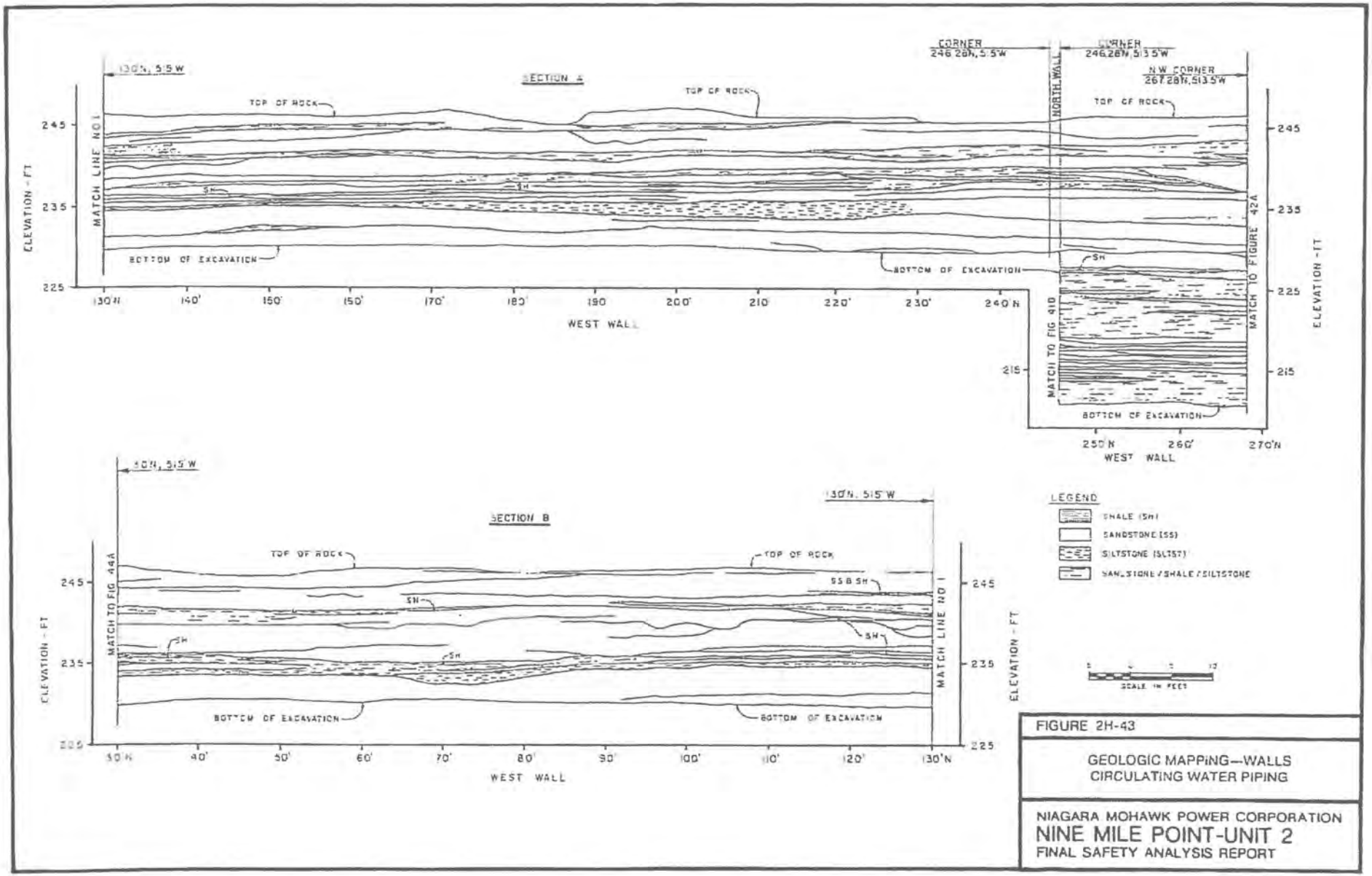


FIGURE 2H-43

GEOLOGIC MAPPING—WALLS
CIRCULATING WATER PIPING

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

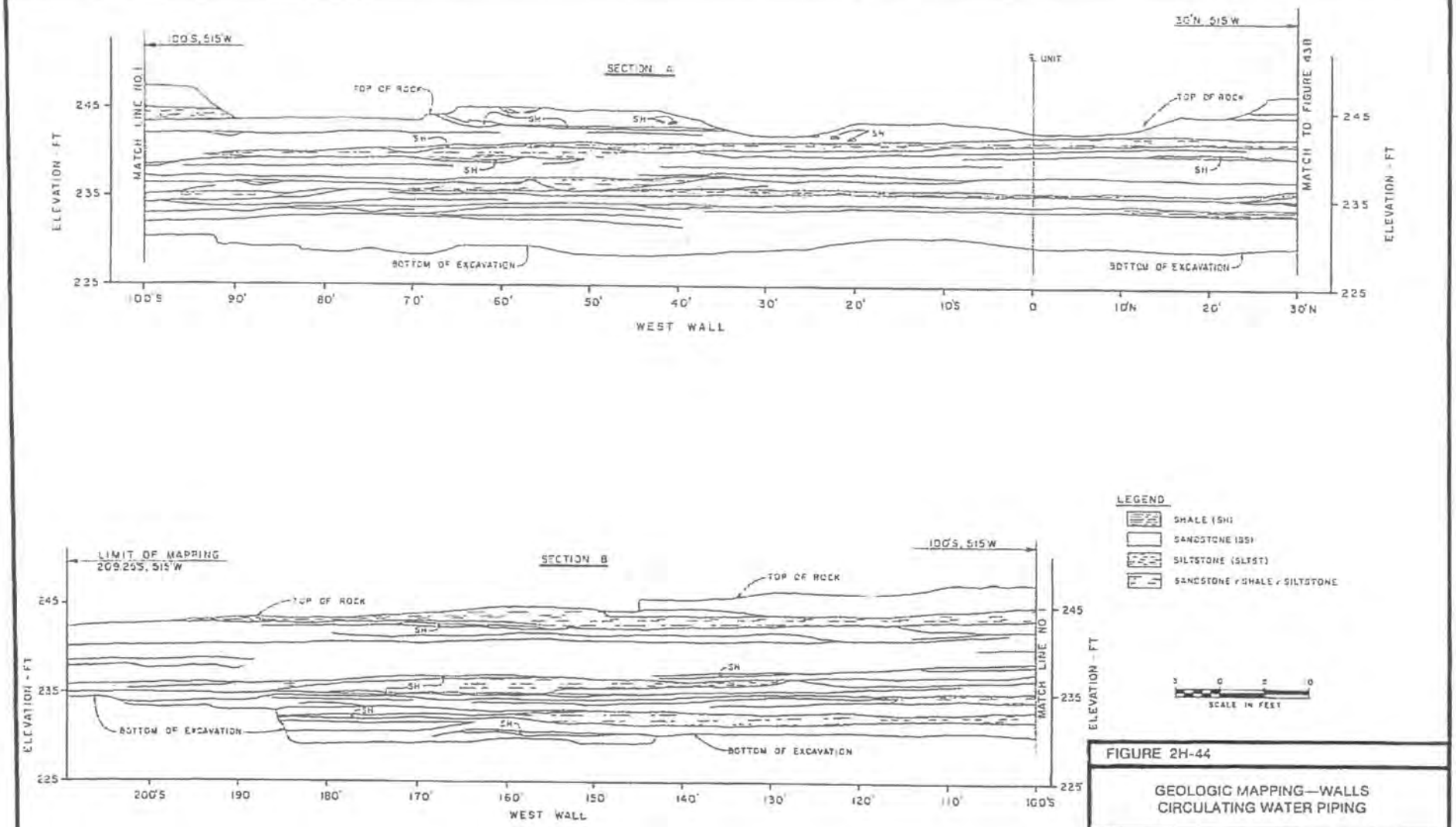


FIGURE 2H-44

GEOLOGIC MAPPING—WALLS
CIRCULATING WATER PIPING

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

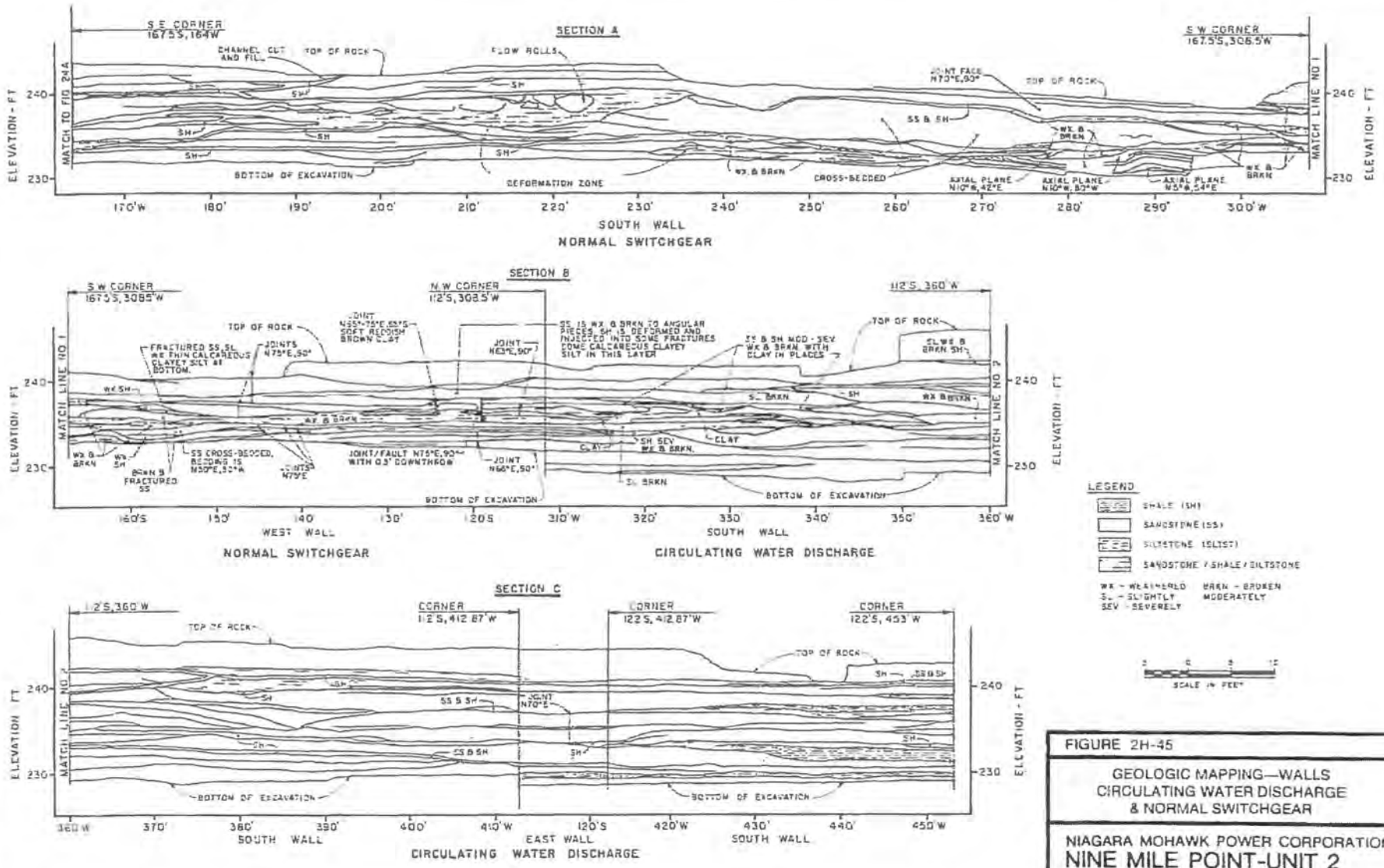


FIGURE 2H-45

GEOLOGIC MAPPING—WALLS
CIRCULATING WATER DISCHARGE
& NORMAL SWITCHGEAR

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

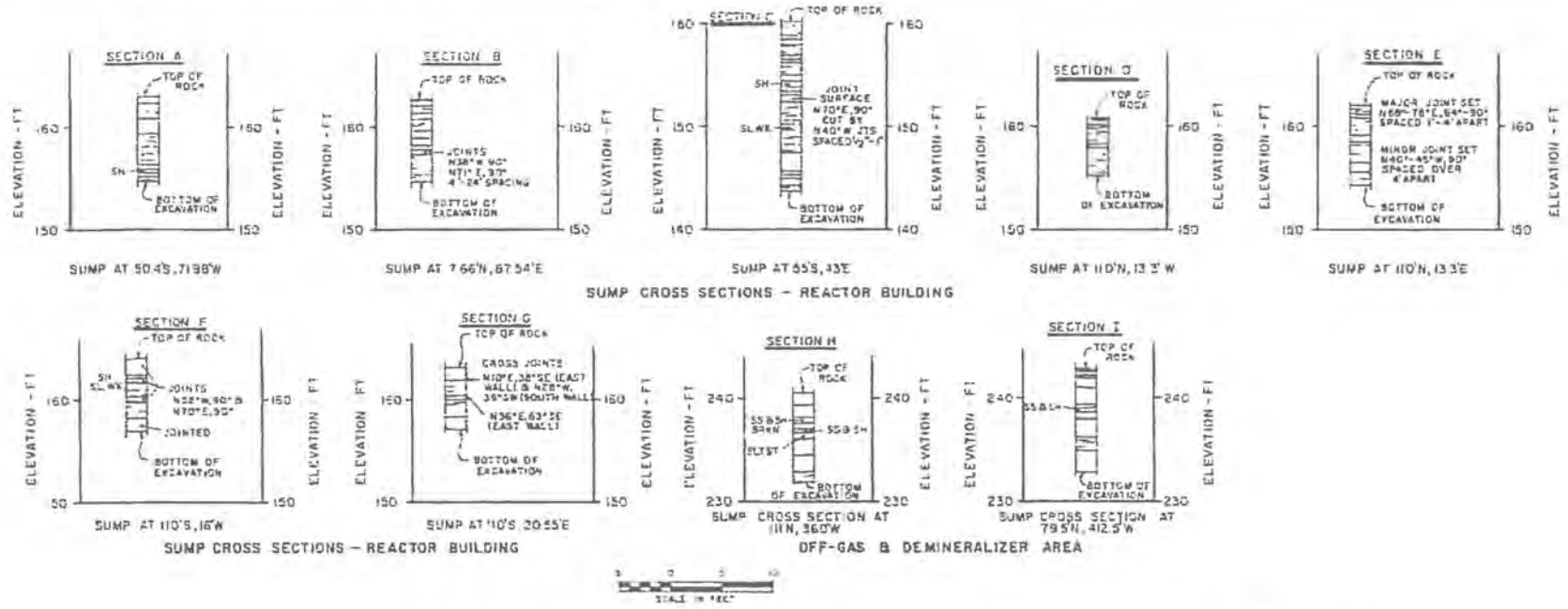


FIGURE 2H-46

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

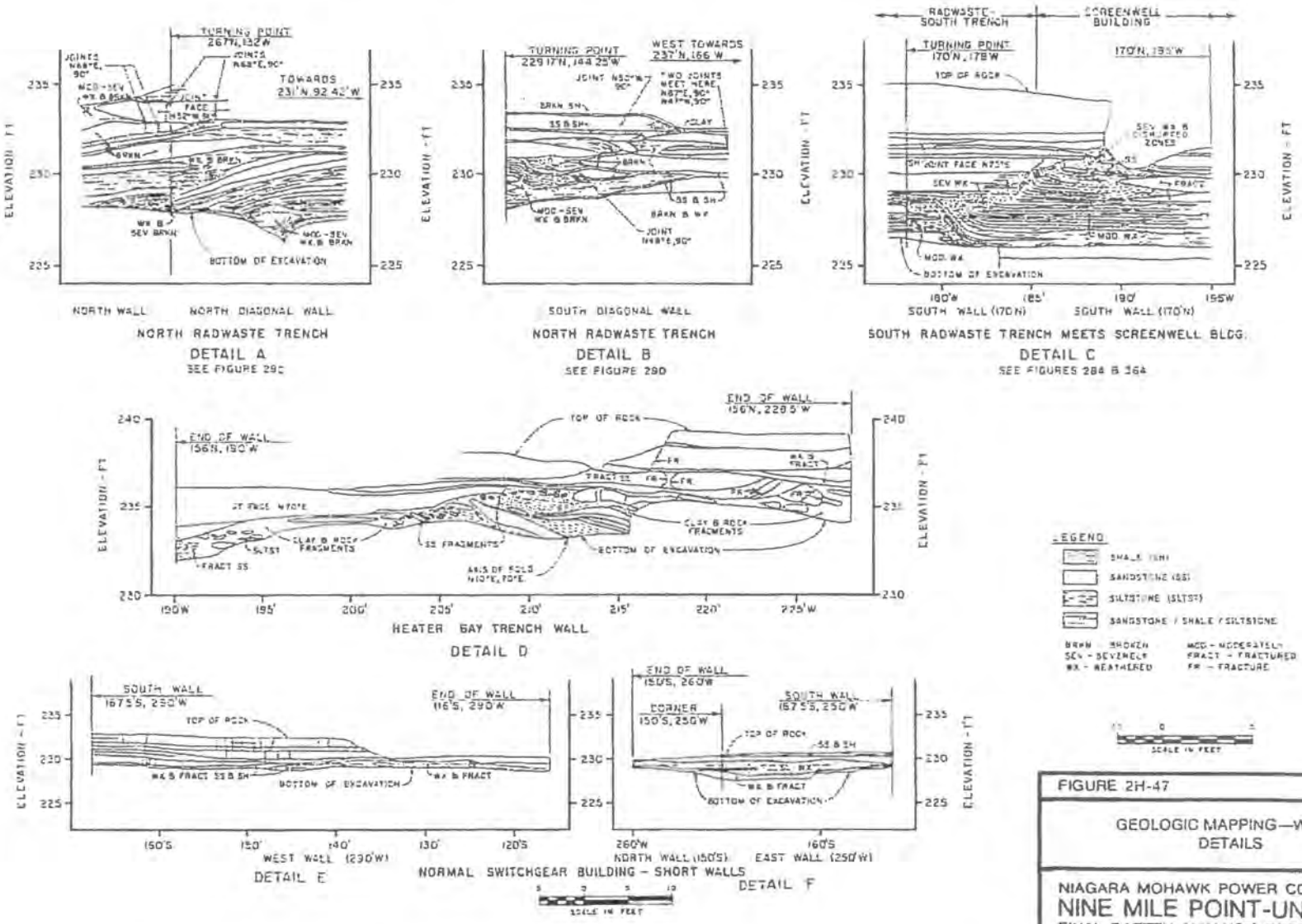


FIGURE 2H-47

GEOLOGIC MAPPING—WALLS
DETAILS

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

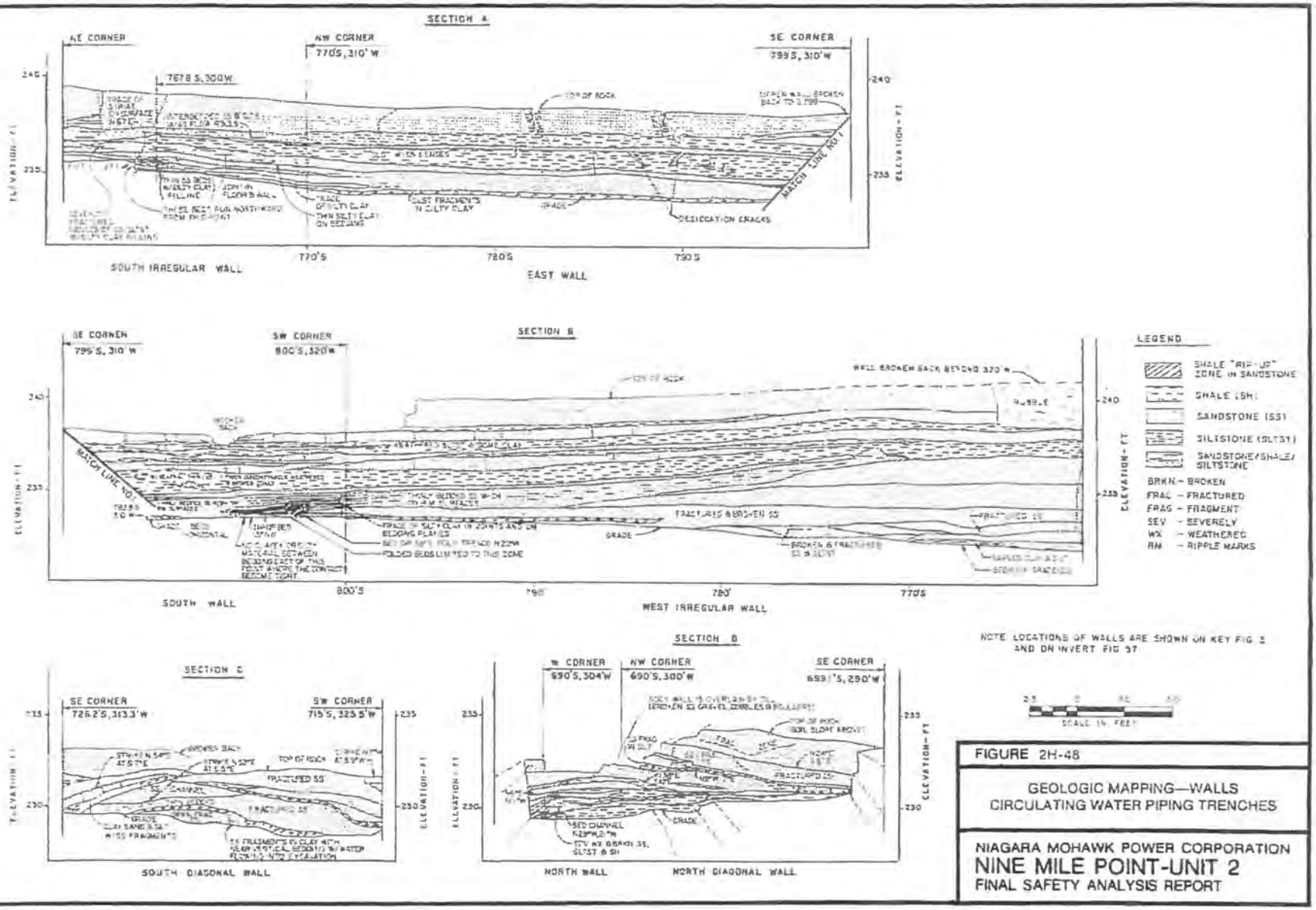
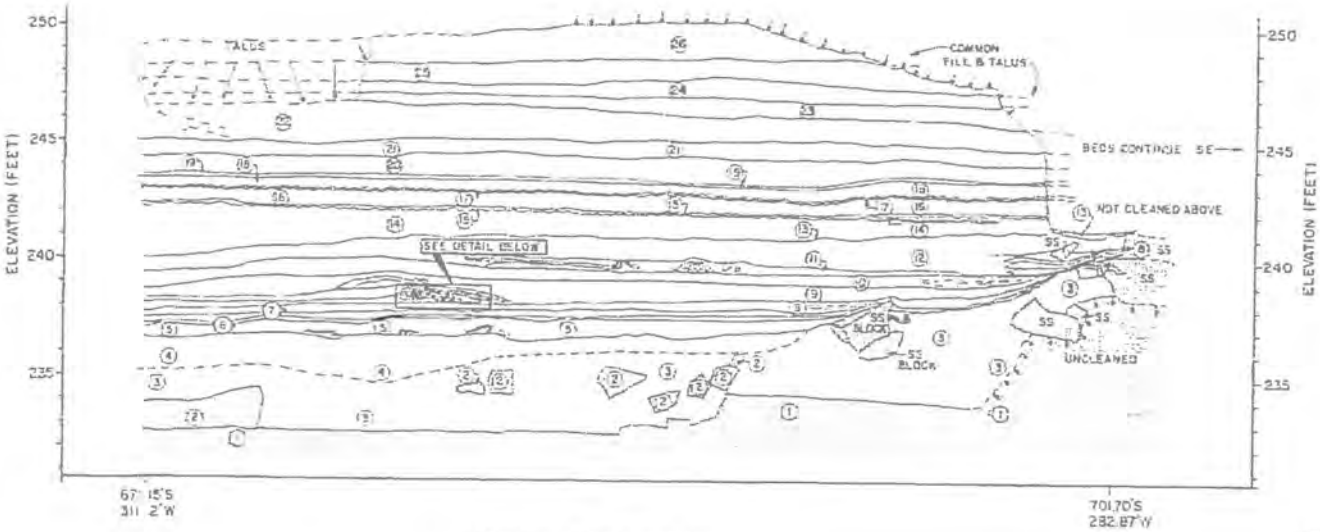


FIGURE 2H-48

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. DETACHED 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. VERVED 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 IN SILT WITH OCCASIONAL ORGANICS & PEBBLES.
25. LIGHT GRAY VERY FINE SAND & SILT WITH FROST WEDGING, ABUNDANT ORGANICS & PEAT
26. DARK BROWN MODERN PEAT WITH ROOTS & VEGETATION.

NOTE: FOR SECTIONS OF UNDERLYING BEDROCK SEE FIG. 49

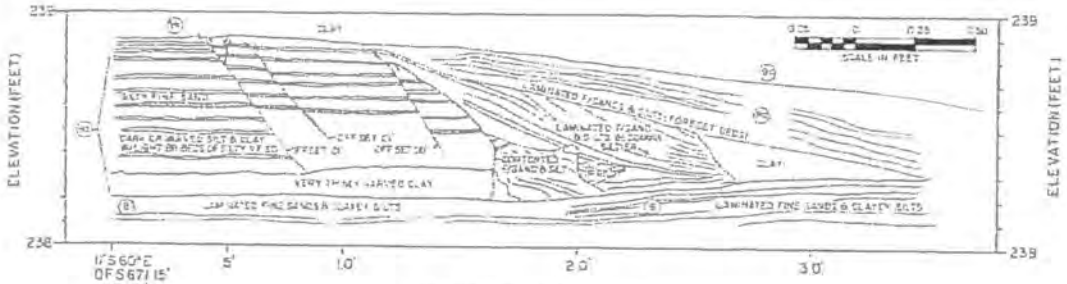
LEGEND

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



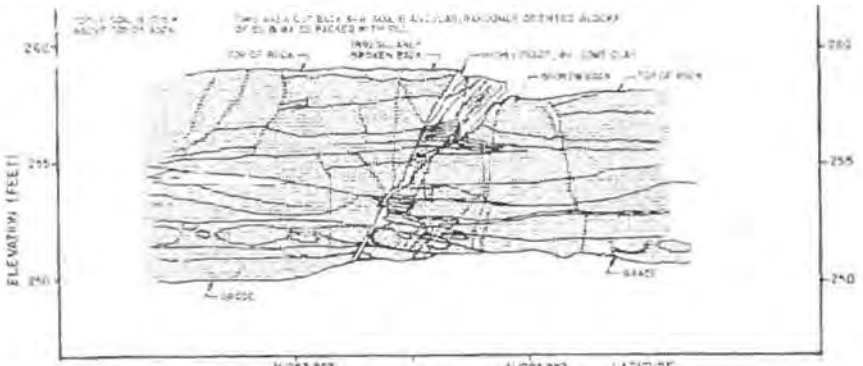
ENLARGED DETAIL SHOWN ABOVE

FIGURE 2H-49

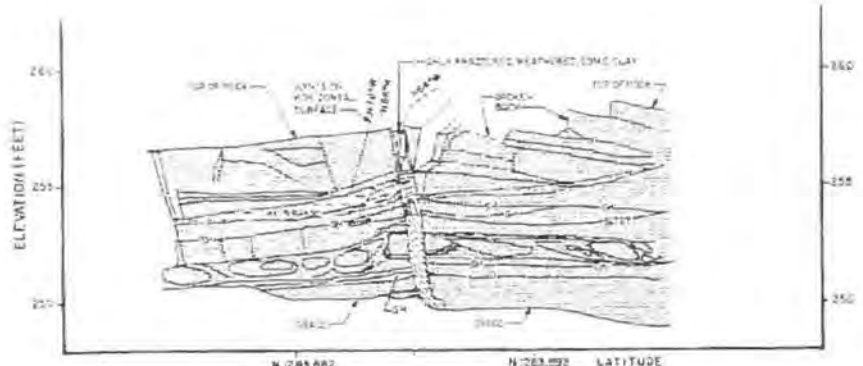
NORTH SOIL WALL OF
CIRCULATING WATER PIPING TRENCH

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

DRAINAGE DITCH



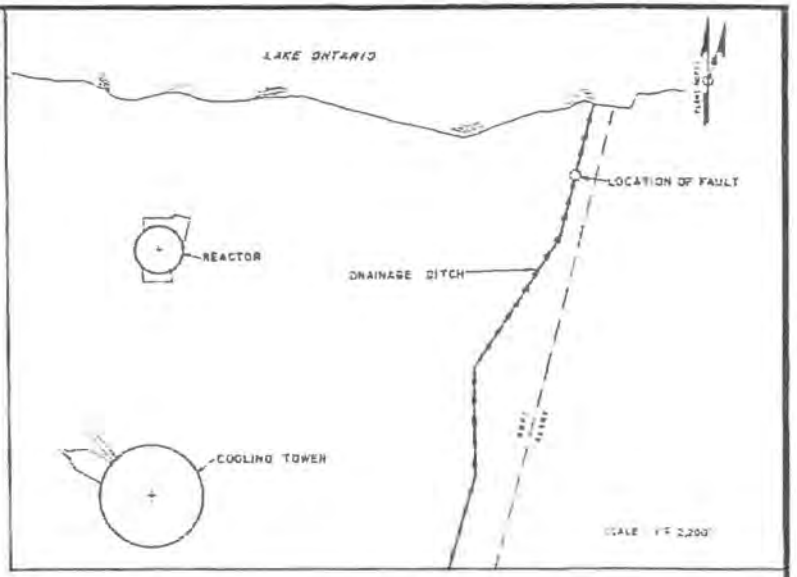
EAST WALL



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

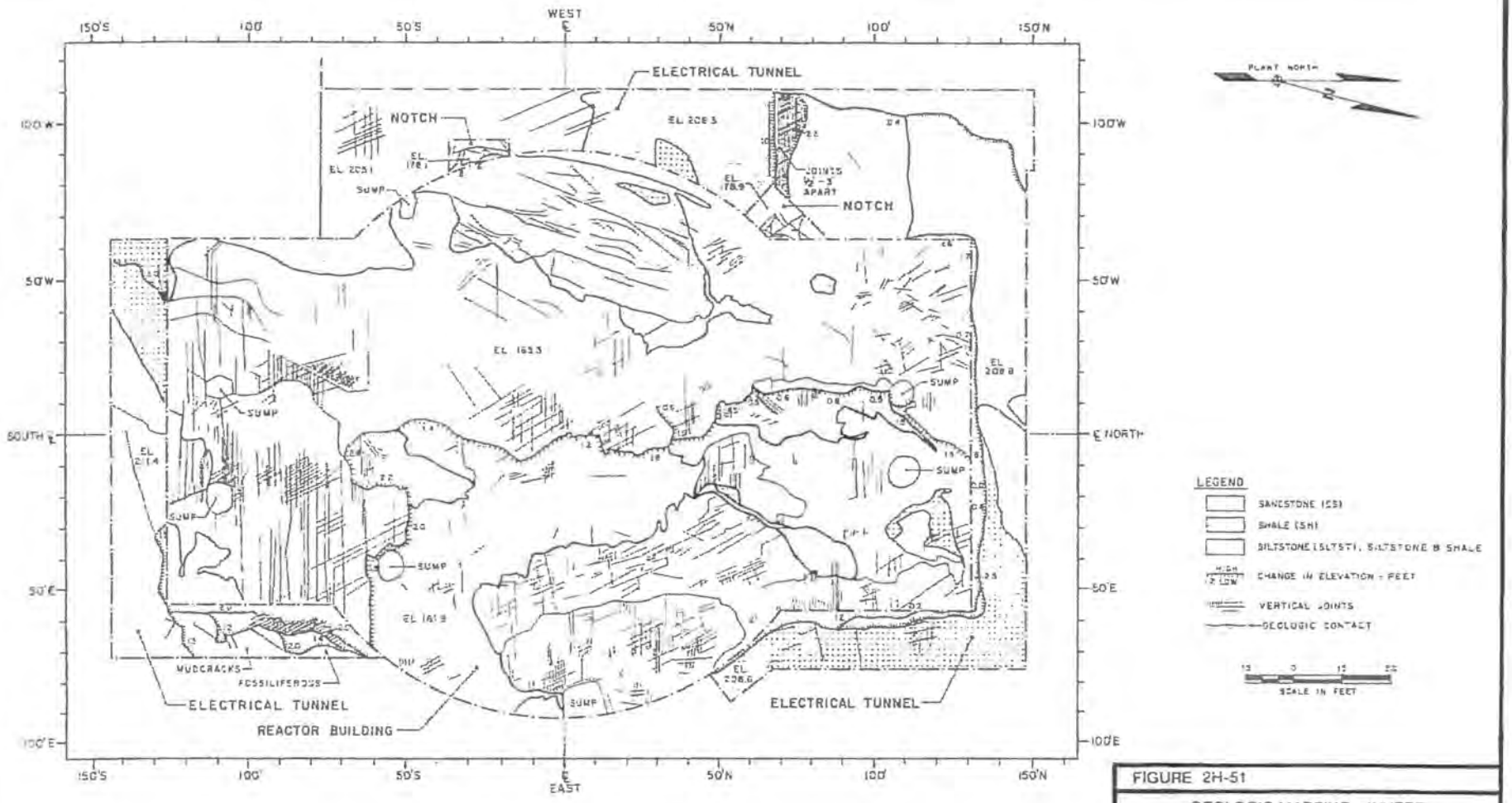
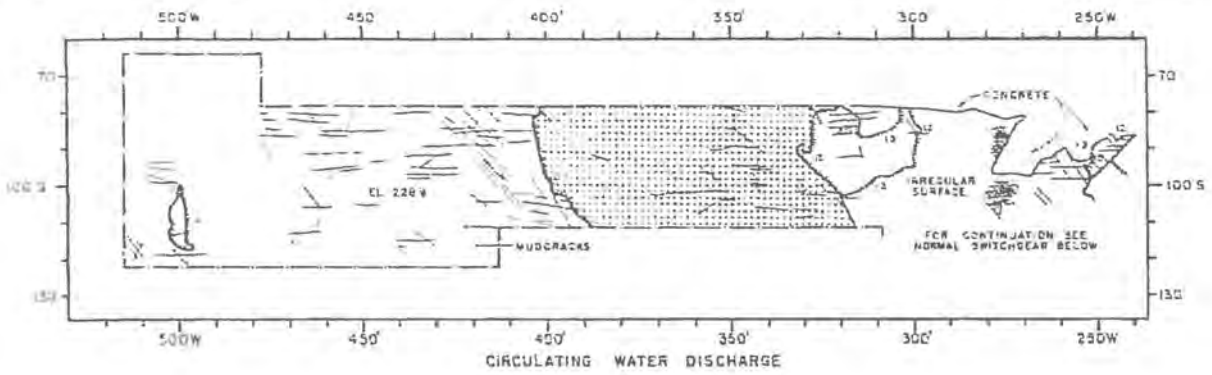


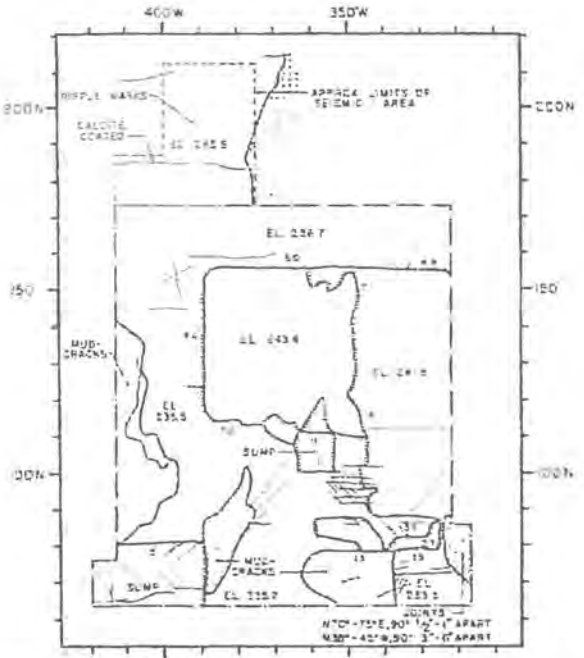
FIGURE 2H-51

GEOLOGIC MAPPING—INVERT
REACTOR BUILDING AND
ELECTRICAL TUNNELS

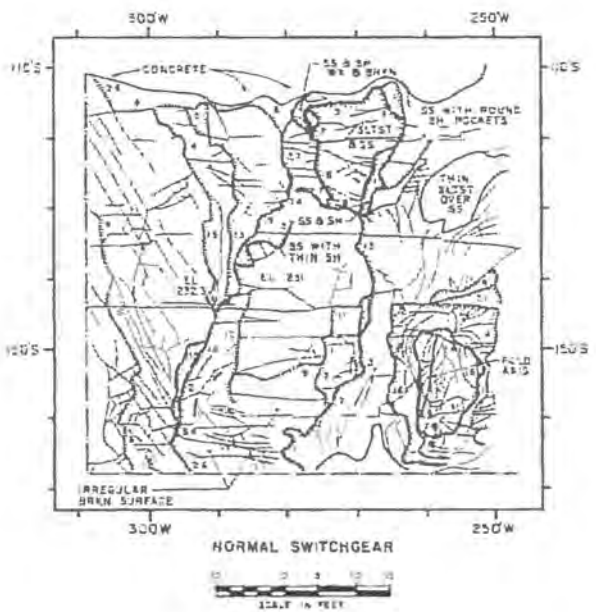
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



CIRCULATING WATER DISCHARGE



OFF-GAS & DEMINERALIZER AREA



NORMAL SWITCHGEAR

LEGEND

- SANDSTONE (SS)
- SHALE (SH)
- SILTSTONE (SLTST) SILTSTONE & SHALE
- CHANGE IN ELEVATION - FEET
- CHANGE IN ELEVATION WEATHERED ZONE AT BASE OF SLOPE
- VERTICAL JOINTS
- GEOLOGIC CONTACT

WR - WEATHERED BRKN - BROKEN

SCALE IN FEET

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

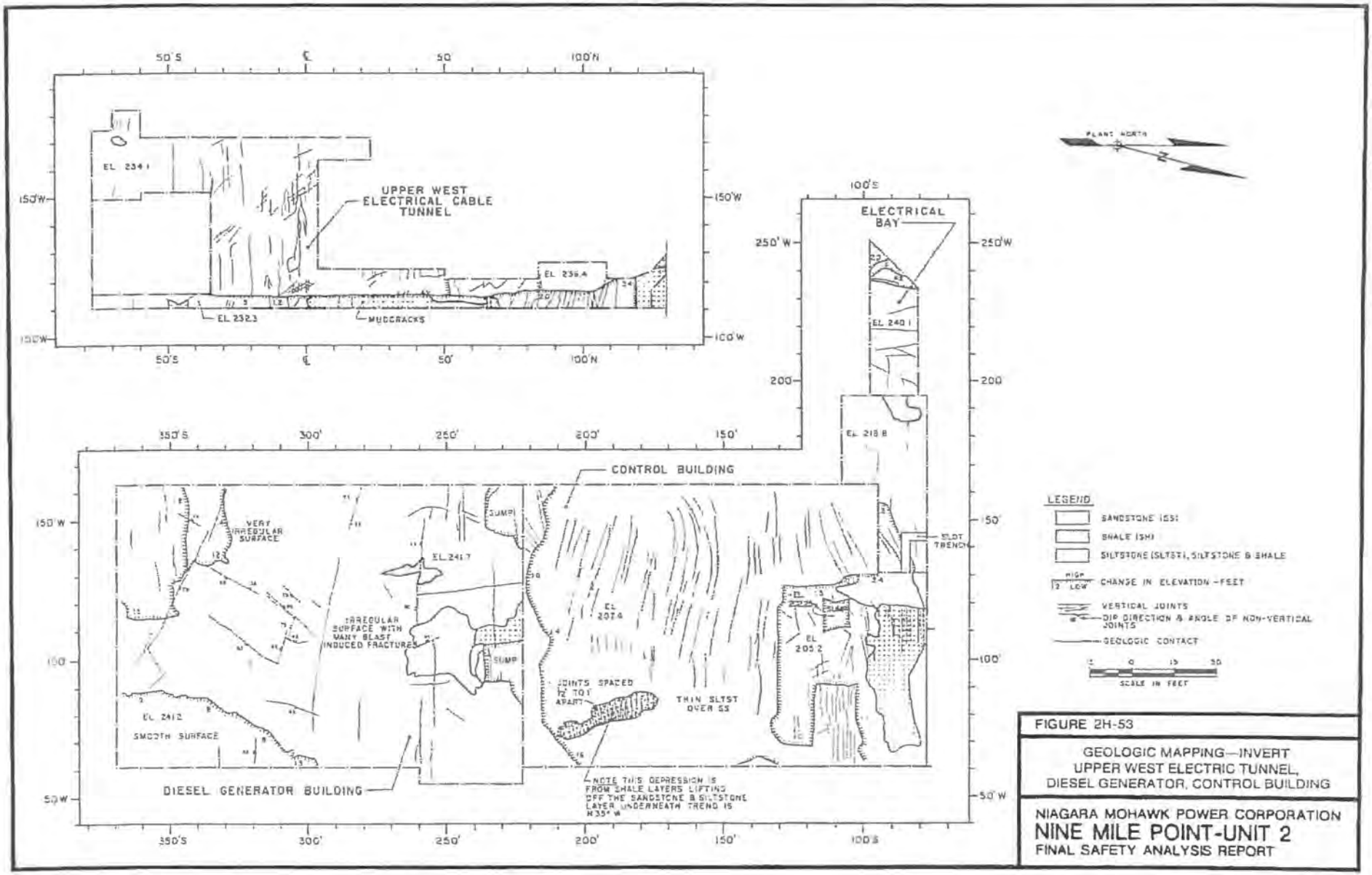


FIGURE 2H-53

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

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

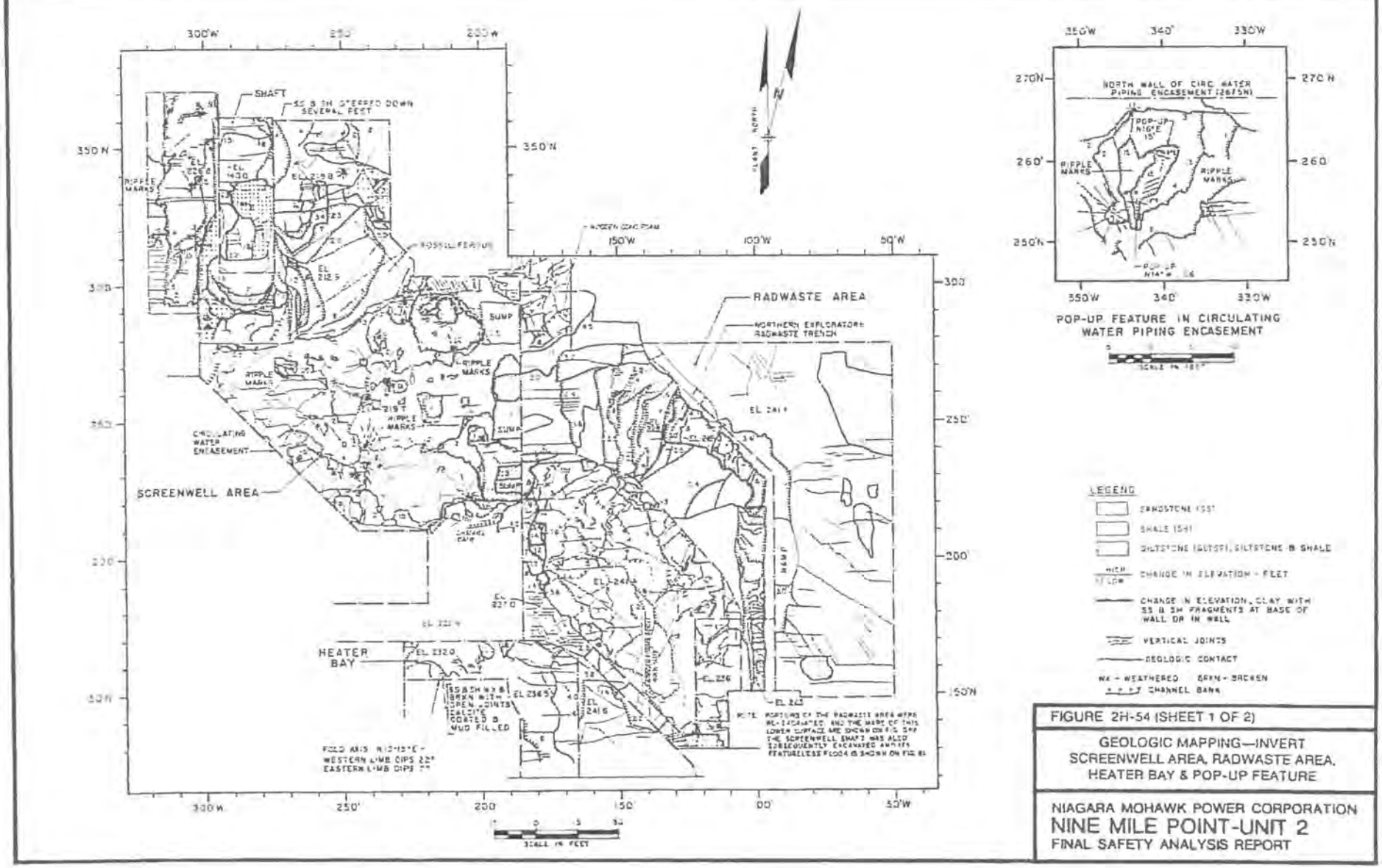
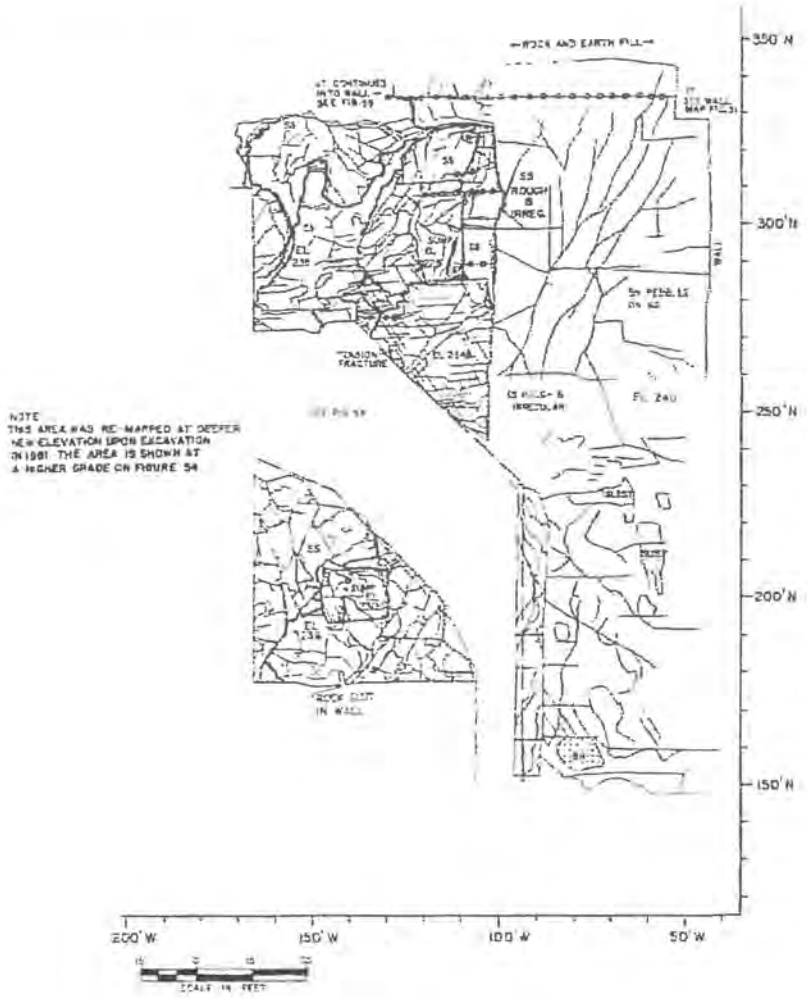


FIGURE 2H-54 (SHEET 1 OF 2)

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



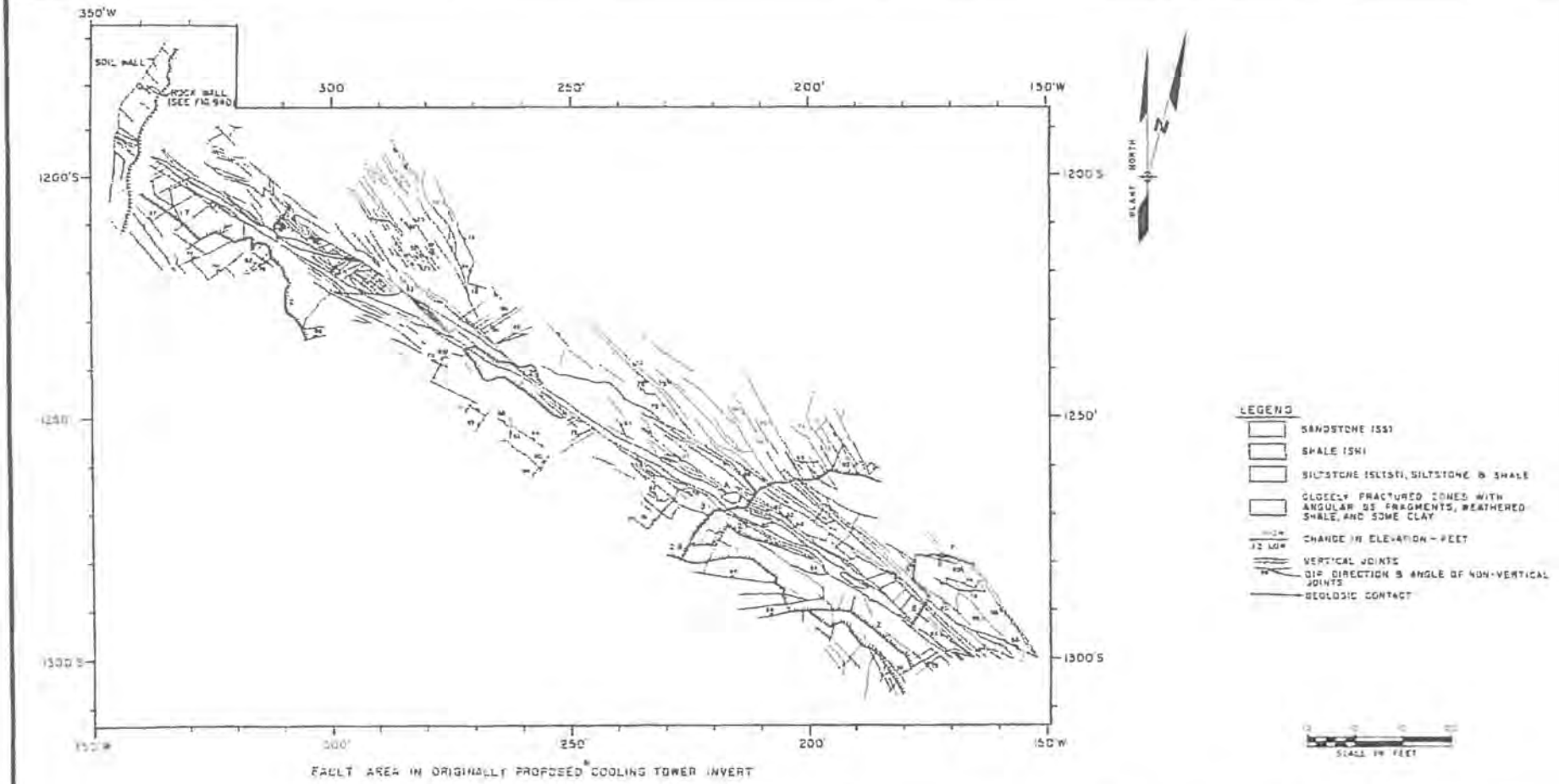
LEGEND

- 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



FAULT AREA IN ORIGINALLY PROPOSED* COOLING TOWER INVERT

*NOTE THE ORIGINALLY PROPOSED COOLING TOWER LOCATION WAS REVISED AND THE NEW LOCATION IS SHOWN ON FIG. 2.

