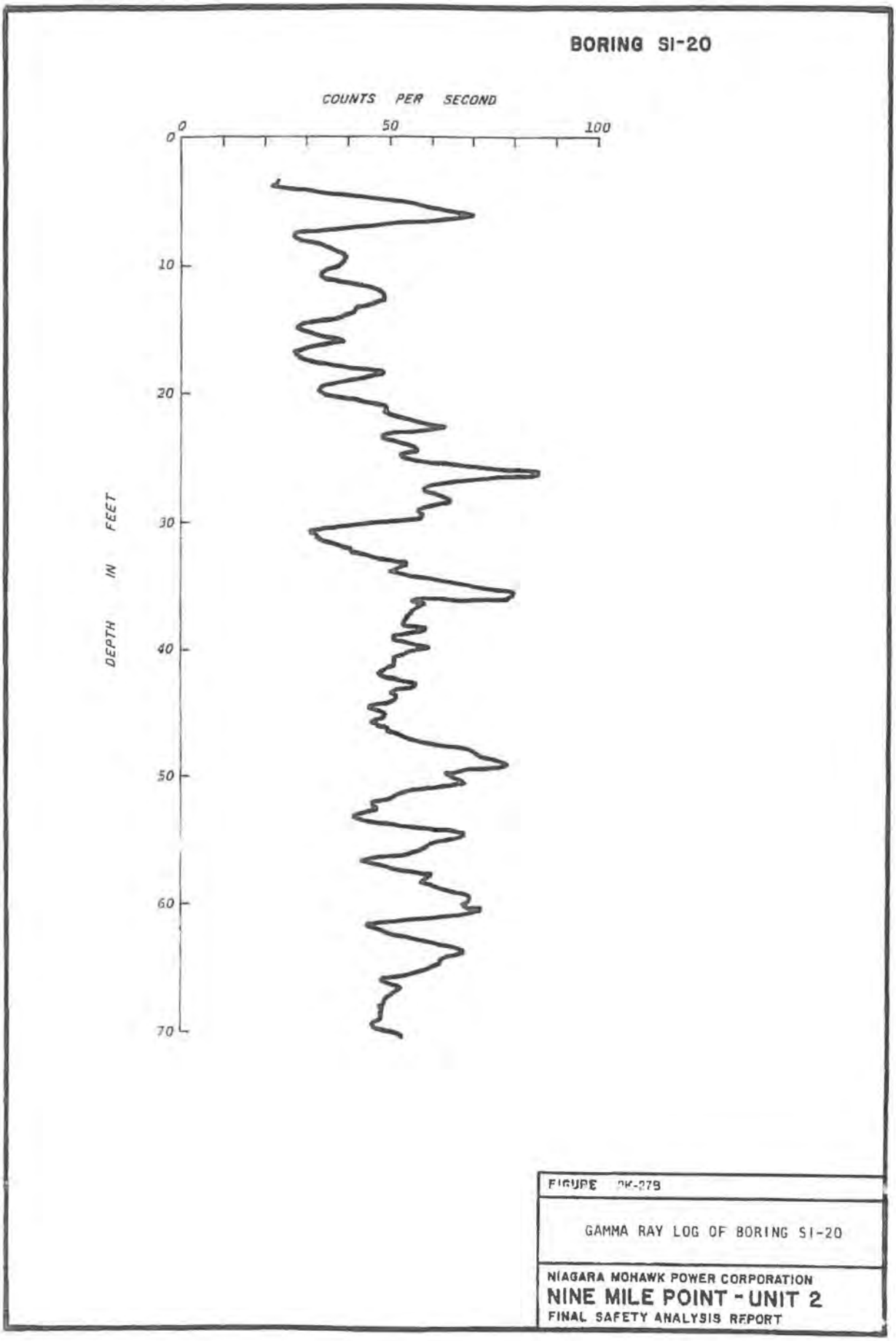