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

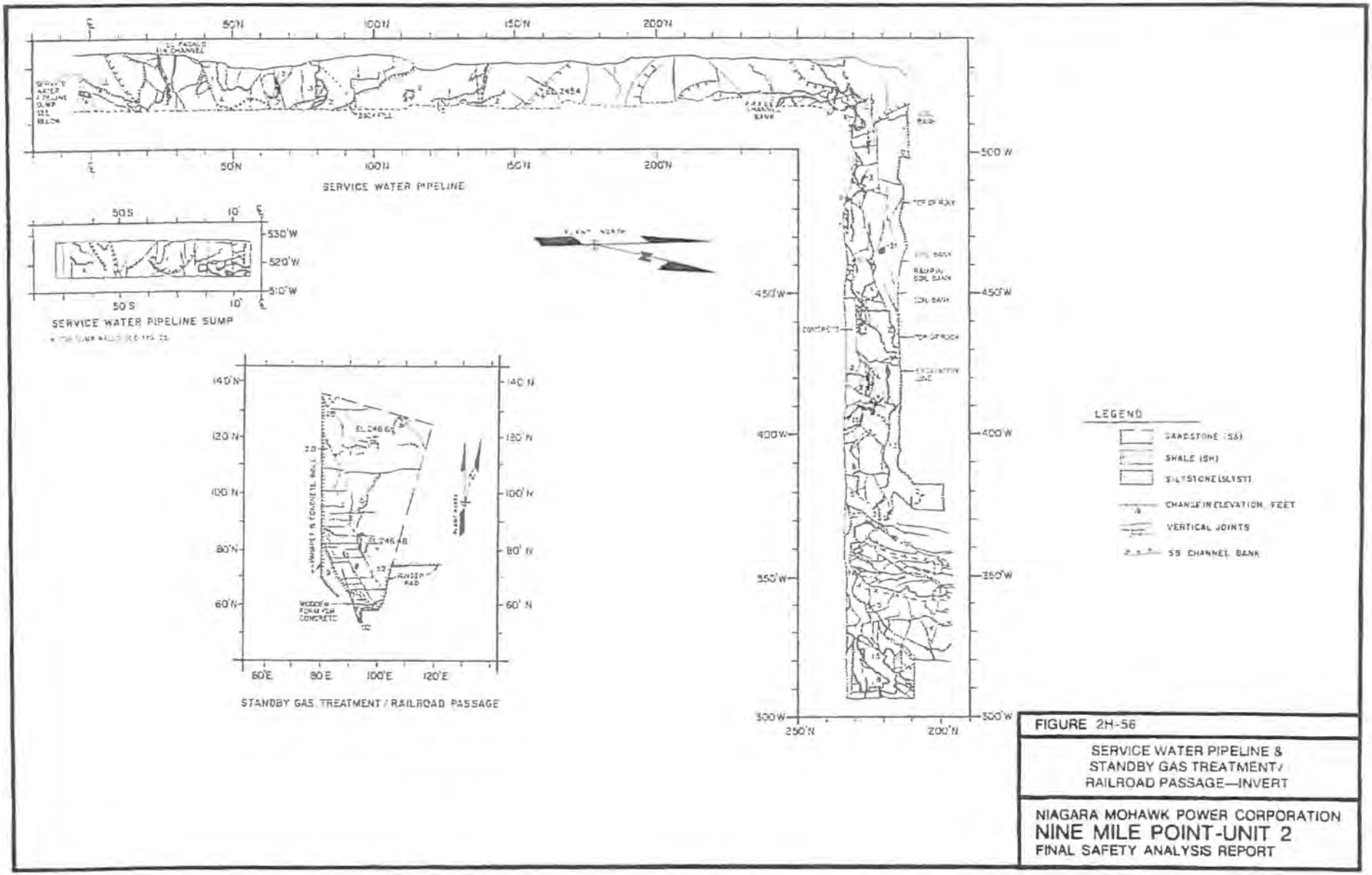


FIGURE 2H-56

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

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

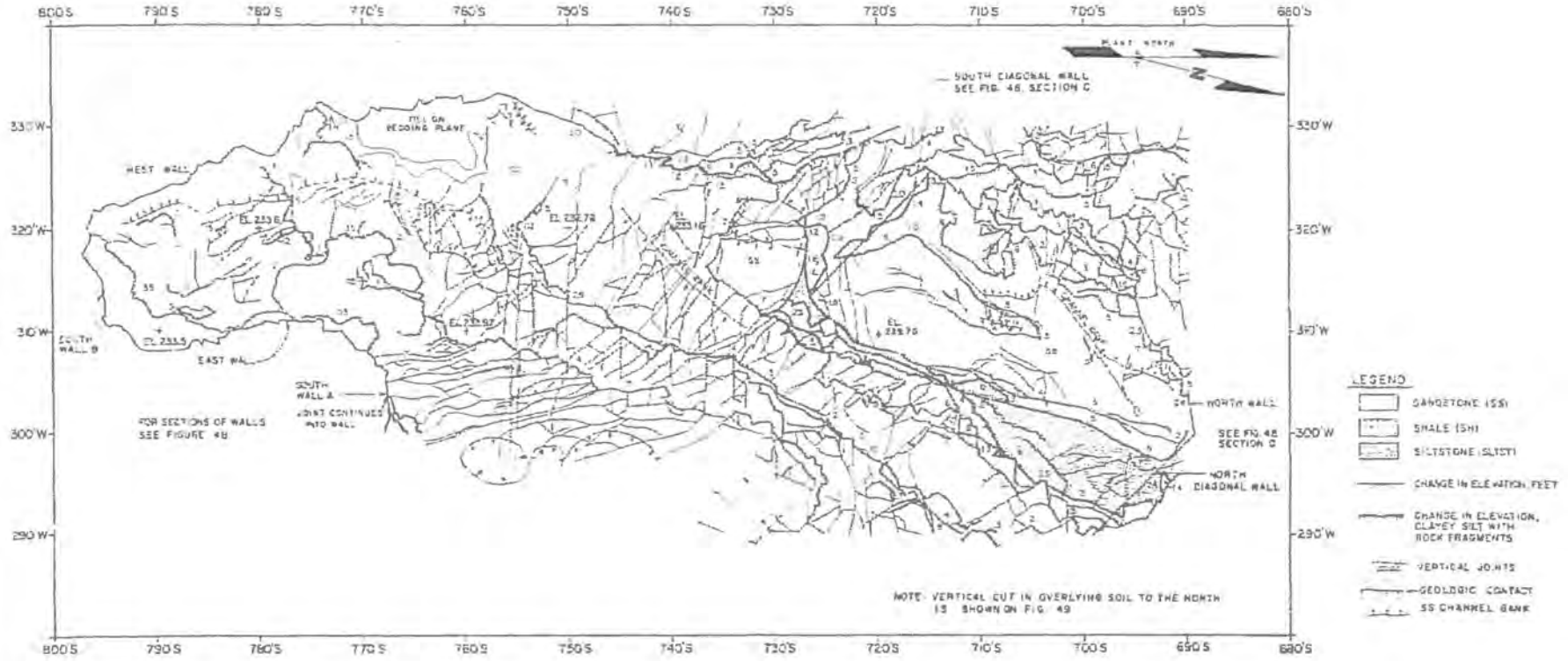


FIGURE 2H-57

GEOLOGIC MAPPING—INVERT
CIRCULATING WATER PIPING TRENCHES

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

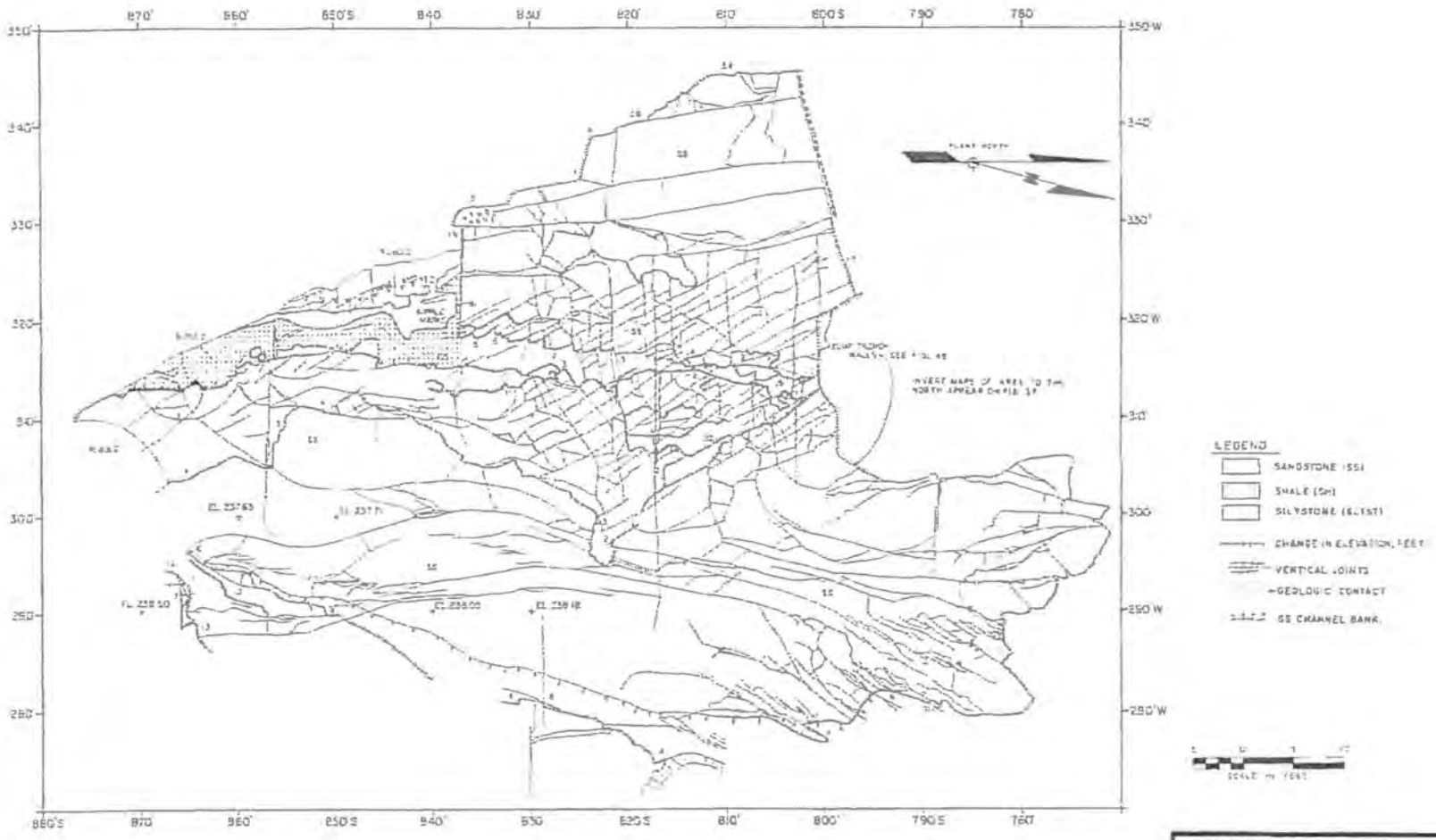


FIGURE 2H-58

GEOLOGIC MAPPING—INVERT
CIRCULATING WATER PIPING TRENCHES

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

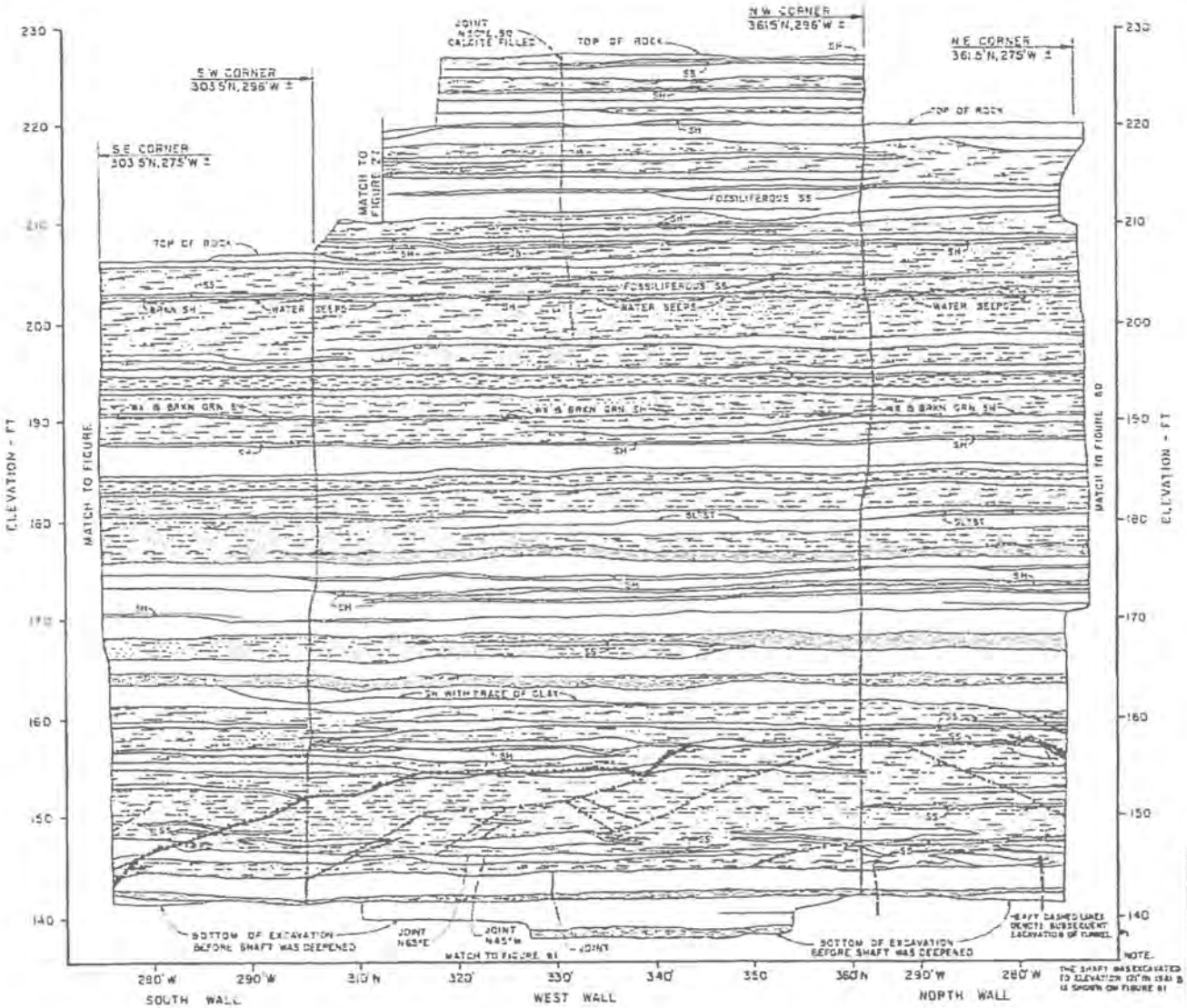
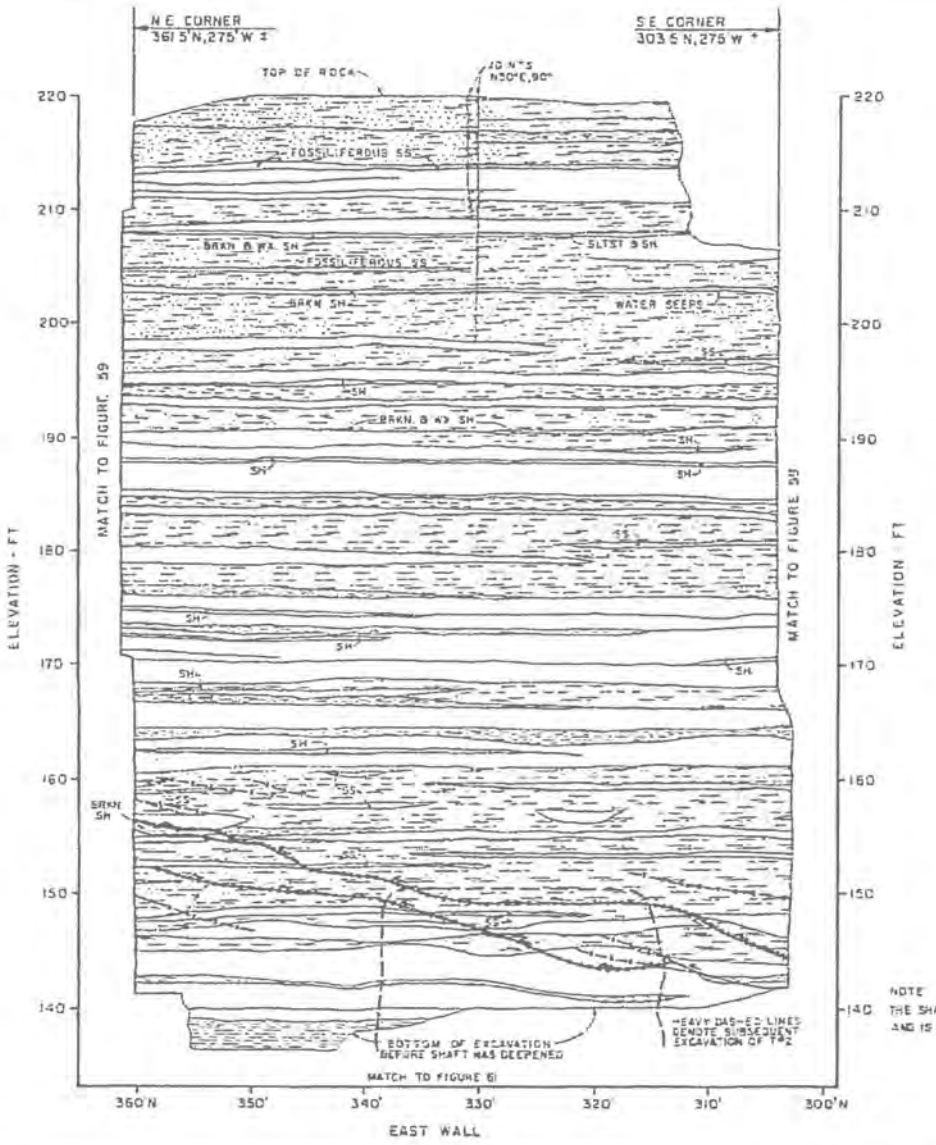


FIGURE 2H-59

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

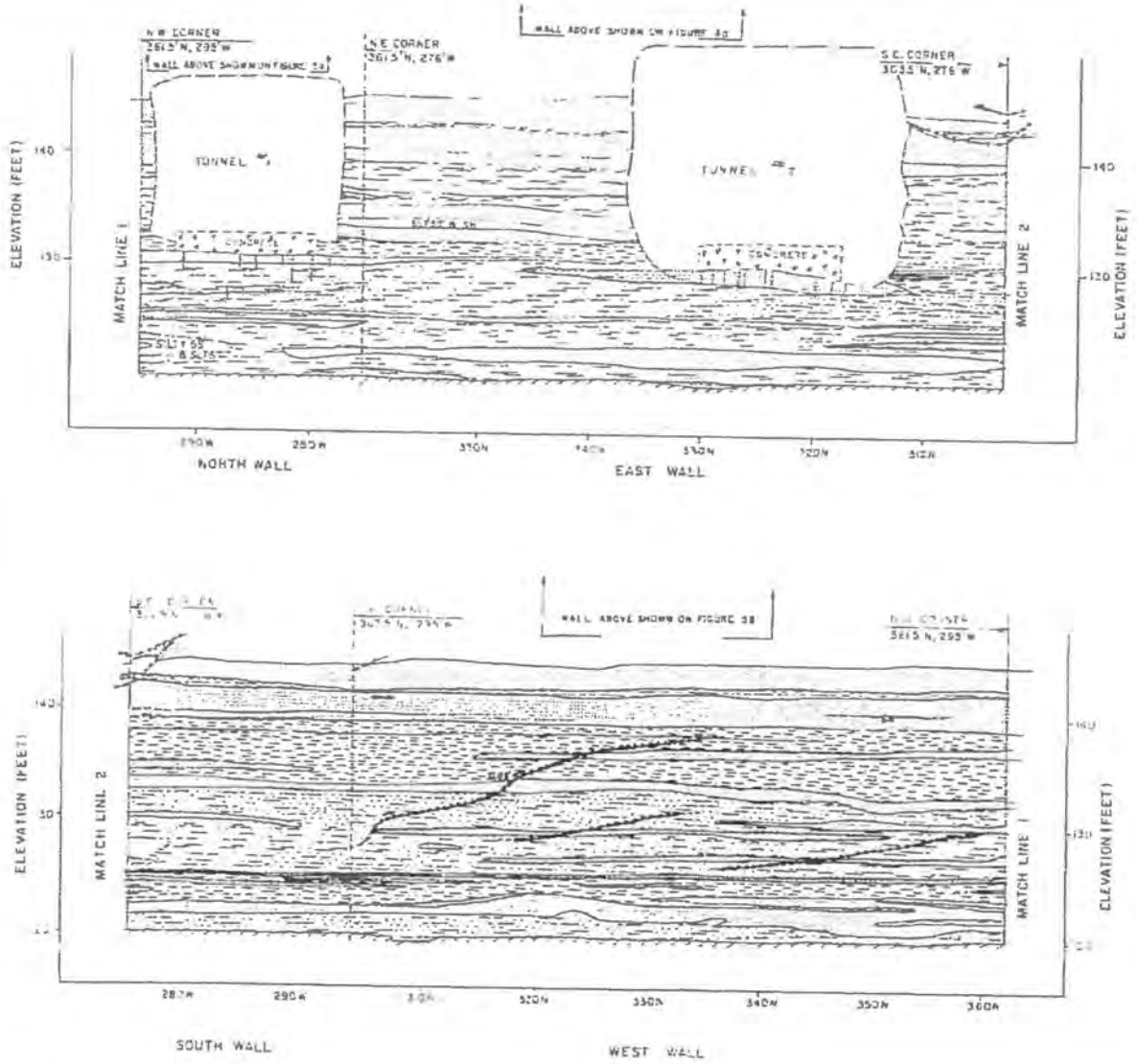
WX - WEATHERED BRKN - BROKEN

SCALE IN FEET

FIGURE 2H-60

GEOLOGIC MAPPING—WALLS
SCREENWELL SHAFT

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



LEGEND

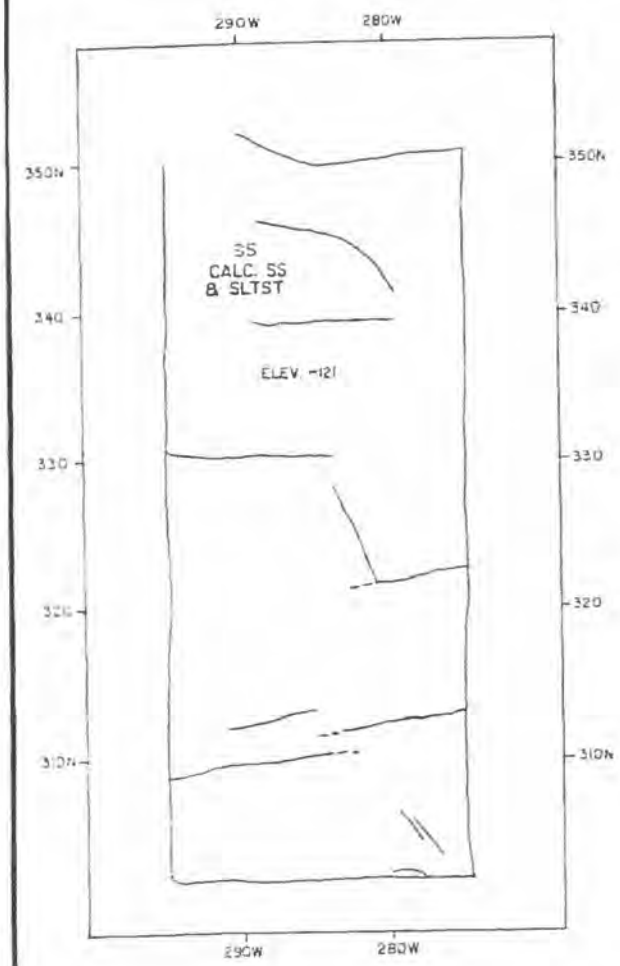
- SHALE (SH)
- SANDSTONE (SS)
- SILTSTONE (SLTST)
- SANDSTONE / SHALE / SILTSTONE
- SHEAR
- JOINT

NOTE: THE SHAFT WAS FURTHER EXCAVATED IN 1984 AND IS SHOWN ON THIS FIGURE
THE UPPER WALLS ARE SHOWN ON FIGURES 59 AND 60.
THE INVERT AT ELEVATION -140 IS SHOWN ON FIGURE 56
THE INVERT AT ELEVATION -120 IS SHOWN ON FIGURE 62.

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

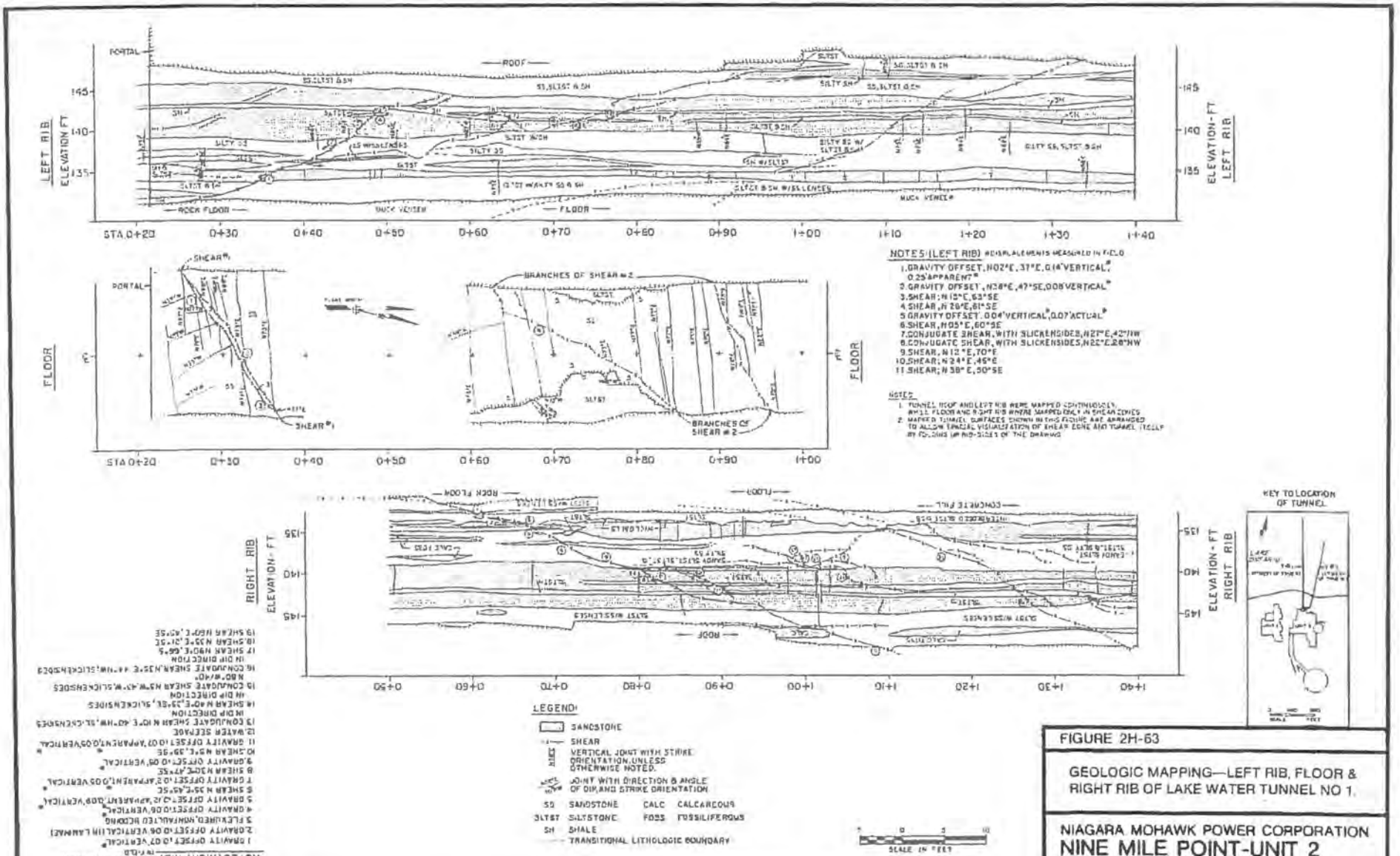


FIGURE 2H-63

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

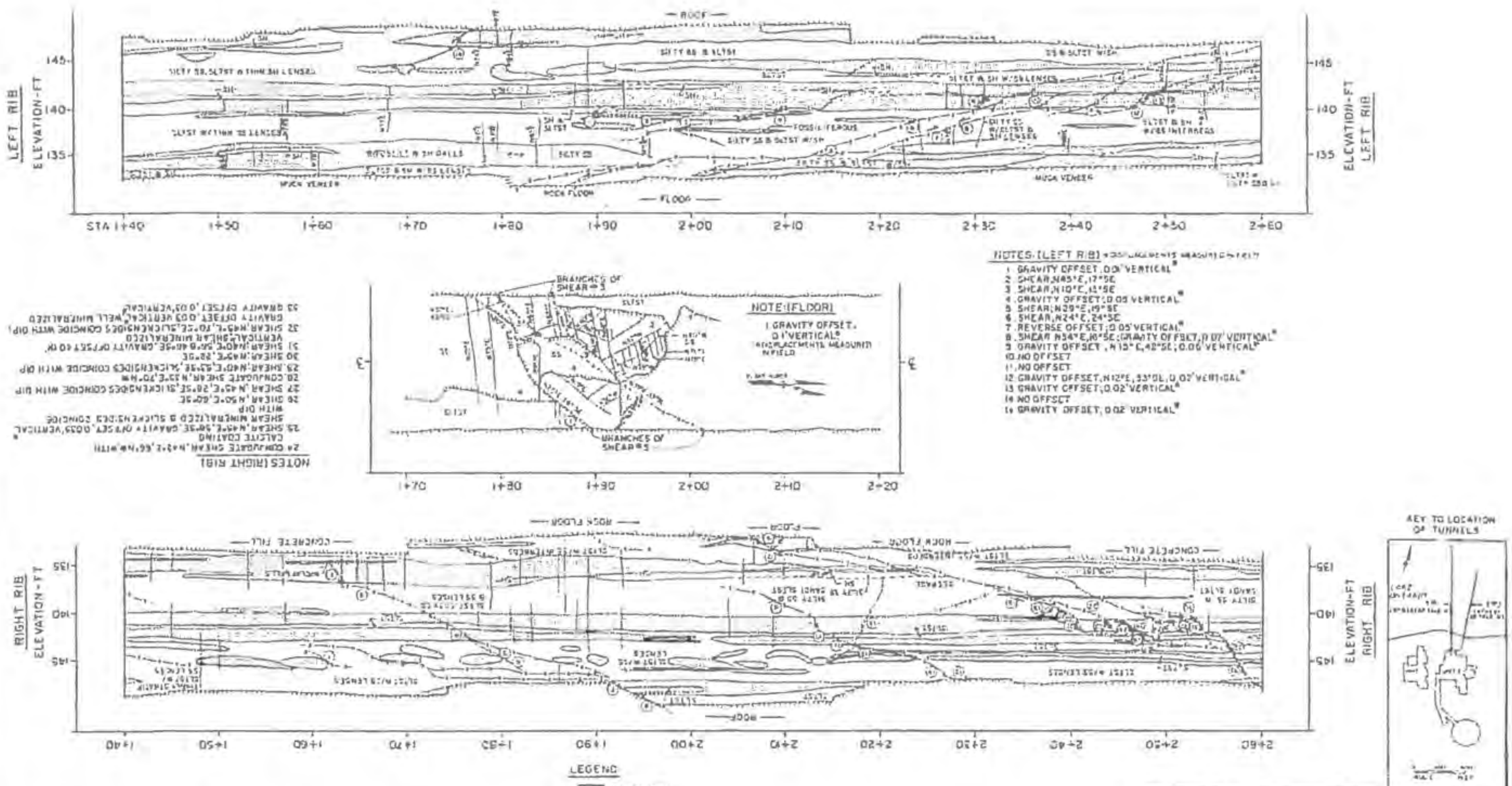


FIGURE 2H-64

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

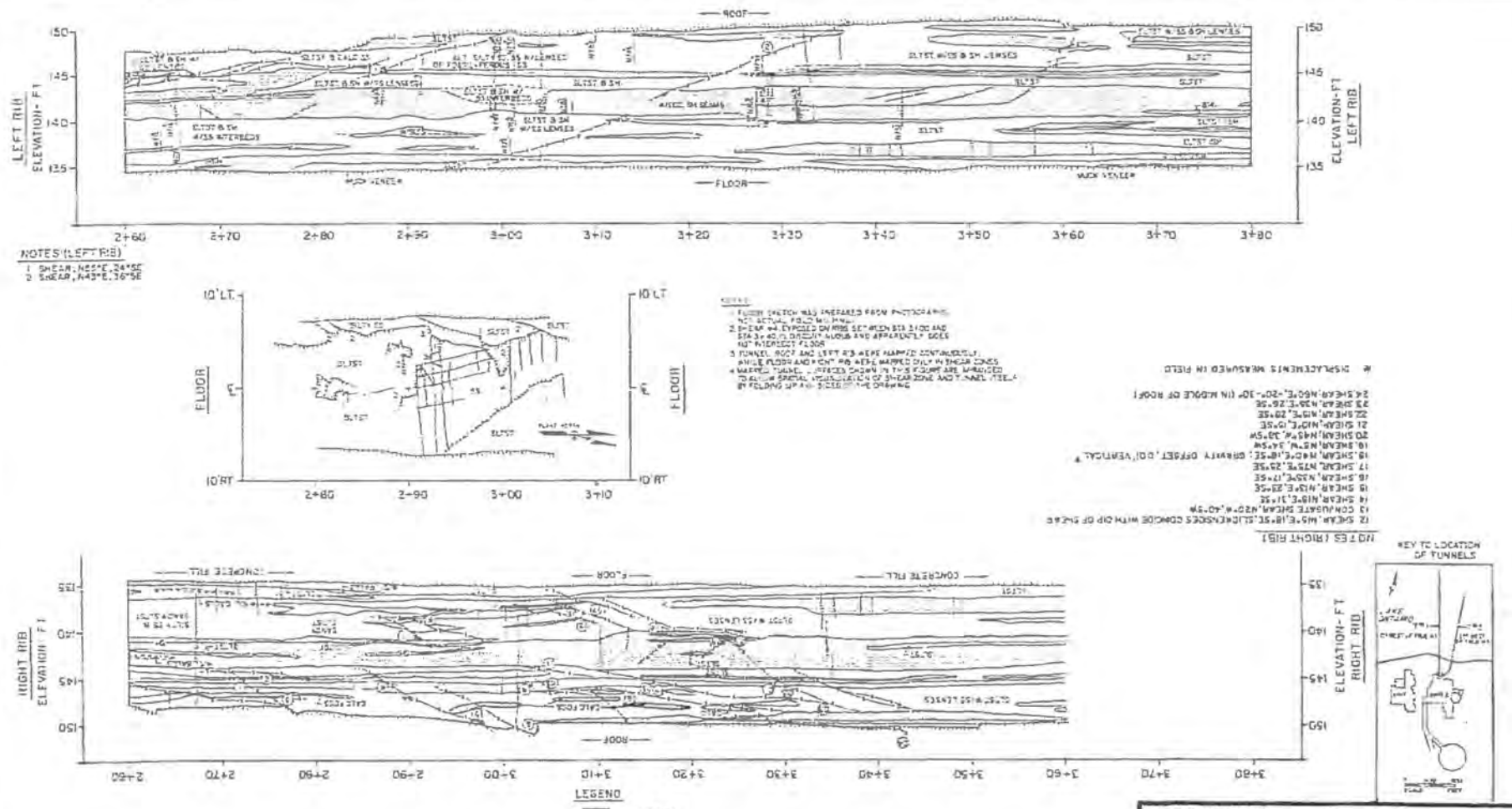
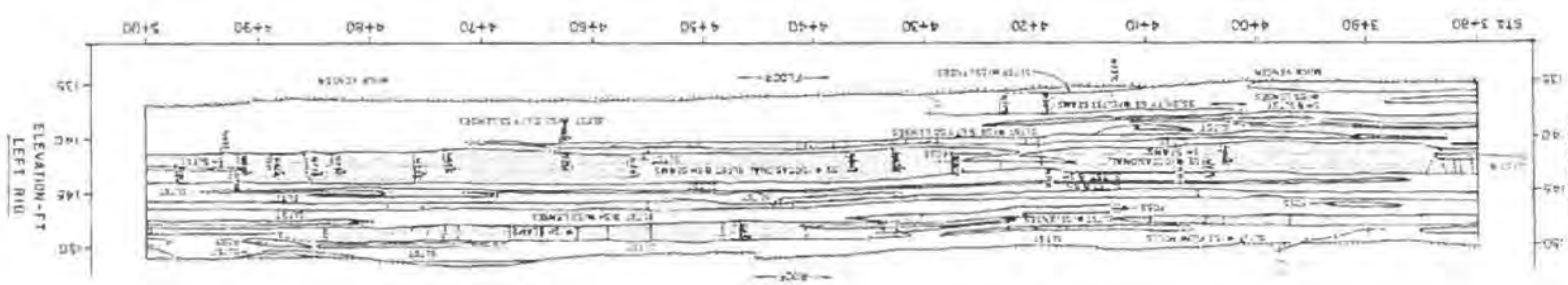


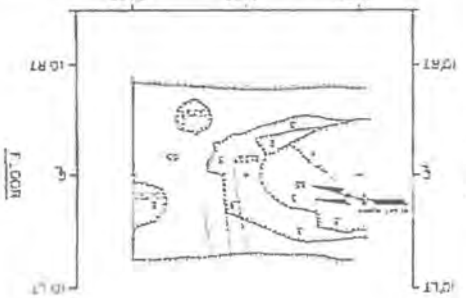
FIGURE 2H-65

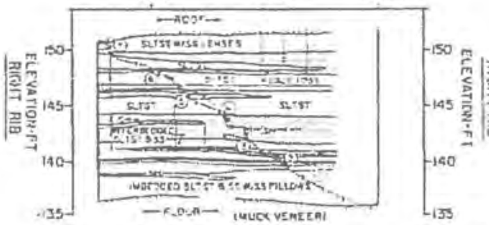
GEOLOGIC MAPPING—LEFT RIB, FLOOR & RIGHT RIB OF LAKE WATER TUNNEL NO 1.

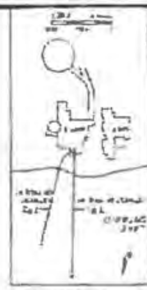
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



NOTE (LEFT RIB)
1 SHEAR CROSSES ROOF AND MERGES INTO BEDDING PLANE ON RIGHT RIB







KEY TO LOCATION OF TUNNELS

NOTES (RIGHT RIB)

1. SHEAR, N33°E, 42°SE.
2. GRAVITY OFFSET, 0.02' VERTICAL*
3. GRAVITY OFFSET; 0.05' VERTICAL*
4. SHEAR, N7°E, 46°SE; SLICKSIDES COINCIDE WITH DIP OF SHEAR
5. SHEAR: N12°E, 50°SE AND N10°E, 64°SE; SLICKENSIDES COINCIDE WITH DIP OF SHEAR, GRAVITY OFFSET; 0.02' VERTICAL*
6. SHEAR, N27°E, 58°SE, SLICKENSIDES COINCIDE WITH DIP OF SHEAR
7. SHEAR, N30°E, 47°SE, SLICKENSIDES COINCIDE WITH DIP OF SHEAR; GRAVITY OFFSET; 0.08' VERTICAL* 0.11' ACTUAL*

* DISPLACEMENTS MEASURED IN FIELD

LEGEND

- SANDSTONE
- SHEAR
- 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-66

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

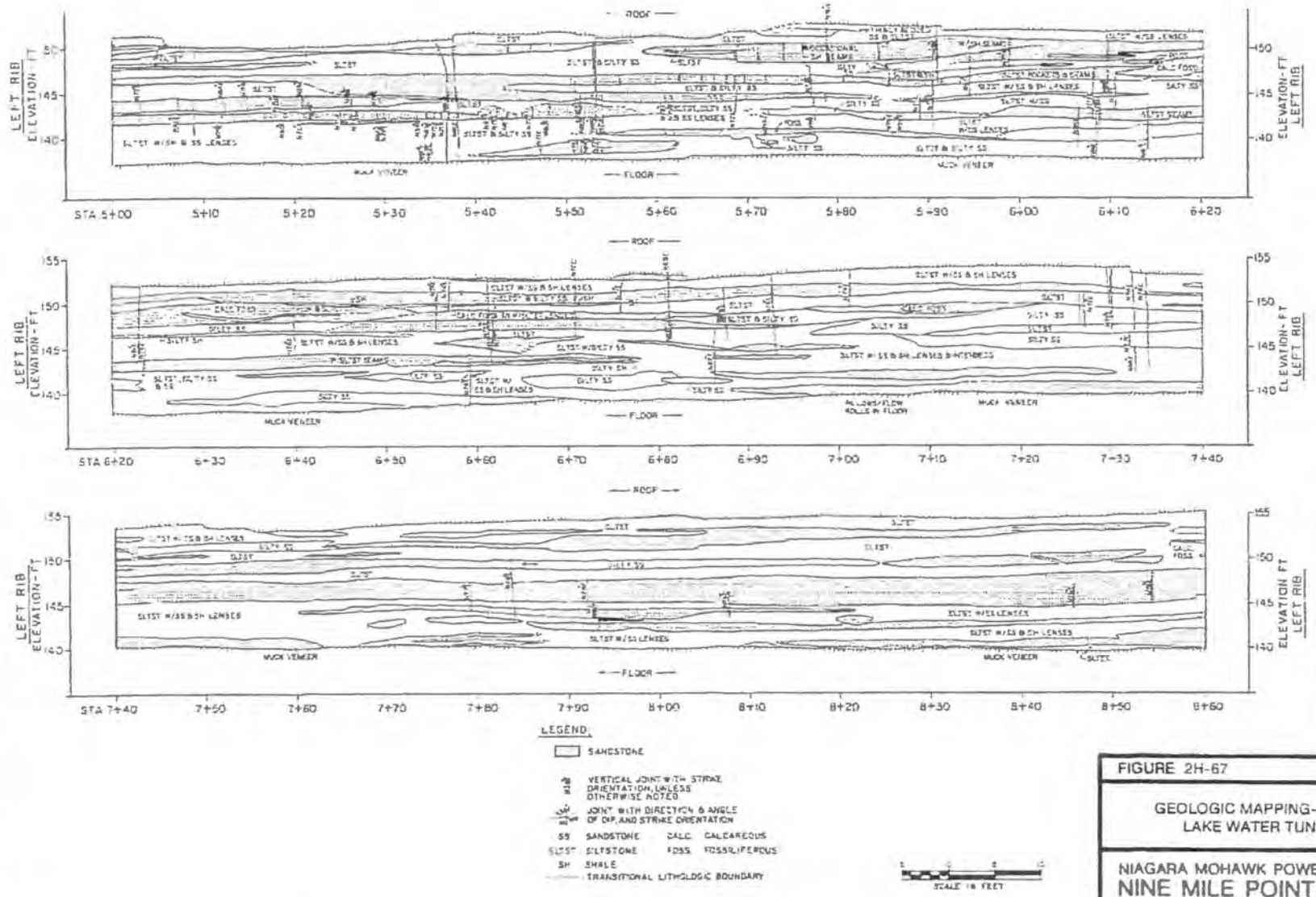


FIGURE 2H-67

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

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

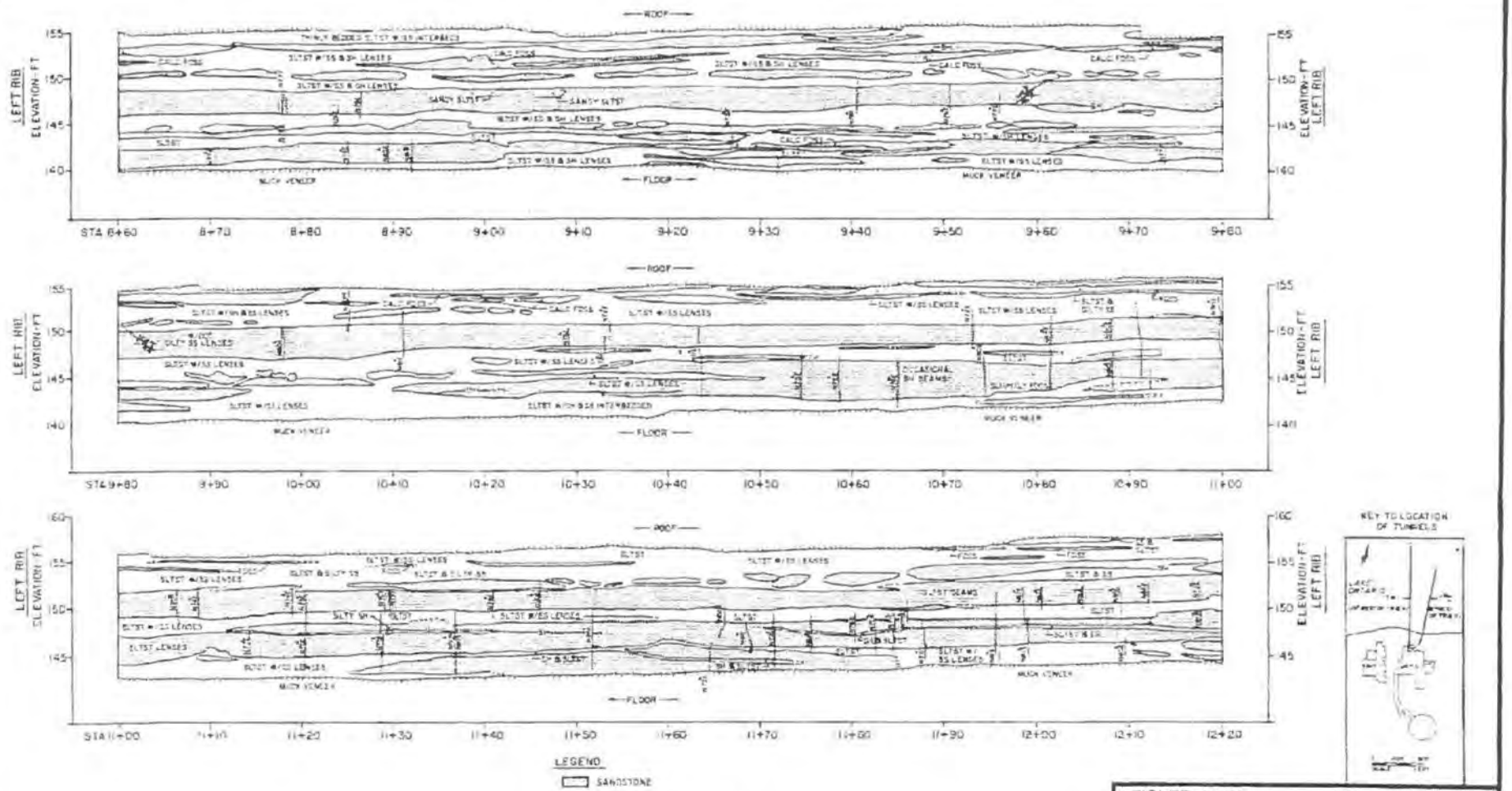


FIGURE 2H-68

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

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

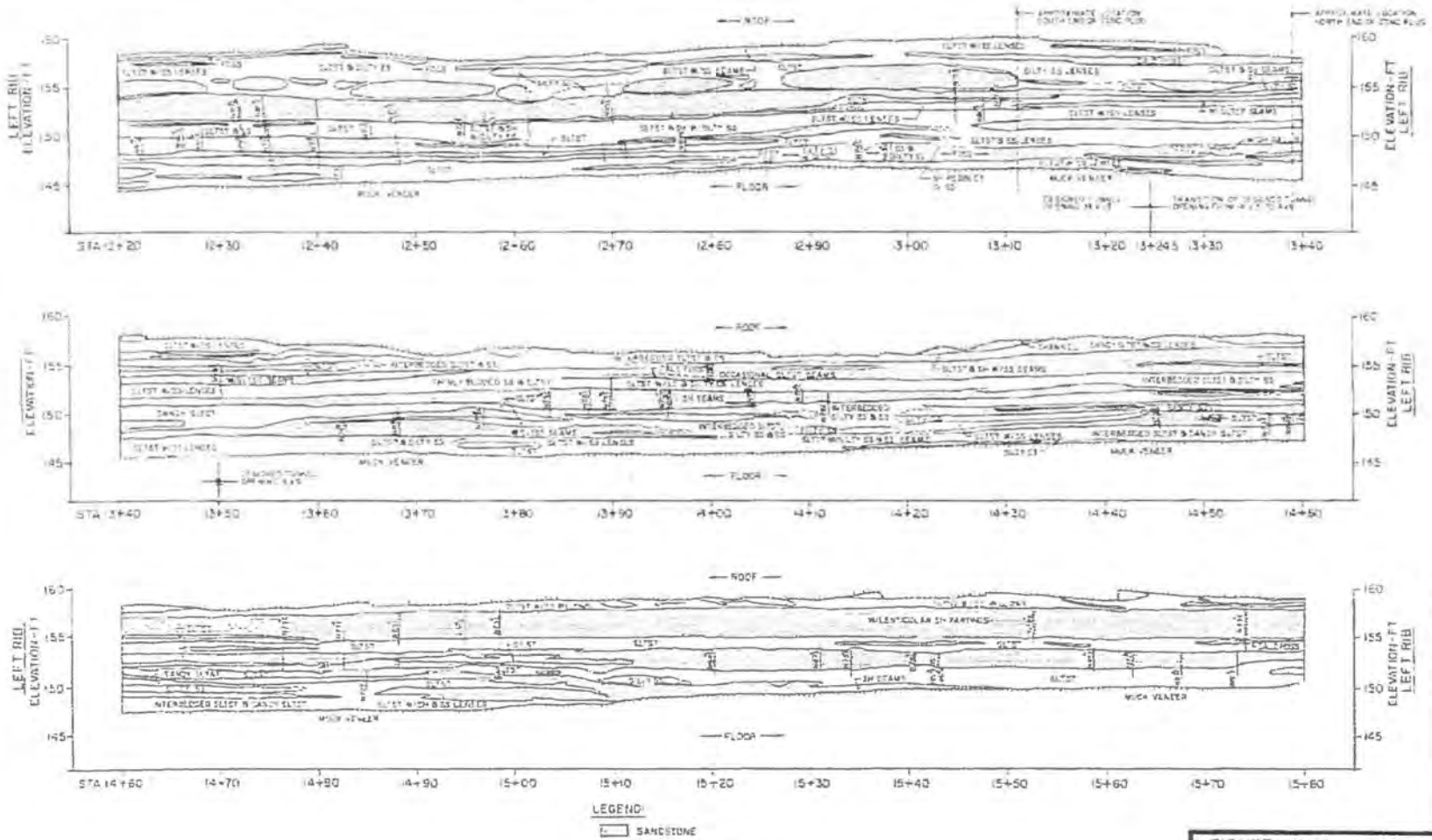
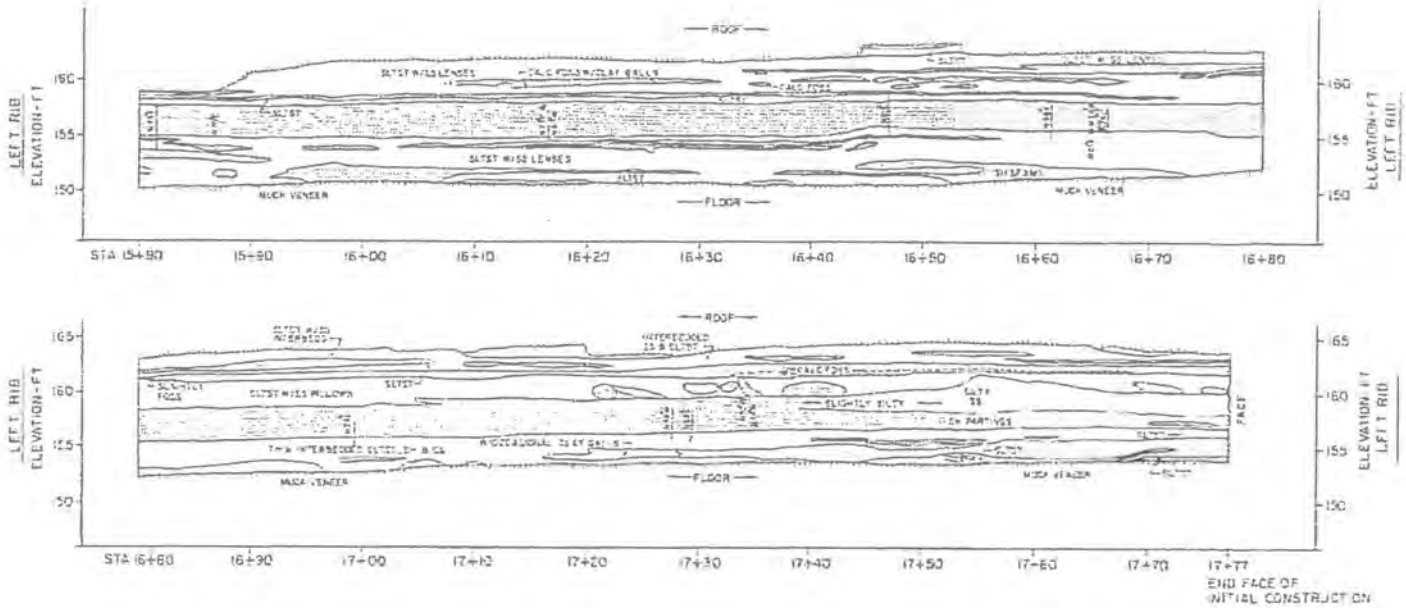
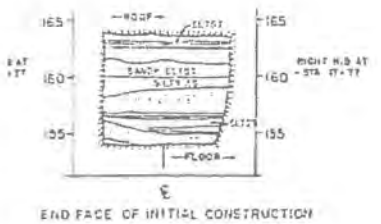


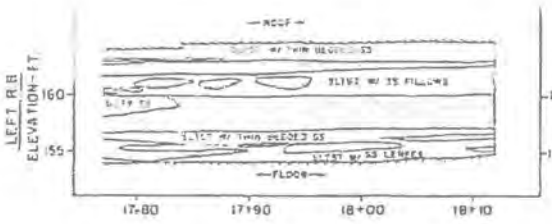
FIGURE 2H-69

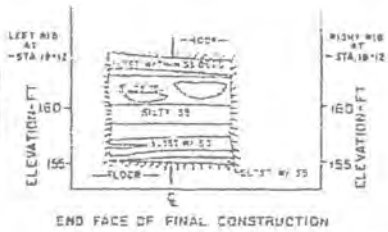
GEOLOGIC MAPPING—LEFT RIB OF LAKE WATER TUNNEL NO 1.

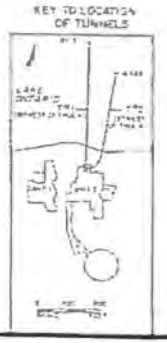
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT











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

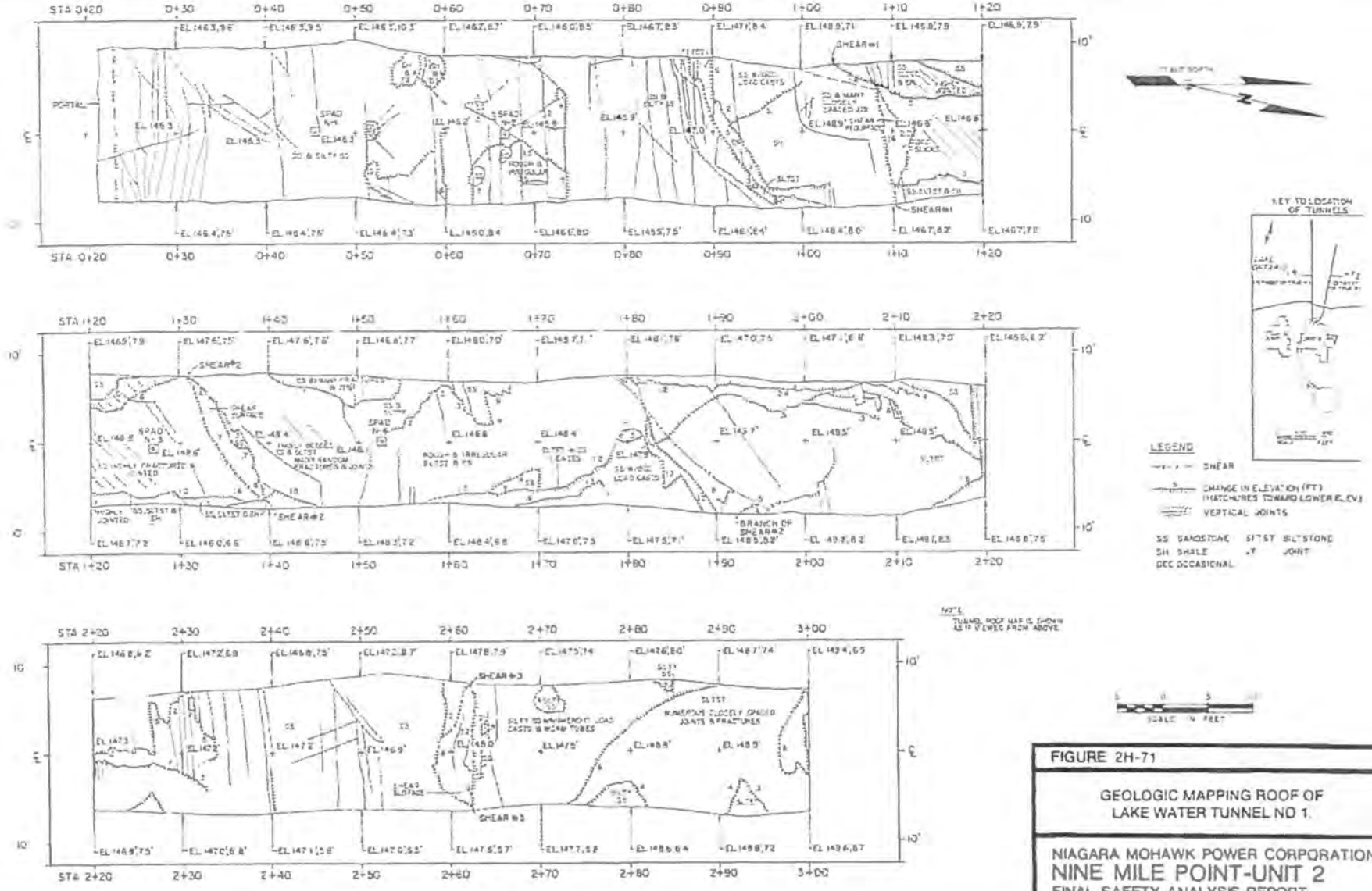


FIGURE 2H-71

GEOLOGIC MAPPING ROOF OF LAKE WATER TUNNEL NO 1.

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

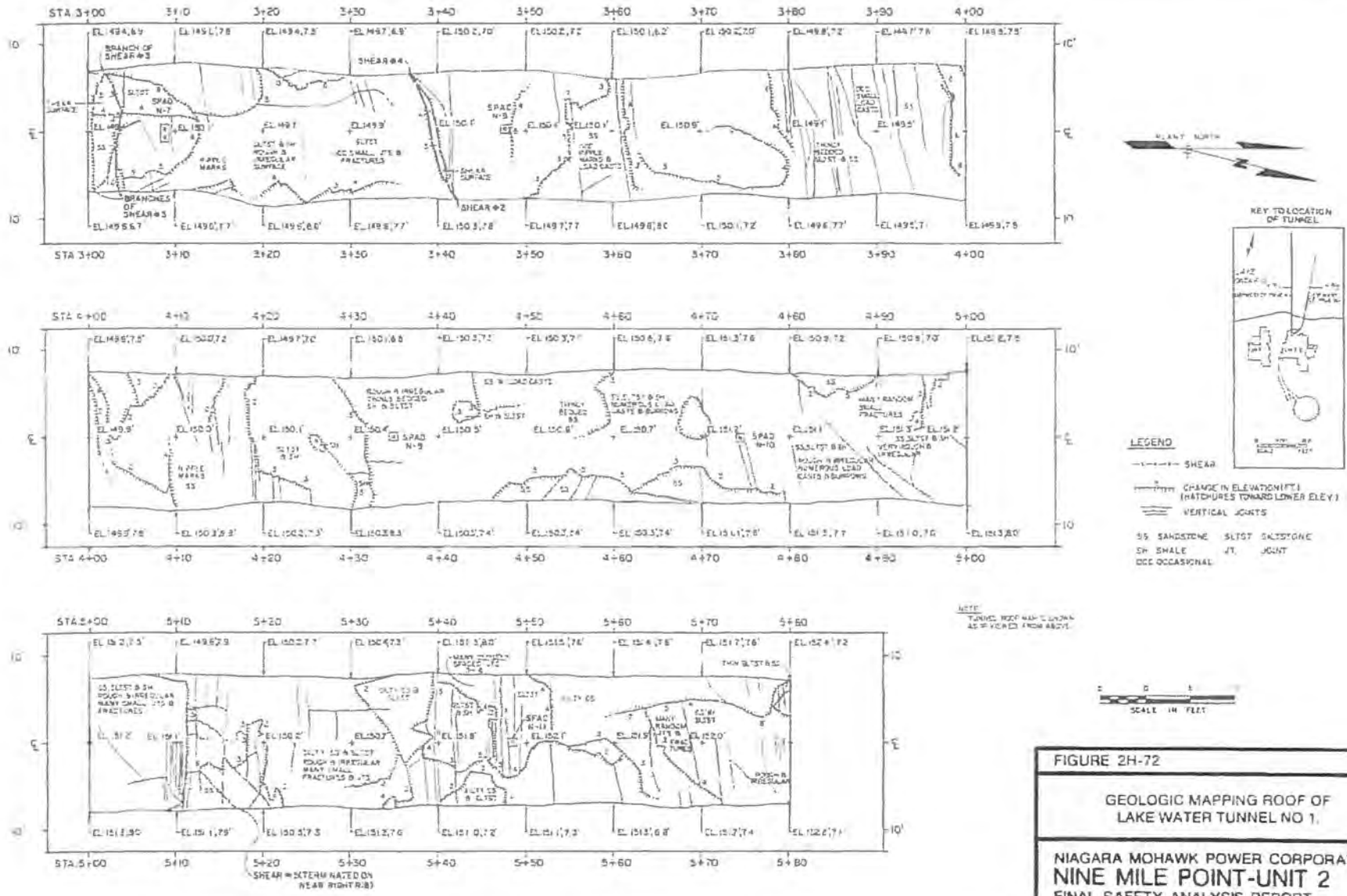


FIGURE 2H-72

GEOLOGIC MAPPING ROOF OF LAKE WATER TUNNEL NO 1.

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

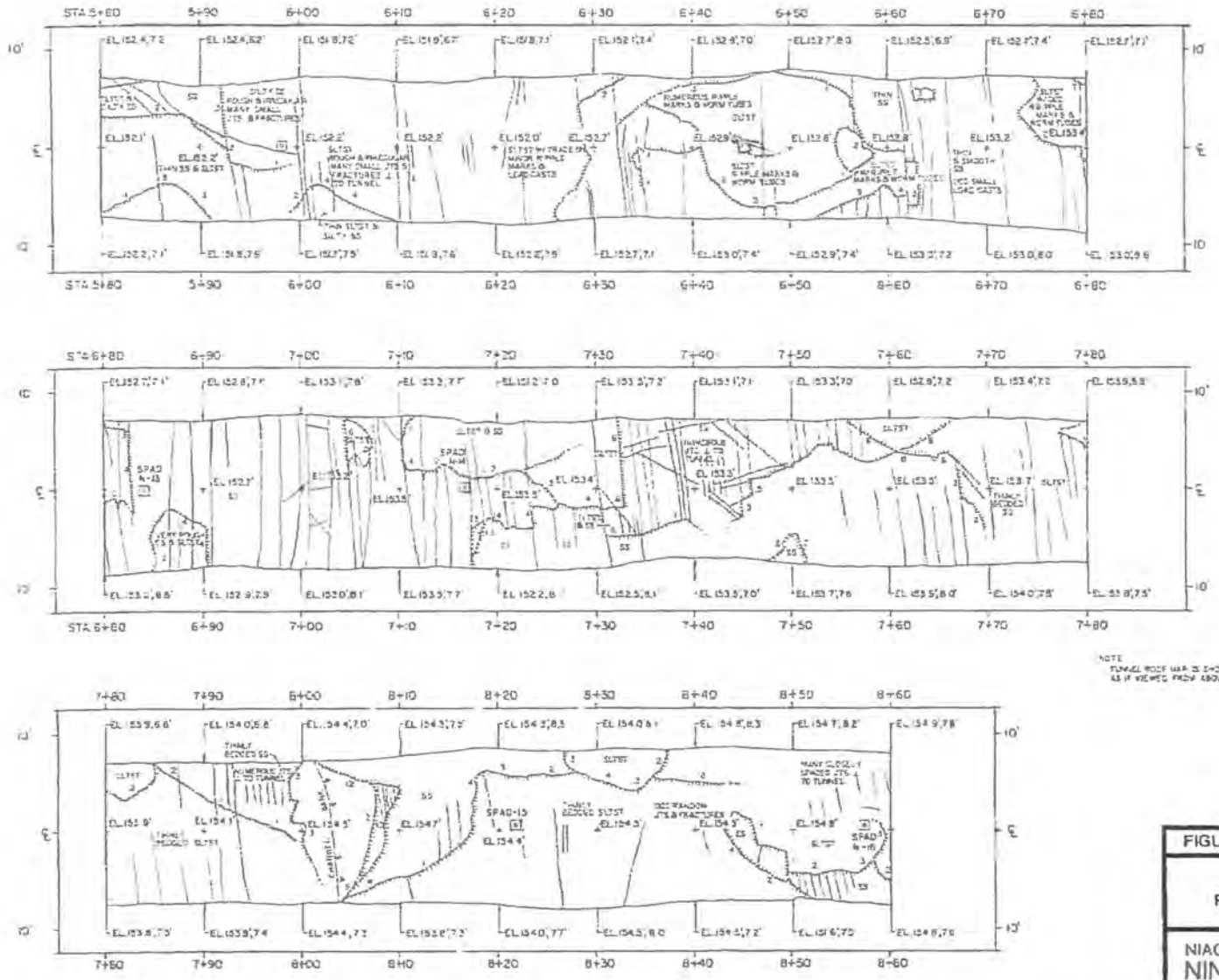


FIGURE 2H-73

GEOLOGIC MAPPING
ROOF OF LAKE WATER TUNNEL NO.1

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

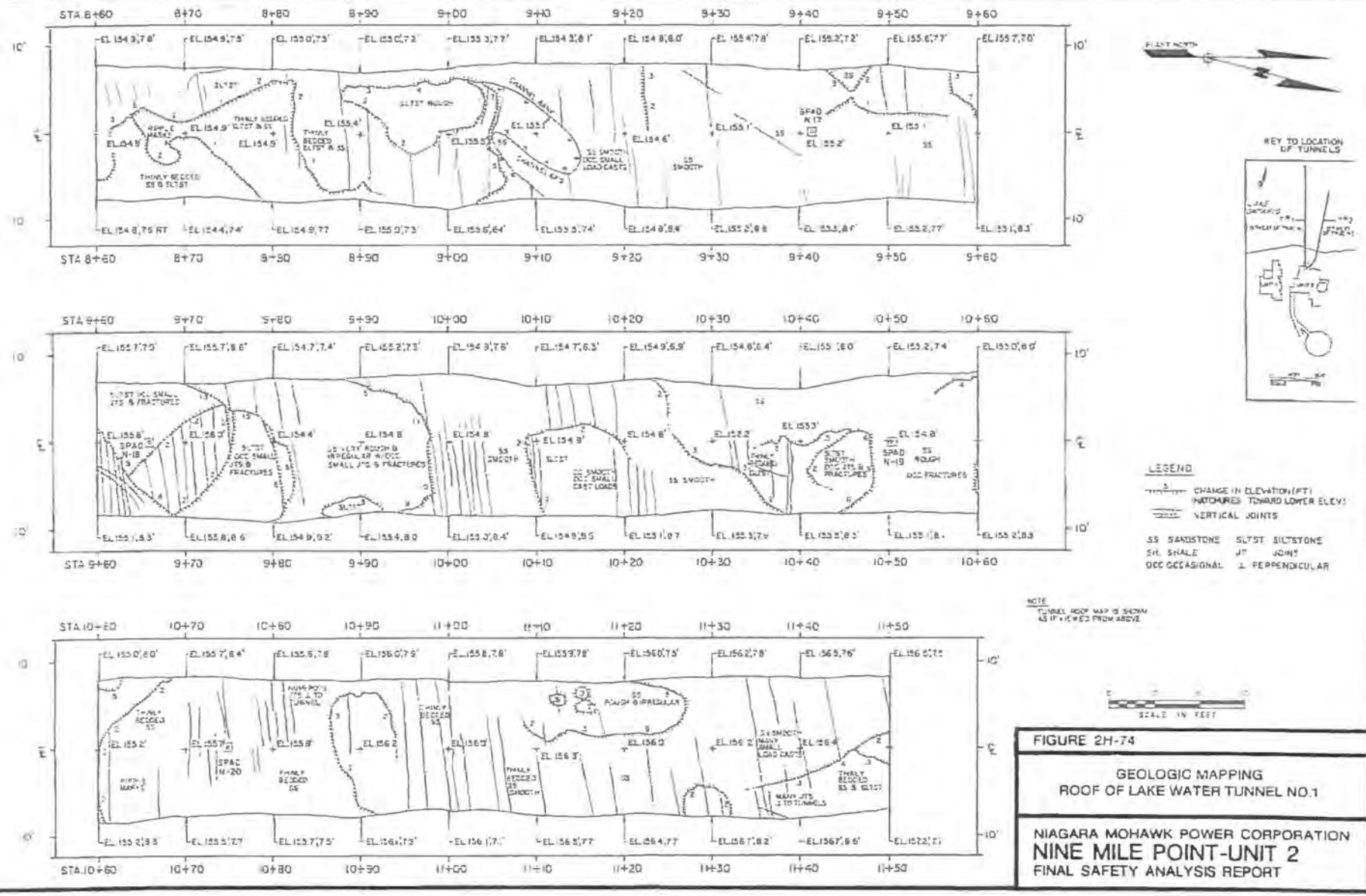


FIGURE 2H-74

GEOLOGIC MAPPING
ROOF OF LAKE WATER TUNNEL NO.1

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

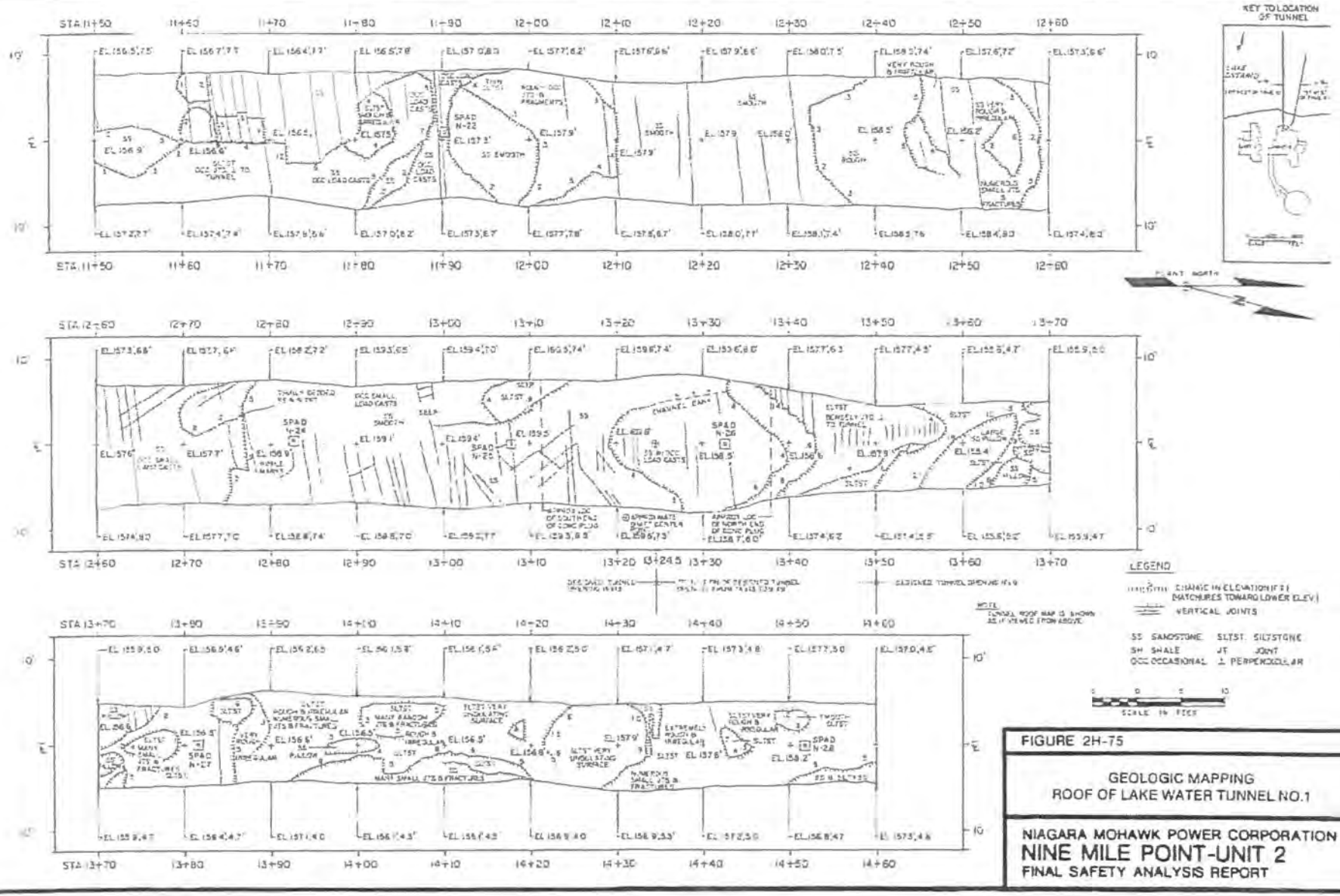


FIGURE 2H-75

GEOLOGIC MAPPING
ROOF OF LAKE WATER TUNNEL NO.1

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

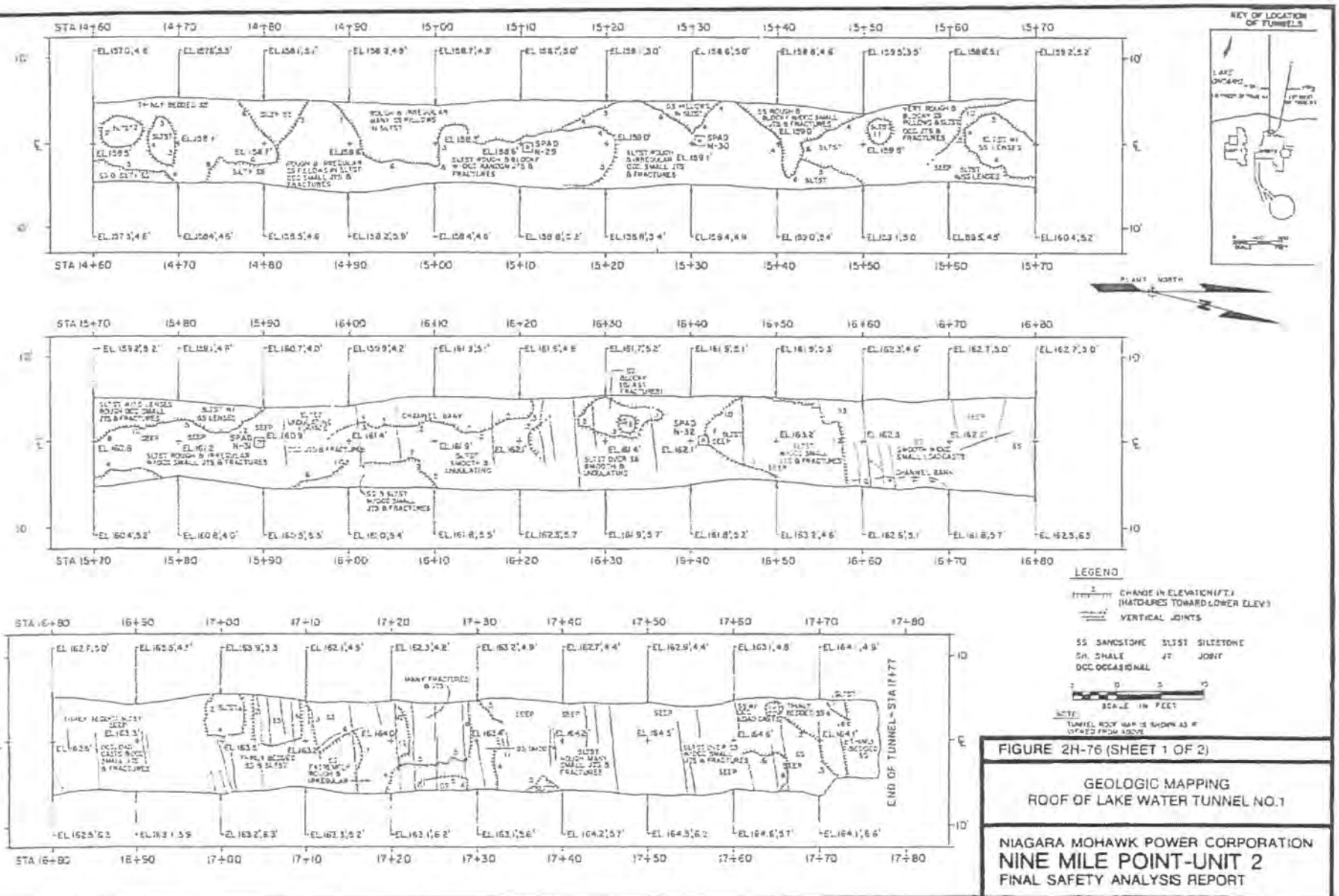
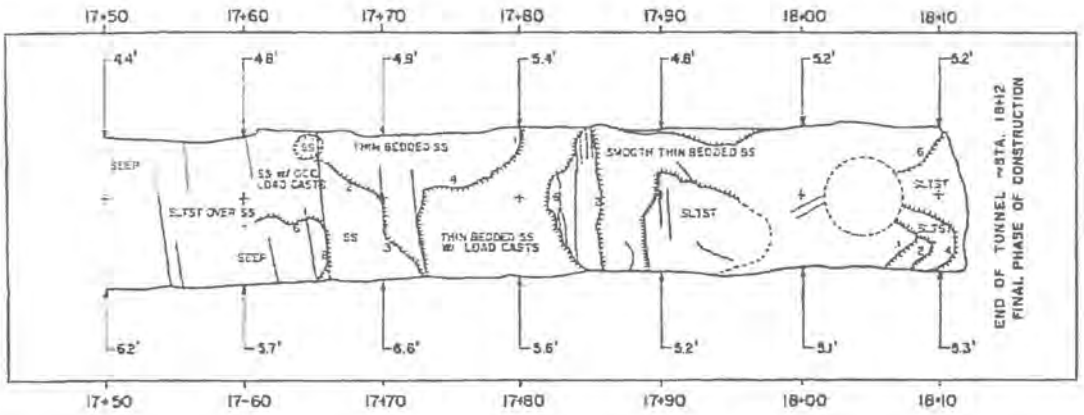


FIGURE 2H-76 (SHEET 1 OF 2)

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

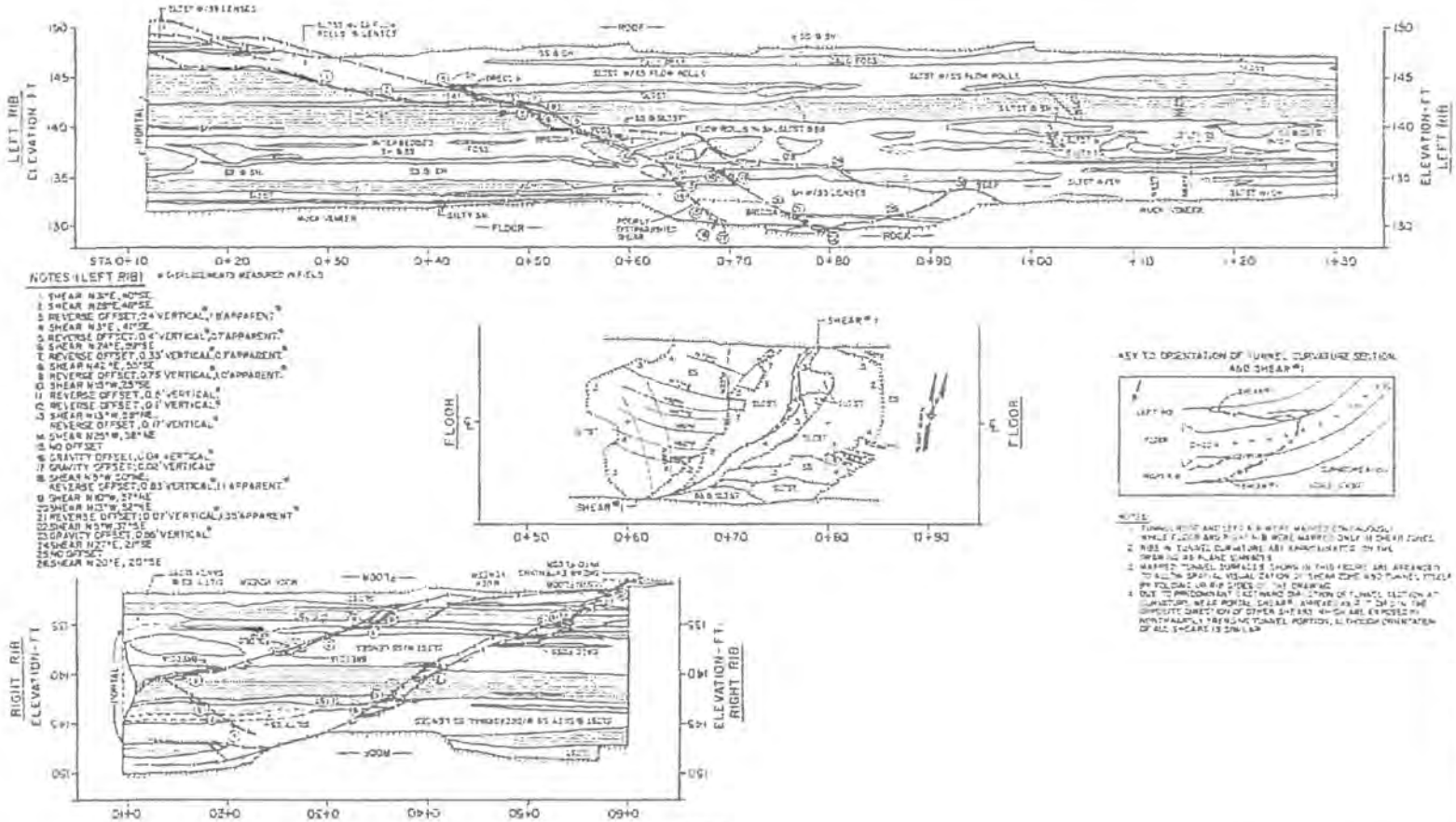


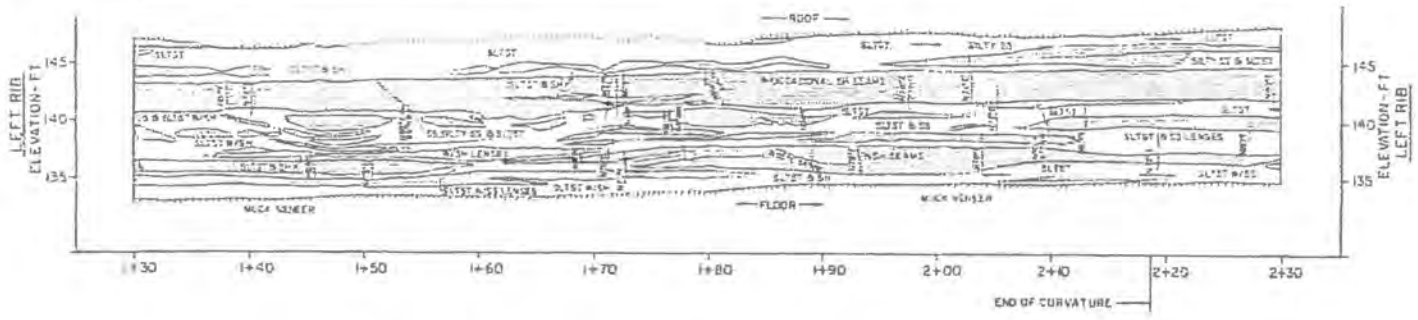
FIGURE 2H-77

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

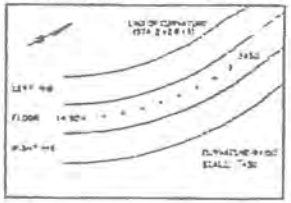
NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT-UNIT 2

FINAL SAFETY ANALYSIS REPORT



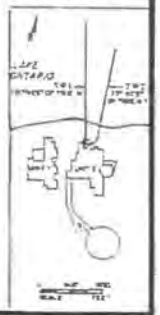
KEY TO ORIENTATION OF TUNNEL CURVATURE



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



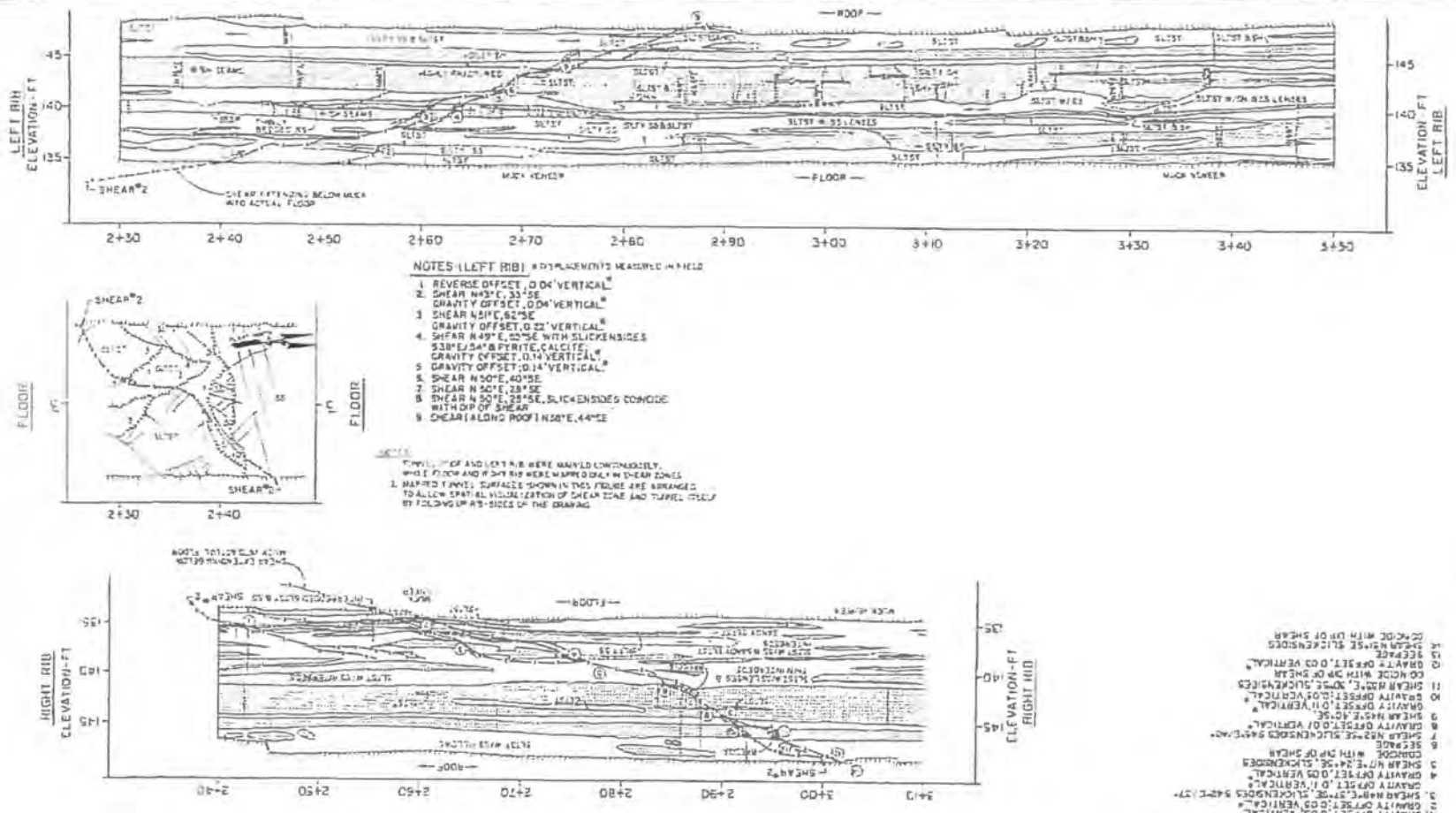
LEGEND:

- 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

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



NOTES: (LEFT RIB) * DISPLACEMENTS MEASURED IN FIELD

1. REVERSE OFFSET, 0.04' VERTICAL*
2. SHEAR N43°E, 33°SE GRAVITY OFFSET, 0.04' VERTICAL*
3. SHEAR N51°E, 62°SE GRAVITY OFFSET, 0.22' VERTICAL*
4. SHEAR N49°E, 65°SE WITH SLICKENSIDES 538°E/34° & PYRITE, CALCITE; GRAVITY OFFSET, 0.14' VERTICAL*
5. GRAVITY OFFSET, 0.14' VERTICAL*
6. SHEAR N 50°E, 40°SE
7. SHEAR N 50°E, 28°SE
8. SHEAR N 50°E, 25°SE, SLICKENSIDES COINCIDE WITH DIP OF SHEAR
9. SHEAR (ALONG ROOF) N38°E, 44°SE

NOTES:

1. TUNNEL FLOOR AND LEFT RIB 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 ITSELF BY FOLDING UP SIDES OF THIS DRAWING.

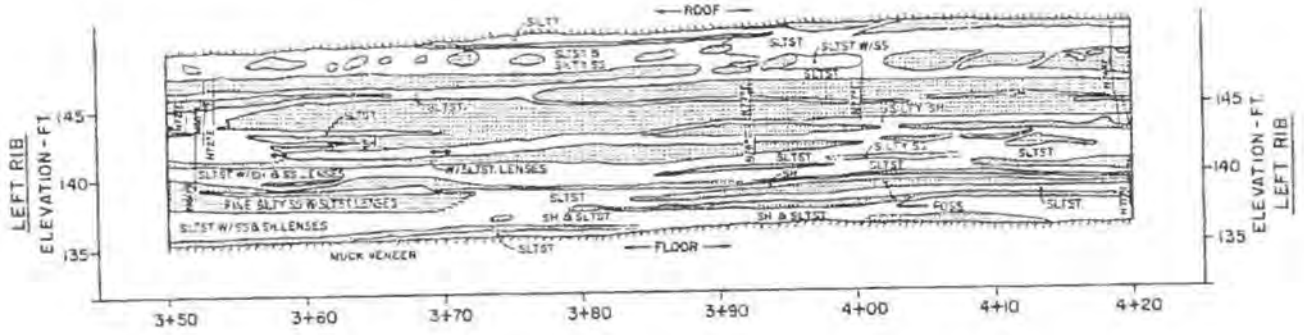
NOTES: (RIGHT RIB) * DISPLACEMENTS MEASURED IN FIELD

1. GRAVITY OFFSET, 0.09' VERTICAL*
2. GRAVITY OFFSET, 0.03' VERTICAL*
3. SHEAR N48°E, 37°SE, SLICKENSIDES 542'E/37°
4. GRAVITY OFFSET, 0.01' VERTICAL*
5. SHEAR N47°E, 34°SE, SLICKENSIDES
6. SECPAGE
7. SHEAR N32°SE SLICKENSIDES S40°E/40°
8. GRAVITY OFFSET, 0.01' VERTICAL*
9. SHEAR N45°E, 40°SE
10. GRAVITY OFFSET, 0.01' VERTICAL*
11. SHEAR N30°E, 30°SE, SLICKENSIDES
12. GRAVITY OFFSET, 0.03' VERTICAL*
13. SHEAR N51°SE SLICKENSIDES COINCIDE WITH DIP OF SHEAR

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

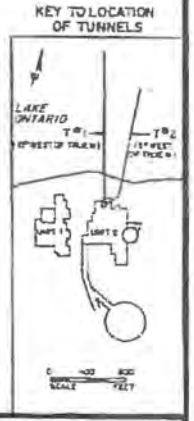


FIGURE 2H-80

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

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

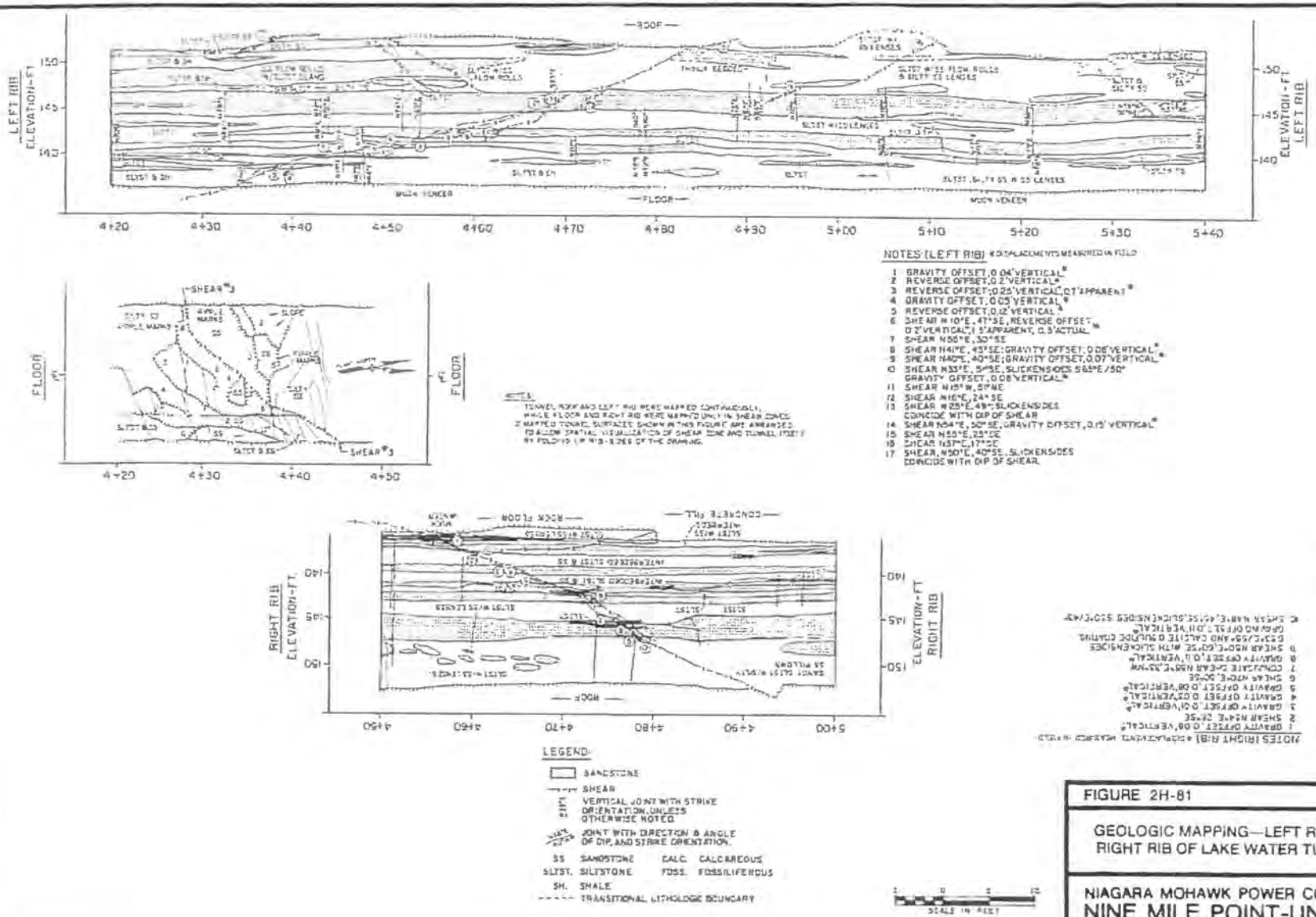
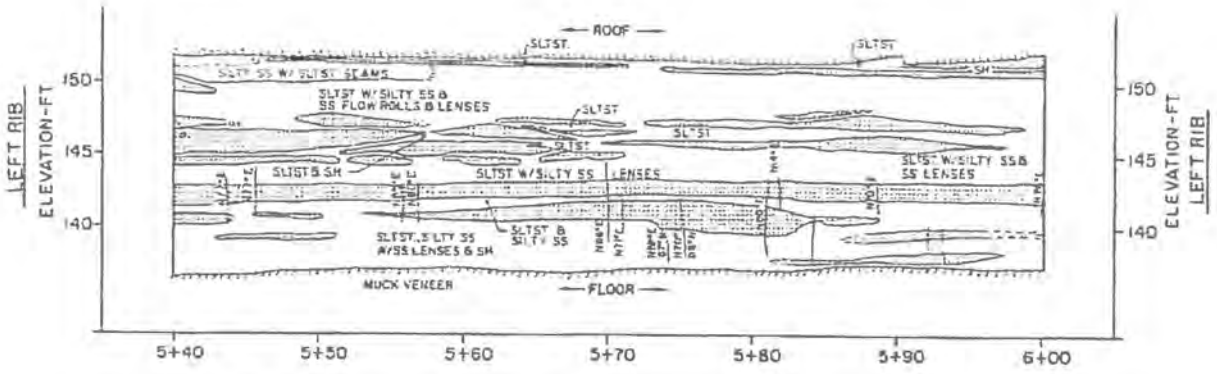


FIGURE 2H-81

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

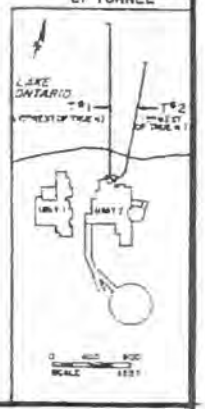


FIGURE 2H-82

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

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

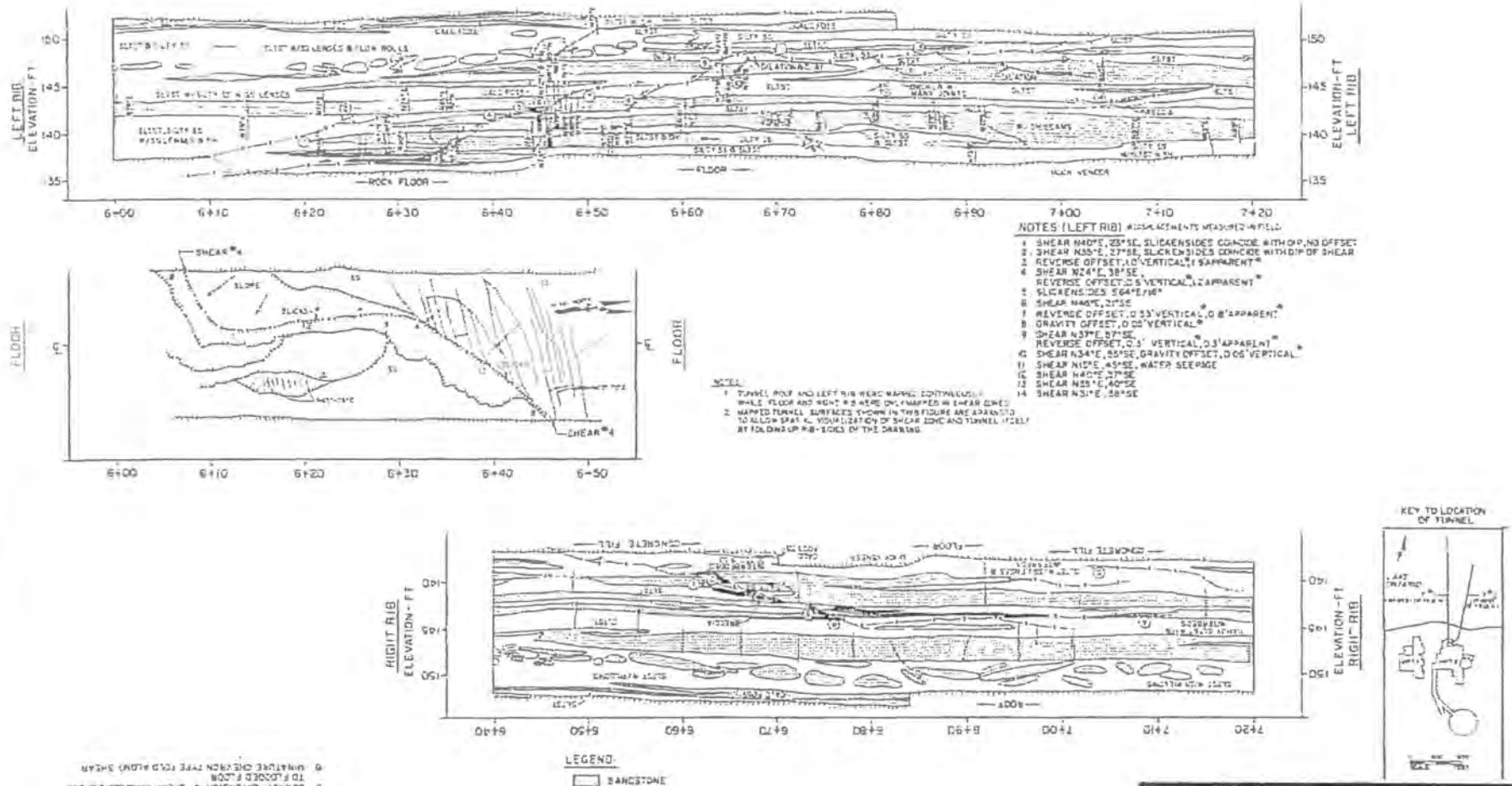
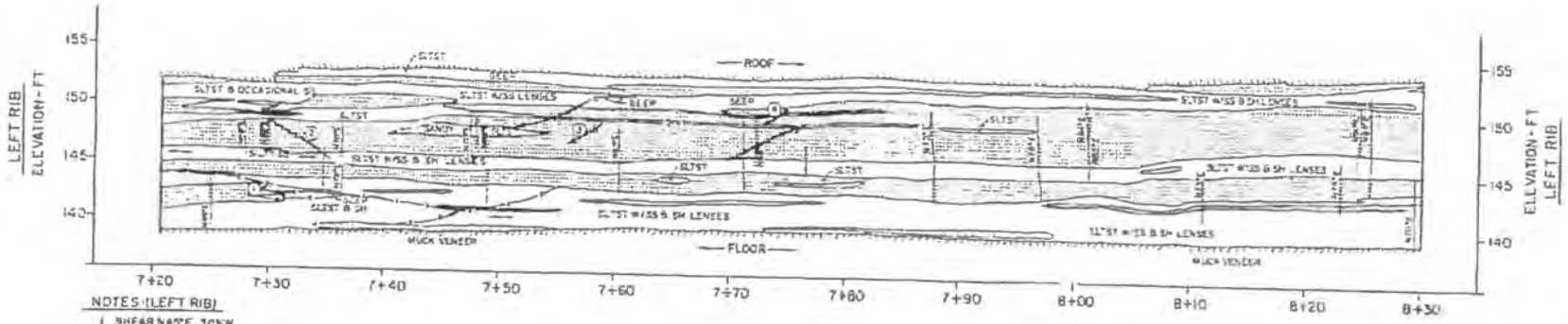


FIGURE 2H-83

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 — CALC. CALCAREOUS
- SLTST. SILTSTONE — FOSS. FOSSILIFEROUS
- SH. SHALE
- 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

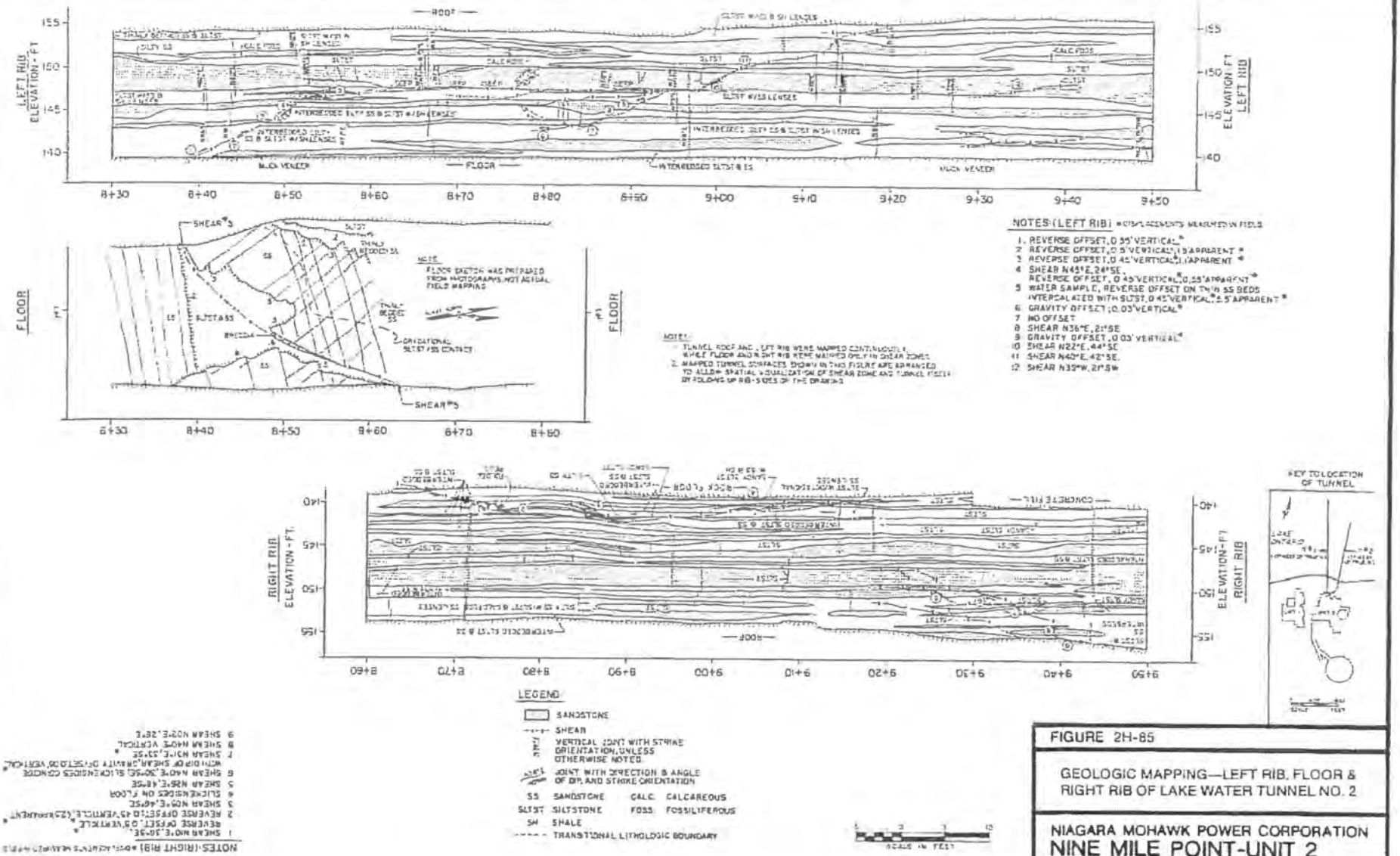
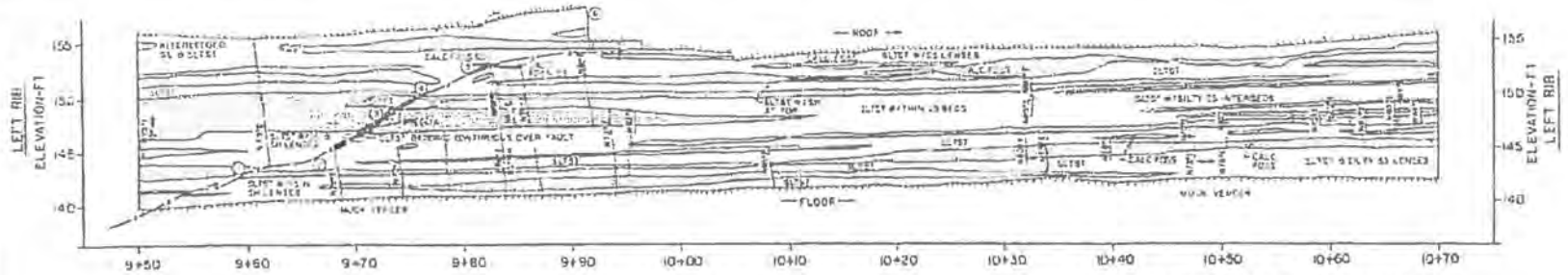
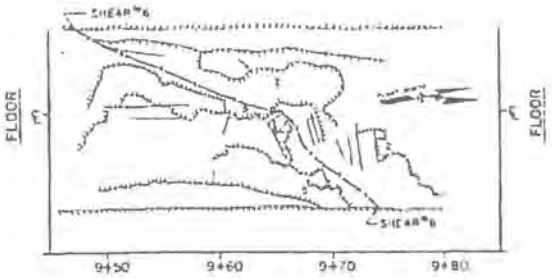


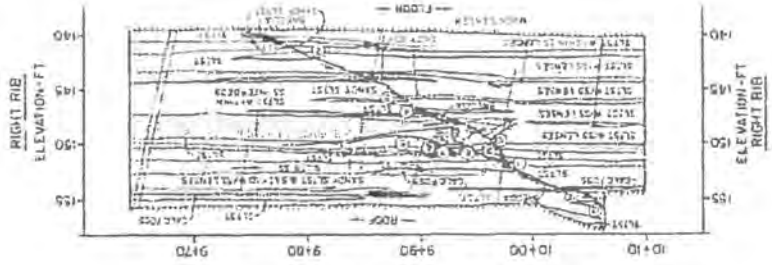
FIGURE 2H-85

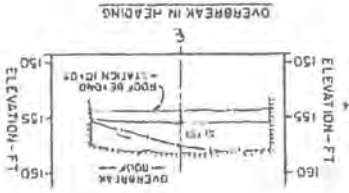
GEOLOGIC MAPPING—LEFT RIB, FLOOR & RIGHT RIB OF LAKE WATER TUNNEL NO. 2

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









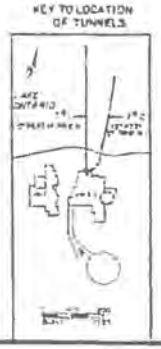


FIGURE 2H-86

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

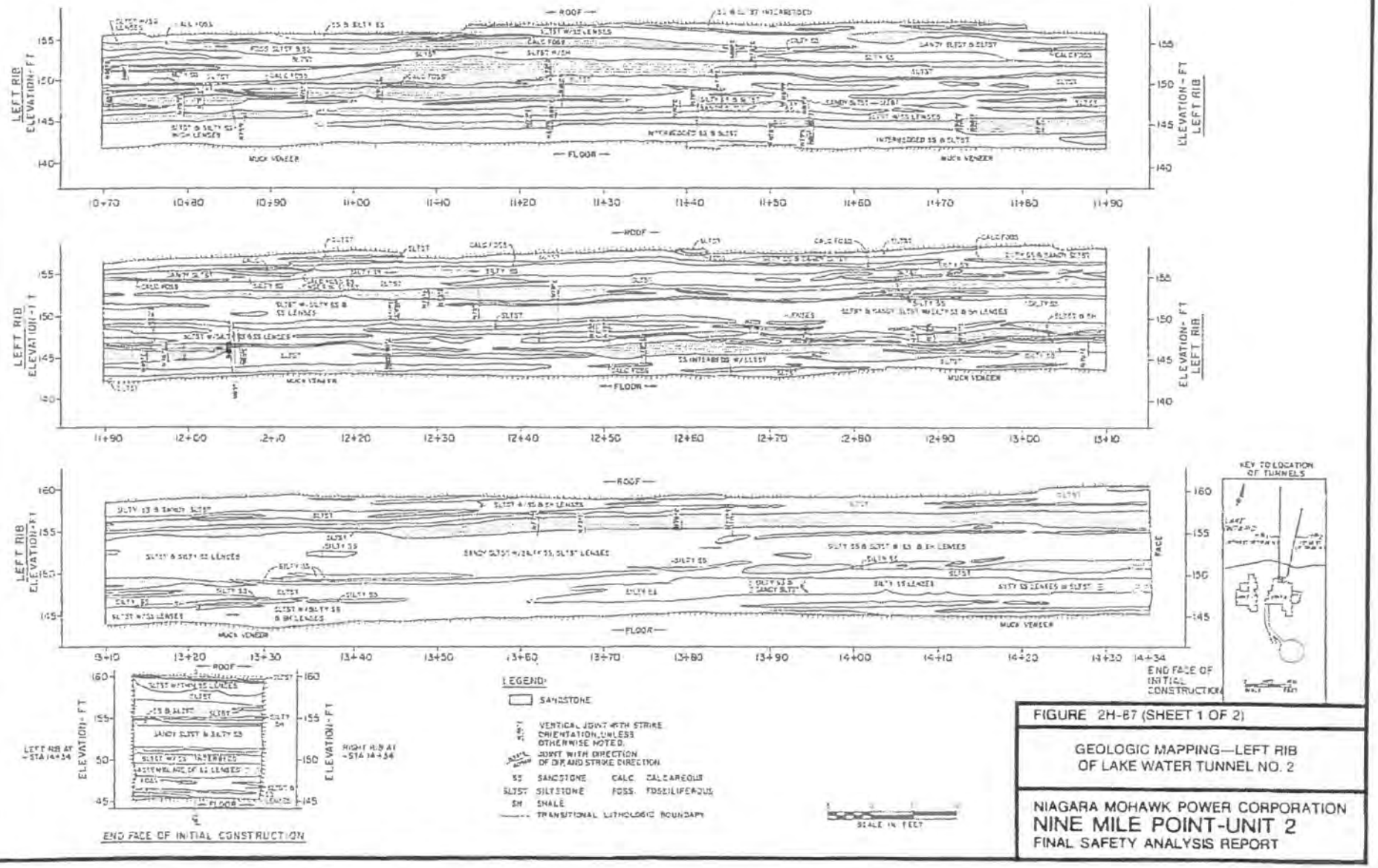
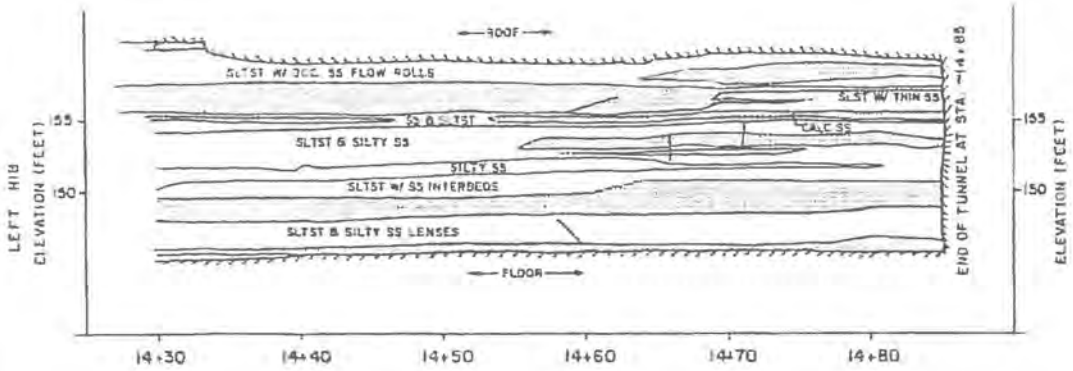
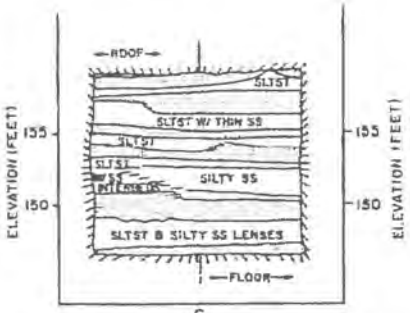


FIGURE 2H-87 (SHEET 1 OF 2)

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

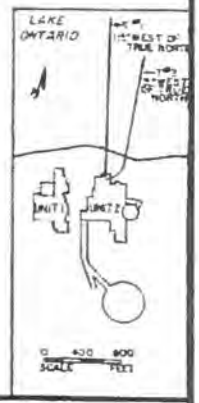


FIGURE 2H-87 (SHEET 2 OF 2)

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

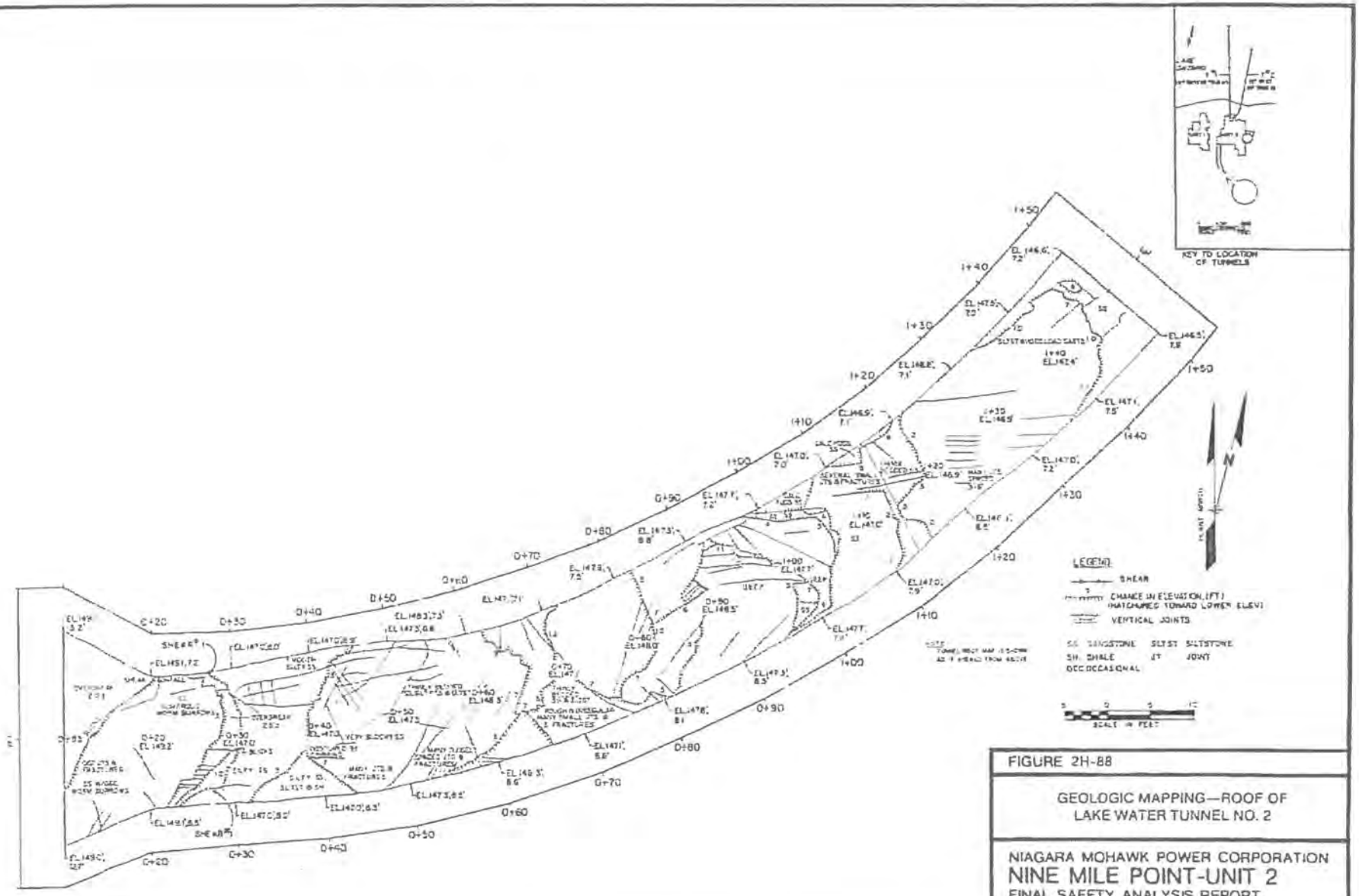


FIGURE 2H-88

GEOLOGIC MAPPING—ROOF OF LAKE WATER TUNNEL NO. 2

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

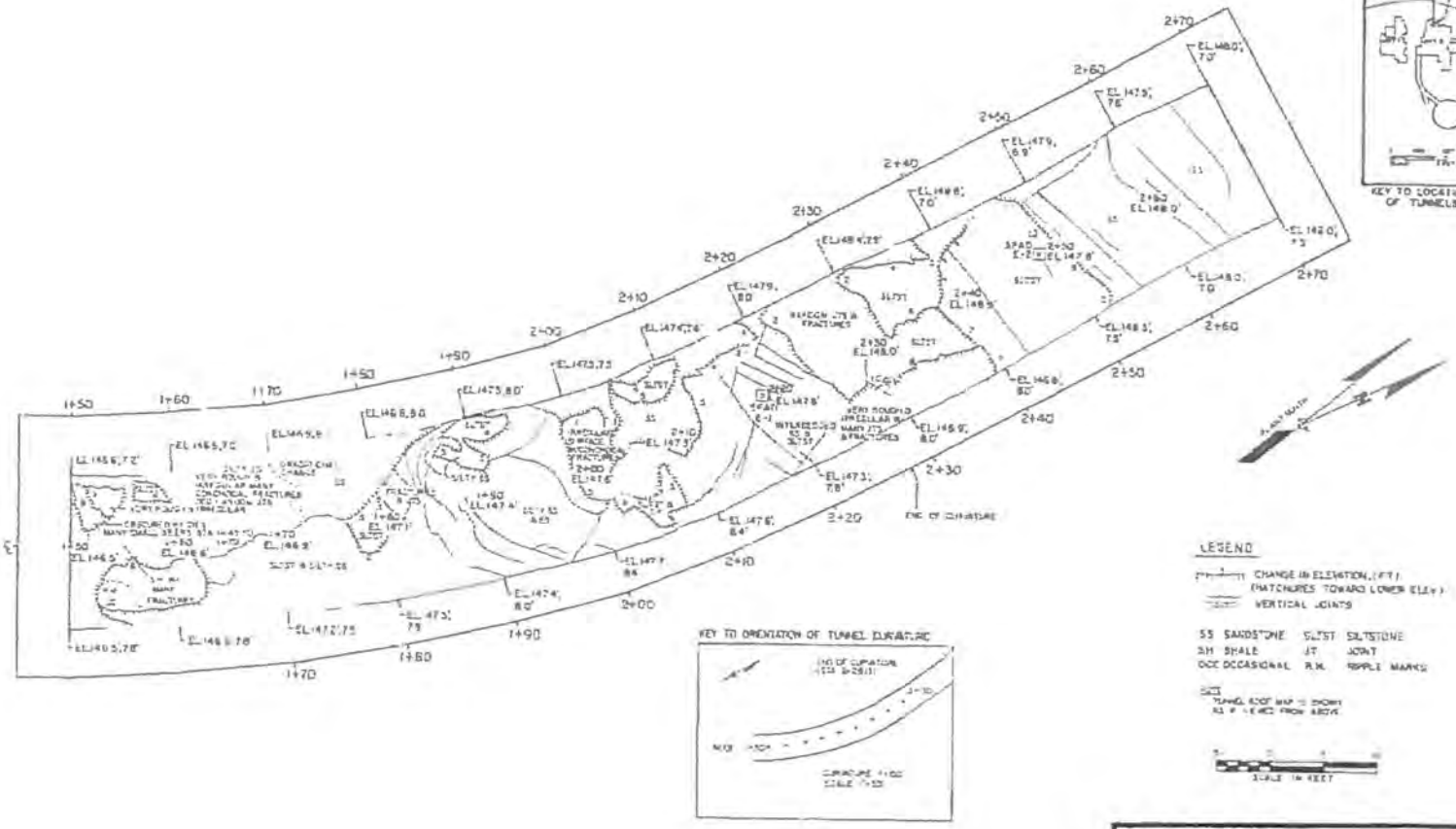


FIGURE 2H-89

GEOLOGIC MAPPING—ROOF OF LAKE WATER TUNNEL NO. 2

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

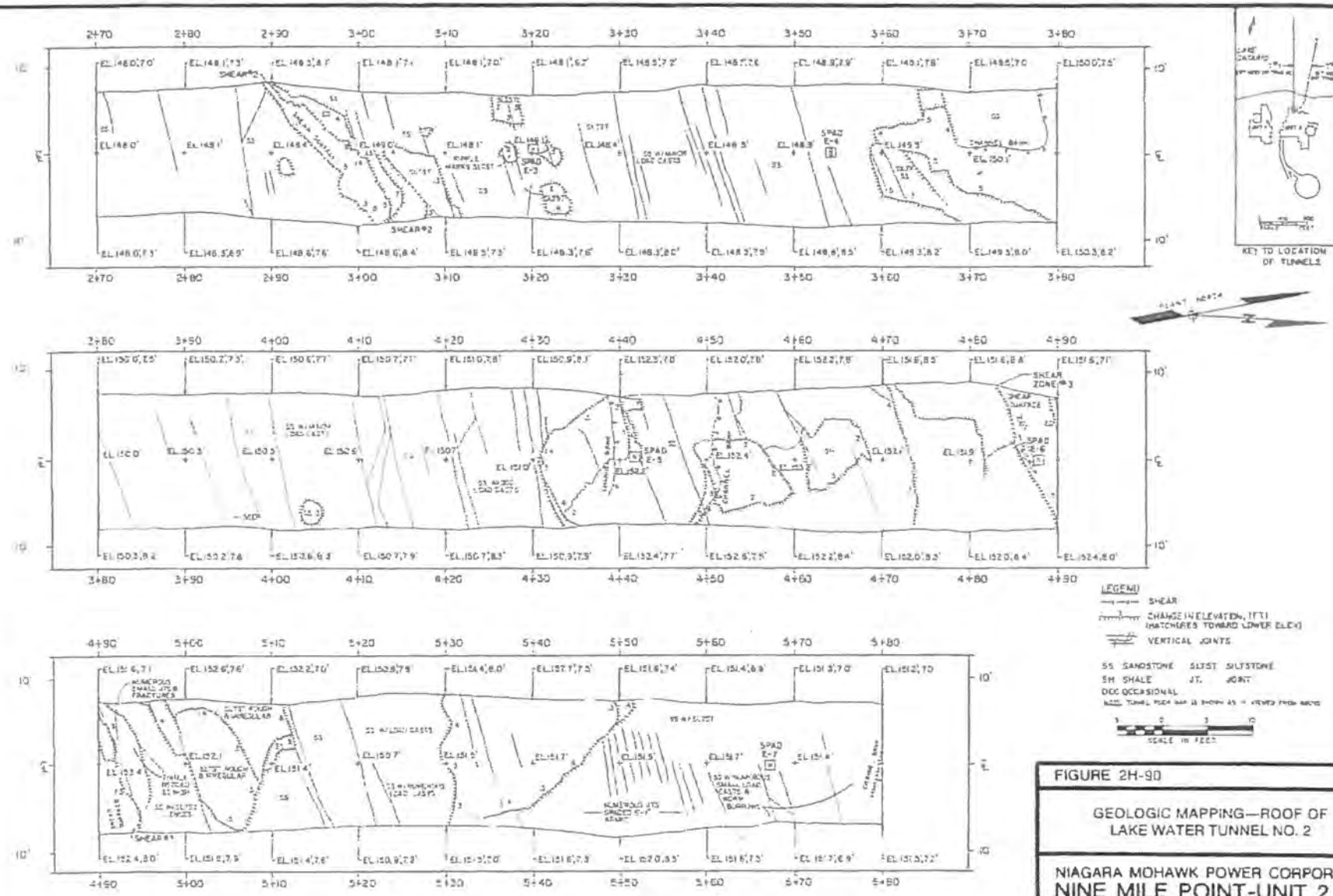


FIGURE 2H-90

GEOLOGIC MAPPING—ROOF OF LAKE WATER TUNNEL NO. 2

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

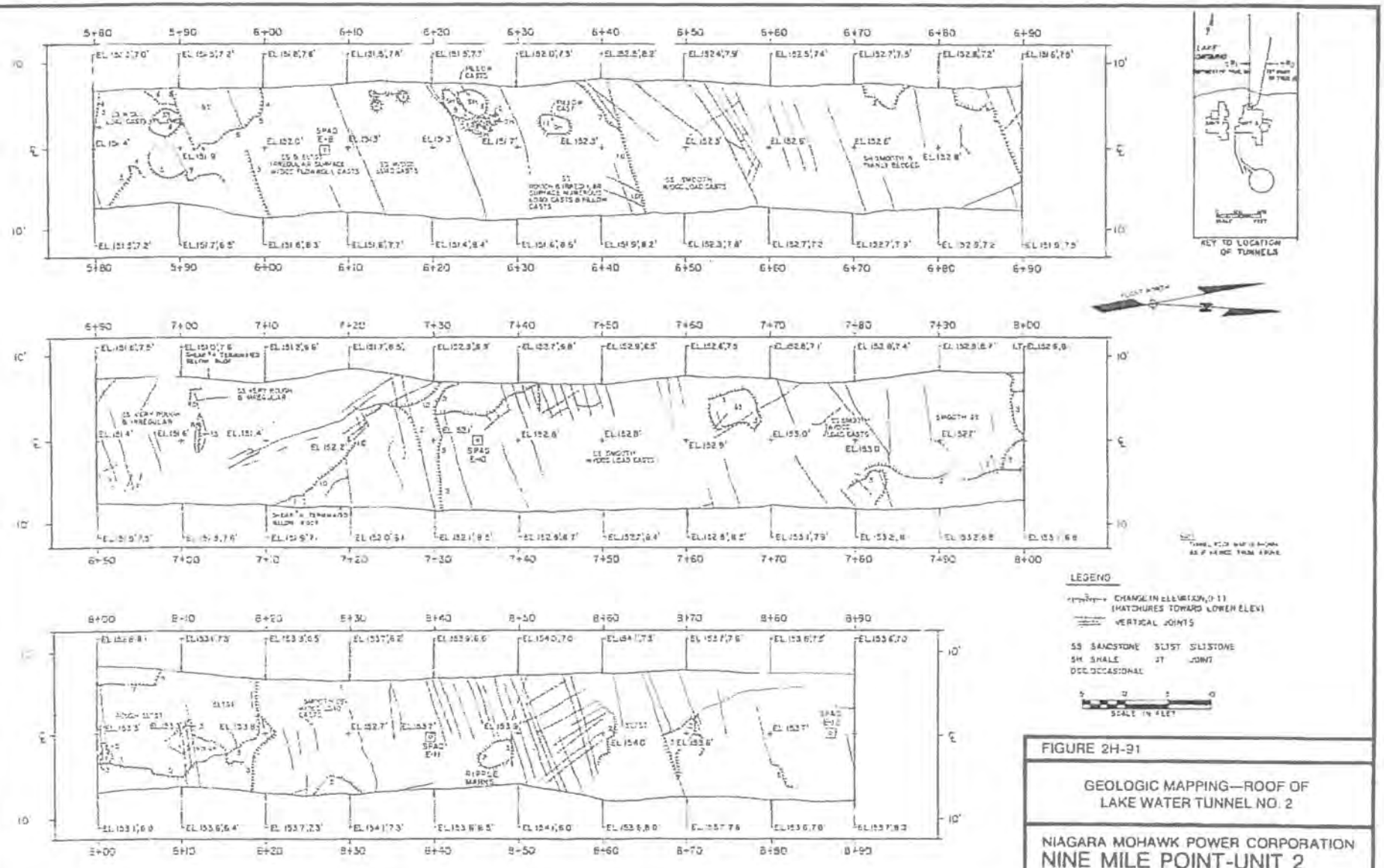


FIGURE 2H-31

GEOLOGIC MAPPING—ROOF OF LAKE WATER TUNNEL NO. 2

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

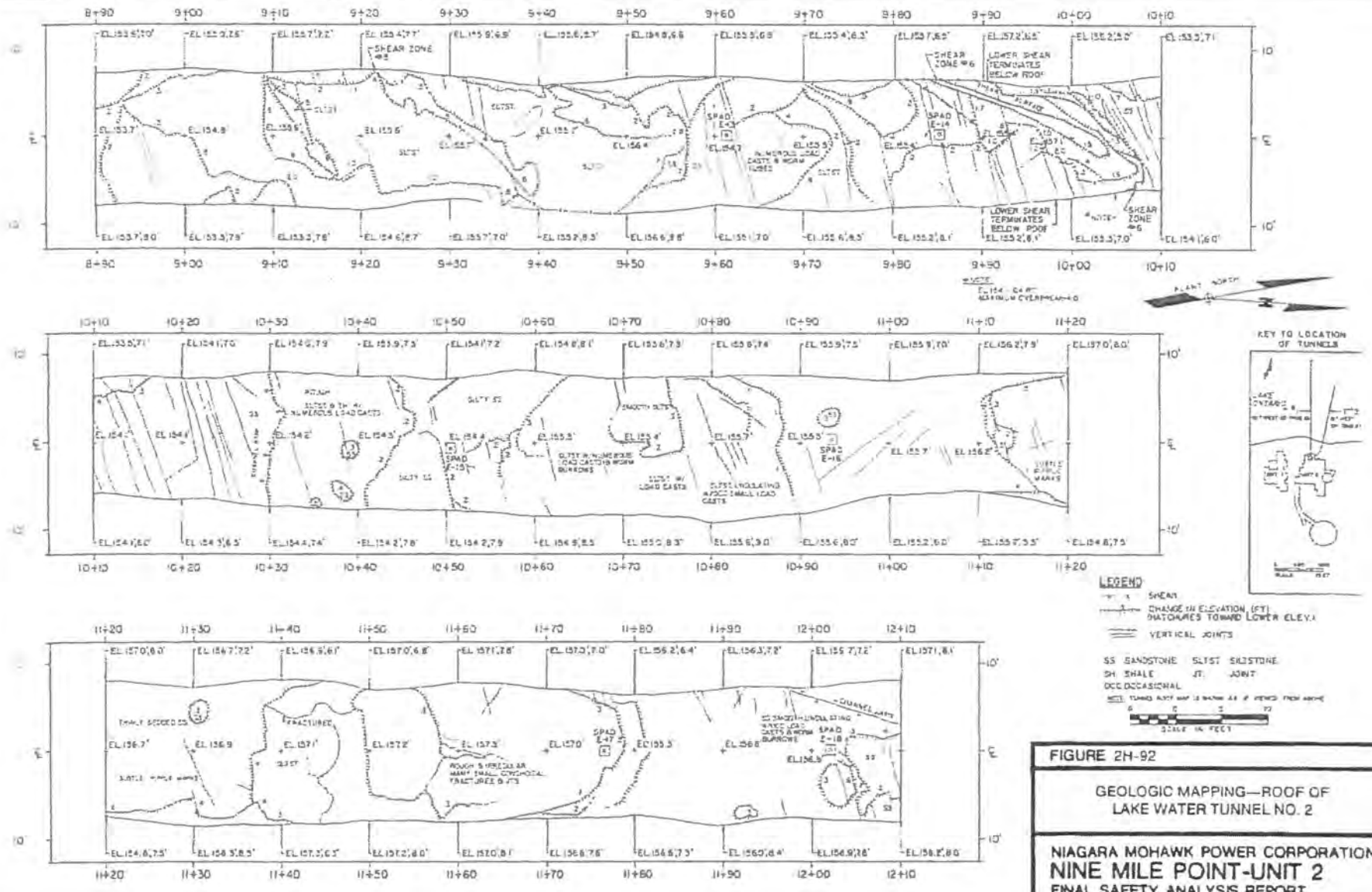


FIGURE 2H-92

GEOLOGIC MAPPING—ROOF OF LAKE WATER TUNNEL NO. 2

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

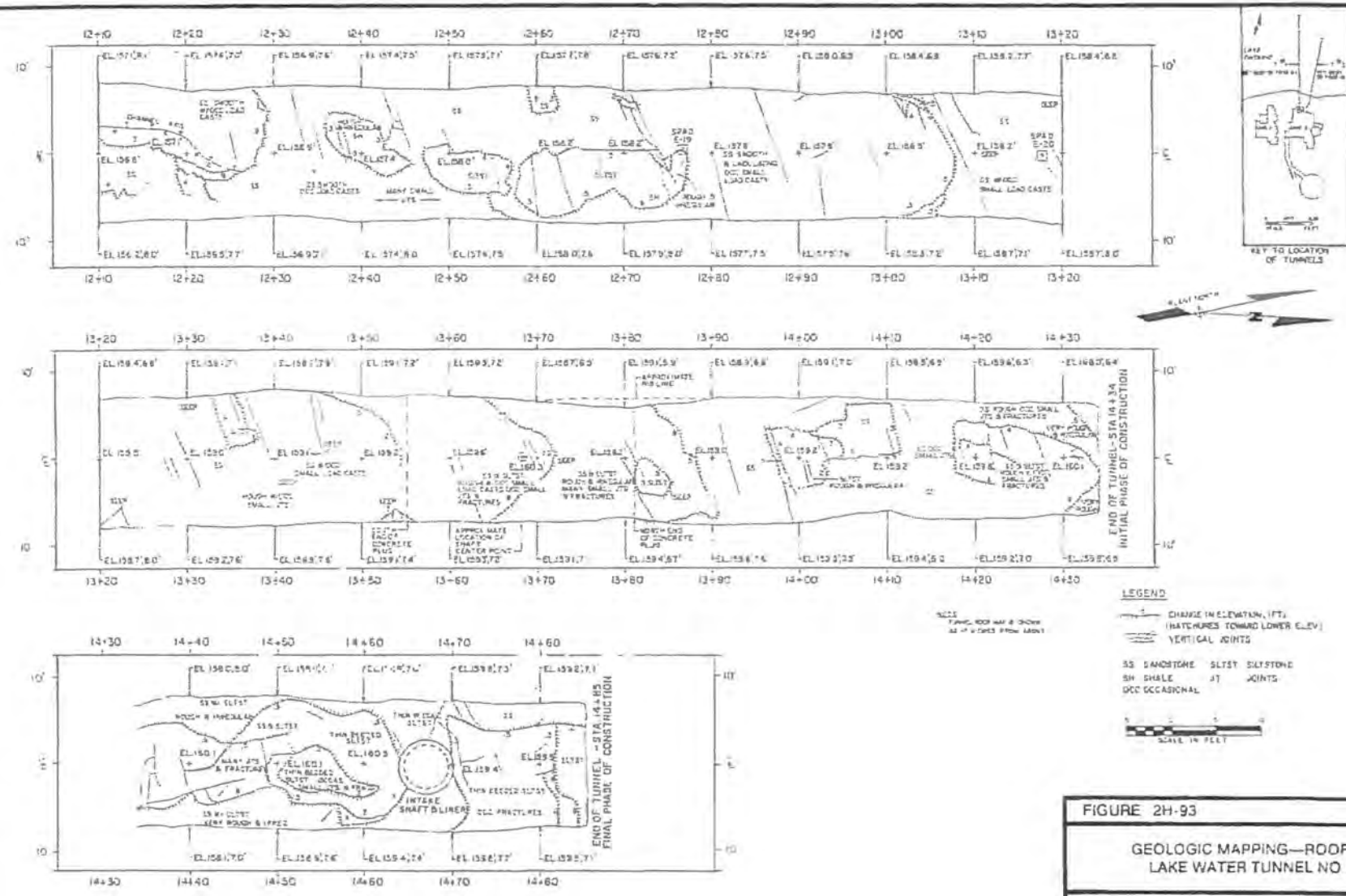
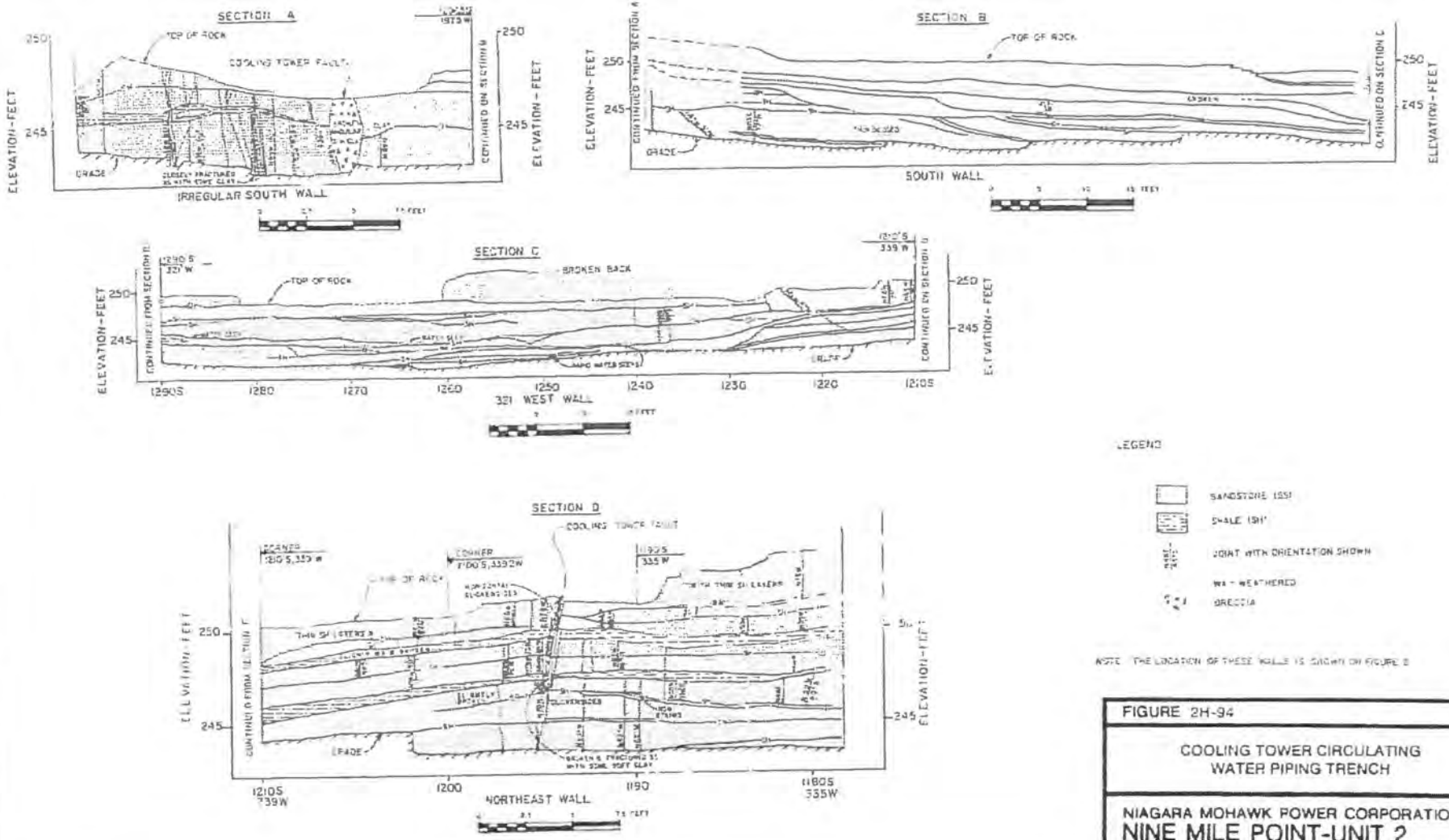


FIGURE 2H-93

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

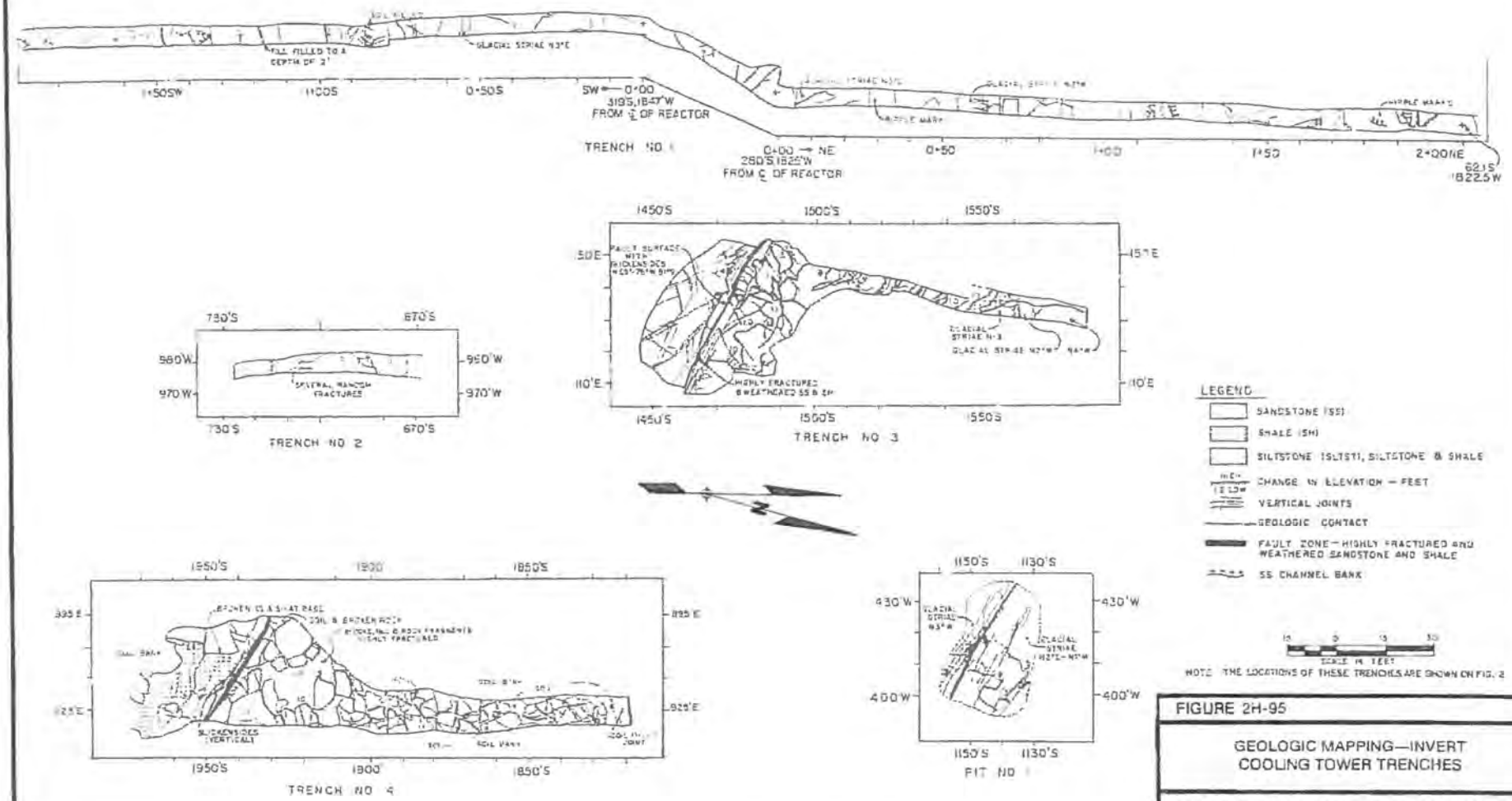
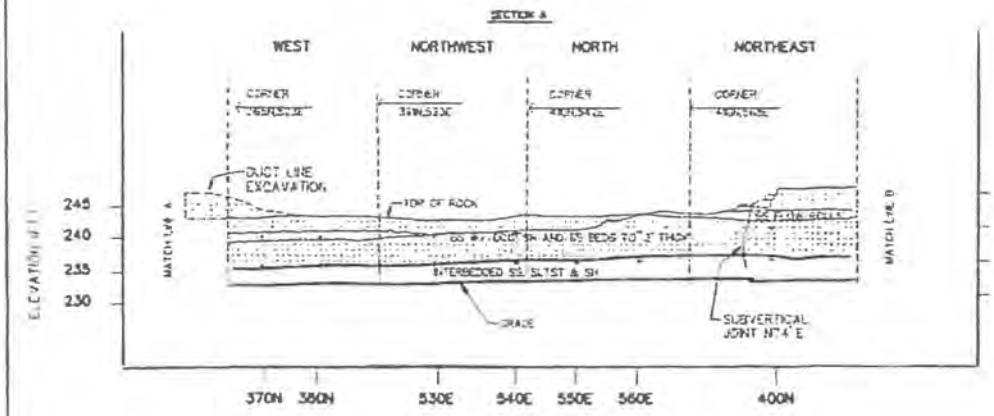


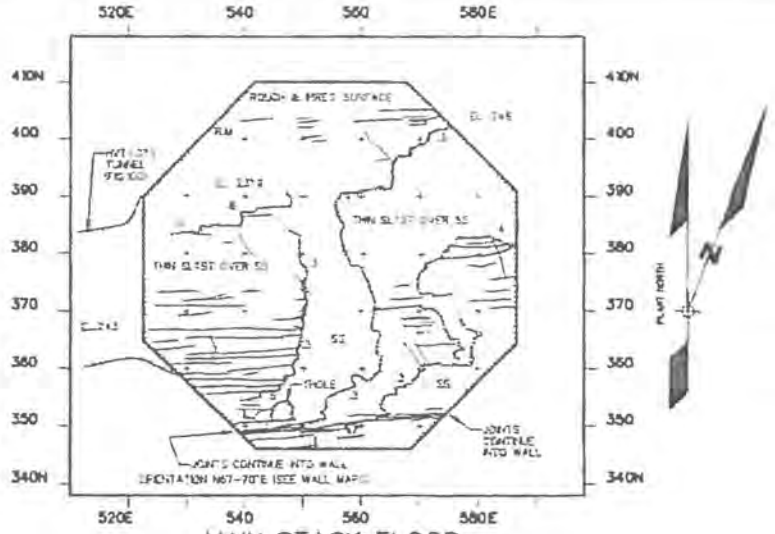
FIGURE 2H-95

GEOLOGIC MAPPING—INVERT COOLING TOWER TRENCHES

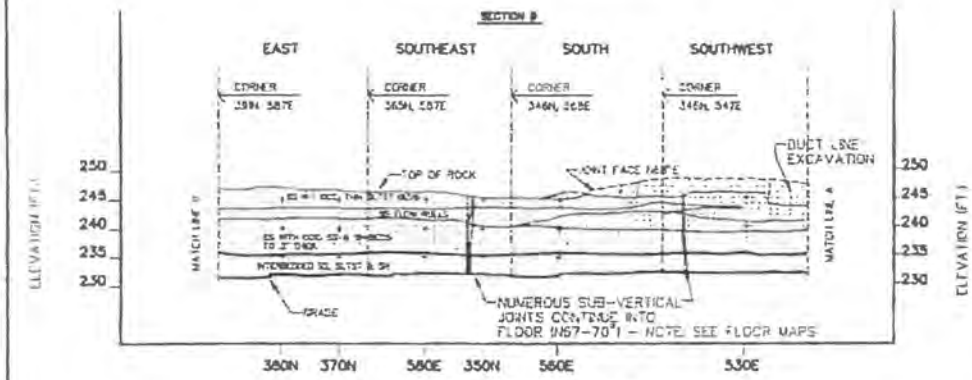
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



MAIN STACK WALLS



MAIN STACK FLOOR



MAIN STACK WALLS

LEGEND

SANDSTONE (SS)

SH - SHALE

CHANGE IN ELEVATION (FT.)

OCC. - OCCASIONAL

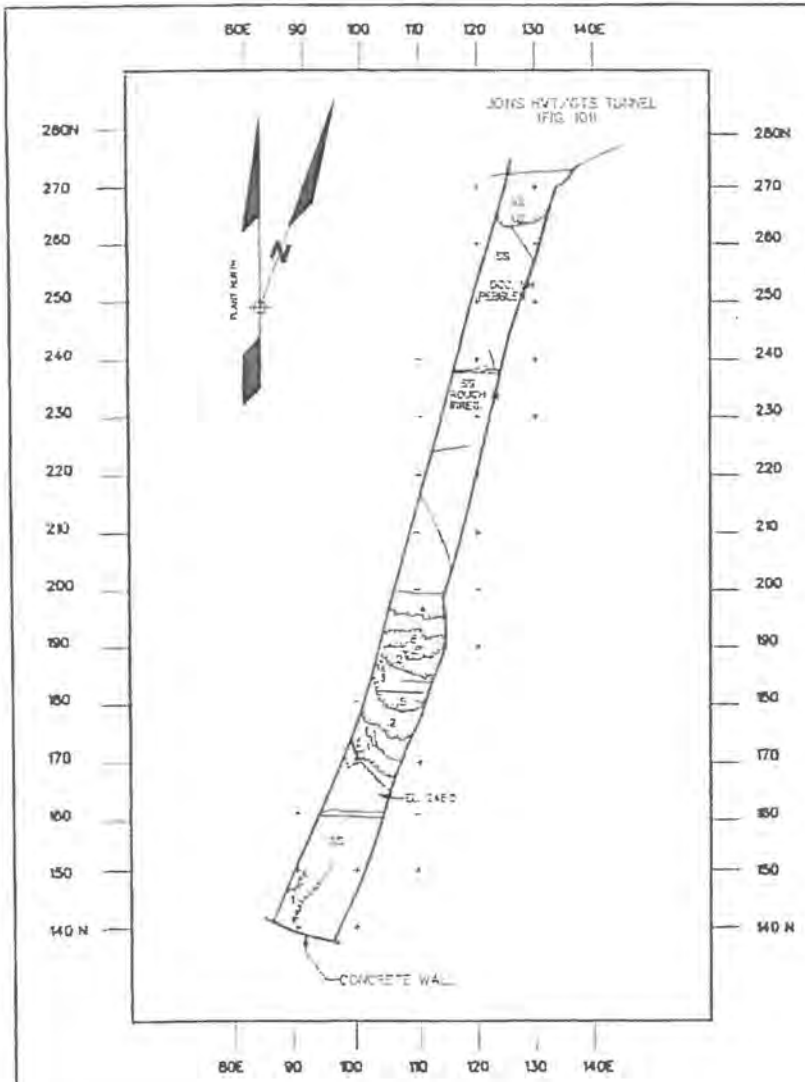
VERTICAL JOINTS, PLAN VIEW

RM - RIPPLE MARKS

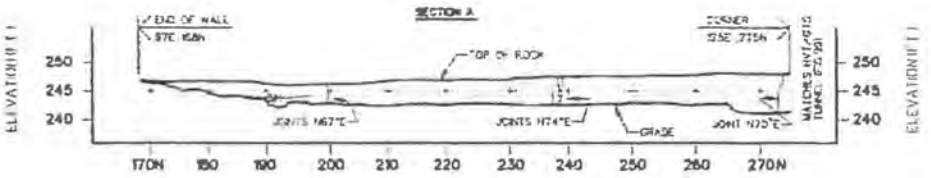
FIGURE 2H-96

MAIN STACK — WALLS & FLOOR

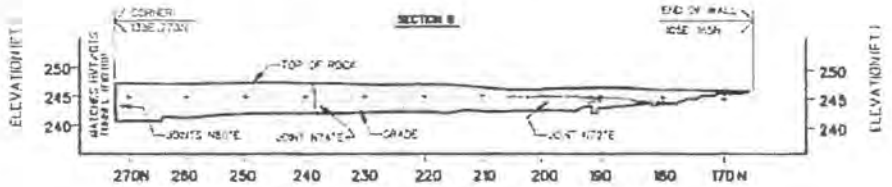
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



GTS TUNNEL FLOOR



GTS TUNNEL – WEST WALL



GTS TUNNEL – EAST WALL

LEGEND

SANDSTONE (SS)

SH – SHALE

CHANGE IN ELEVATION (FT.)

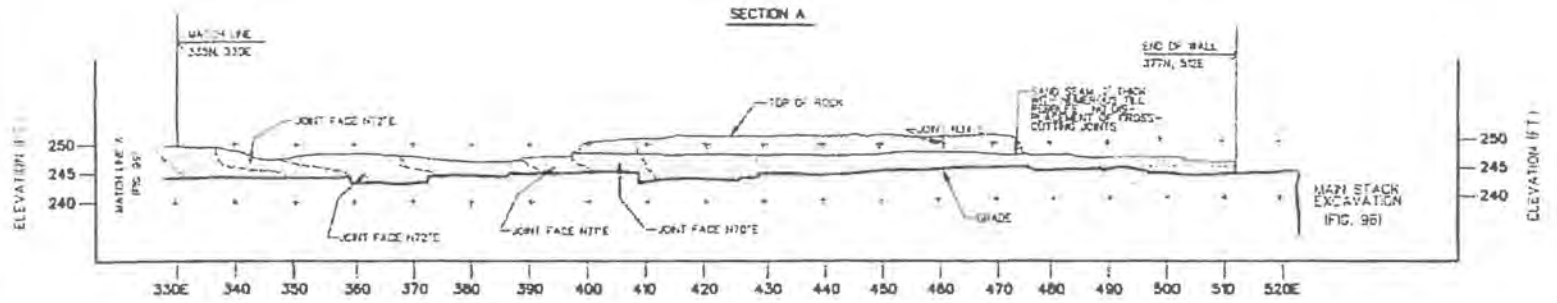
OCC – OCCASIONAL

VERTICAL JOINTS, PLAN VIEW

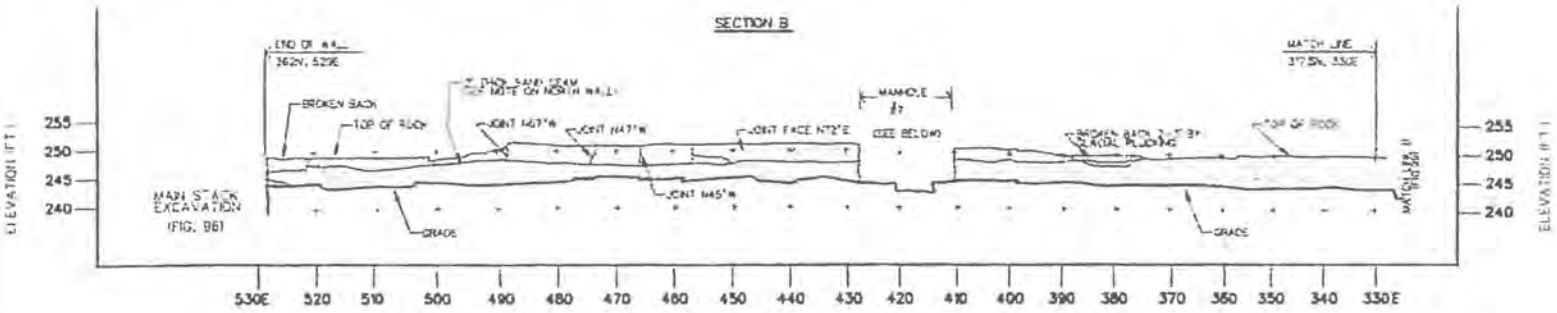
FIGURE 2H-97

GTS TUNNEL — WALLS & FLOOR

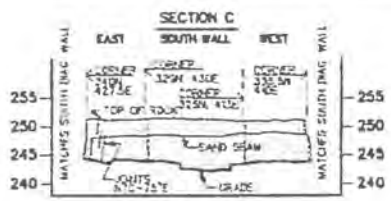
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



HVT/GTS TUNNEL – NORTH DIAGONAL WALL



HVT/GTS TUNNEL – SOUTH DIAGONAL WALL



MANHOLE #7

LEGEND

SANDSTONE (SC)

FIGURE 2H-98

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

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

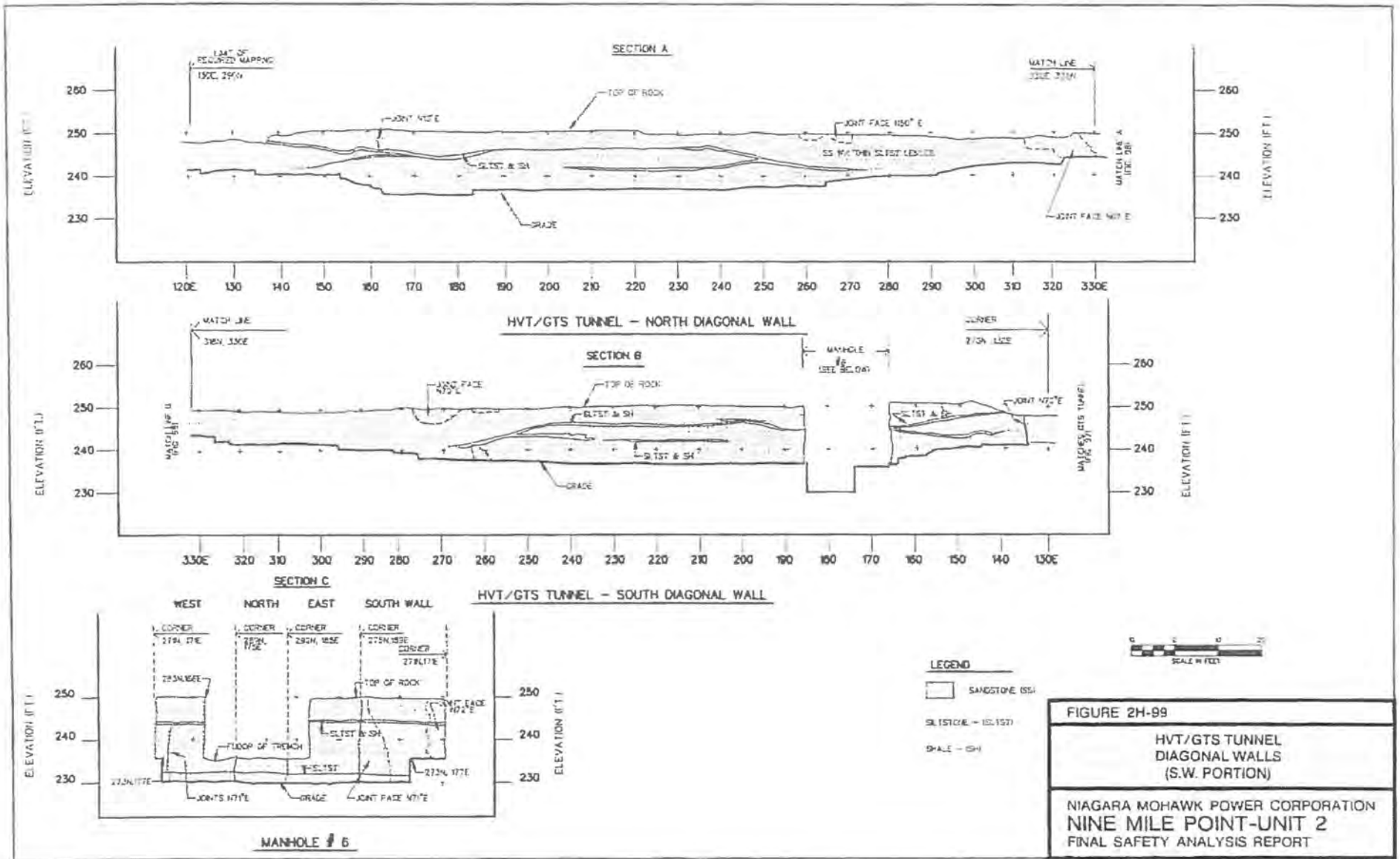


FIGURE 2H-99

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

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

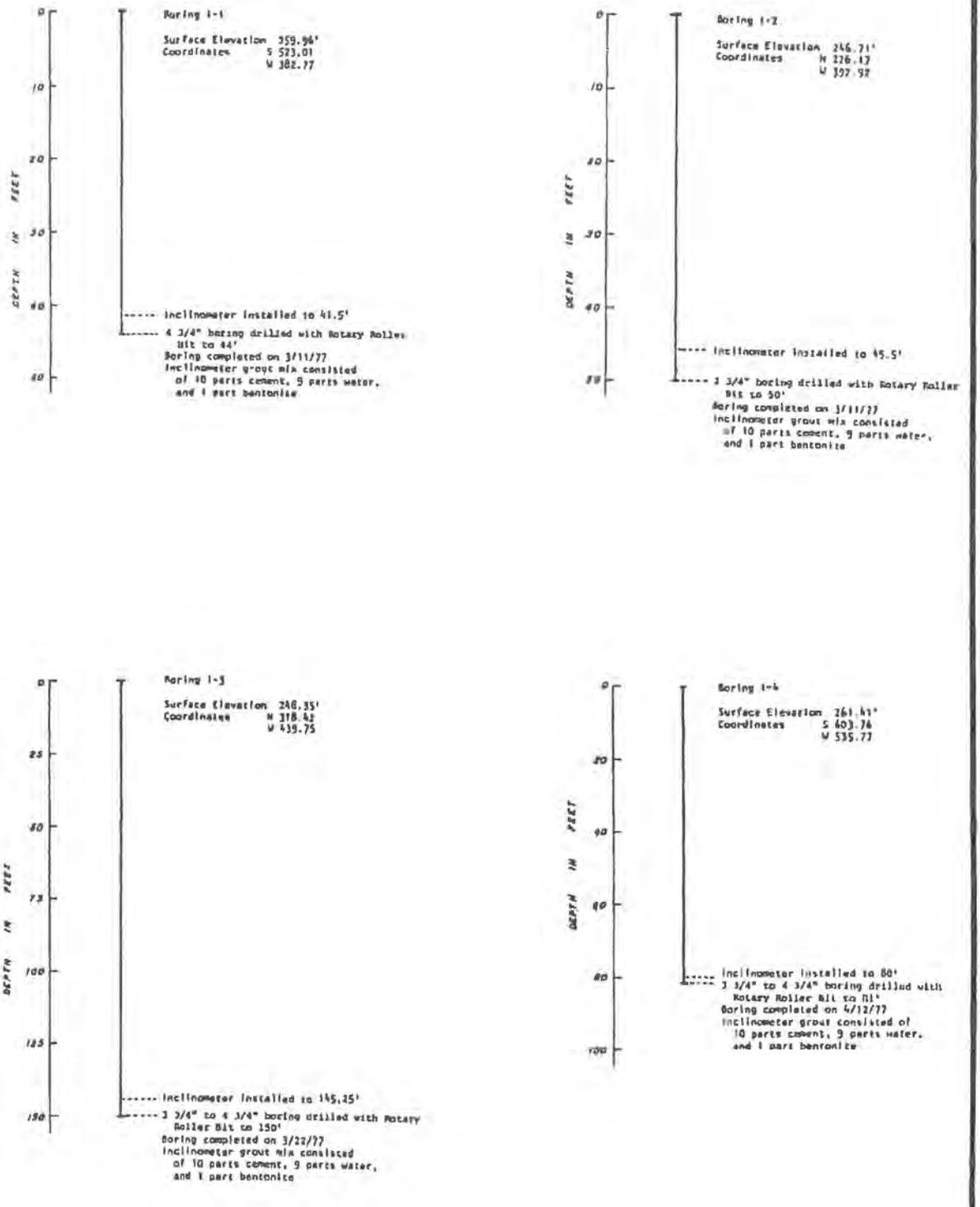


FIGURE 2E-1

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

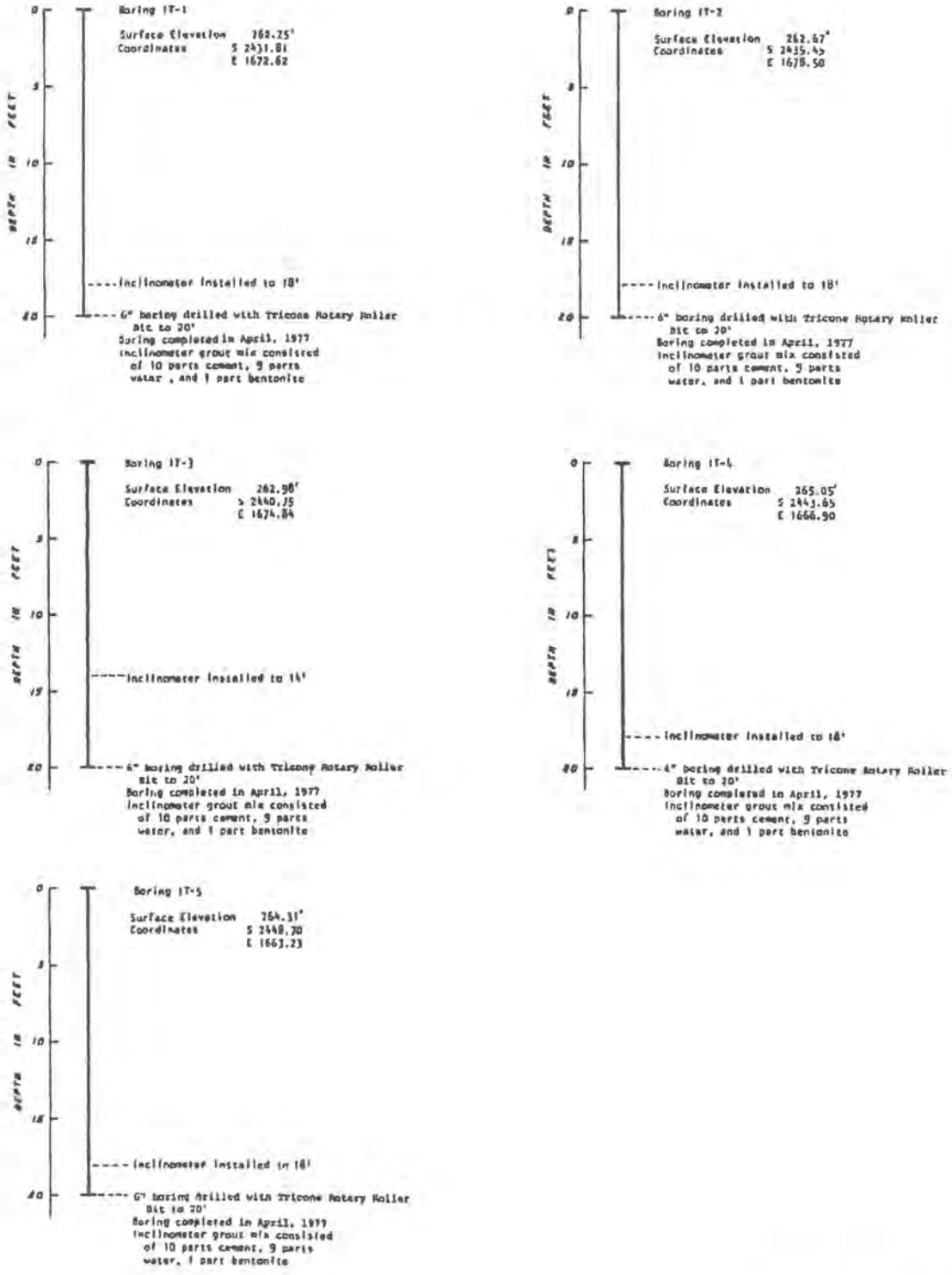


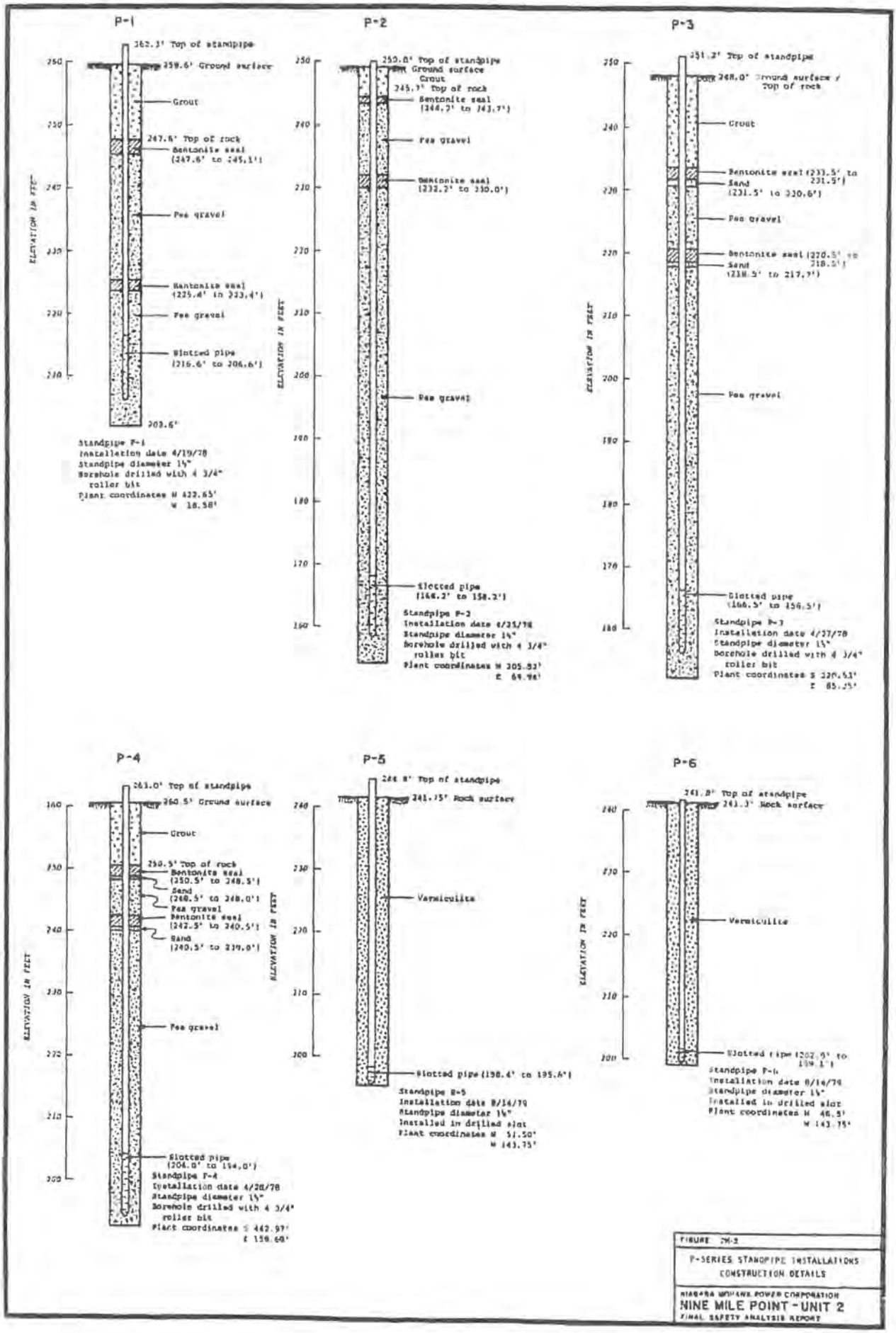
FIGURE 2K-2

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


P-1
362.3' Top of standpipe
259.6' Ground surface
Grout
247.6' Top of rock
Bentonite seal (247.6' to 245.1')
Pea gravel
Bentonite seal (225.4' to 223.4')
Pea gravel
Slotted pipe (216.6' to 206.6')
203.6'
Standpipe P-1
Installation date 4/19/78
Standpipe diameter 1½"
Borehole drilled with 4 3/4" roller bit
Plant coordinates N 422.65'
W 18.58'
ELEVATION IN FEET
P-2
250.0' Top of standpipe
Ground surface
Grout
245.7' Top of rock
Bentonite seal (244.2' to 243.7')
Pea gravel
Bentonite seal (232.2' to 230.0')
Pea gravel
Slotted pipe (166.2' to 158.2')
Standpipe P-2
Installation date 6/21/78
Standpipe diameter 1½"
Borehole drilled with 4 3/4" roller bit
Plant coordinates N 305.83'
E 69.96'
ELEVATION IN FEET
P-3
251.2' Top of standpipe
248.0' Ground surface / Top of rock
Grout
Bentonite seal (233.5' to 231.5')
Sand (231.5' to 220.6')
Pea gravel
Bentonite seal (220.5' to 218.5')
Sand (218.5' to 217.7')
Pea gravel
Slotted pipe (166.5' to 156.5')
Standpipe P-3
Installation date 6/22/78
Standpipe diameter 1½"
Borehole drilled with 4 3/4" roller bit
Plant coordinates S 320.61'
E 85.25'
ELEVATION IN FEET
P-4
261.0' Top of standpipe
260.5' Ground surface
Grout
250.5' Top of rock
Bentonite seal (250.5' to 248.5')
Sand (248.5' to 248.0')
Pea gravel
Bentonite seal (242.5' to 240.5')
Sand (240.5' to 239.0')
Pea gravel
Slotted pipe (204.0' to 194.0')
Standpipe P-4
Installation date 4/28/78
Standpipe diameter 1½"
Borehole drilled with 4 3/4" roller bit
Plant coordinates S 442.97'
E 158.69'
ELEVATION IN FEET
P-5
244.8' Top of standpipe
241.75' Rock surface
Vermiculite
Slotted pipe (198.4' to 195.4')
Standpipe P-5
Installation date 8/14/79
Standpipe diameter 1½"
Installed in drilled slot
Plant coordinates N 51.50'
W 143.75'
ELEVATION IN FEET
P-6
241.8' Top of standpipe
241.3' Rock surface
Vermiculite
Slotted pipe (202.9' to 199.1')
Standpipe P-6
Installation date 8/14/79
Standpipe diameter 1½"
Installed in drilled slot
Plant coordinates N 46.5'
W 143.75'
ELEVATION IN FEET
FIGURE 2M-2
P-SERIES STANDPIPE INSTALLATIONS CONSTRUCTION DETAILS
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

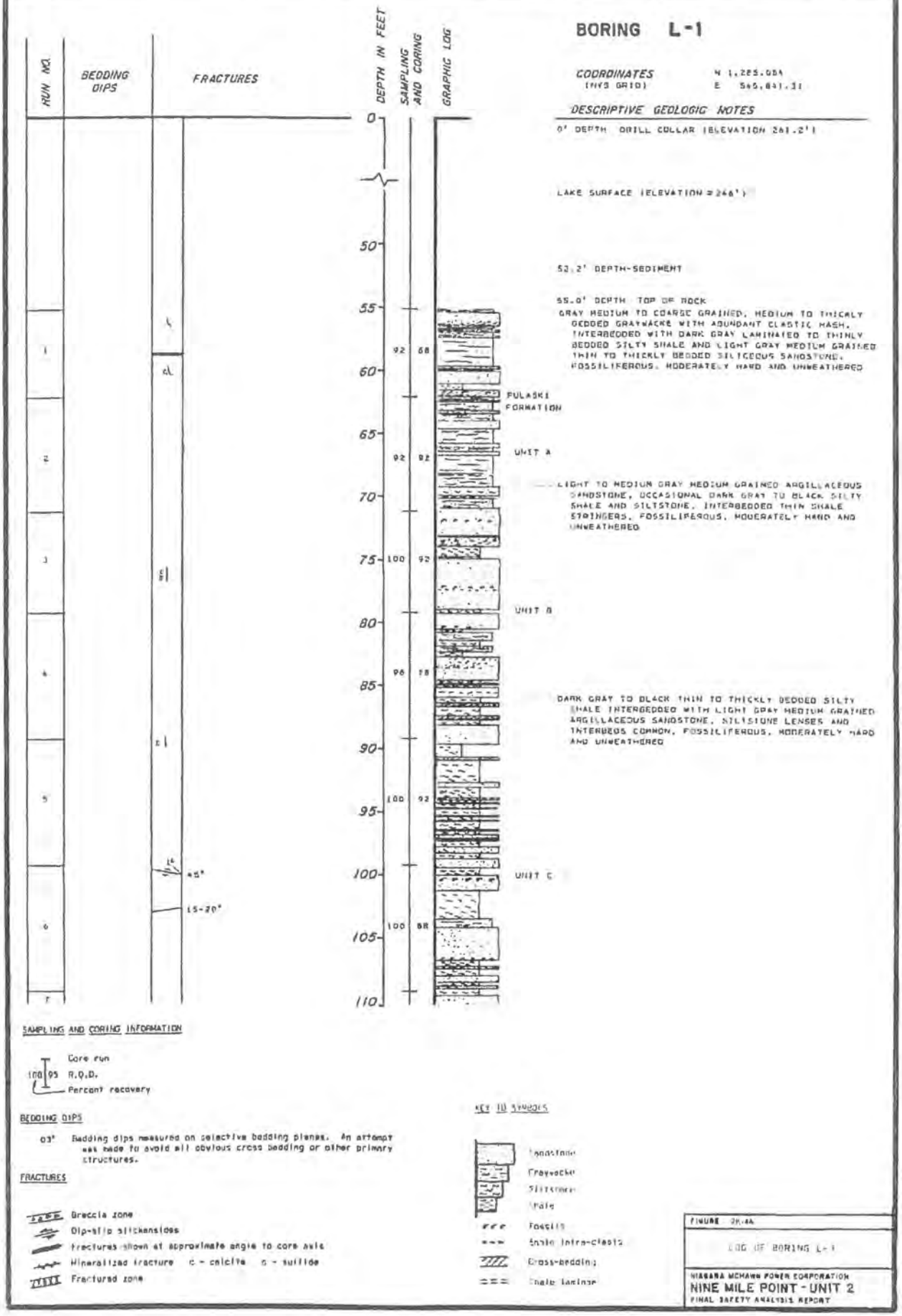
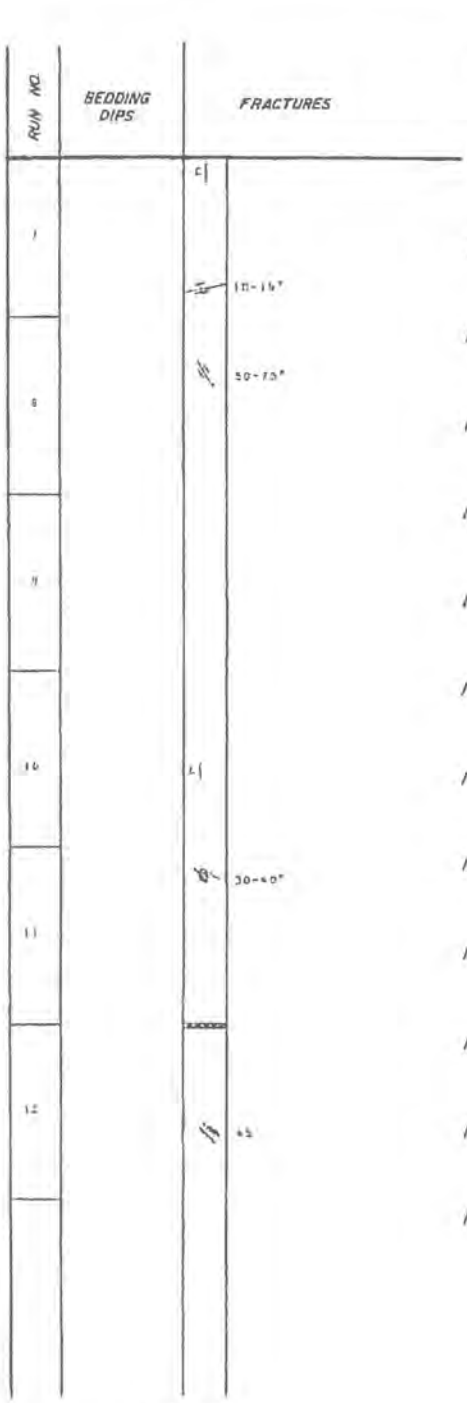


FIGURE 2K-4A

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

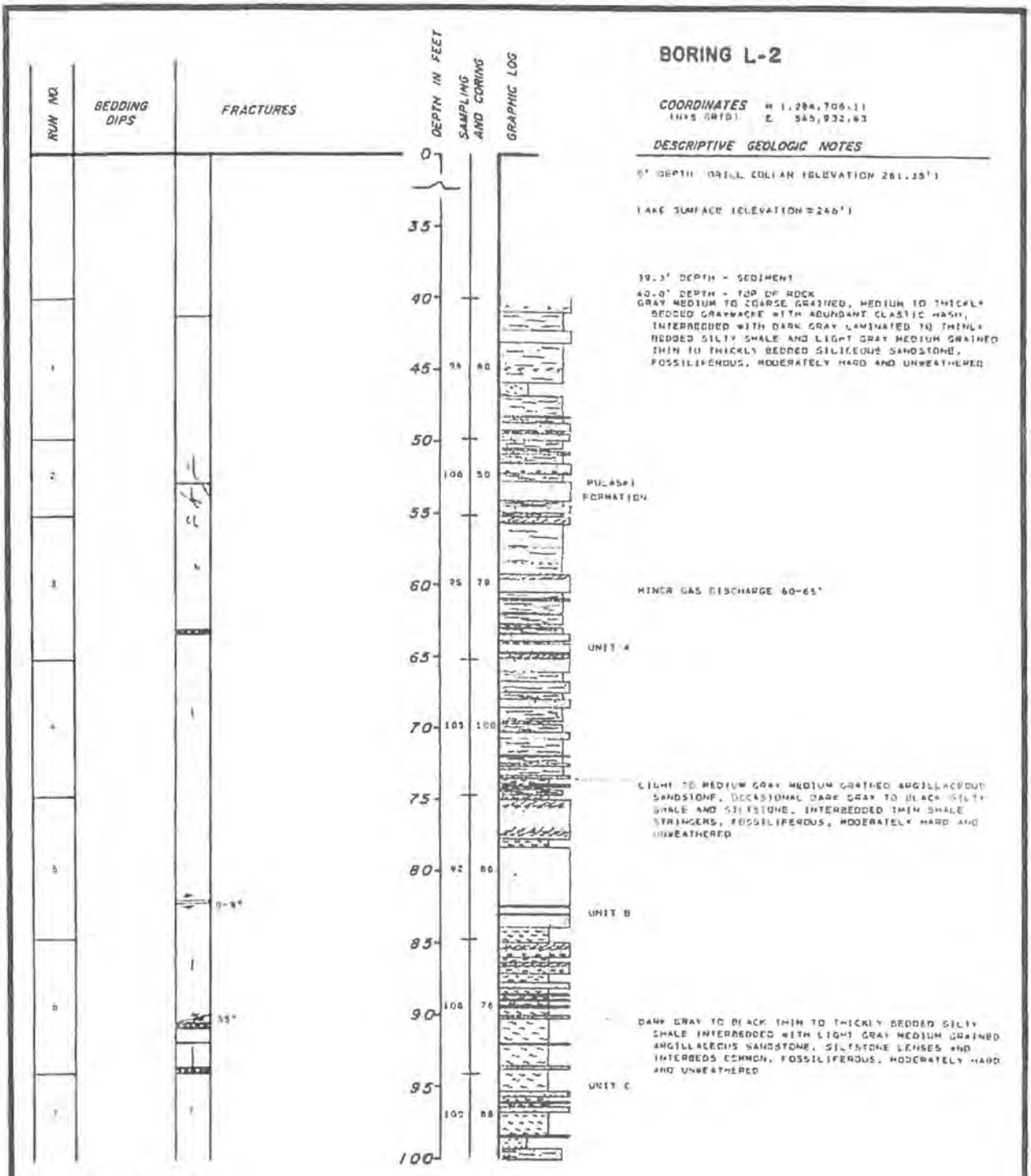
KEY TO SYMBOLS

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

KEY TO SYMBOLS

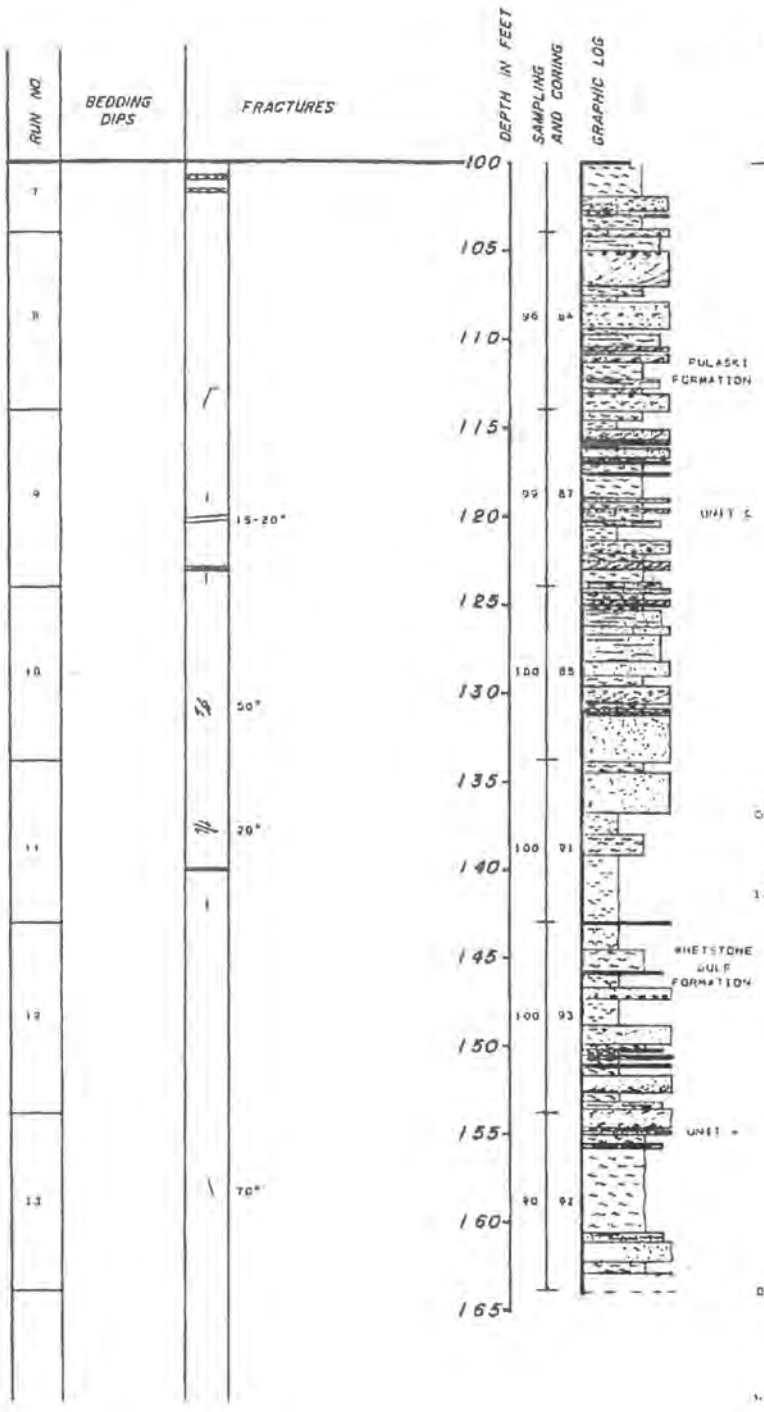
- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

FIGURE 2.5-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

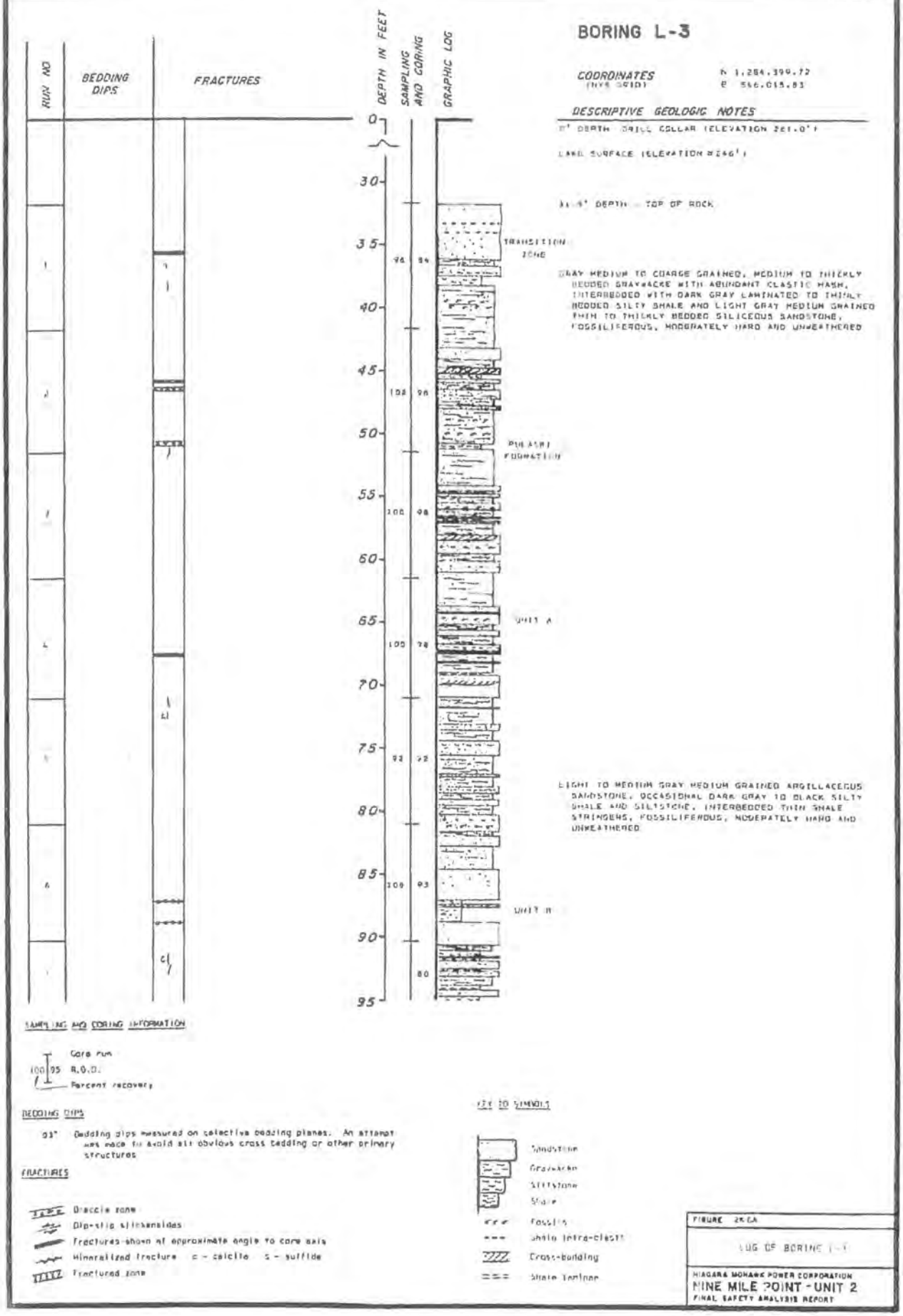
KEY TO SYMBOLS

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

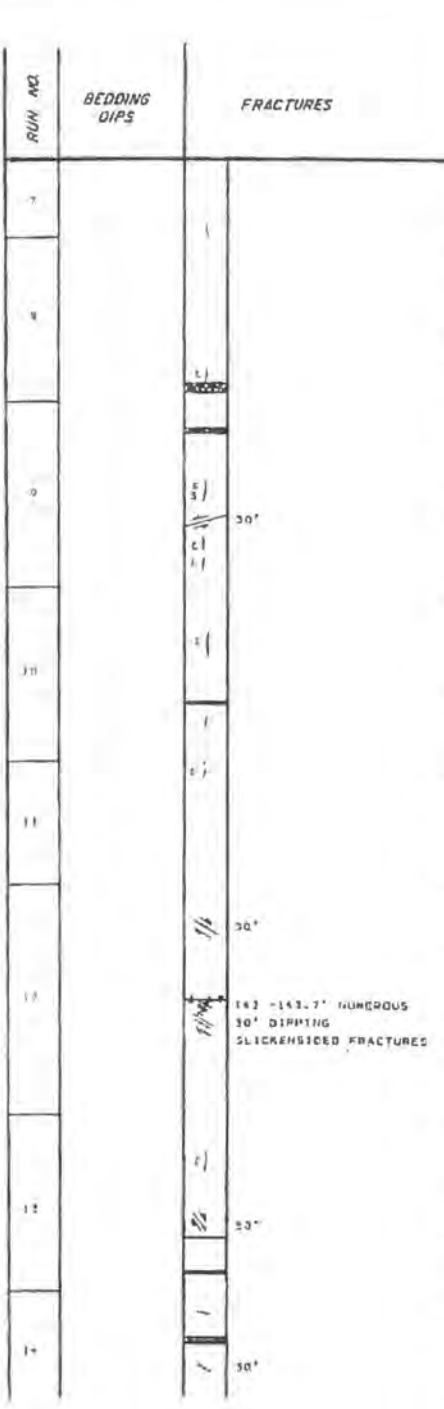
FIGURE 2K-58

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'
31.6' DEPTH - TOP OF ROCK
RUN NO
BEDDING DIPS
FRACTURES
DEPTH IN FEET
SAMPLING AND CORING
GRAPHIC LOG
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
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
SAMPLING AND CORING INFORMATION
Core run
R.Q.D.
Percent recovery
BEDDING DIPS
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 2K.6A
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

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
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

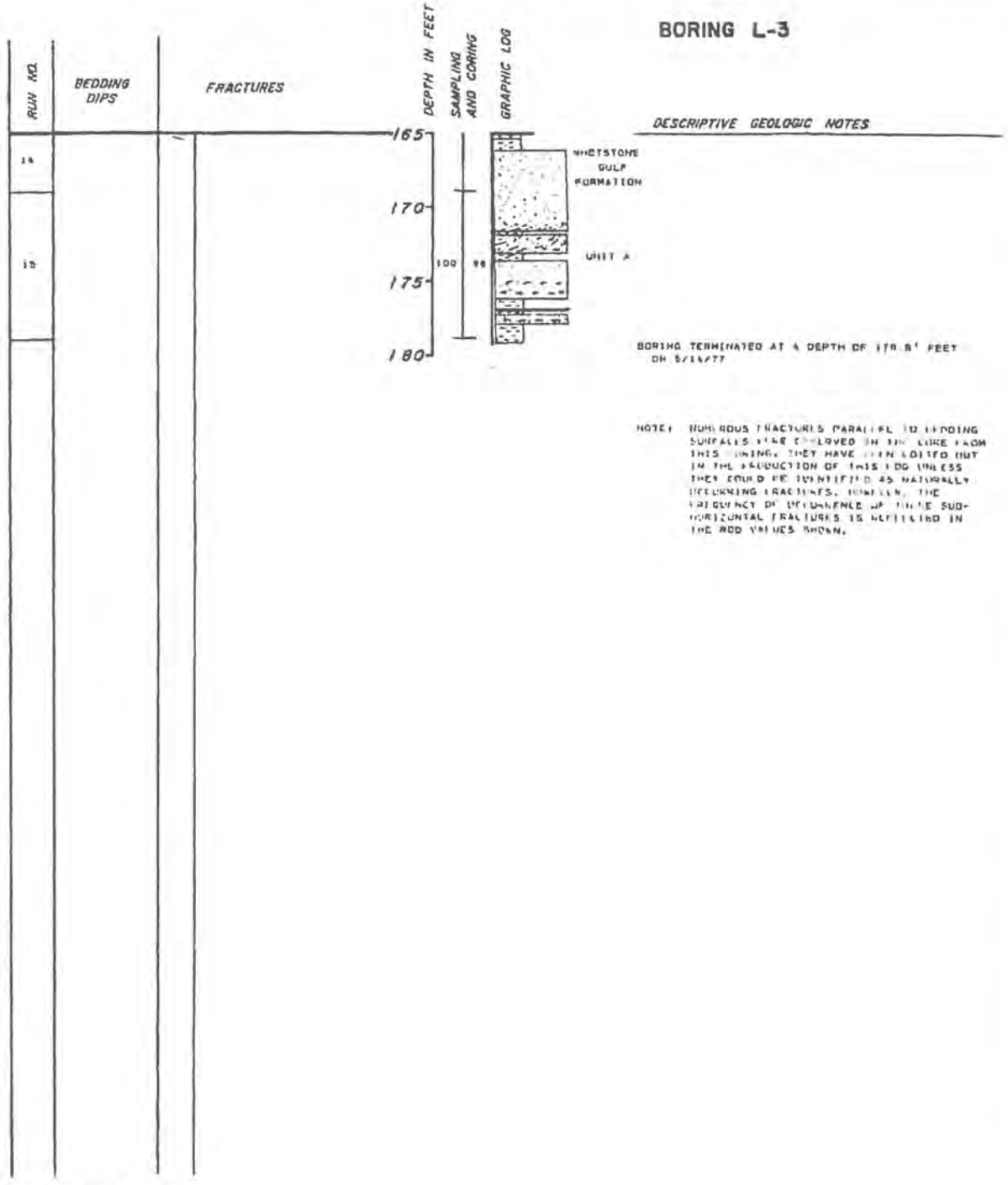
Sandstone
Graywacke
Siltstone
Shale
Fossils
Shale intraclasts
Cross-bedding
Grain texture

FIGURE 2K.E0

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

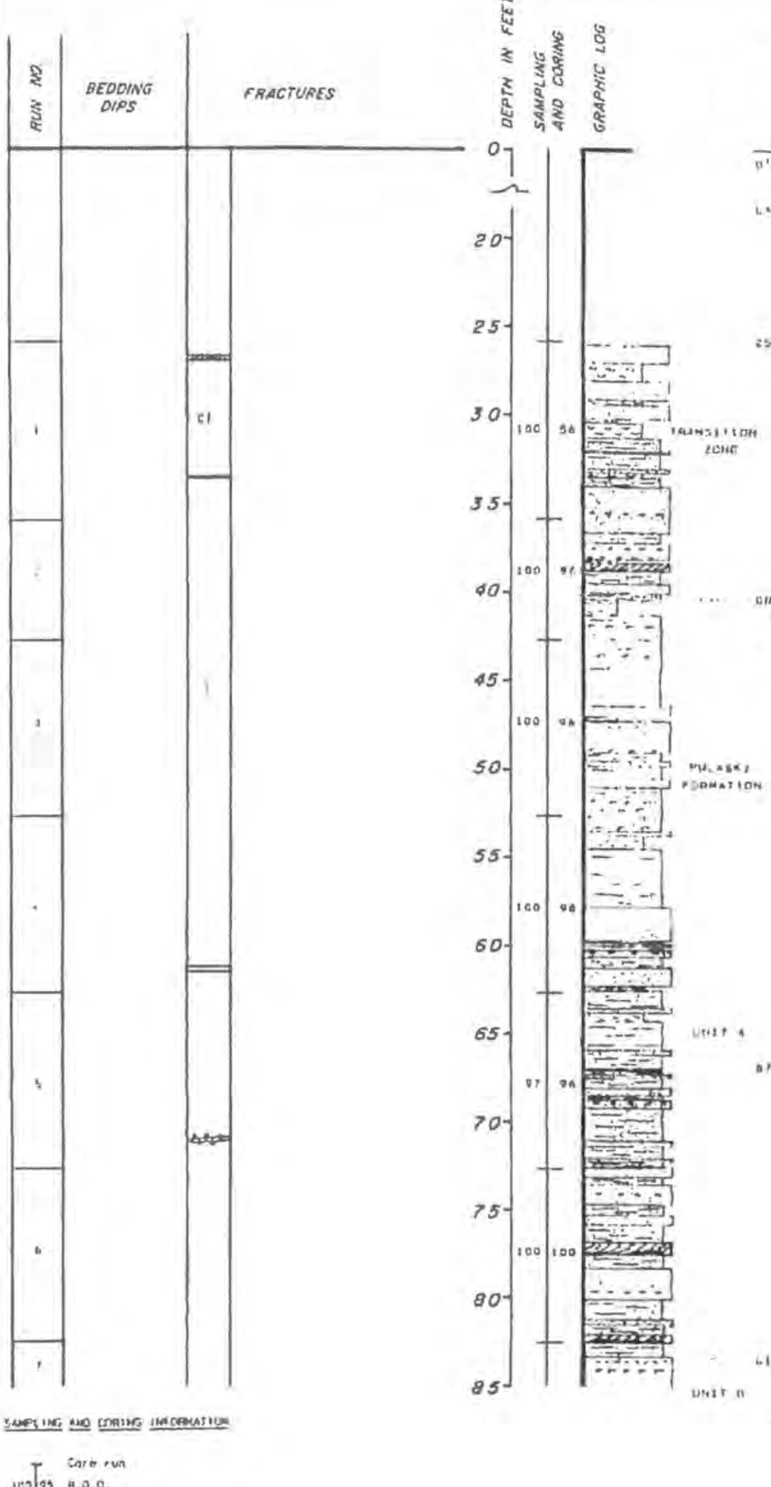
FIGURE 2K-6C

LOG OF BORING L-3

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

BORING L-4

COORDINATES (NYS GRID)　N 1,284,082.38　E 546,100.78



DESCRIPTIVE GEOLOGIC NOTES

0' DEPTH — DRILL COLLAR (ELEVATION 260.97')

LAKE SURFACE (ELEVATION ≤ 246')

25.5' 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

67' 1/2 INCH THICK ILLITE LAYER

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

- 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

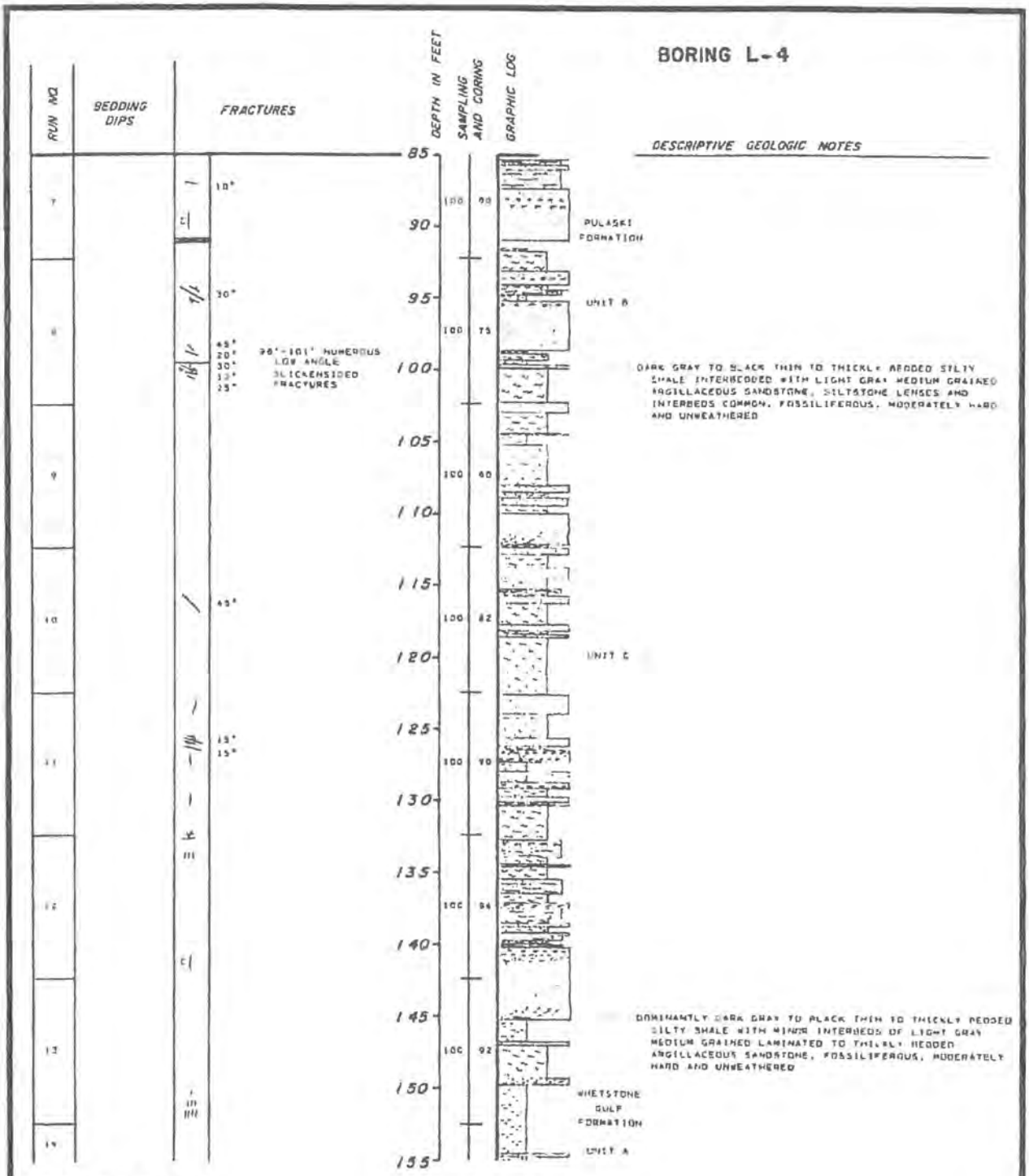
KEY TO SYMBOLS

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

FIGURE 2K-7A

LOG OF BORING L-4

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



SAMPLING AND BORING 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
- 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

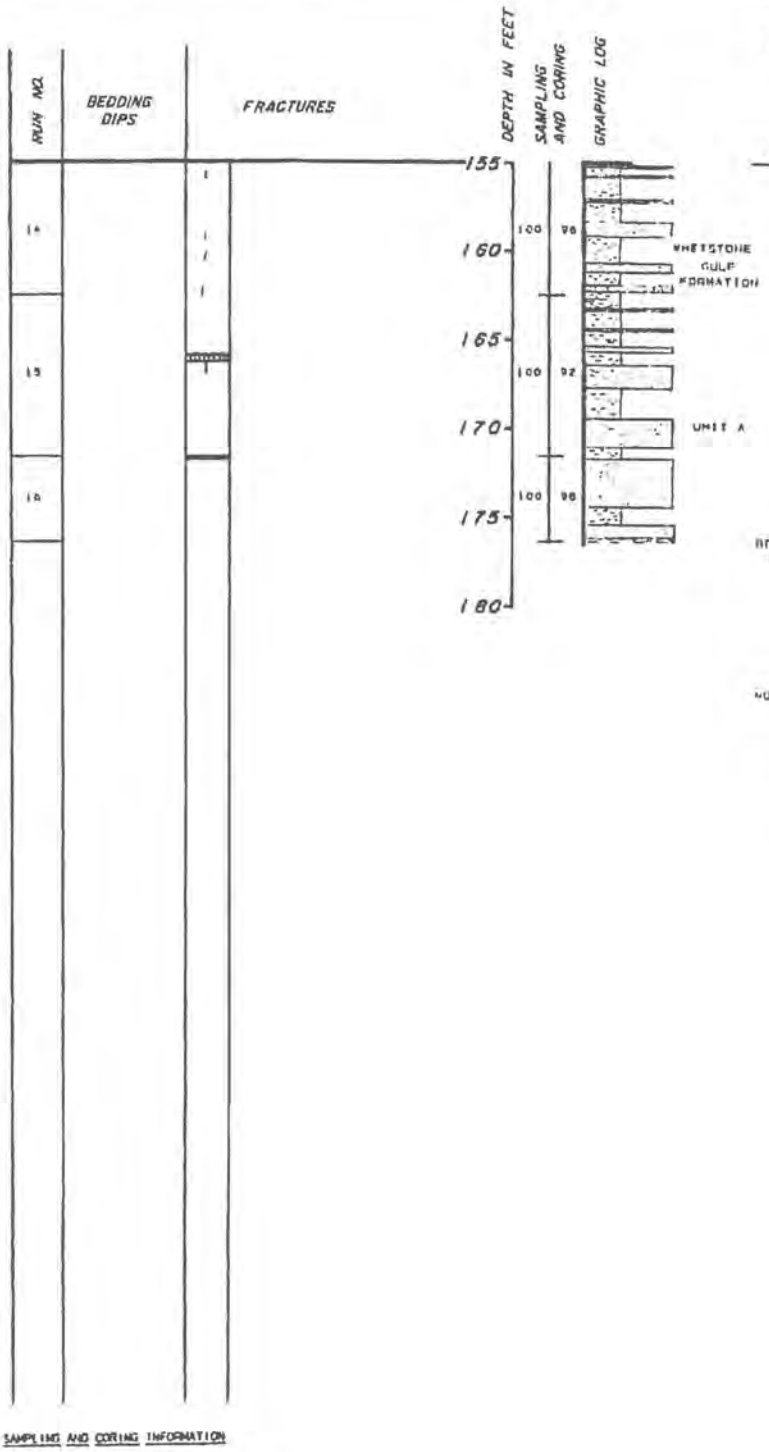
BORING L-4

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

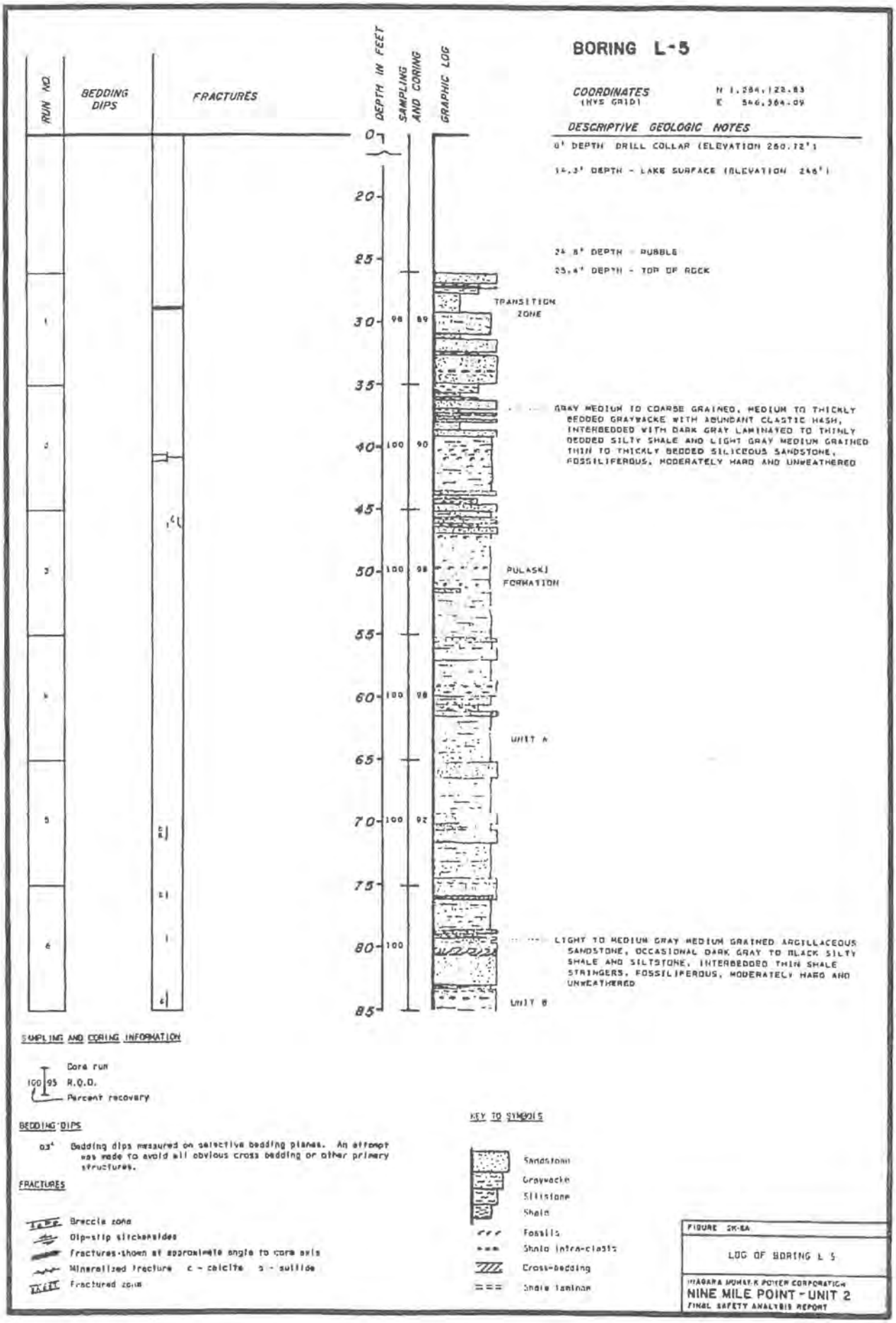
FIGURE 2A-1C

LOG OF BORING L-4

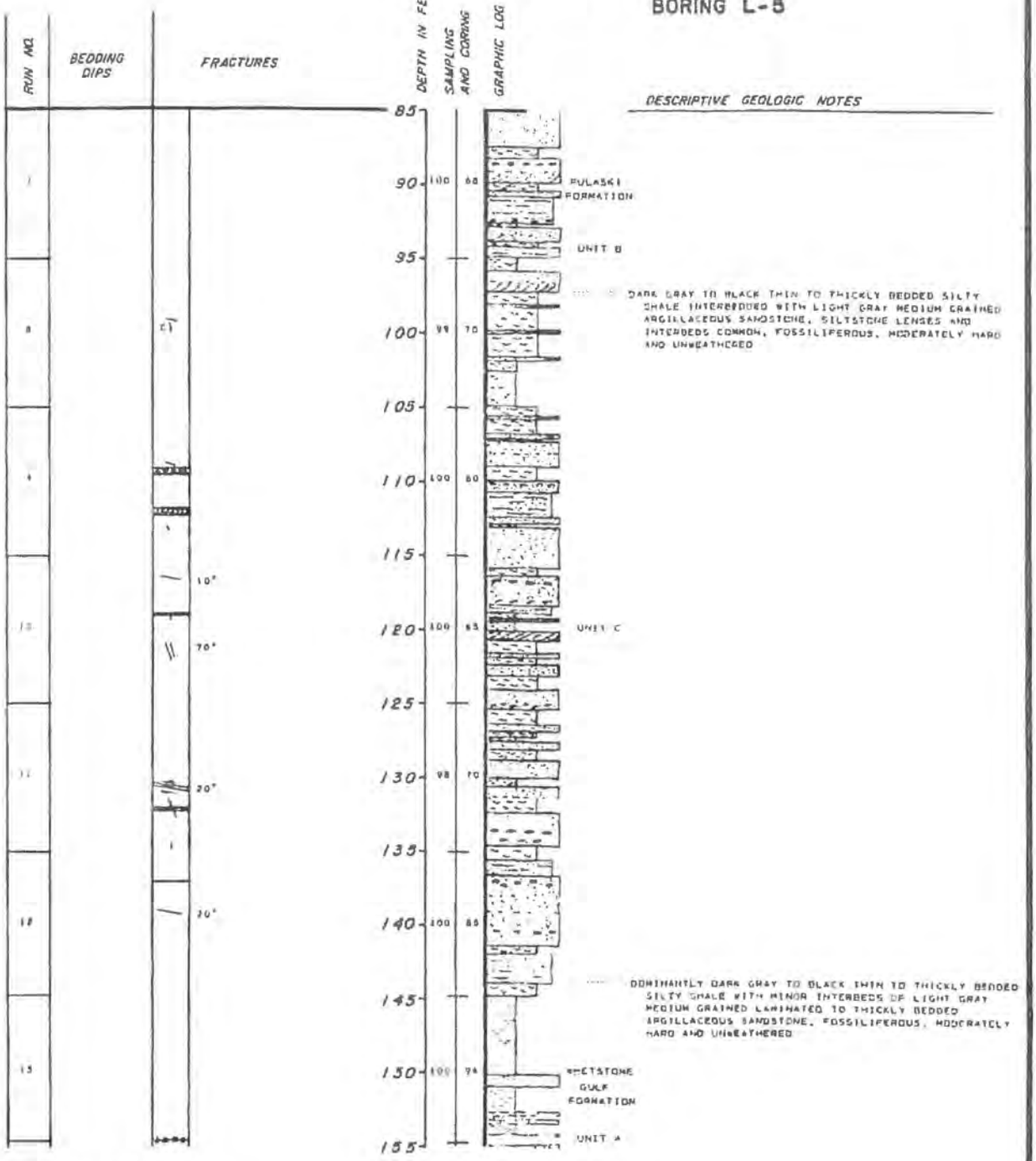
NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT


BORING L-5
COORDINATES (NYS GRID)
N 1,384,128.83
E 546,364.09
DESCRIPTIVE GEOLOGIC NOTES
0' DEPTH DRILL COLLAR (ELEVATION 260.72')
14.3' DEPTH - LAKE SURFACE (ELEVATION 246')
24.8' DEPTH - RUBBLE
25.4' DEPTH - TOP OF ROCK
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
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
RUN NO.
BEDDING DIPS
FRACTURES
DEPTH IN FEET
SAMPLING AND CORING
GRAPHIC LOG
0
20
25
30
35
40
45
50
55
60
65
70
75
80
85
98 89
100 90
100 98
100 98
100 92
100
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 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

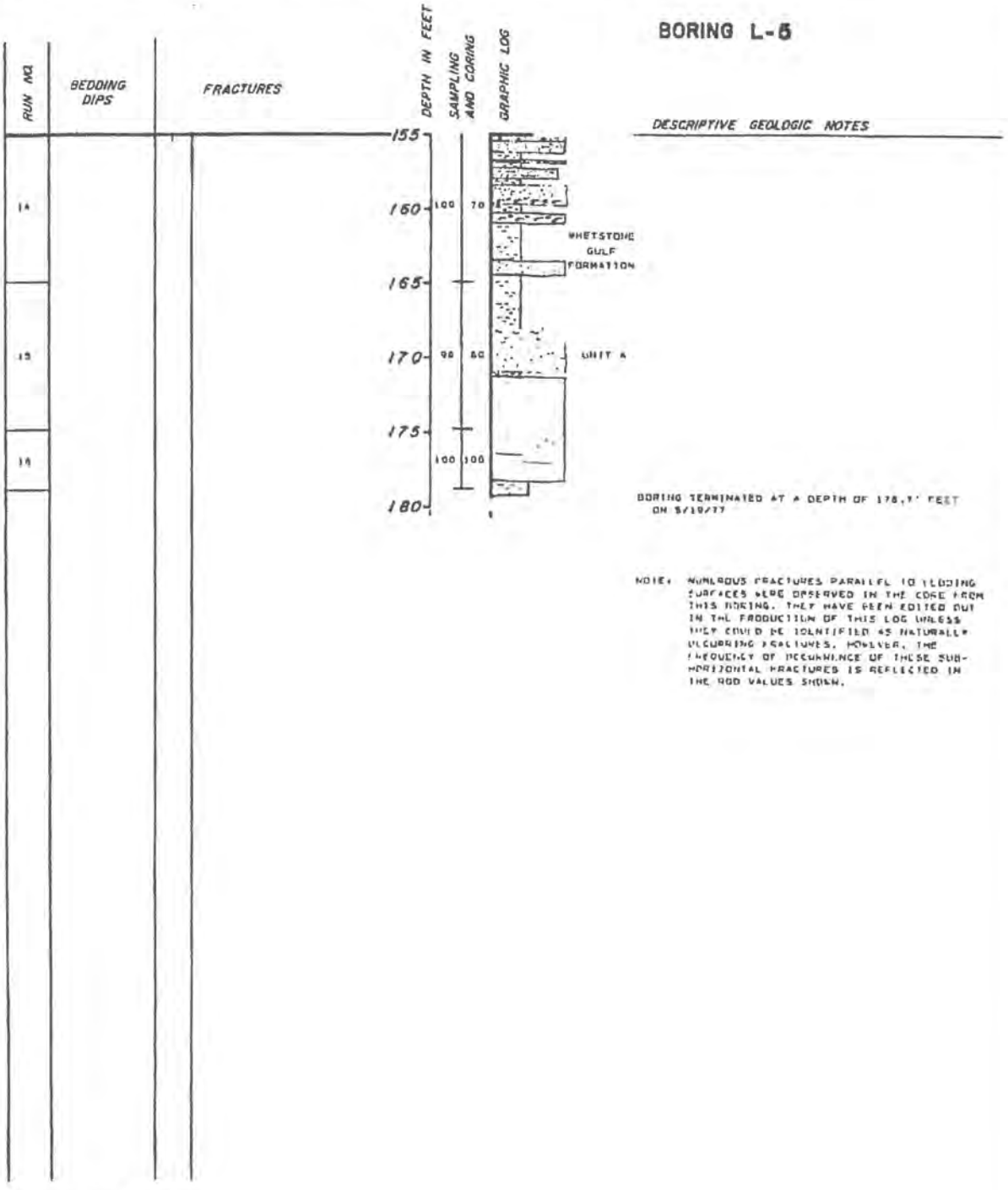
- Sandstone
- Greywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

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

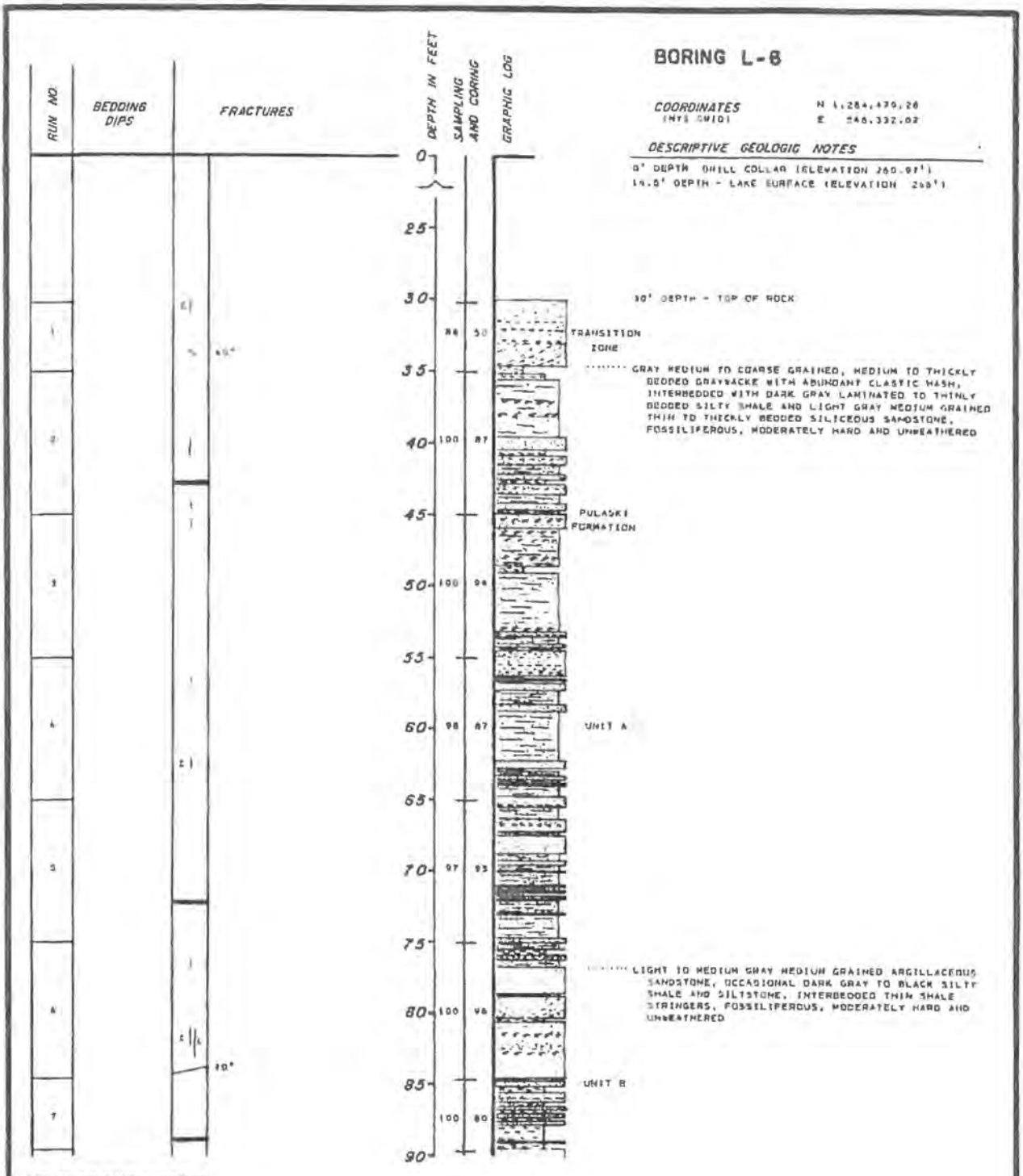
KEY TO SYMBOLS

- 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')

SAMPLING AND CORING INFORMATION

150 | 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

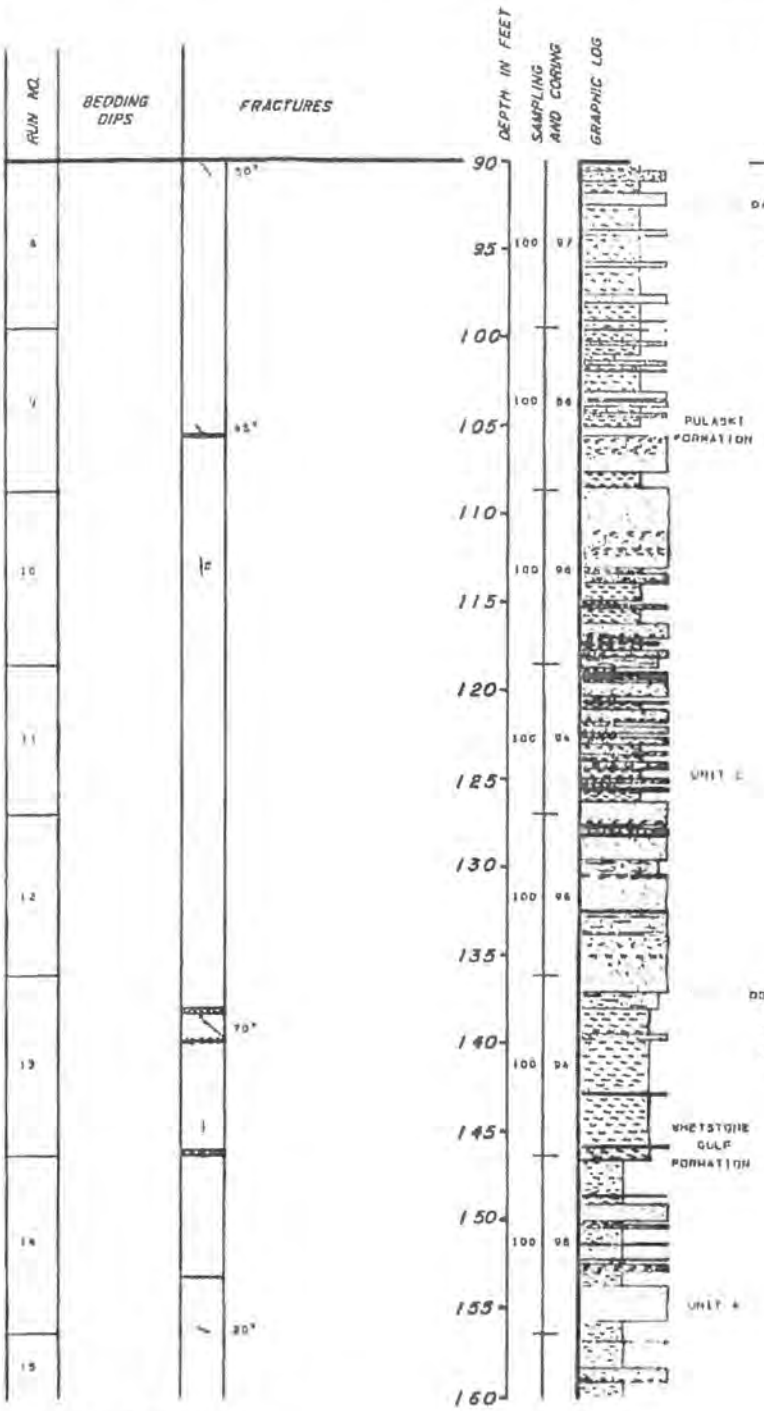
Graywacke
Siltstone
Shale
Fossils
Shale intra-clasts
Cross-bedding
Shale seams

FIGURE 2.5-8A

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

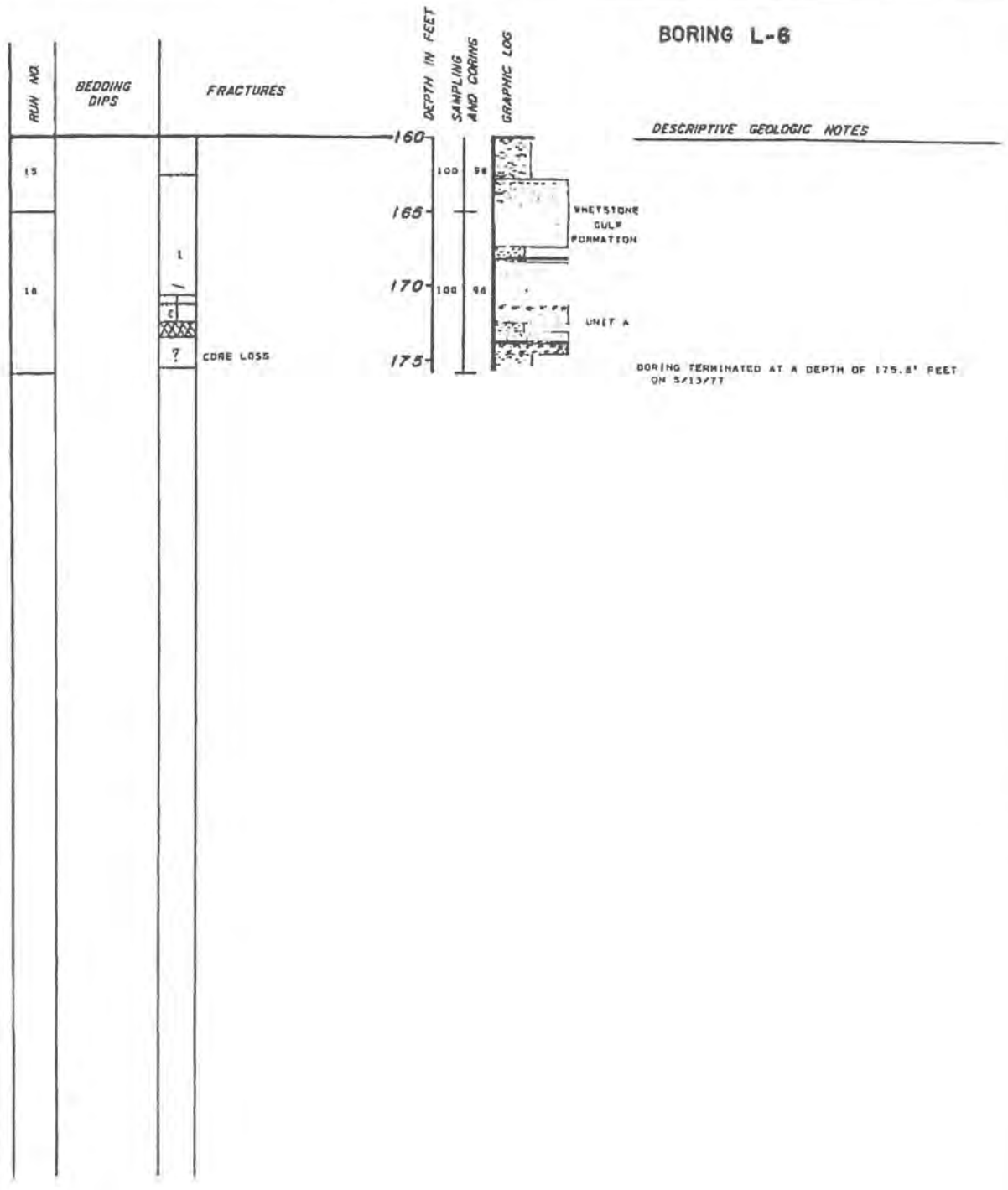
- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

FIGURE 2K-88

LOG OF BORING L-6

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

BORING L-6


RUN NO.
BEDDING DIPS
FRACTURES
DEPTH IN FEET
SAMPLING AND CORING
GRAPHIC LOG
DESCRIPTIVE GEOLOGIC NOTES
160
165
170
175
15
18
100
98
100
96
WHETSTONE GULF FORMATION
UNIT A
CORE LOSS
BORING TERMINATED AT A DEPTH OF 175.8' FEET ON 5/13/77
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 ... to avoid ... 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
KEY TO SYMBOLS
Graywacke
Siltstone
Shale
Fossils
Shale intra-clasts
Cross-bedding
FIGURE 2K-9C
LOG OF BORING L-6
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

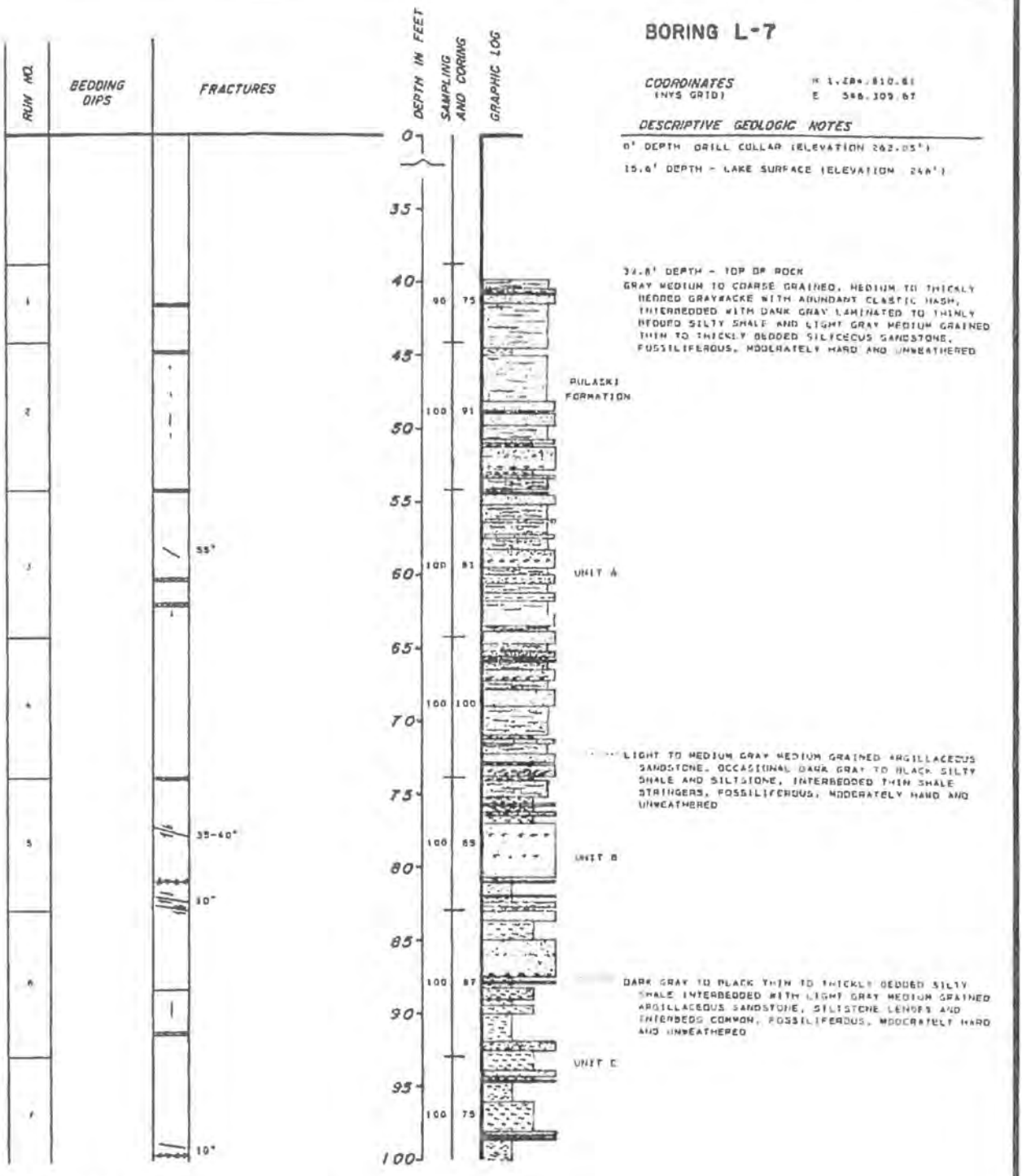
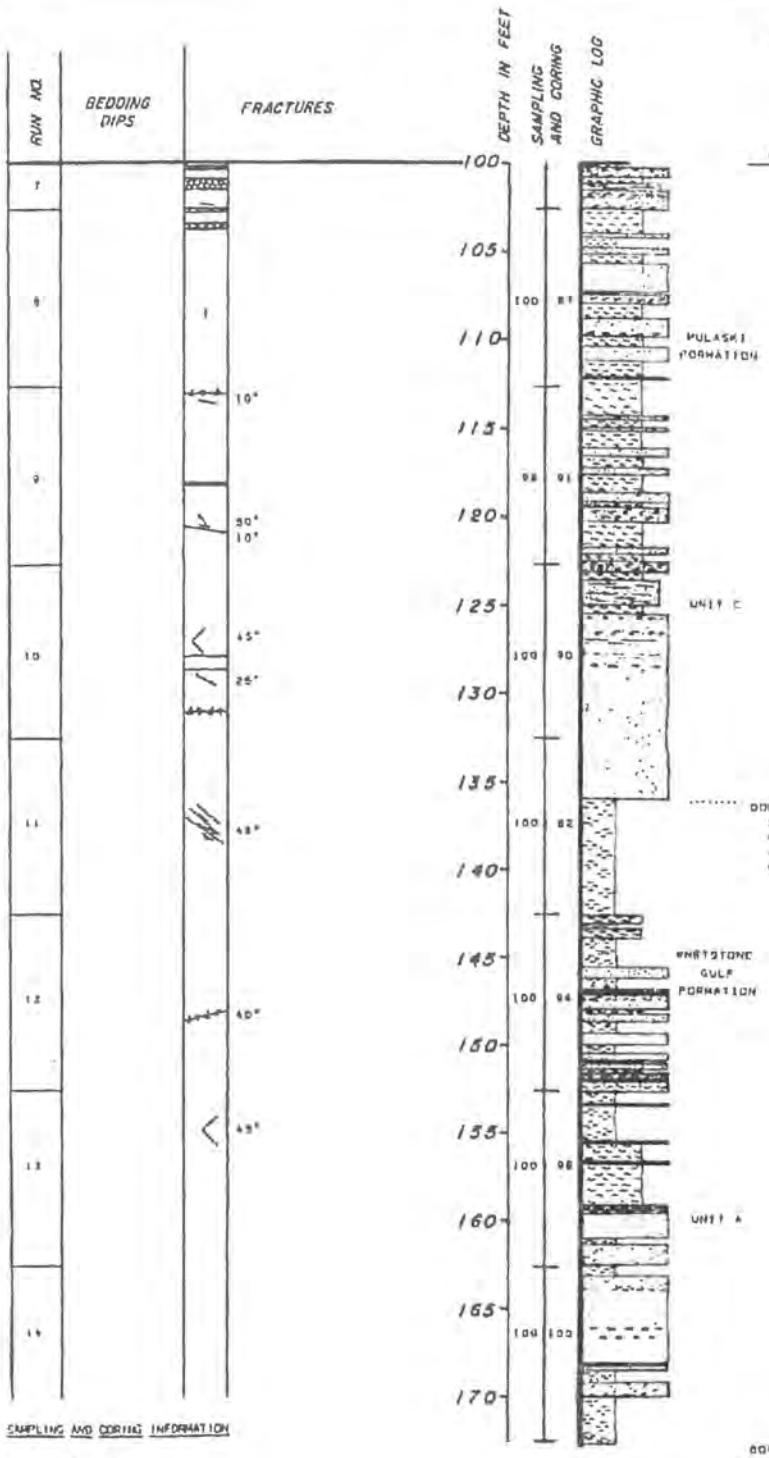


FIGURE [illegible]

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
- 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 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

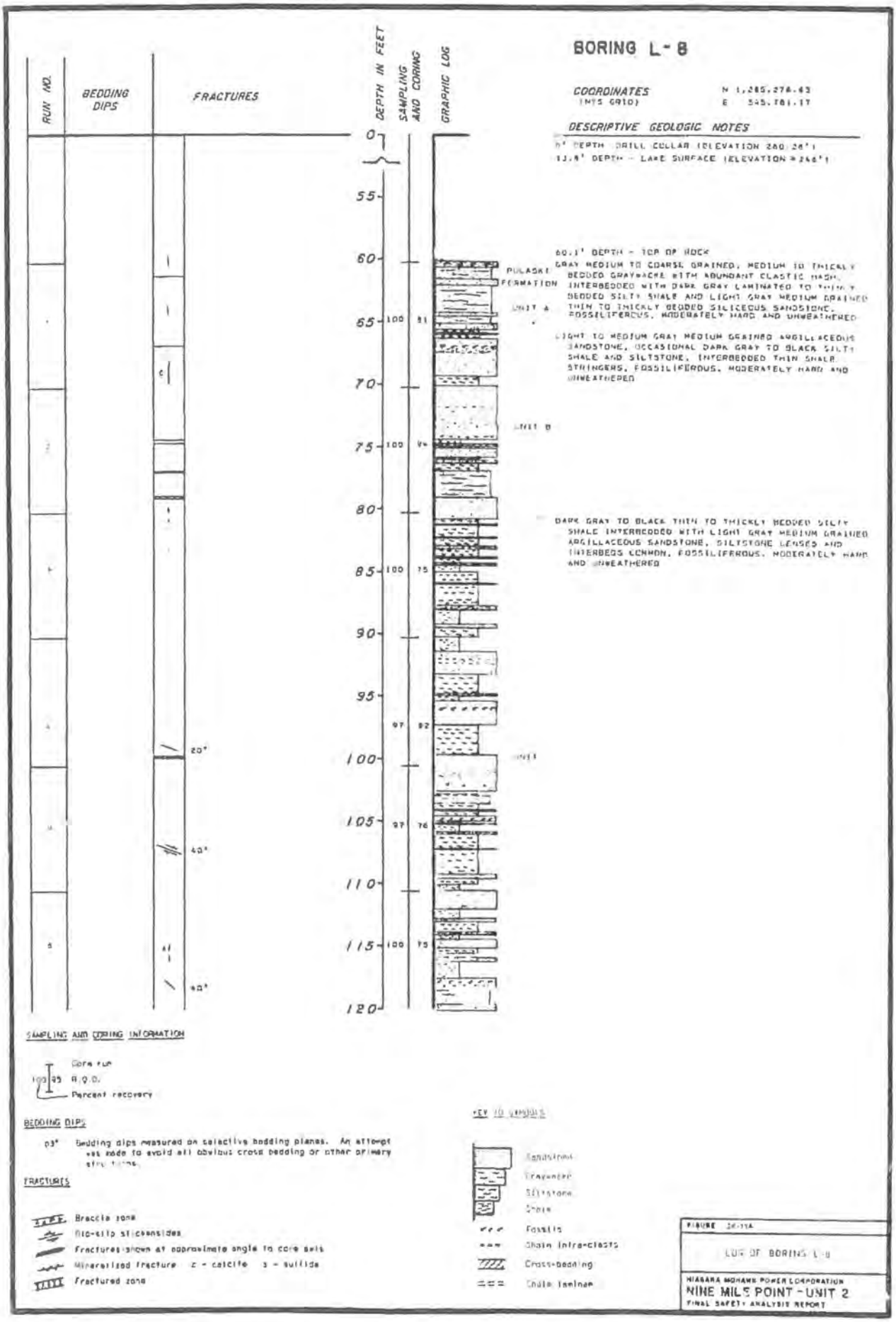
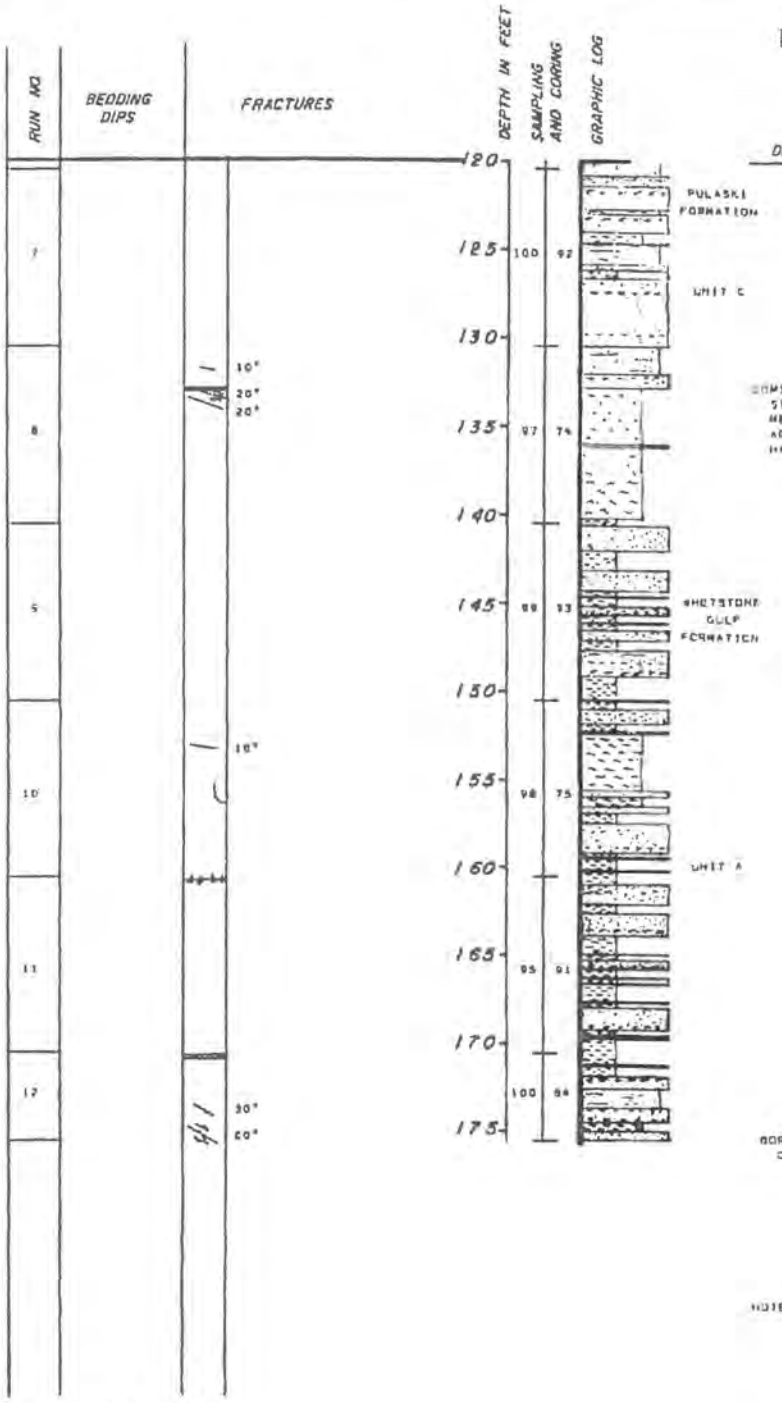


FIGURE 2A-11A

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

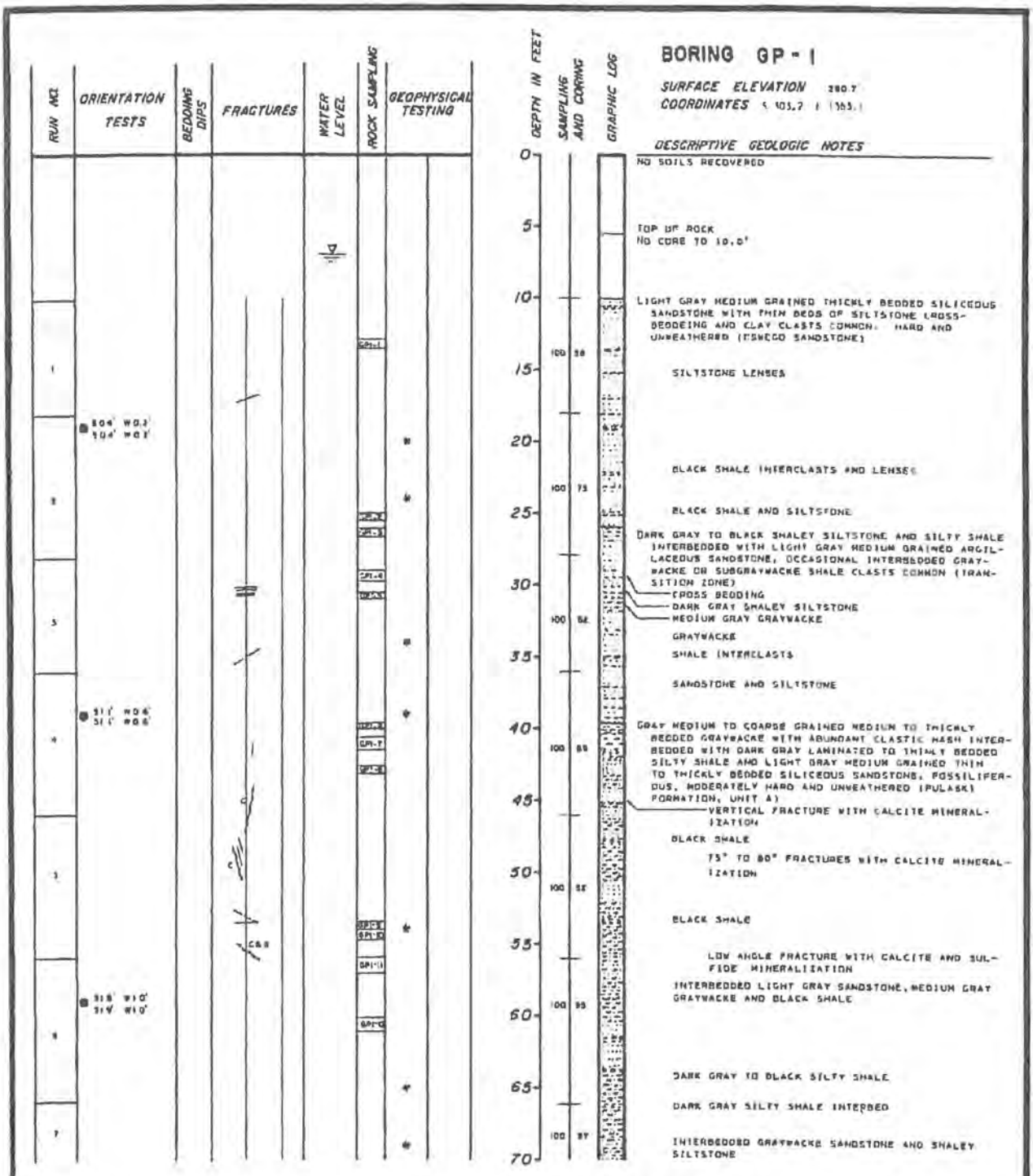
KEY TO SYMBOLS

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

FIGURE 2K 118

LOG OF BORING L-8

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



ORIENTATION TESTS

△ Unsuccessful orientation tests

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

● 88.6' W48' / 89.6' 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 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

GP1-1 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.

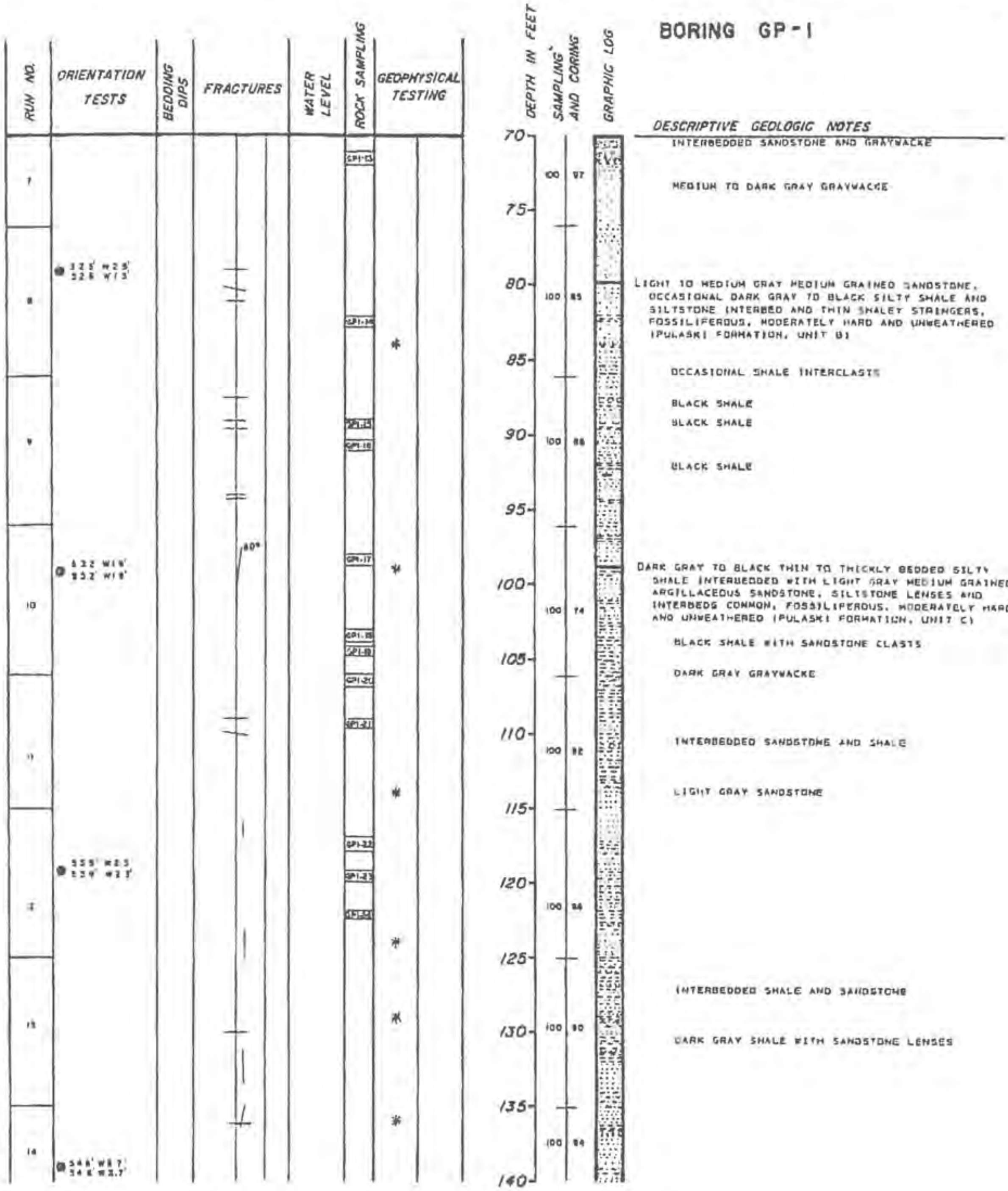
100 | 95 R.Q.D.

Percent recovery

FIGURE 2.5-12A

LOG OF BORING GP-1

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

● 38.4' W4.8' / 38.4' W4.8' 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

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

GEOPHYSICAL TESTING

* Location of cross hole geophysical survey

SAMPLING AND CORING

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.

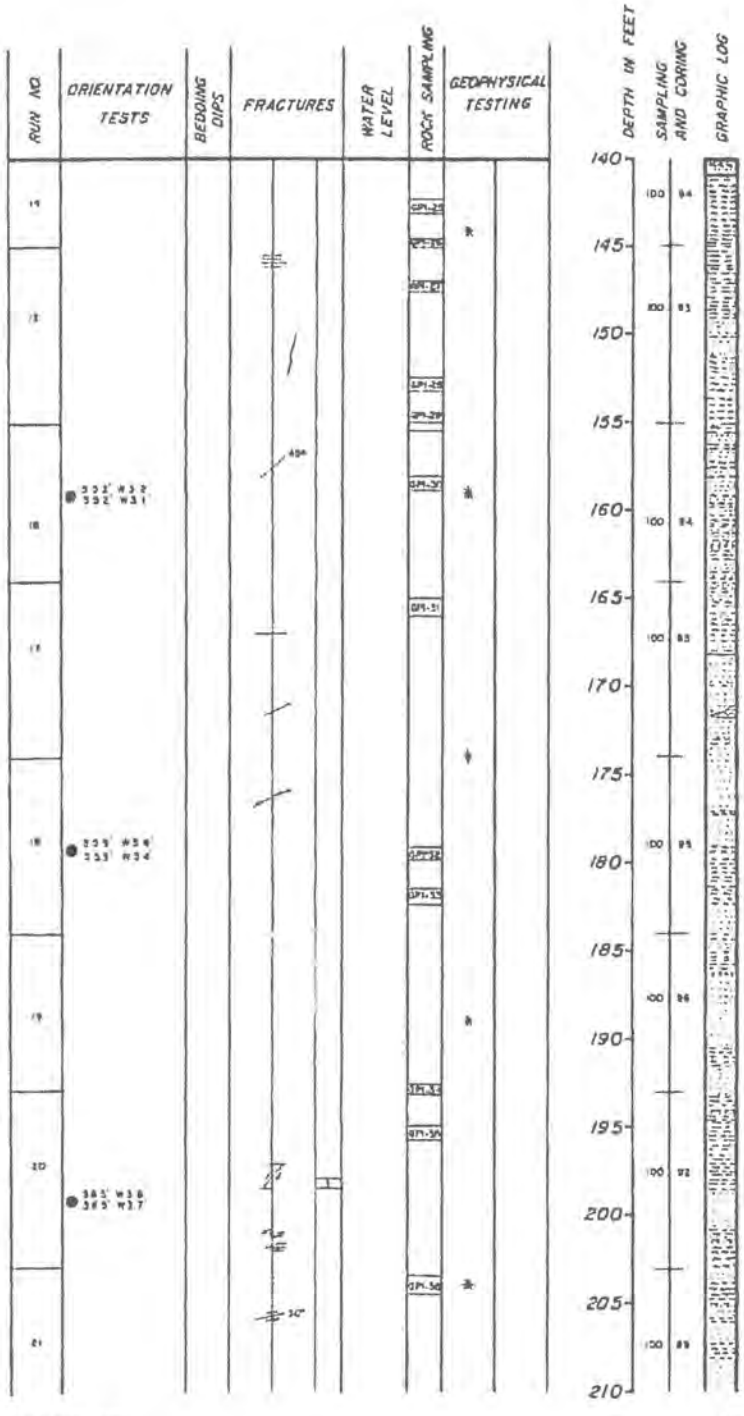
Percent recovery

FIGURE 2X-17B

LOG OF BORING GP-1

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

BORING GP-1



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 (WHETSTONE GULF FORMATION, UNIT A)

LIGHT GRAY MEDIUM GRAINED SANDSTONE

DARK GRAY SILTY SHALE

DARK GRAY TO BLACK SILTY SHALE WITH SANDSTONE LENSES

ALTERNATING THICKLY BEDDED LIGHT GRAY SANDSTONE AND DARK GRAY THIN TO THICKLY BEDDED SILTY SHALE OCCASIONAL SILTSTONE LENS & INTERBEDS, MODERATELY HARD AND UNWEATHERED, FOSSILIFEROUS (WHETSTONE GULF FORMATION, UNIT B)

10° FRACTURE WITH DIP SLIP SLICKENSIDES

HORIZONTAL FRACTURE WITH SLICKENSIDES
HORIZONTAL FRACTURE WITH SLICKENSIDES

10° FRACTURE WITH DIP SLIP SLICKENSIDES

ORIENTATION TESTS

△ Unsuccessful orientation tests

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

● 38.4' W4.8' / 38.5' W4.8' 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

GP1-1 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.

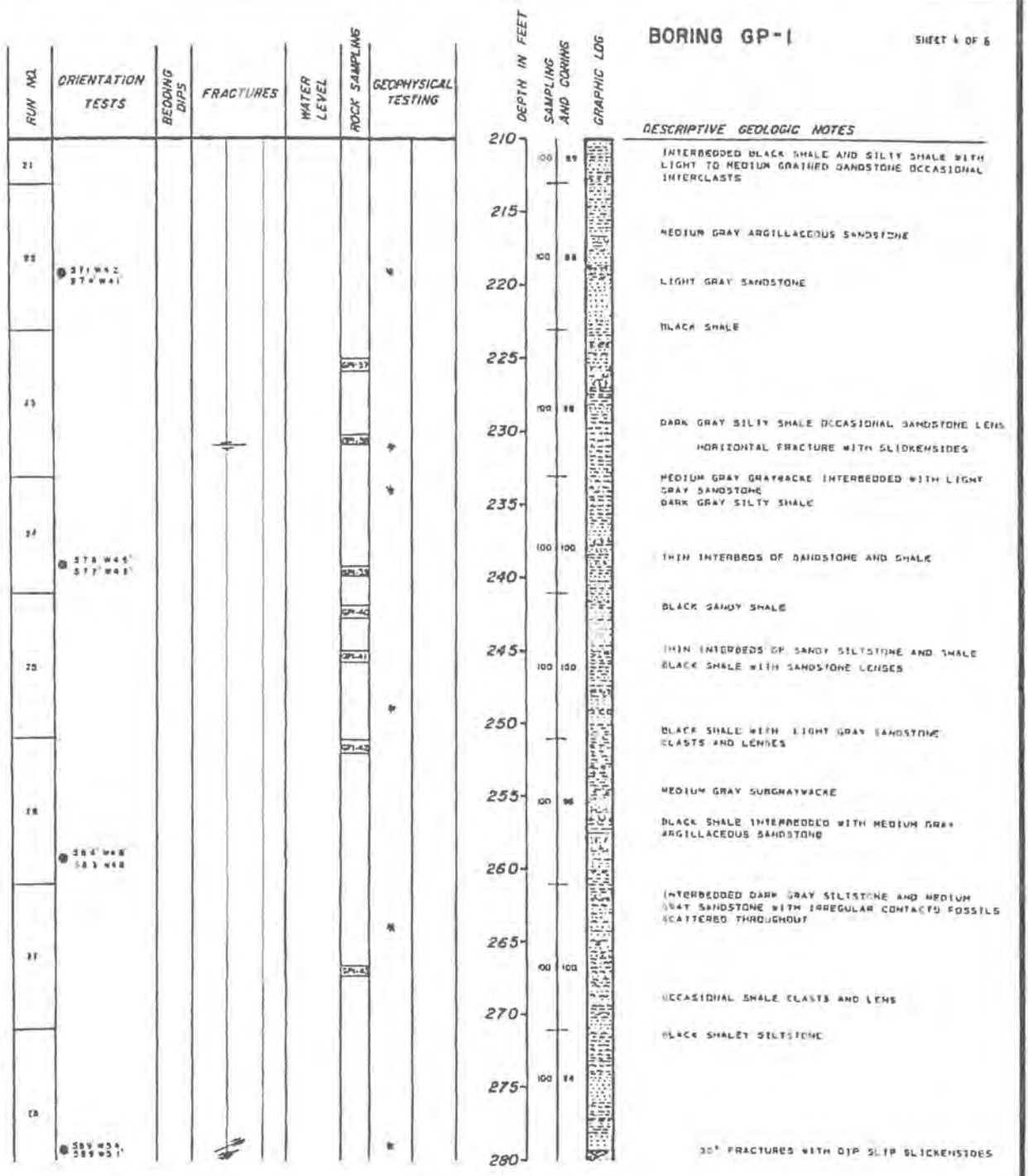
100 | 95 R.Q.D.

Percent recovery

FIGURE [illegible]

LOG OF BORING GP-1

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

● 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.

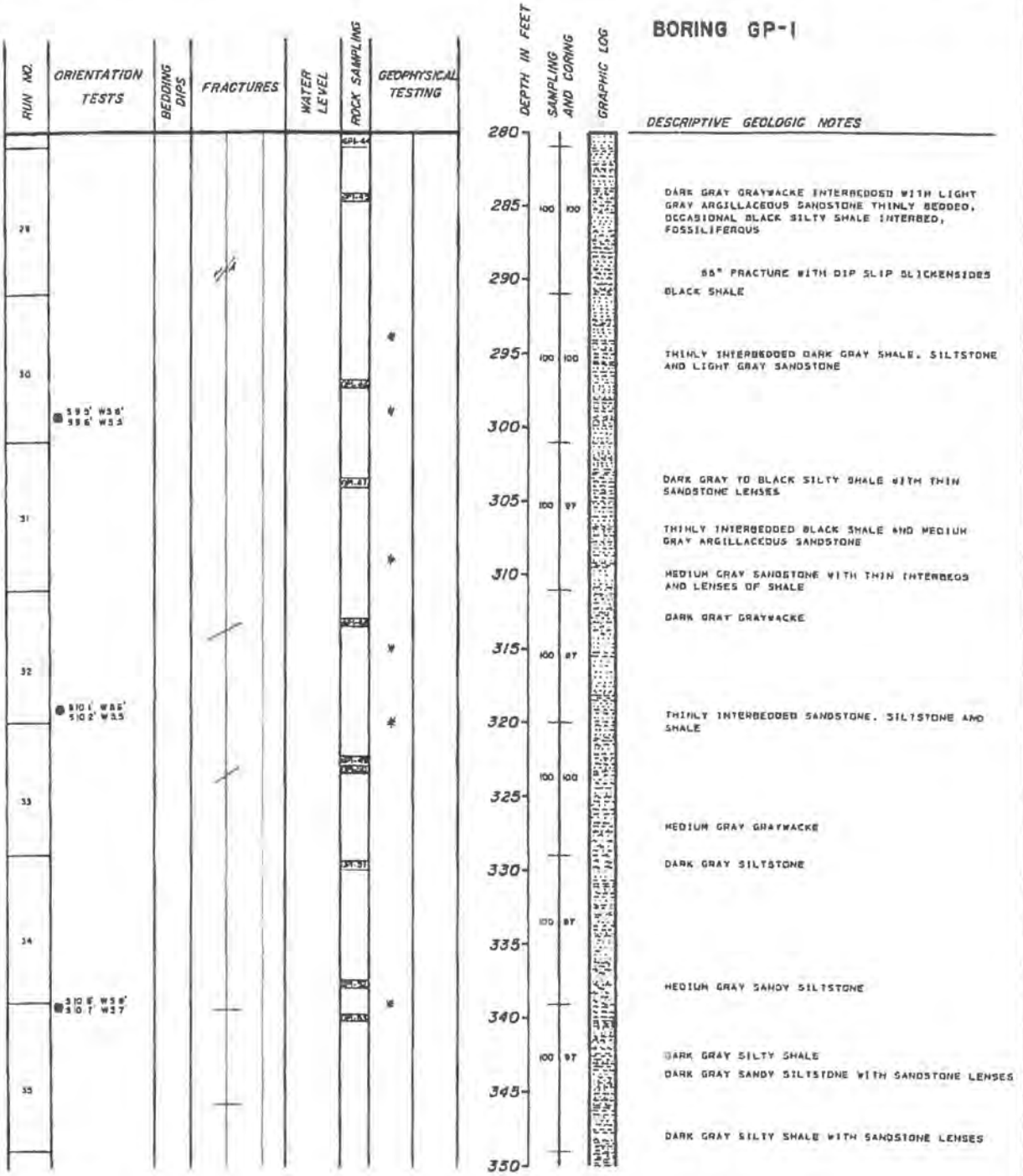
Percent recovery

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

GP1-1 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

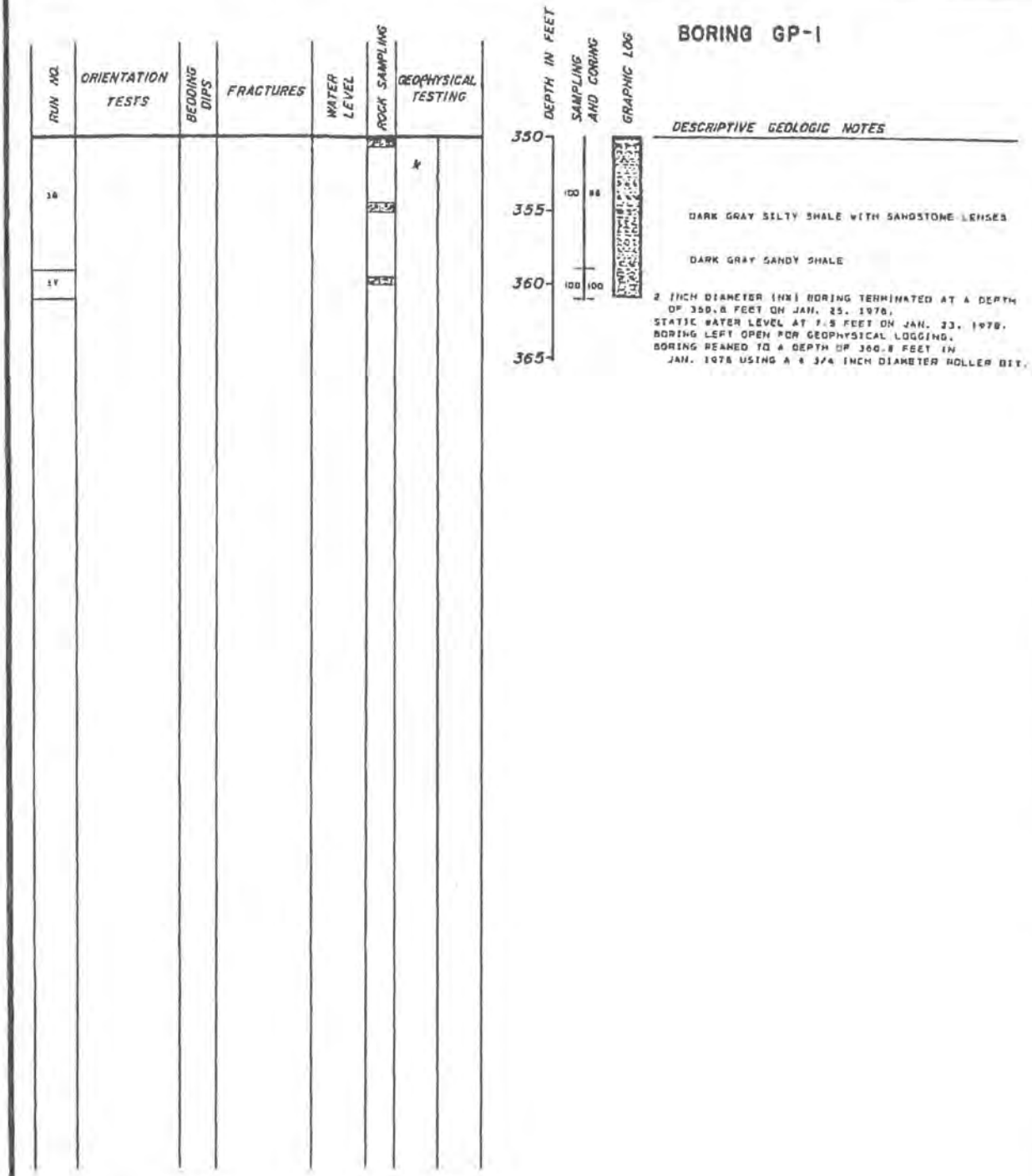
LOG OF BORING GP-1

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

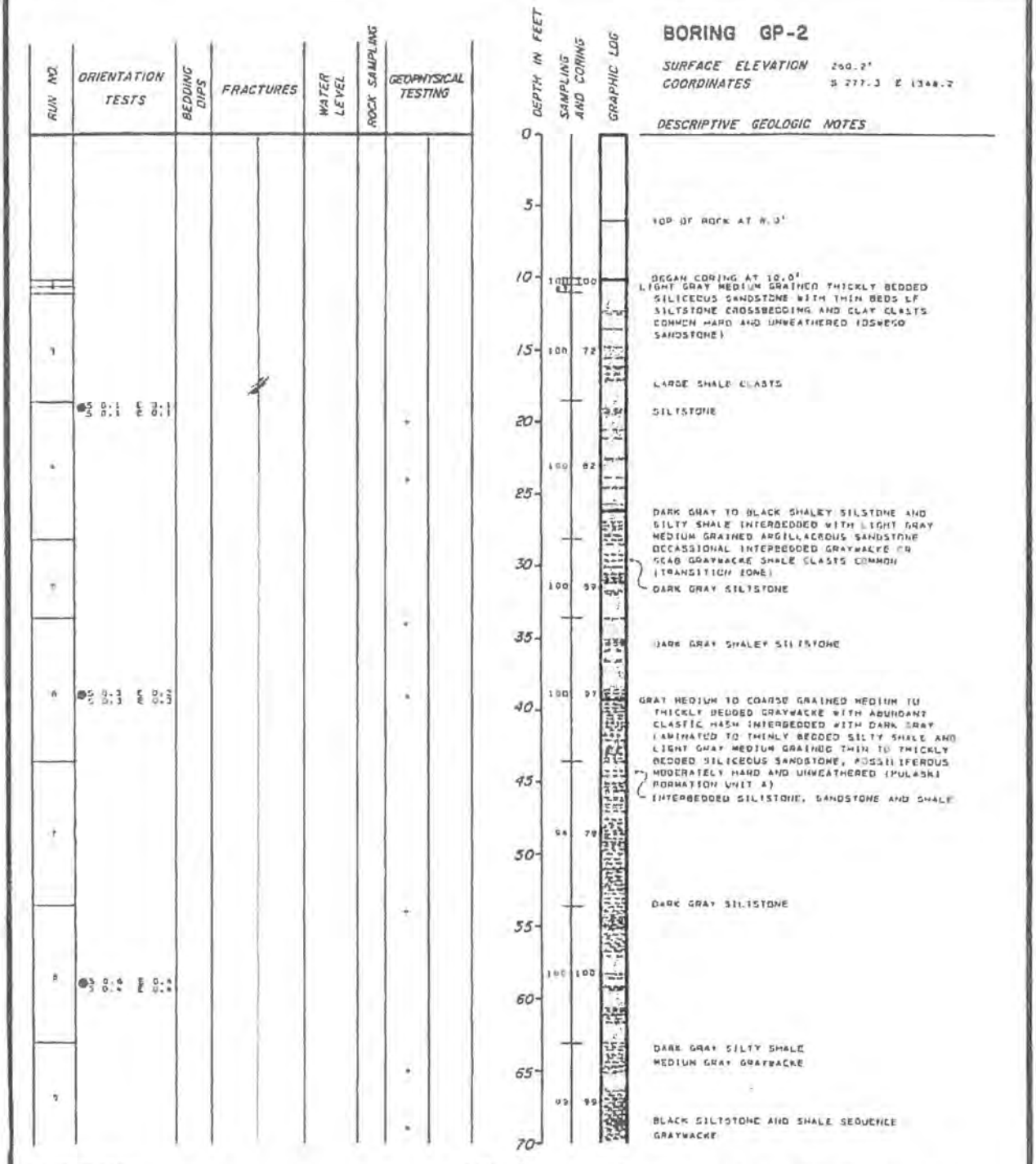
GEOPHYSICAL TESTING

- 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 (Inclinic Subsurface Orientation Tool) Station. Results show drift angle in plan view from a true reference point (center of top of casing) based on a cartesian 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-silt 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

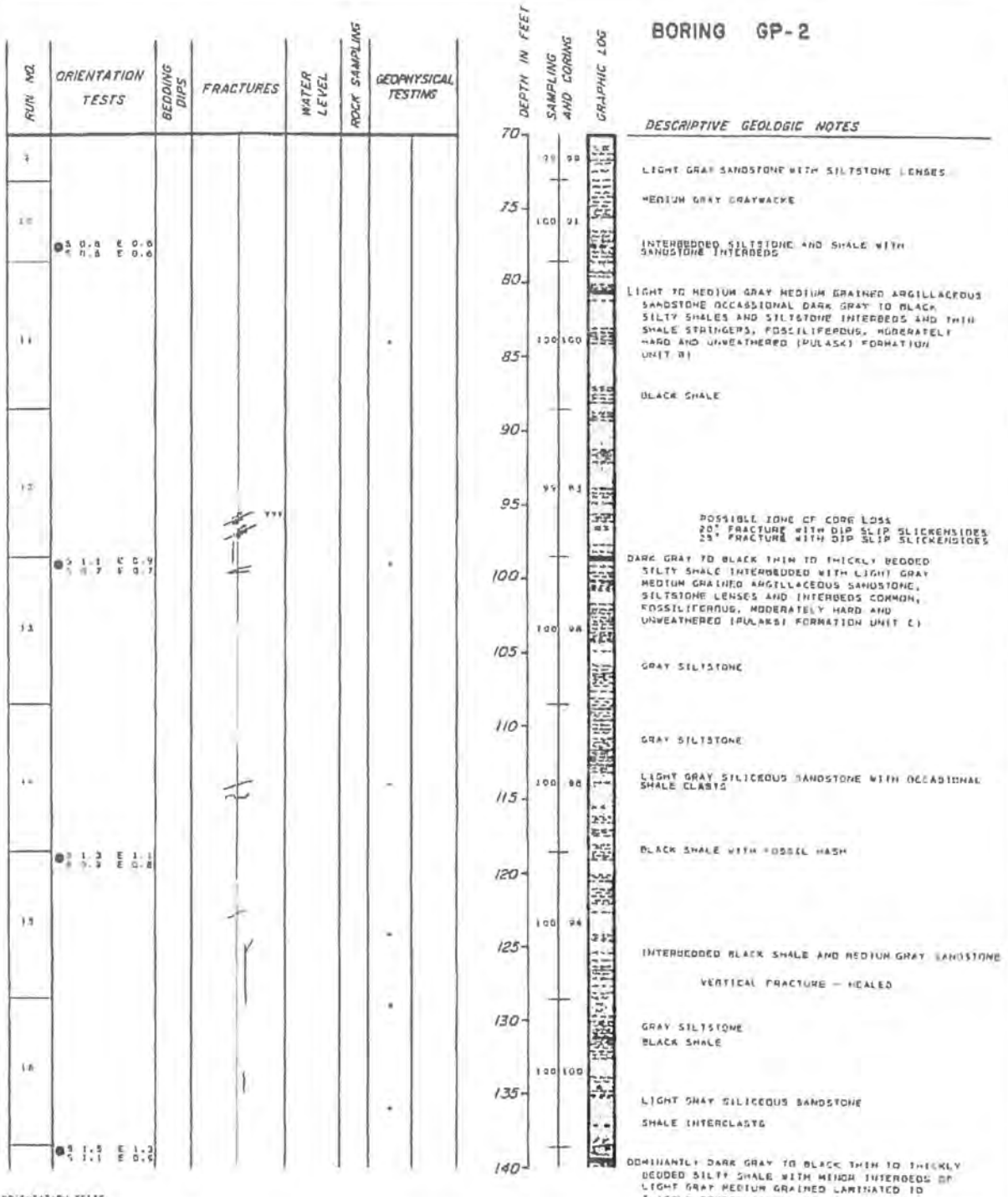
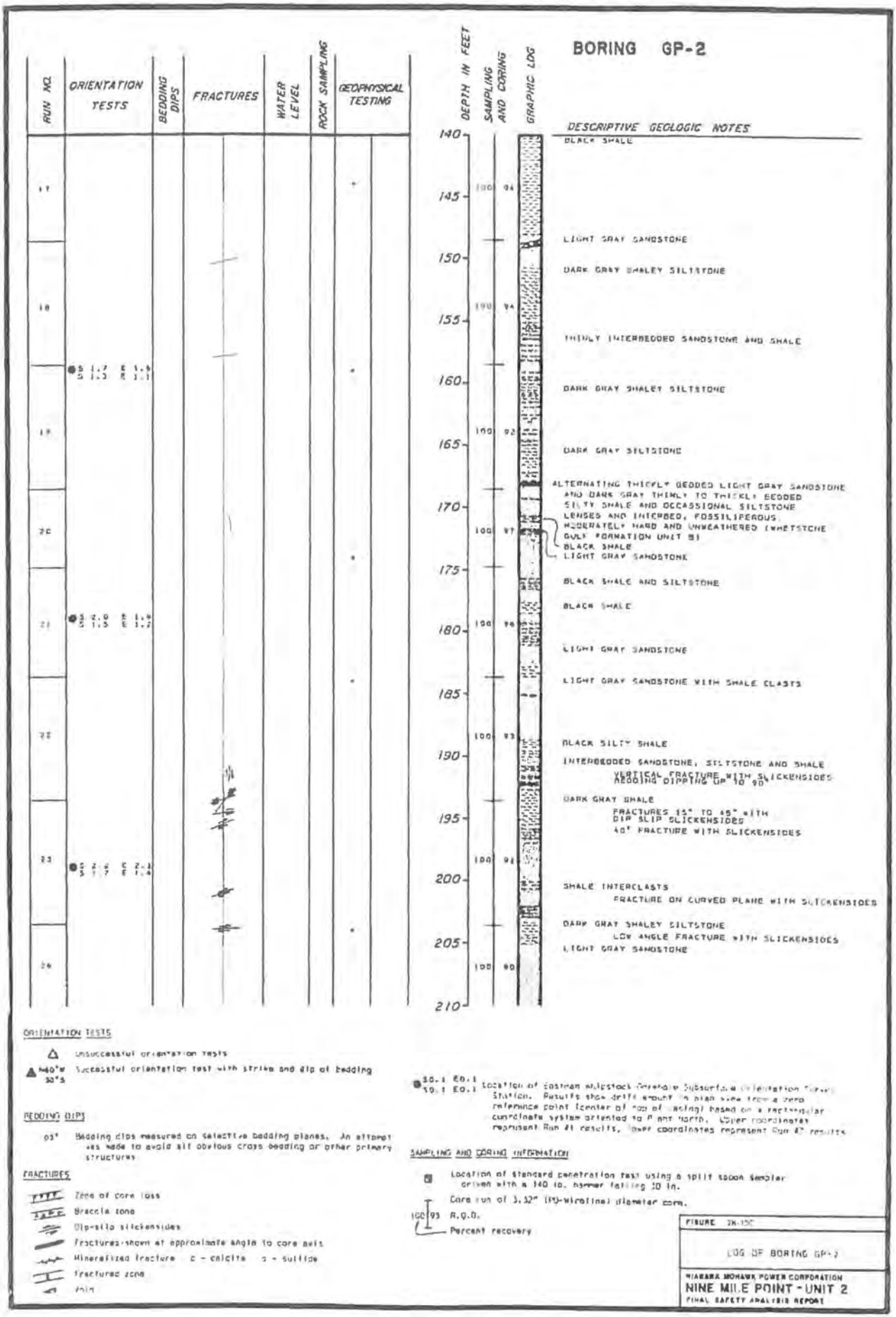


FIGURE 2A-12A

LOG OF BORING GP-2

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



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

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 and 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" (EX)-wireline diameter core.

100 93 R.Q.D.

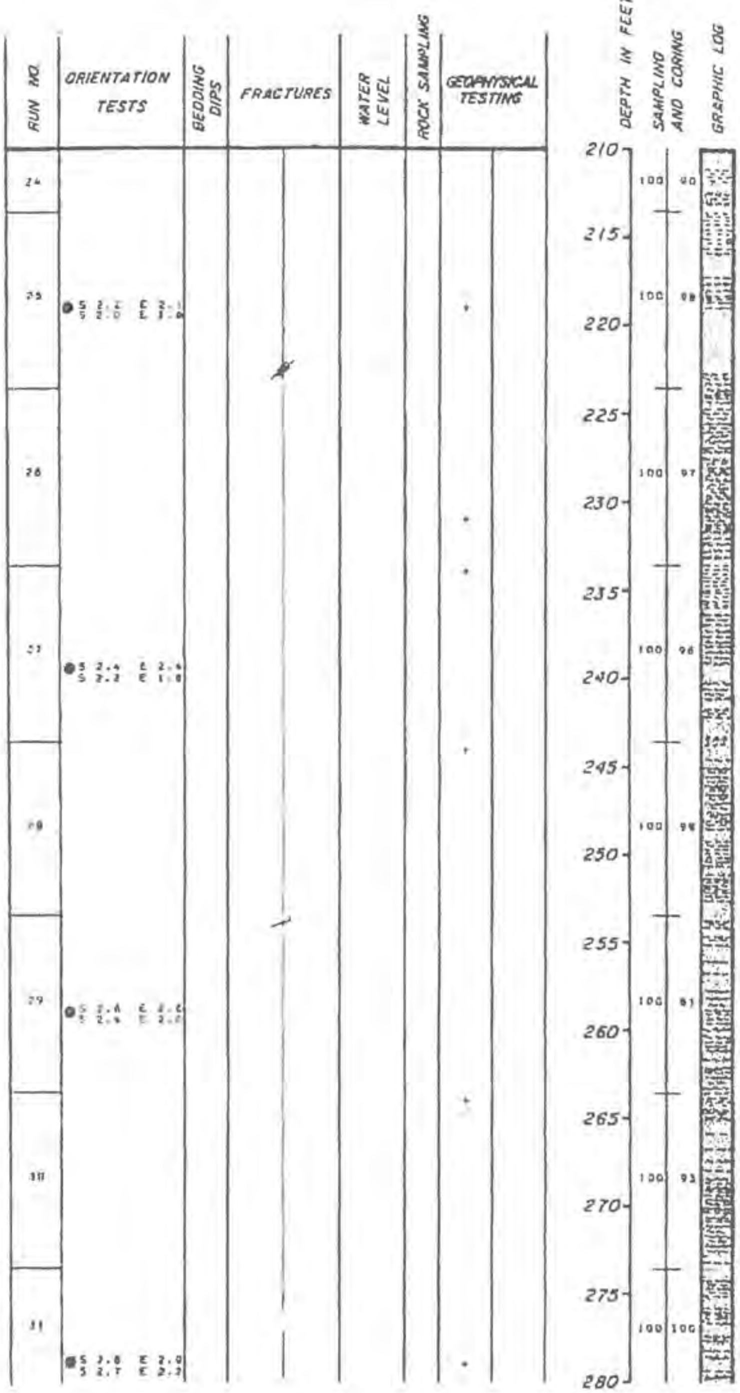
Percent recovery

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 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

● S0.1 E0.1 / S0.1 E0.1 Location of Eastman whipstock Borehole Subsurface 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.

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 1.32" (PQ-wireline) diameter core.

100|95 R.Q.D.

Percent recovery

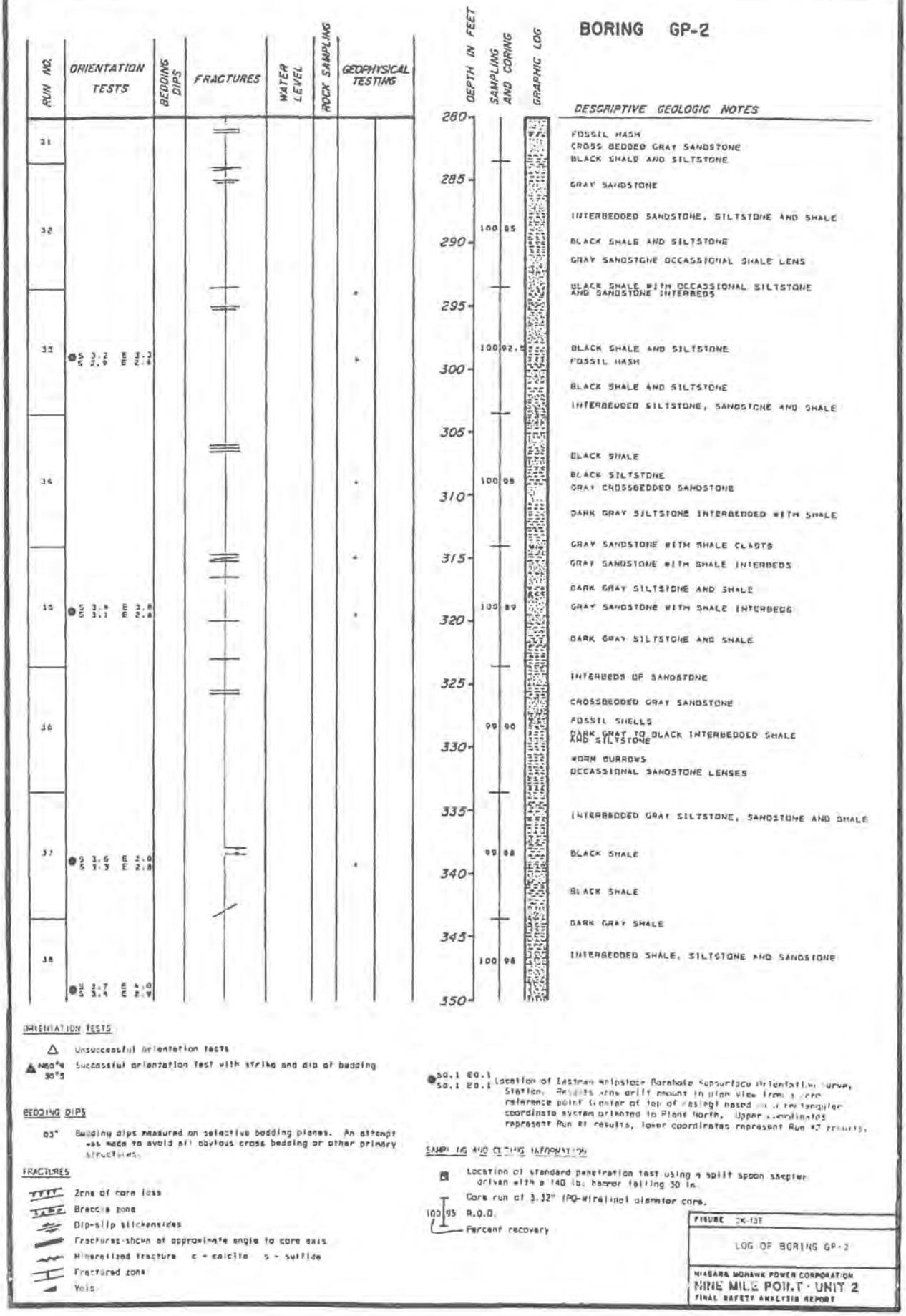
FIGURE 2.5-110

LOG OF BORING GP-2

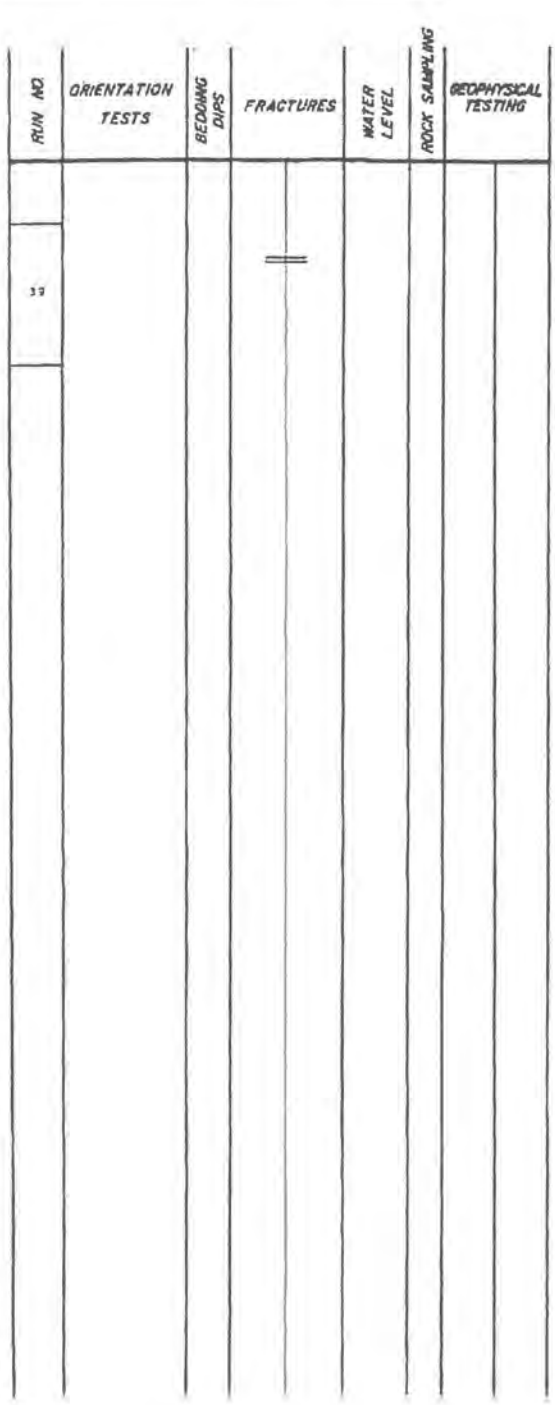
NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT


BORING GP-2
RUN NO.
ORIENTATION TESTS
BEDDING DIPS
FRACTURES
WATER LEVEL
ROCK SAMPLING
GEOPHYSICAL TESTING
DEPTH IN FEET
SAMPLING AND CORING
GRAPHIC LOG
DESCRIPTIVE GEOLOGIC NOTES
280
285
290
295
300
305
310
315
320
325
330
335
340
345
350
31
32
33
34
35
36
37
38
100 85
100 92.5
100 95
100 89
99 90
99 88
100 98
FOSSIL HASH
CROSS BEDDED GRAY SANDSTONE
BLACK SHALE AND SILTSTONE
GRAY SANDSTONE
INTERBEDDED SANDSTONE, SILTSTONE AND SHALE
BLACK SHALE AND SILTSTONE
GRAY SANDSTONE OCCASSIONAL SHALE LENS
BLACK SHALE WITH OCCASSIONAL SILTSTONE AND SANDSTONE INTERBEDS
BLACK SHALE AND SILTSTONE
FOSSIL HASH
BLACK SHALE AND SILTSTONE
INTERBEDDED SILTSTONE, SANDSTONE AND SHALE
BLACK SHALE
BLACK SILTSTONE
GRAY CROSSBEDDED SANDSTONE
DARK GRAY SILTSTONE INTERBEDDED WITH SHALE
GRAY SANDSTONE WITH SHALE CLASTS
GRAY SANDSTONE WITH SHALE INTERBEDS
DARK GRAY SILTSTONE AND SHALE
GRAY SANDSTONE WITH SHALE INTERBEDS
DARK GRAY SILTSTONE AND SHALE
INTERBEDS OF SANDSTONE
CROSSBEDDED GRAY SANDSTONE
FOSSIL SHELLS
DARK GRAY TO BLACK INTERBEDDED SHALE AND SILTSTONE
WORM BURROWS
OCCASSIONAL SANDSTONE LENSES
INTERBEDDED GRAY SILTSTONE, SANDSTONE AND SHALE
BLACK SHALE
BLACK SHALE
DARK GRAY SHALE
INTERBEDDED SHALE, SILTSTONE AND SANDSTONE
ORIENTATION TESTS
Unsuccessful orientation tests
Successful orientation test with strike and dip of bedding
BEDDING DIPS
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
Location of Eastman whipstock Borehole Subsurface Orientation Survey Station. Projects drift mount 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.
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.
R.Q.D.
Percent recovery
FIGURE 2R-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 around 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 Orientation

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

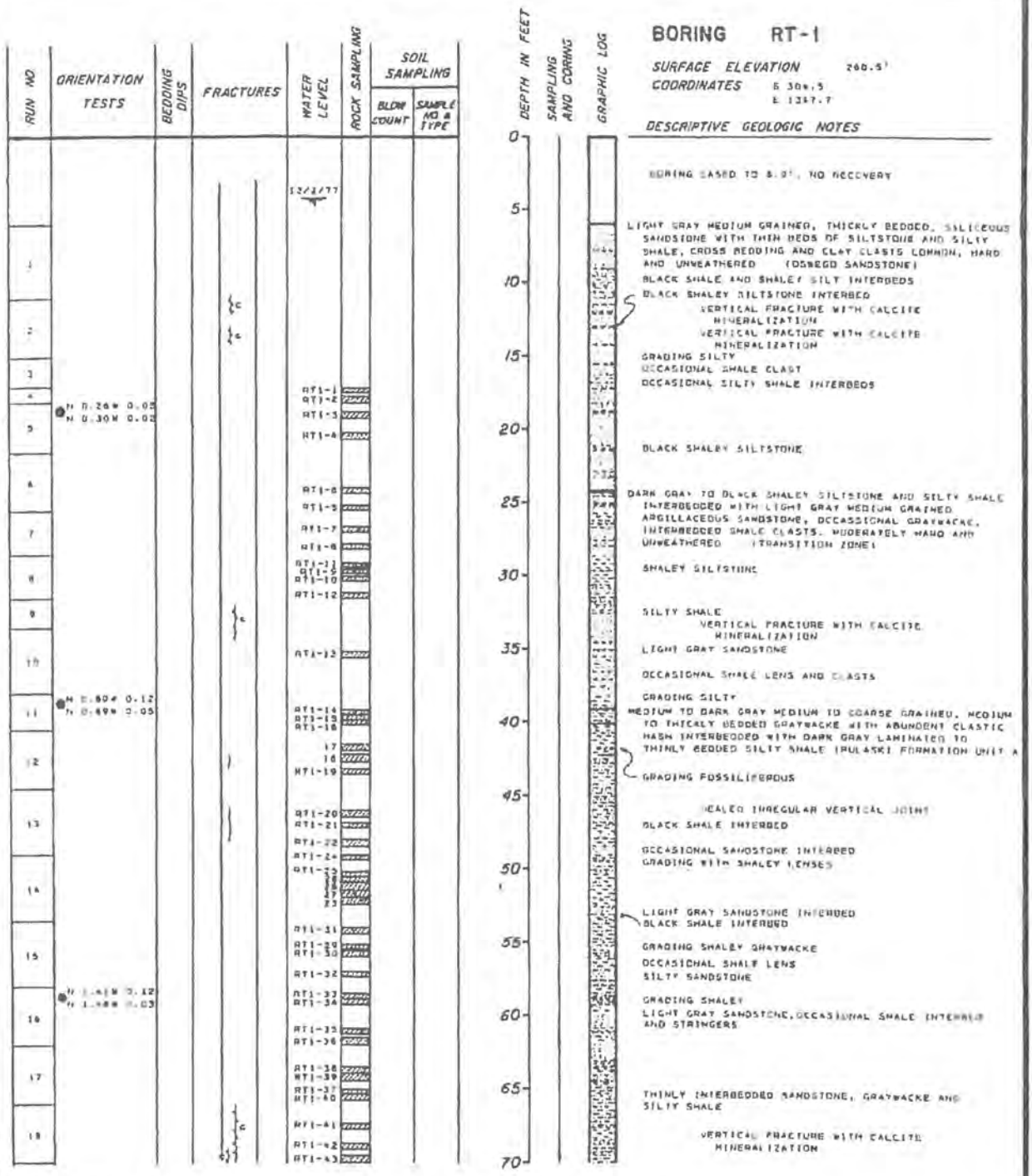
Core run of 3.32" (PQ-Wireline) diameter core.

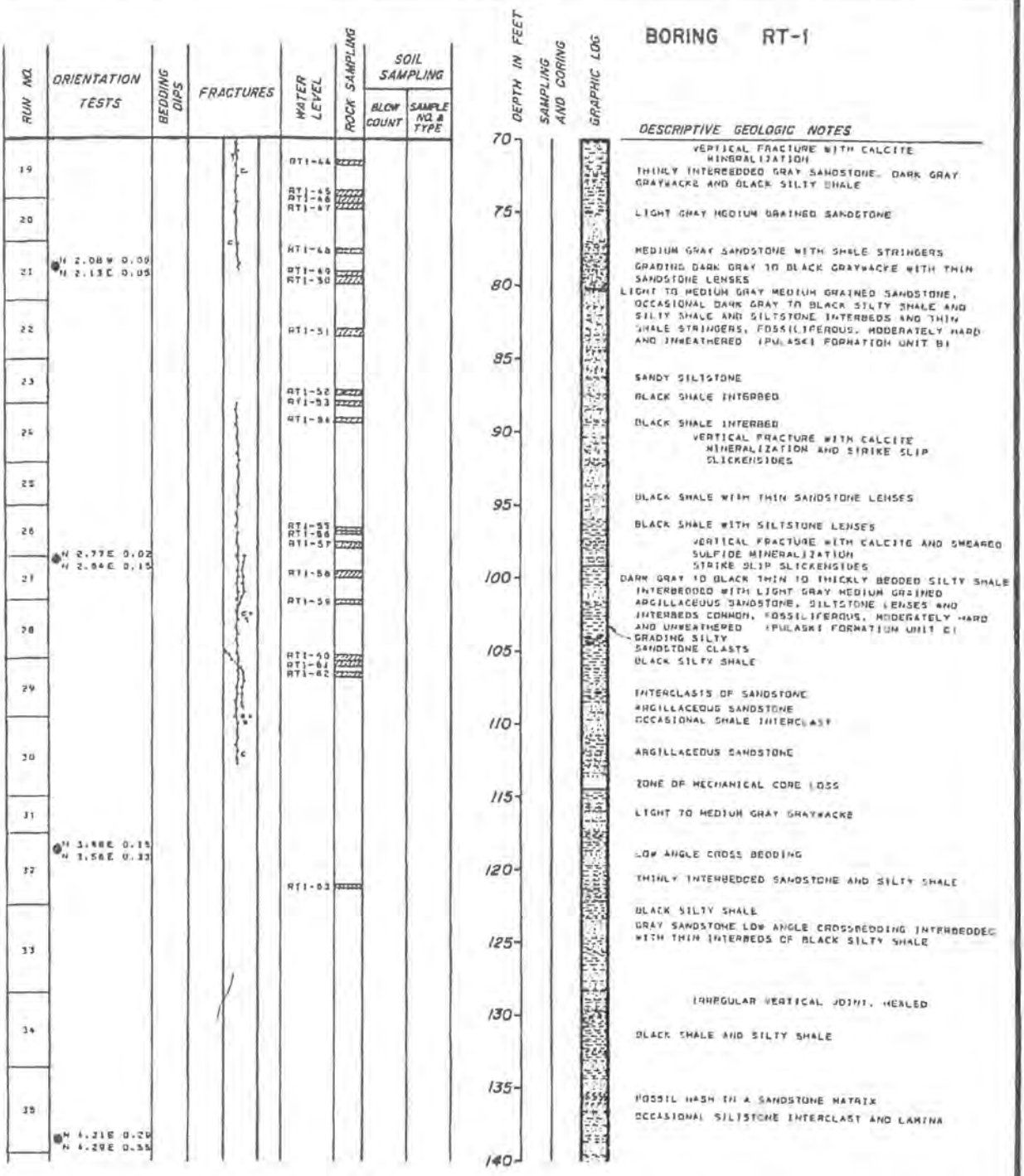
100 95 R.Q.D.
Percent recovery

FIGURE 2K-13F

LOG OF BORING GP-2

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


RUN NO
ORIENTATION TESTS
BEDDING DIPS
FRACTURES
WATER LEVEL
ROCK SAMPLING
SOIL SAMPLING
BLOW COUNT
SAMPLE NO & TYPE
DEPTH IN FEET
SAMPLING AND CORING
GRAPHIC LOG
BORING RT-1
SURFACE ELEVATION 260.5'
COORDINATES N 304.5
E 1247.7
DESCRIPTIVE GEOLOGIC NOTES
12/1/77
BORING CASED TO 8.0', NO RECOVERY
LIGHT GRAY MEDIUM GRAINED, THICKLY BEDDED, SILICEOUS SANDSTONE WITH THIN BEDS OF SILTSTONE AND SILTY SHALE, CROSS BEDDING AND CLAY CLASTS COMMON, HARD AND UNWEATHERED (OSWEGO SANDSTONE)
BLACK SHALE AND SHALEY SILT INTERBEDS
BLACK SHALEY SILTSTONE INTERBED
VERTICAL FRACTURE WITH CALCITE MINERALIZATION
VERTICAL FRACTURE WITH CALCITE MINERALIZATION
GRADING SILTY
OCCASIONAL SHALE CLAST
OCCASIONAL SILTY SHALE INTERBEDS
BLACK SHALEY SILTSTONE
DARK GRAY TO BLACK SHALEY SILTSTONE AND SILTY SHALE INTERBEDDED WITH LIGHT GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, OCCASSIONAL GRAYWACKE, INTERBEDDED SHALE CLASTS, MODERATELY HARD AND UNWEATHERED (TRANSITION ZONE)
SHALEY SILTSTONE
SILTY SHALE
VERTICAL FRACTURE WITH CALCITE MINERALIZATION
LIGHT GRAY SANDSTONE
OCCASIONAL SHALE LENS AND CLASTS
GRADING SILTY
MEDIUM TO DARK GRAY MEDIUM TO COARSE GRAINED, MEDIUM TO THICKLY BEDDED GRAYWACKE WITH ABUNDENT CLASTIC WASH INTERBEDDED WITH DARK GRAY LAMINATED TO THINLY BEDDED SILTY SHALE (PULASKI FORMATION UNIT A
GRADING FOSSILIFEROUS
HEALED IRREGULAR VERTICAL JOINT
BLACK SHALE INTERBED
OCCASIONAL SANDSTONE INTERBED
GRADING WITH SHALEY LENSES
LIGHT GRAY SANDSTONE INTERBED
BLACK SHALE INTERBED
GRADING SHALEY GRAYWACKE
OCCASIONAL SHALE LENS
SILTY SANDSTONE
GRADING SHALEY
LIGHT GRAY SANDSTONE, OCCASIONAL SHALE INTERBED AND STRINGERS
THINLY INTERBEDDED SANDSTONE, GRAYWACKE AND SILTY SHALE
VERTICAL FRACTURE WITH CALCITE MINERALIZATION
RT1-1
RT1-2
RT1-3
RT1-4
RT1-5
RT1-6
RT1-7
RT1-8
RT1-9
RT1-10
RT1-11
RT1-12
RT1-13
RT1-14
RT1-15
RT1-16
RT1-17
RT1-18
RT1-19
RT1-20
RT1-21
RT1-22
RT1-23
RT1-24
RT1-25
RT1-26
RT1-27
RT1-28
RT1-29
RT1-30
RT1-31
RT1-32
RT1-33
RT1-34
RT1-35
RT1-36
RT1-37
RT1-38
RT1-39
RT1-40
RT1-41
RT1-42
RT1-43
ORIENTATION TESTS
Unsuccessful orientation tests
Successful orientation test with strike and dip of bedding
BEDDING DIPS
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
Location of Erathen 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 mathematical coordinate system oriented to Plant North. Upper coordinates represent Run #1 results, lower coordinates represent Run #2 results.
ROCK SAMPLE INFORMATION
Location of sample collected for laboratory testing
SAMPLING AND TESTING 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.
Percent recovery
R.Q.D.
FIGURE 2R-144
LOG OF BORING RT-1
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 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 6" 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	DEPTH IN FEET	SAMPLING AND CORING	GRAPHIC LOG
				RT1-84 RT1-85 RT1-86 RT1-87 RT1-88				140 145 150		

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 (WHETSTONE GULF 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 4 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
- 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 Surveyor 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

RT1-5 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 6" diameter core.

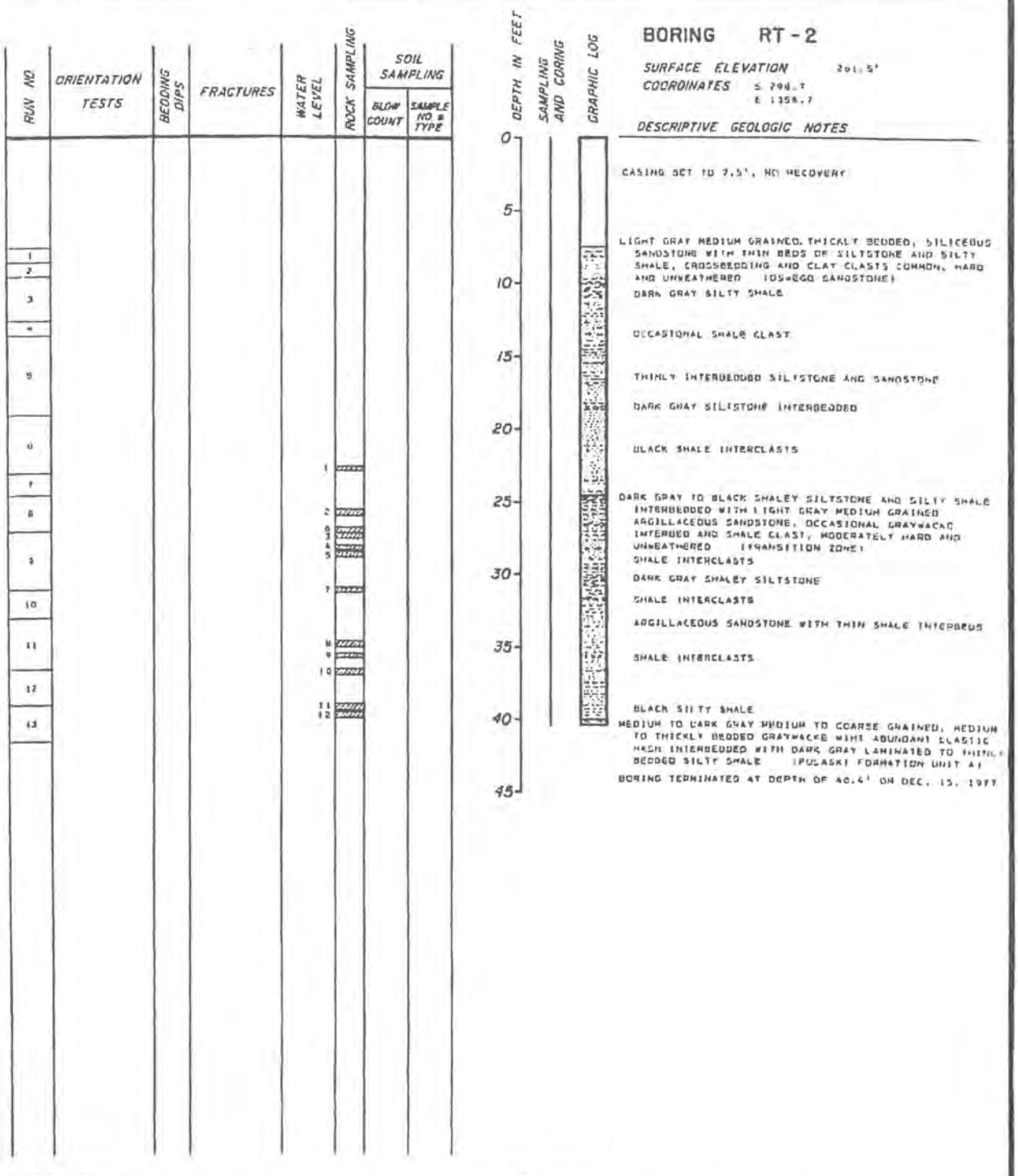
100 | 95 R.Q.D.

Percent recovery

FIGURE 2A-140

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 N 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 Q = quartz

Fractured zone

Void

ROCK SAMPLE INFORMATION

8 Location of sample collected for laboratory testing

SAMPLING AND CORING INFORMATION

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

Core run

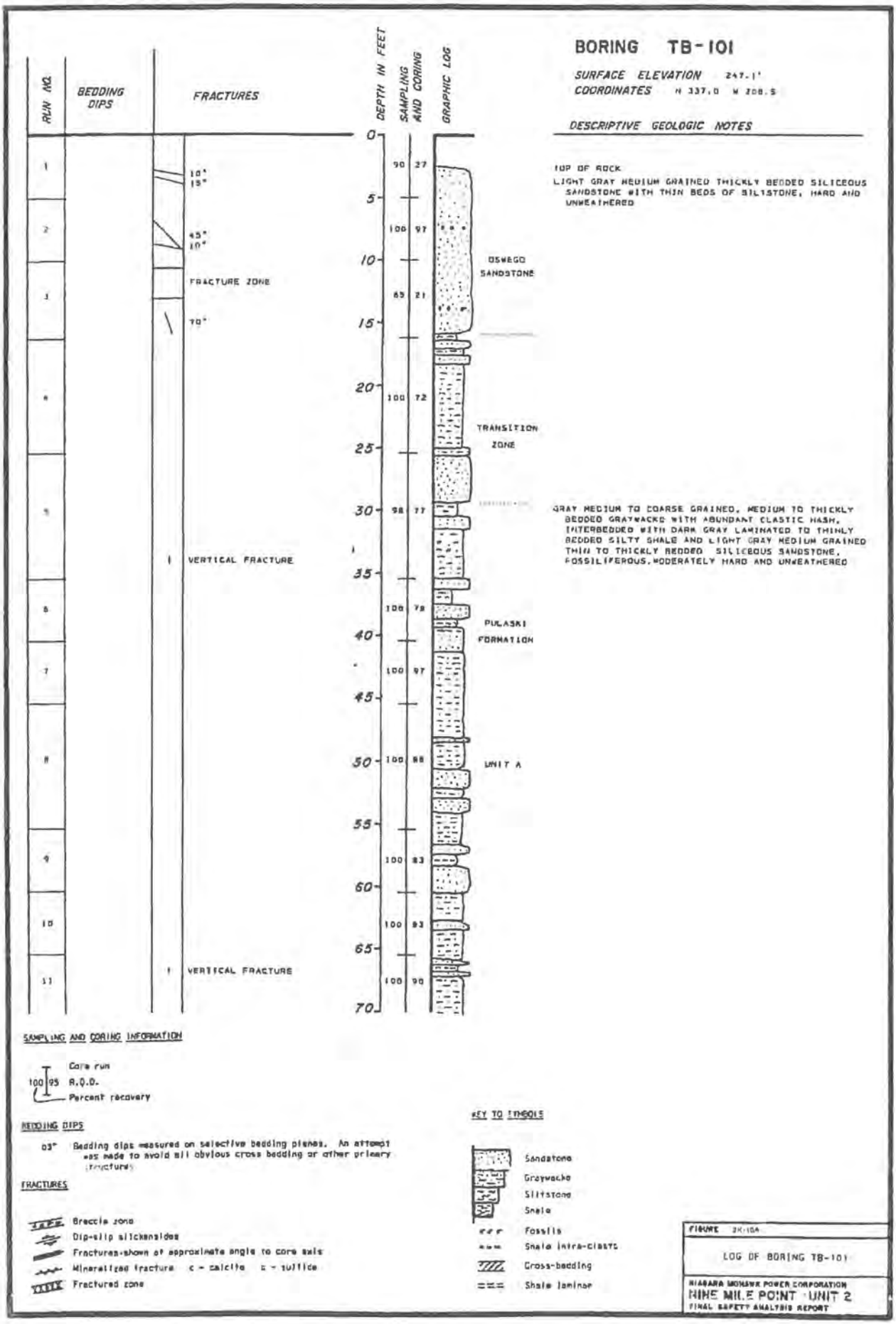
97/95 R.Q.D.

Percent recovery

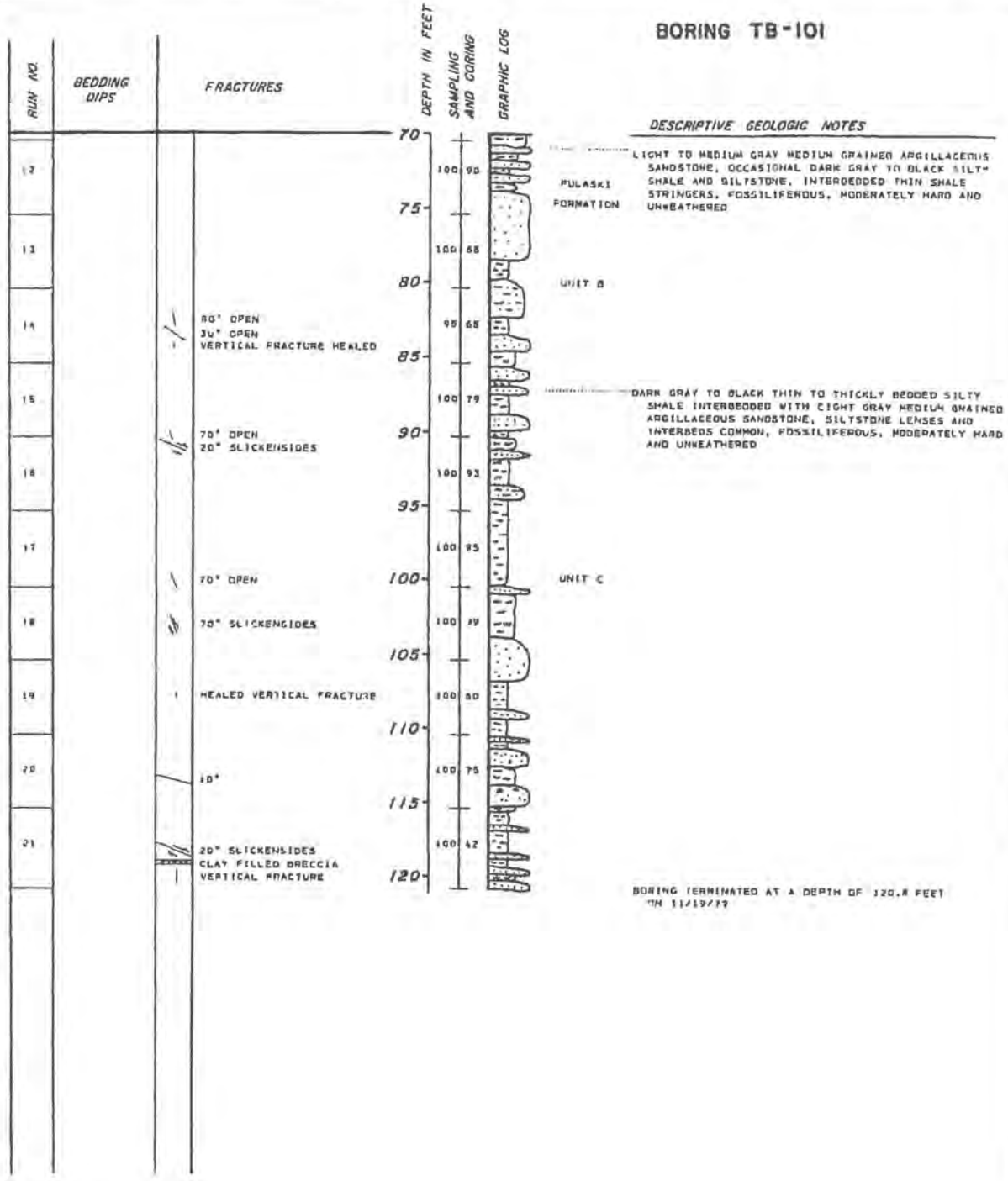
FIGURE 2RT2

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
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
90 27
100 97
85 21
100 72
98 77
100 78
100 97
100 88
100 83
100 93
100 90
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
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 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

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

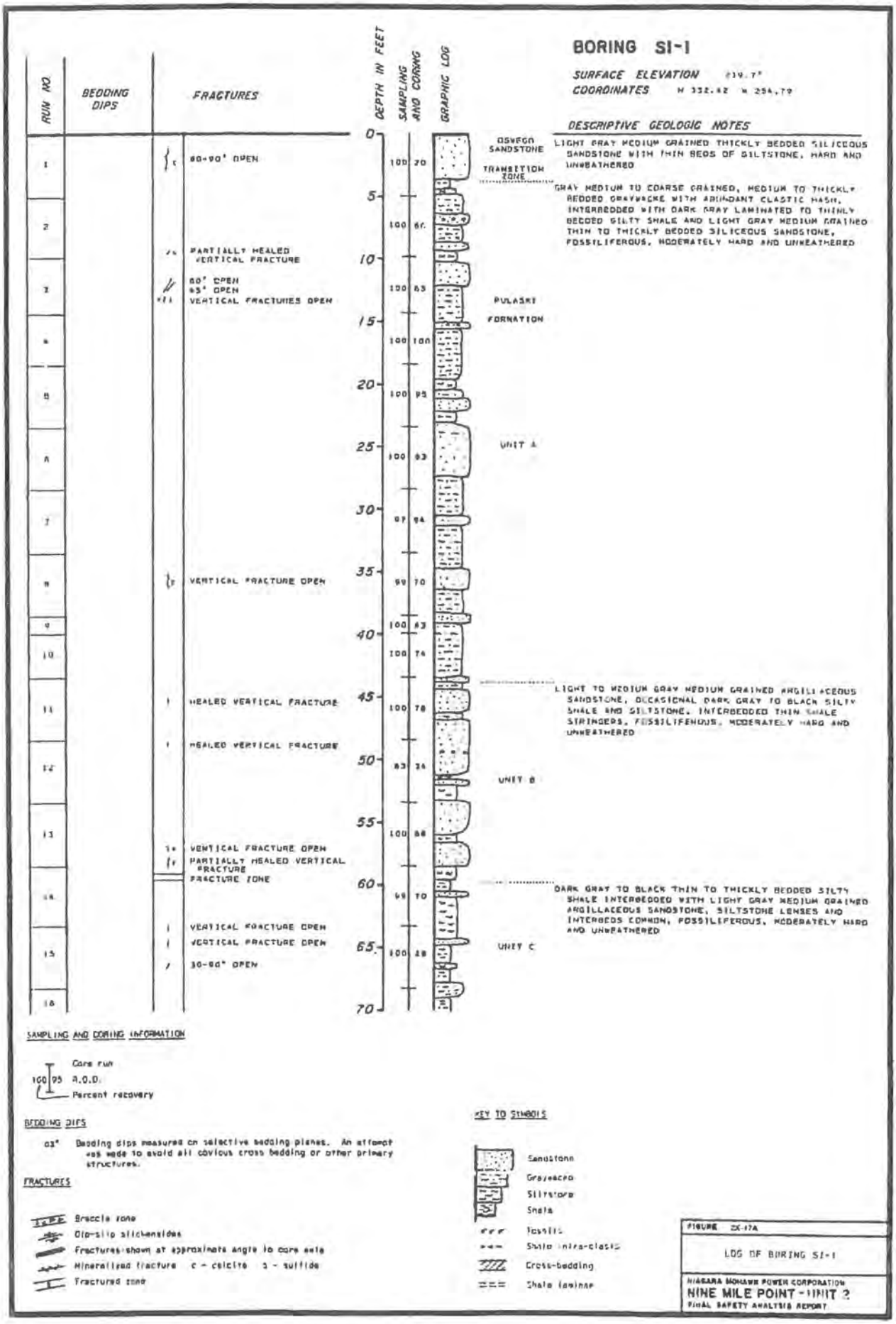
KEY TO SYMBOLS

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

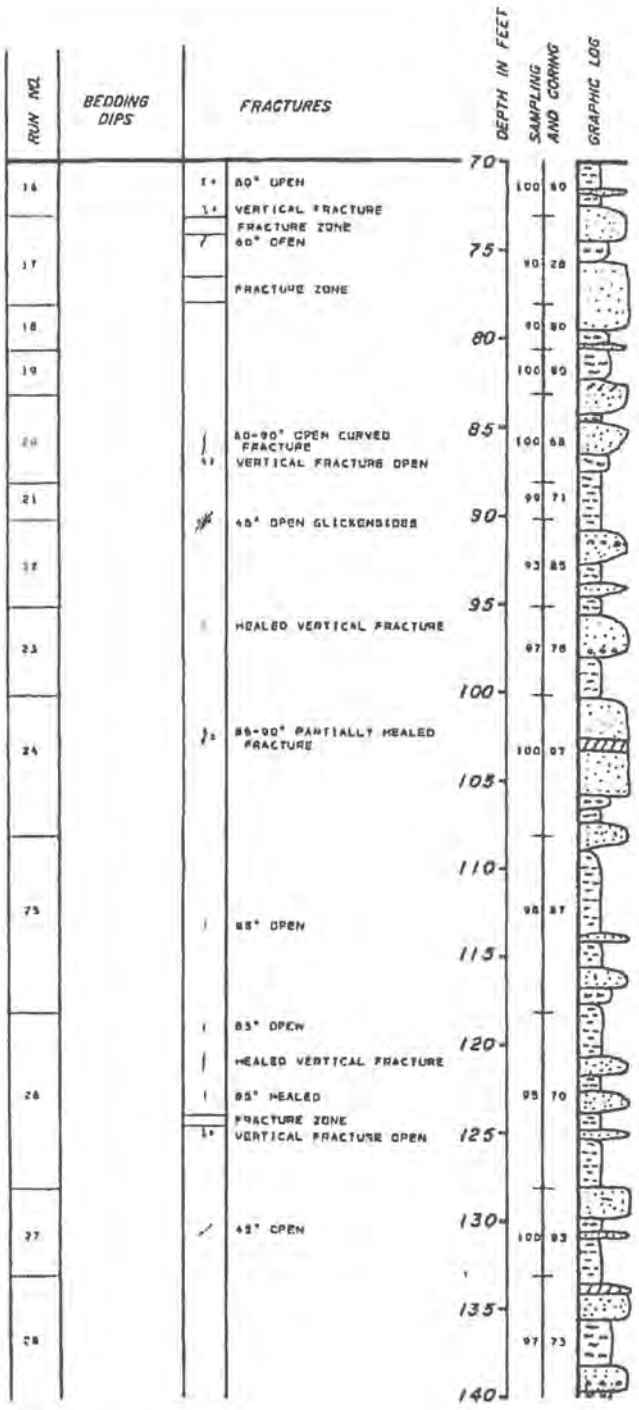
FIGURE 2A1160

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
PULASKI FORMATION
UNIT A
UNIT B
UNIT C
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
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
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

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 [illegible]

FRACTURES

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

KEY TO SYMBOLS

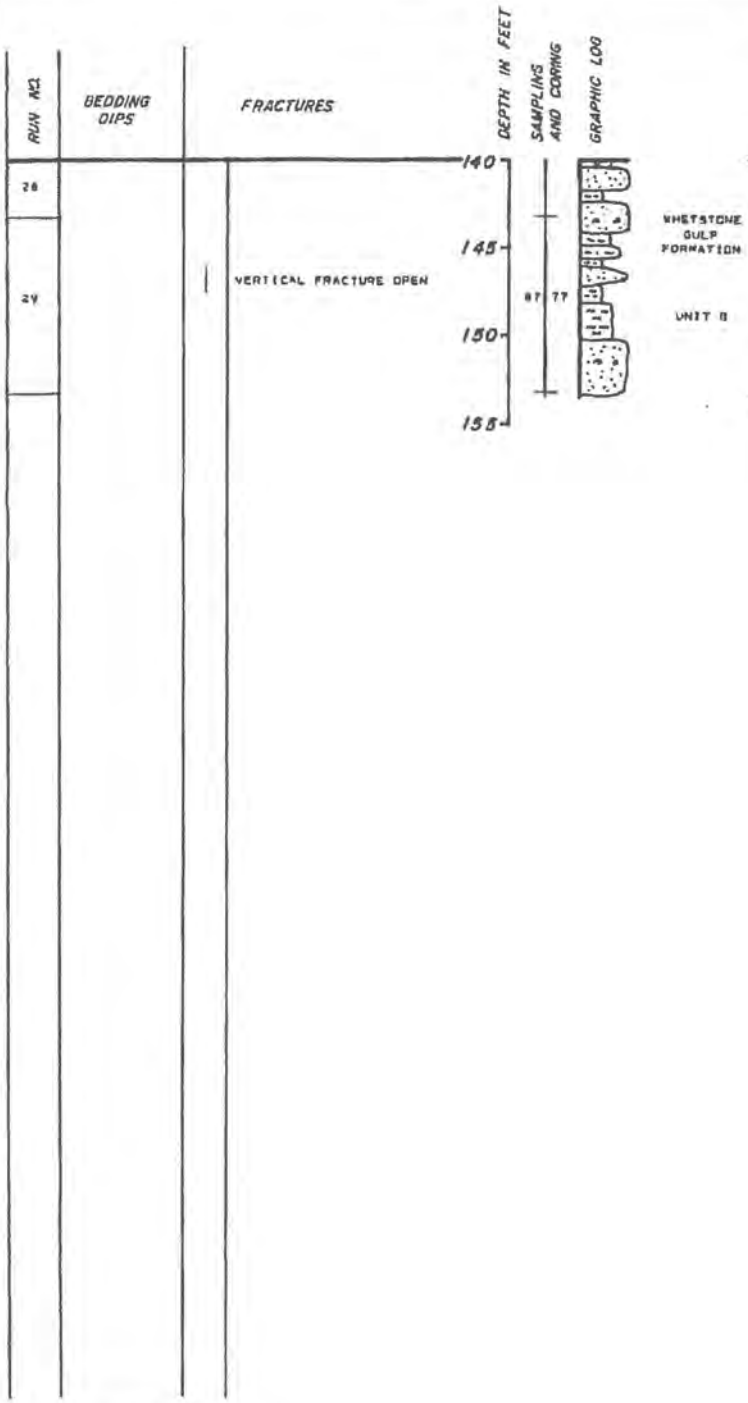
- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

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

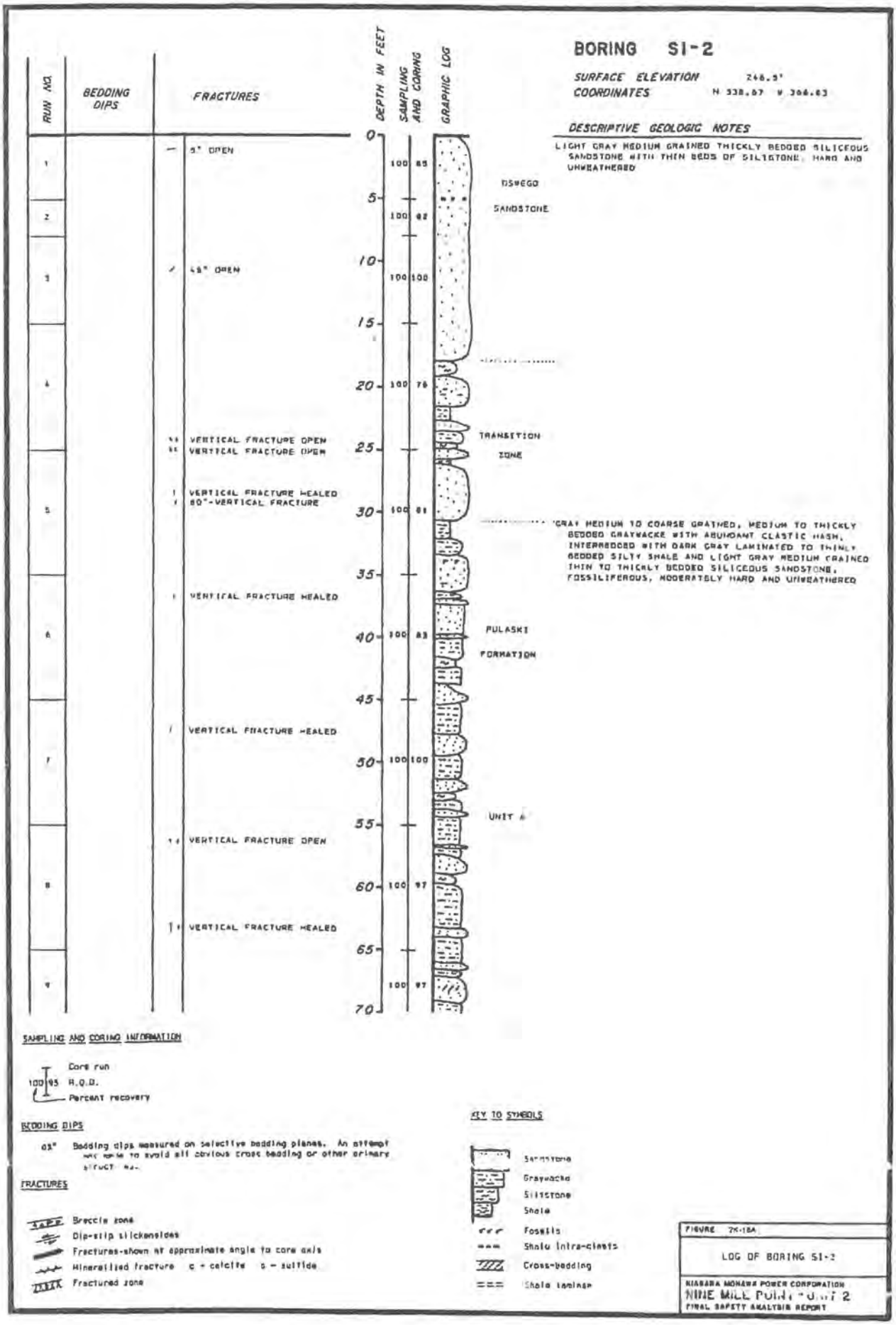
KEY TO SYMBOLS

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

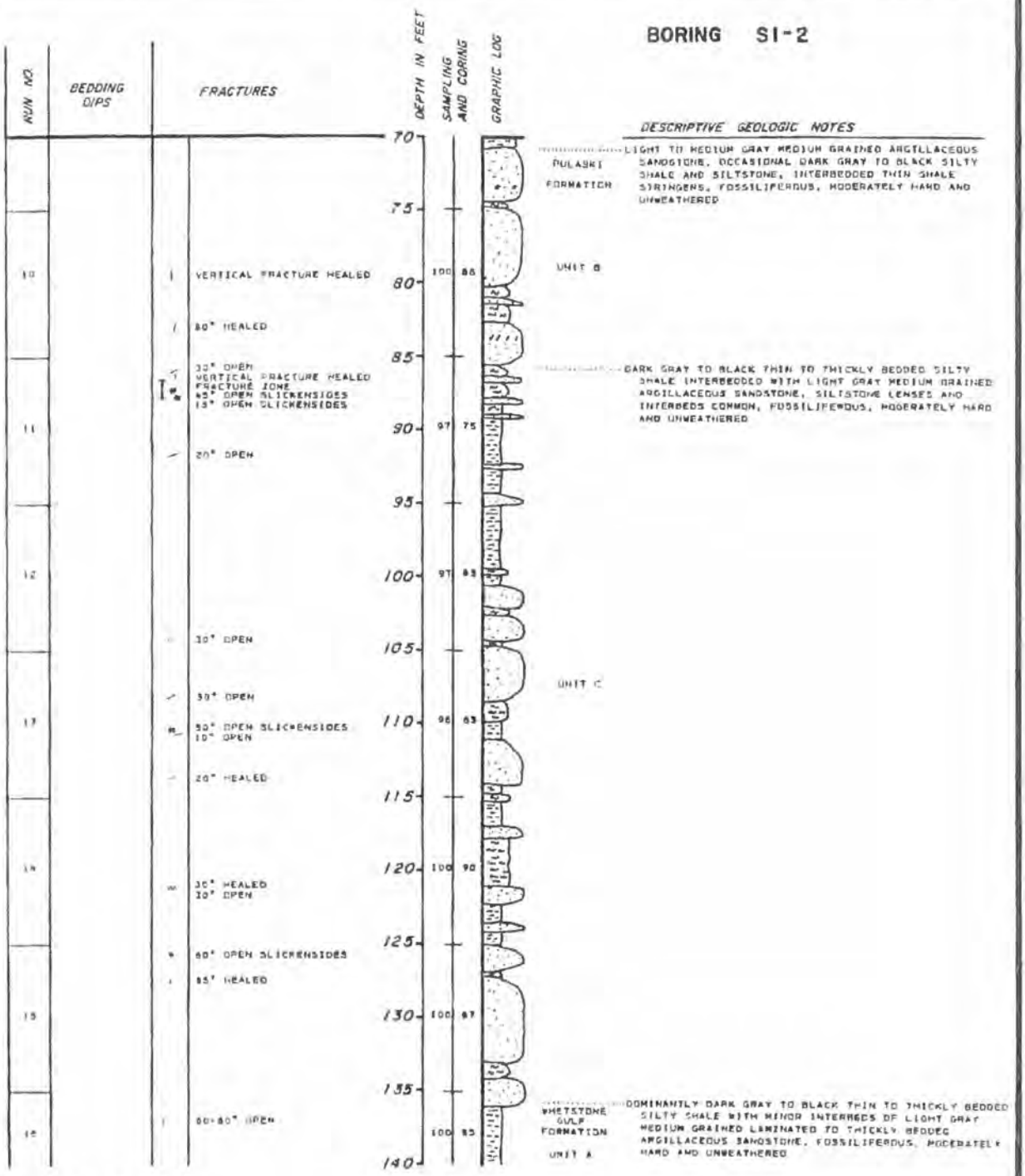
FIGURE 2E-17C

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
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 struct...
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

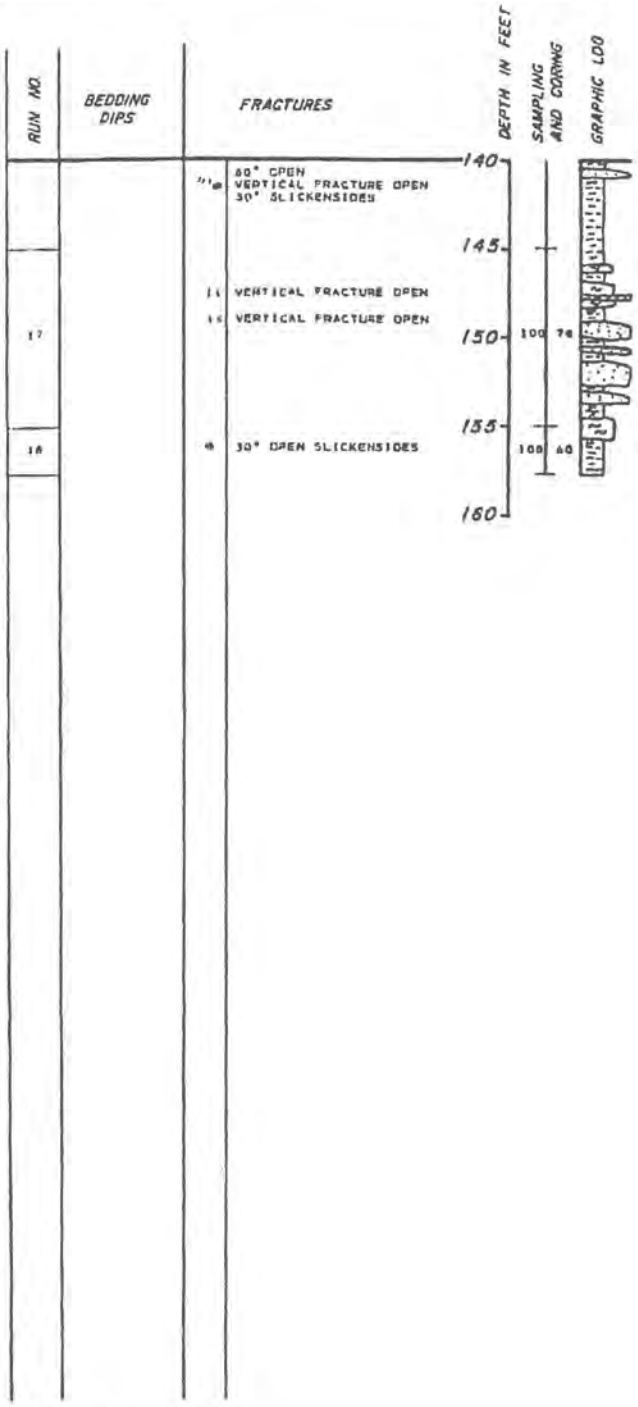
- Sandstone
- Graywacke
- Siltstone
- Shale
- fossils
- Shale intraclasts
- Cross-bedding
- Shale laminae

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

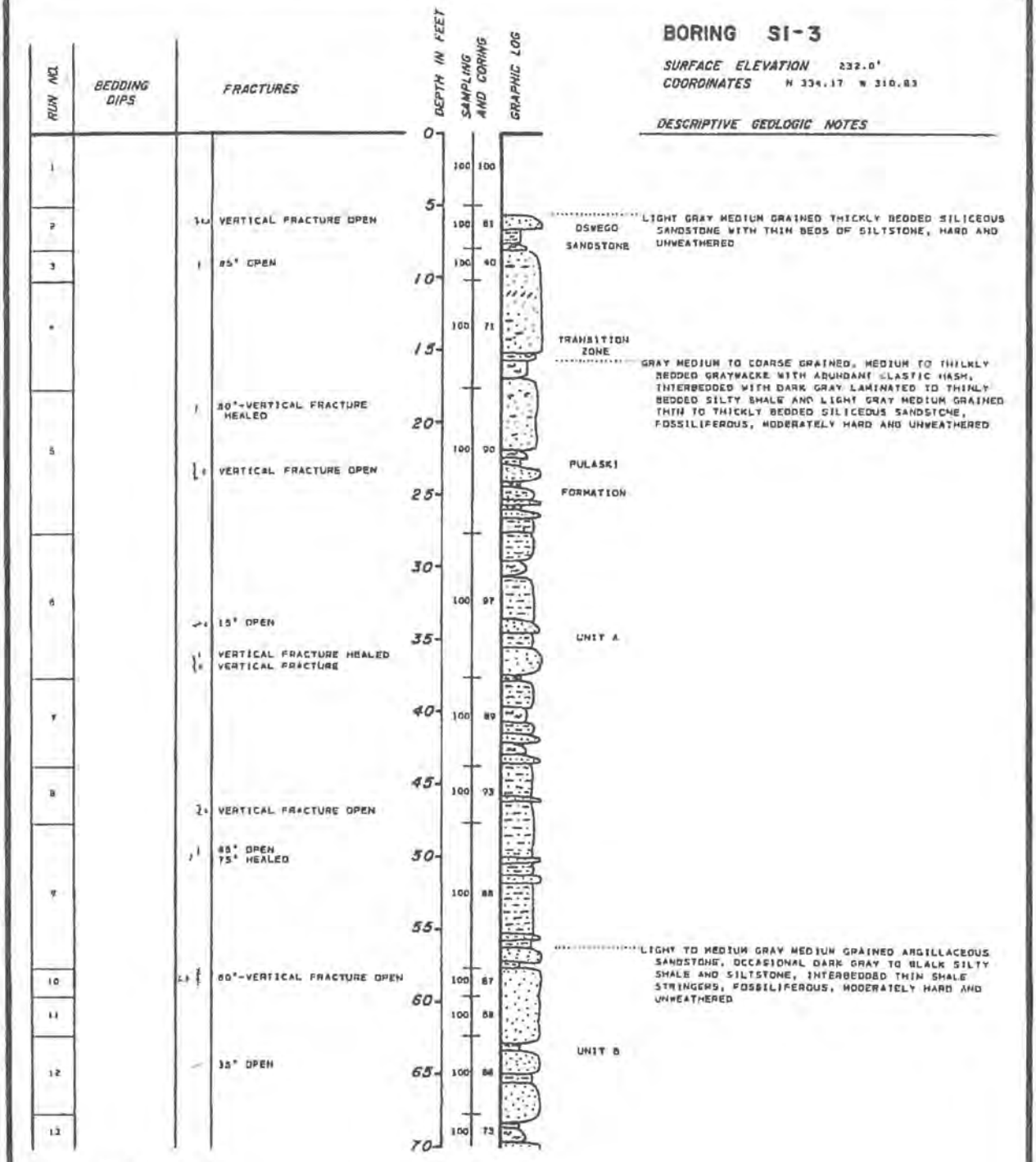
KEY TO SYMBOLS

- 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 p - sulfide
- Fractured zone

KEY TO SYMBOLS

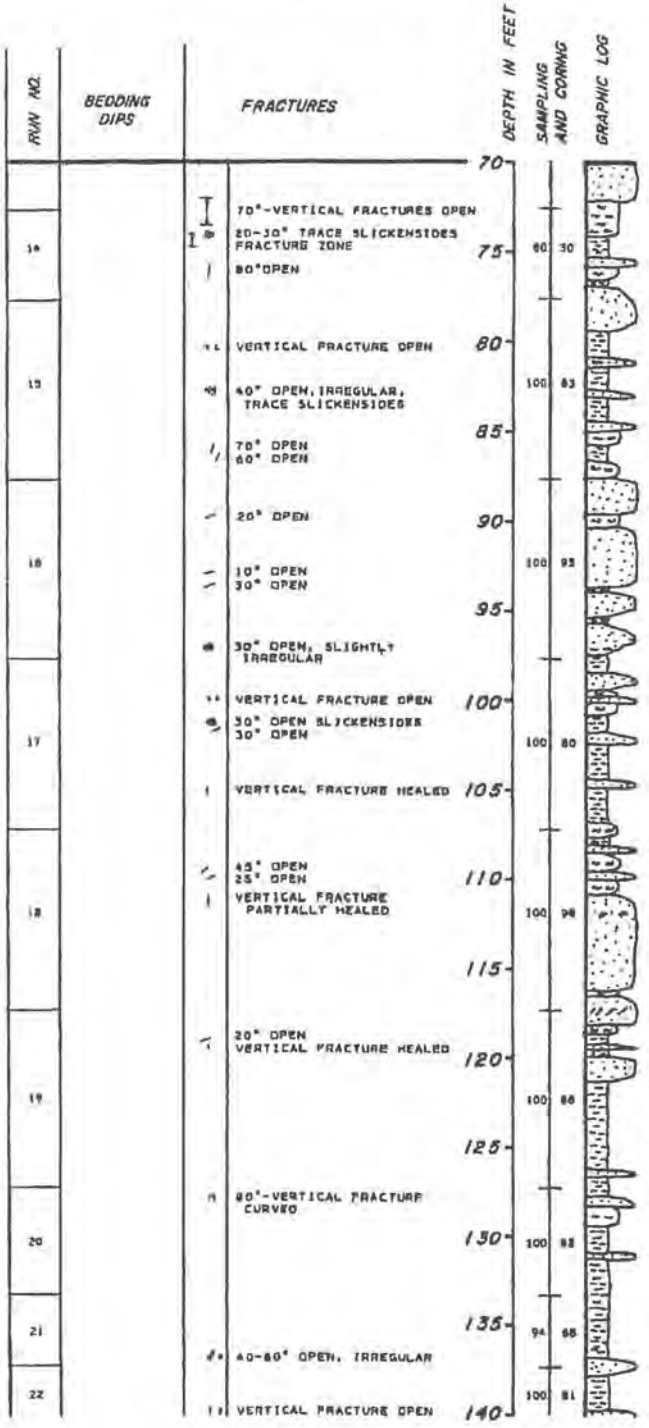
- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

FIGURE 2K-10A

LOG OF BORING SI-3

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

BORING SI-3



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

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

KEY TO SYMBOLS

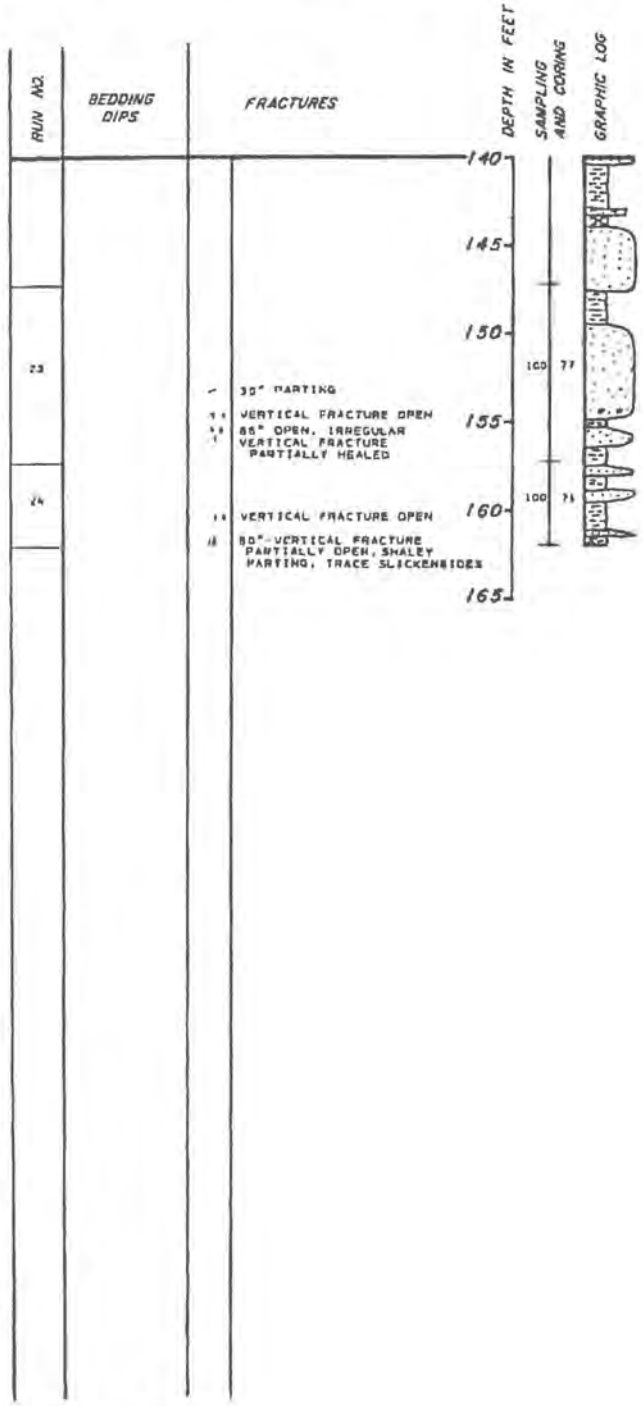
Graywacke
Siltstone
Shale
Fossils
Shale intra-clasts
Cross-bedding
Shale laminae

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

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

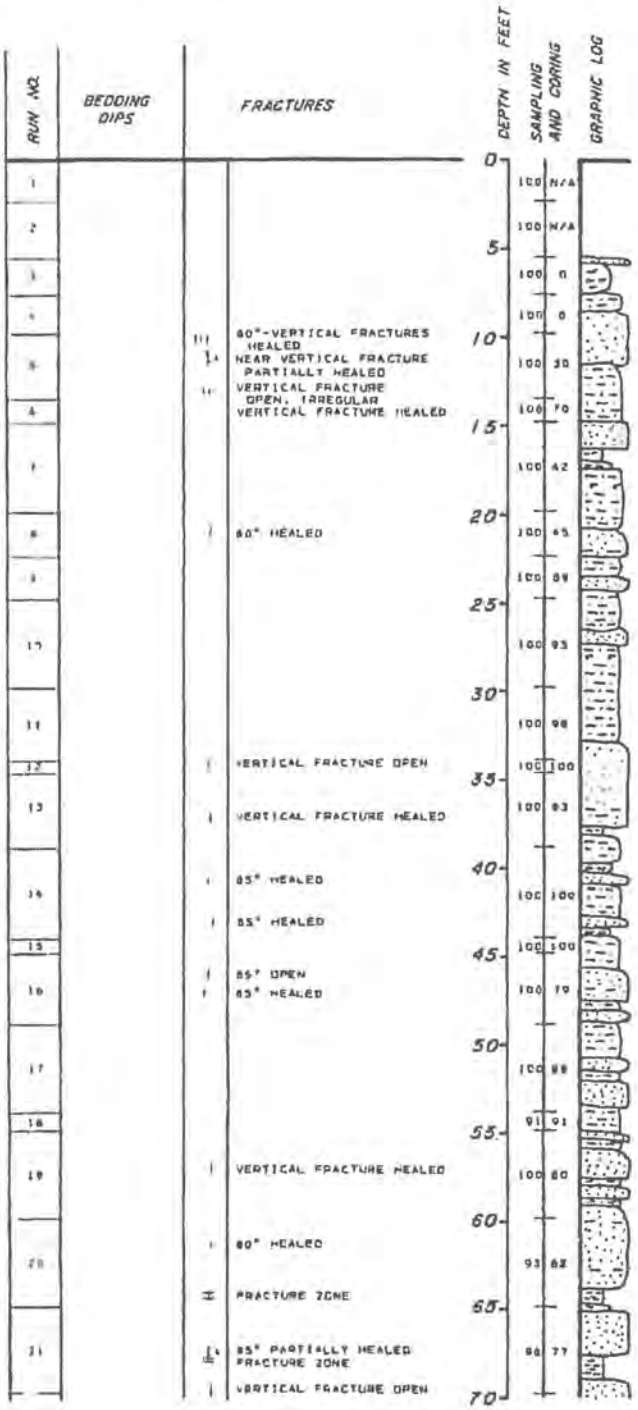
FIGURE 2R:19C

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



DESCRIPTIVE GEOLOGIC NOTES

CONCRETE

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

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 measure 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 = zeolite
- Fractured zone

KEY TO SYMBOLS

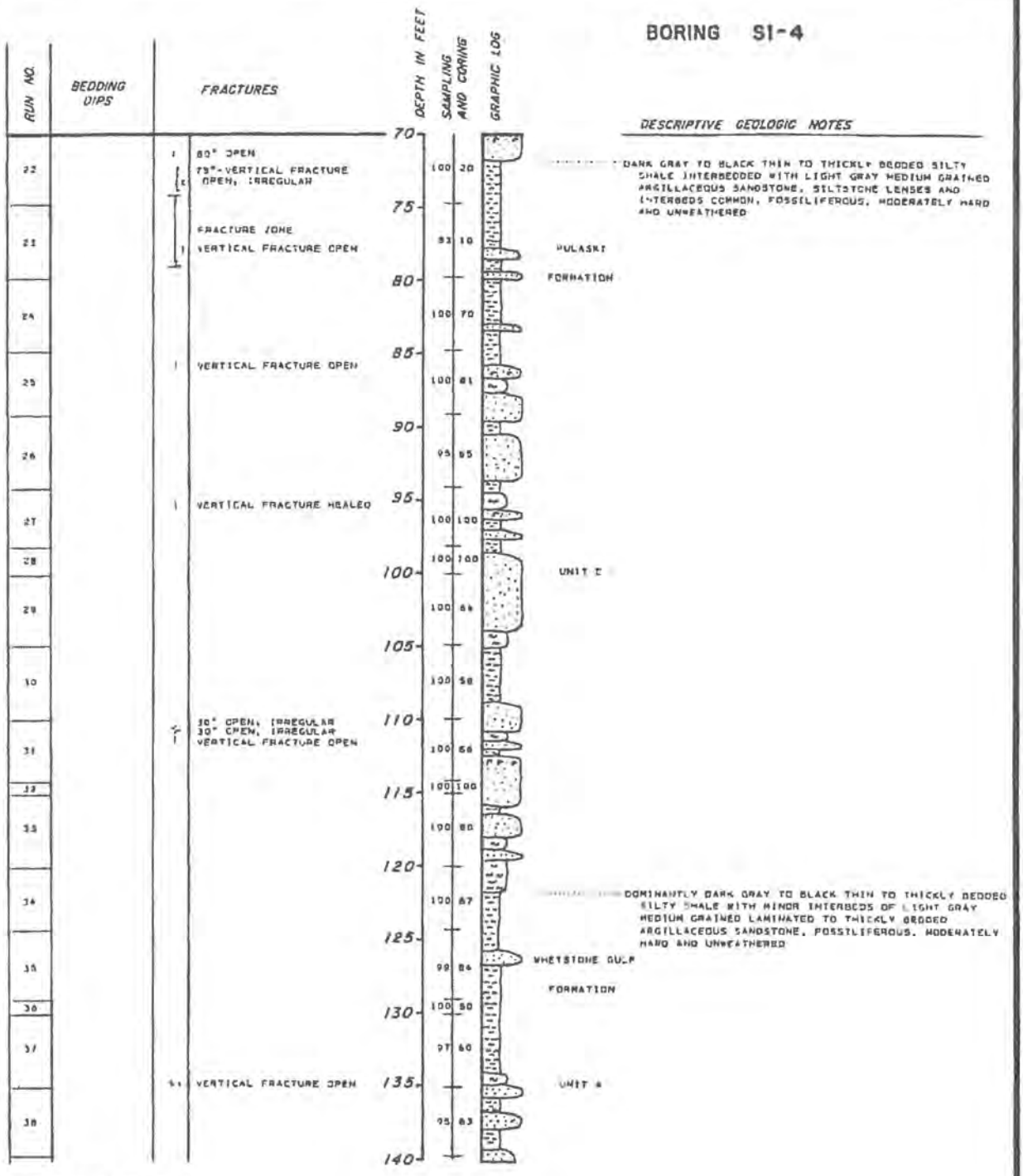
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intraclasts
- Cross-bedding
- Shale laminae

FIGURE 2K-20A

LOG OF BORING SI-4

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

BORING SI-4



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

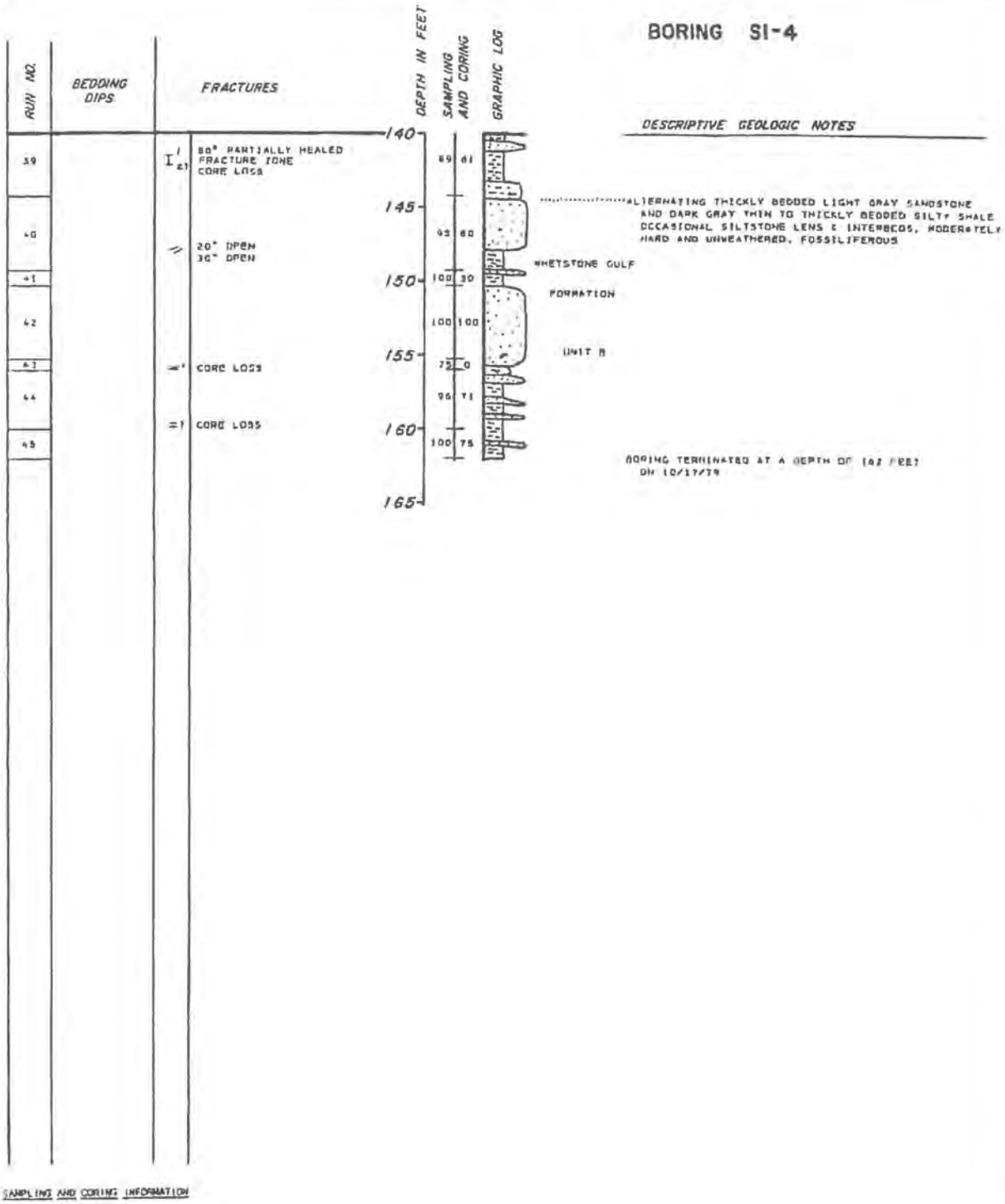
- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intraclasts
- Cross-bedding
- Shale laminae

FIGURE 2H-209

LOG OF BORING SI-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

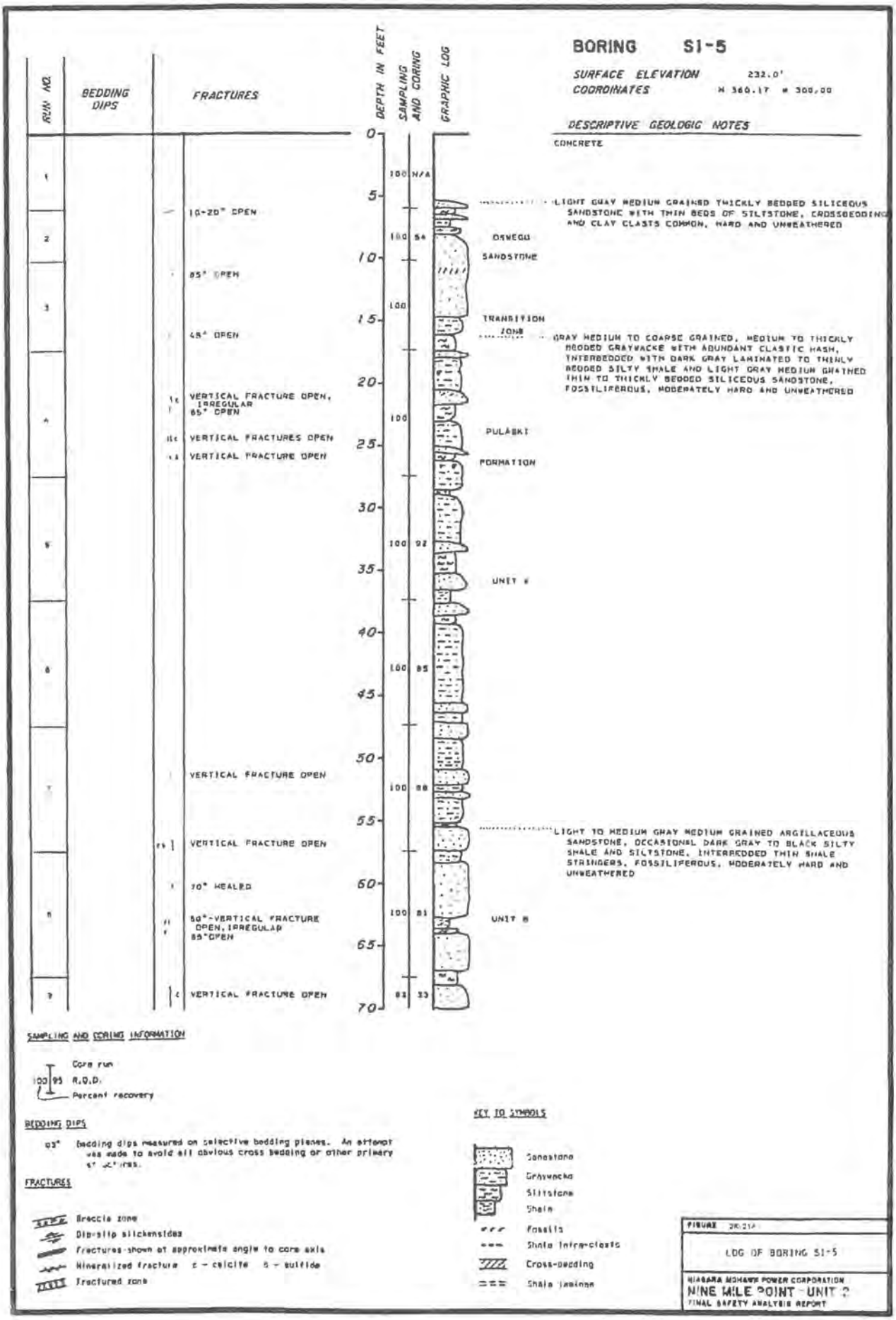
KEY TO SYMBOLS

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