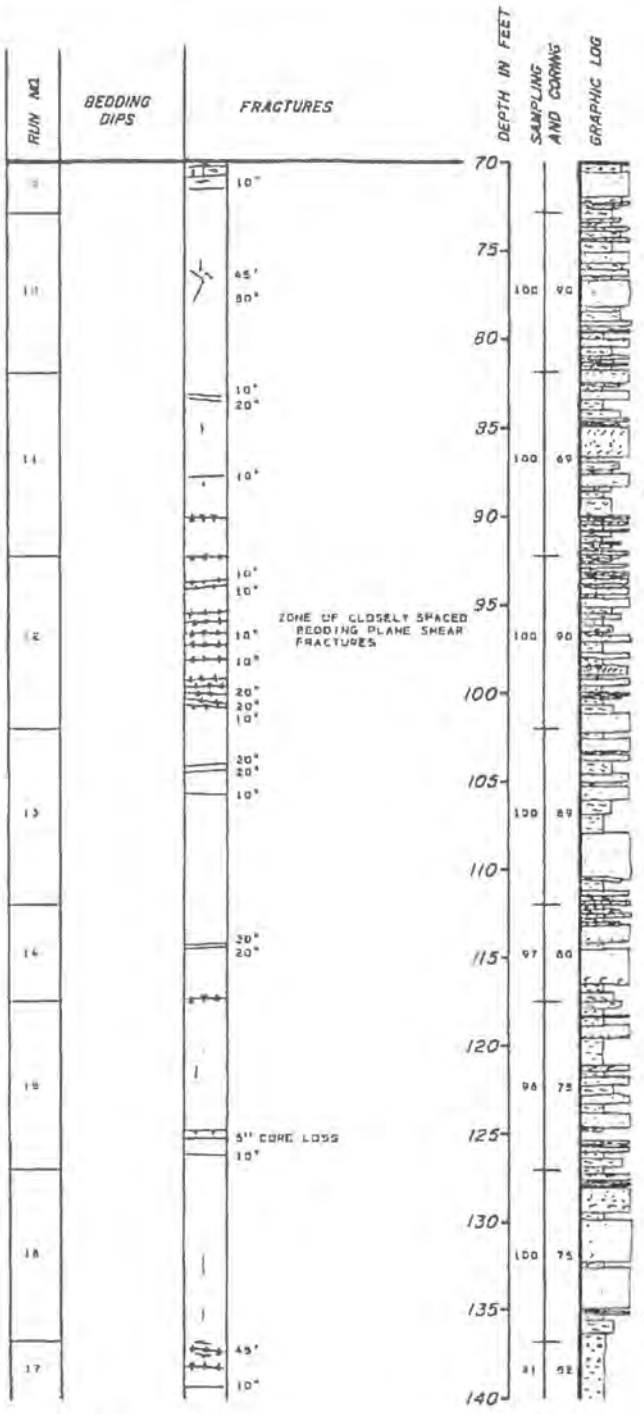


FIGURE 2K-27B

GAMMA RAY LOG OF BORING SI-20

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING SI-20



DESCRIPTIVE GEOLOGIC NOTES

PULASKI FORMATION

UNIT B

LIGHT TO MEDIUM GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, OCCASIONAL DARK GRAY TO BLACK SILTY SHALE AND SILTSTONE; INTERBEDDED THIN SHALE STRINGERS; FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE INTERBEDDED WITH LIGHT GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, SILTSTONE LENSES AND INTERBEDS COMMON, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

UNIT C

WHETSTONE GULF FORMATION

UNIT A

PREDOMINANTLY DARK GRAY TO BLACK THIN TO THICKLY BEDDED SILTY SHALE WITH MINOR INTERBEDS OF LIGHT GRAY MEDIUM GRAINED LAMINATED TO THICKLY BEDDED ARGILLACEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

SAMPLING AND CORING INFORMATION

Core run
100 | 95 R.Q.D.
Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures-shown at approximate angle to core axis
- Mineralized fracture C = calcite S = sulfide
- Fractured zone

KEY TO SYMBOLS

- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intraclasts
- Cross-bedding

FIGURE [illegible]

LOG OF BORING SI-20

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING SI-20

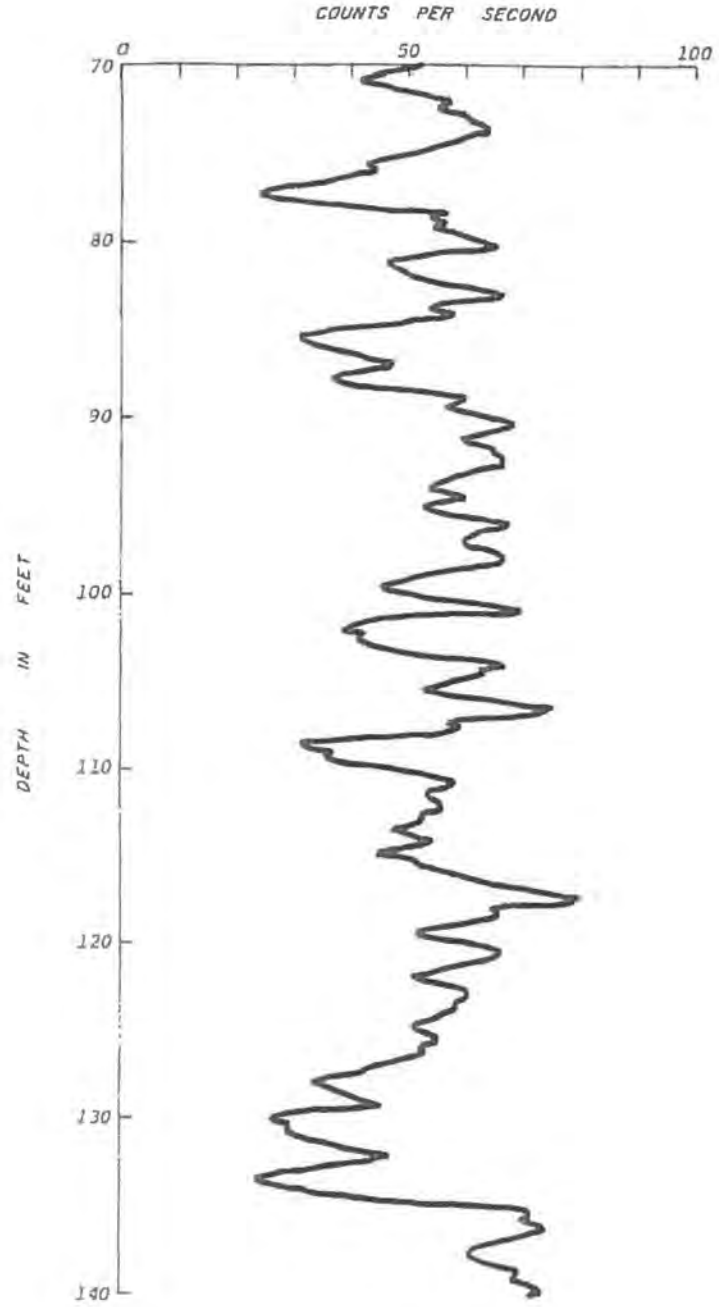
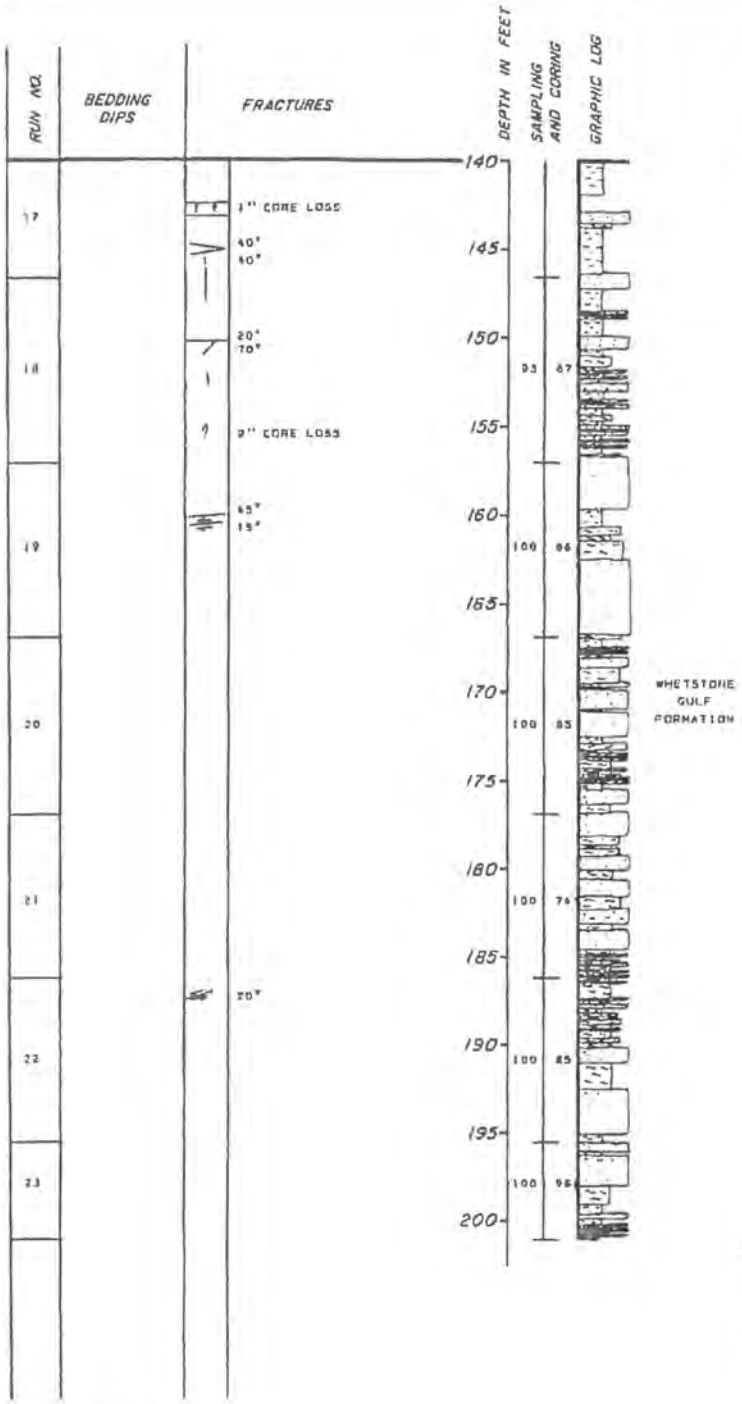


FIGURE [illegible]

GAMMA RAY LOG OF BORING SI-20

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING SI-20



DESCRIPTIVE GEOLOGIC NOTES

BORING TERMINATED AT A DEPTH OF 210.0 FEET ON 10/6/81 AND GEOPHYSICALLY LOGGED ON 10/8/81

NOTE: NUMEROUS FRACTURES PARALLEL TO BEDDING SURFACES WERE OBSERVED IN THE CORE FROM THIS BORING. THEY HAVE BEEN EDITED OUT IN THE PRODUCTION OF THIS LOG UNLESS THEY COULD BE IDENTIFIED AS NATURALLY OCCURRING FRACTURES. HOWEVER, THE FREQUENCY OF OCCURRENCE OF THESE SUB-HORIZONTAL FRACTURES IS REFLECTED IN THE RQD VALUES SHOWN.

SAMPLING AND CORING INFORMATION

100 | 95 — Core run; R.Q.D.; Percent recovery

BEDDING DIPS

03° Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

FRACTURES

- Breccia zone
- Dip-slip slickensides
- Fractures shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone

KEY TO SYMBOLS

- Greywacke
- Siltstone
- Shale
- Fossils
- Shale interclasts
- Cross-bedding

FIGURE 2K-21E

LOG OF BORING SI-20

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

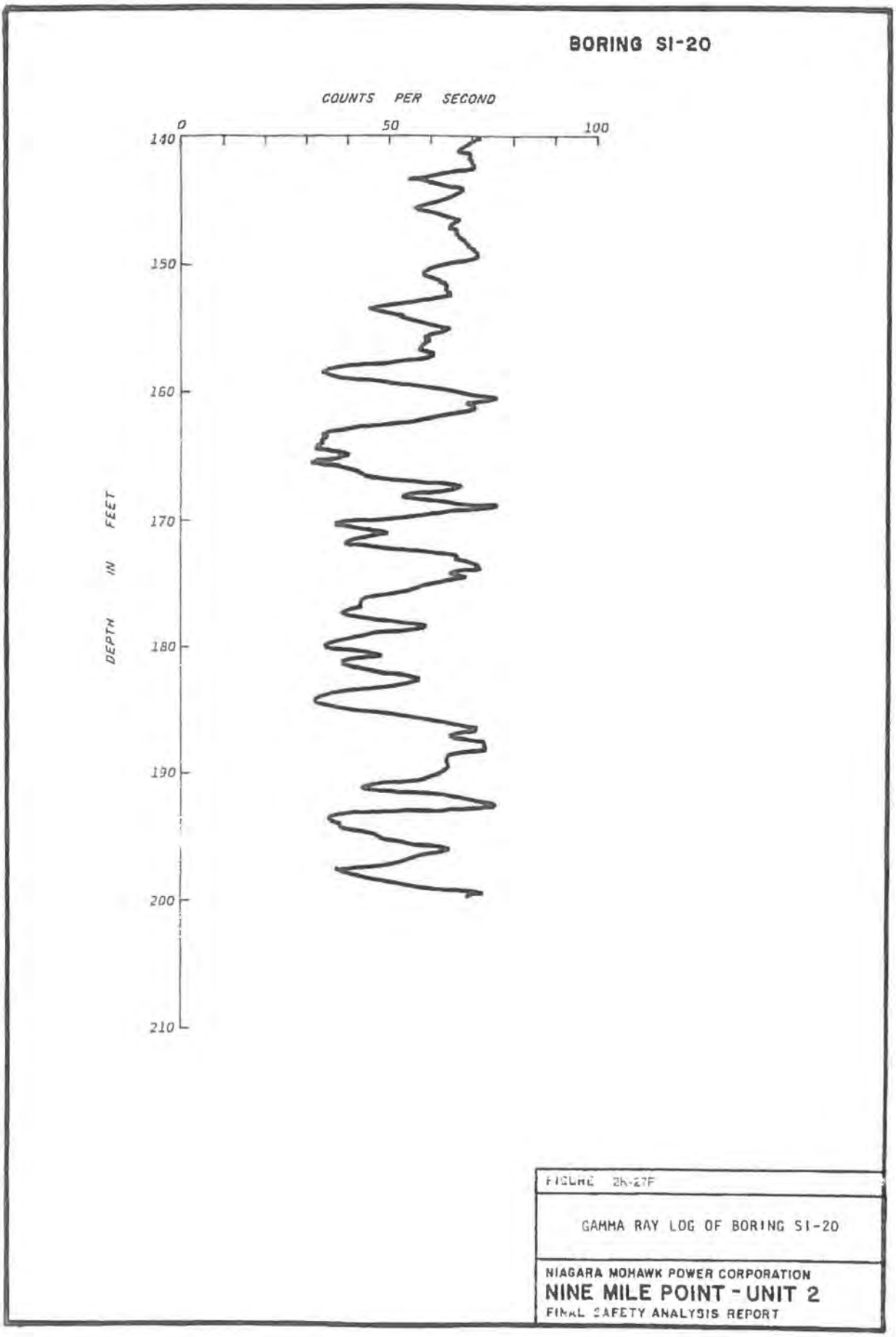


FIGURE 2A-27F

GAMMA RAY LOG OF BORING SI-20

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT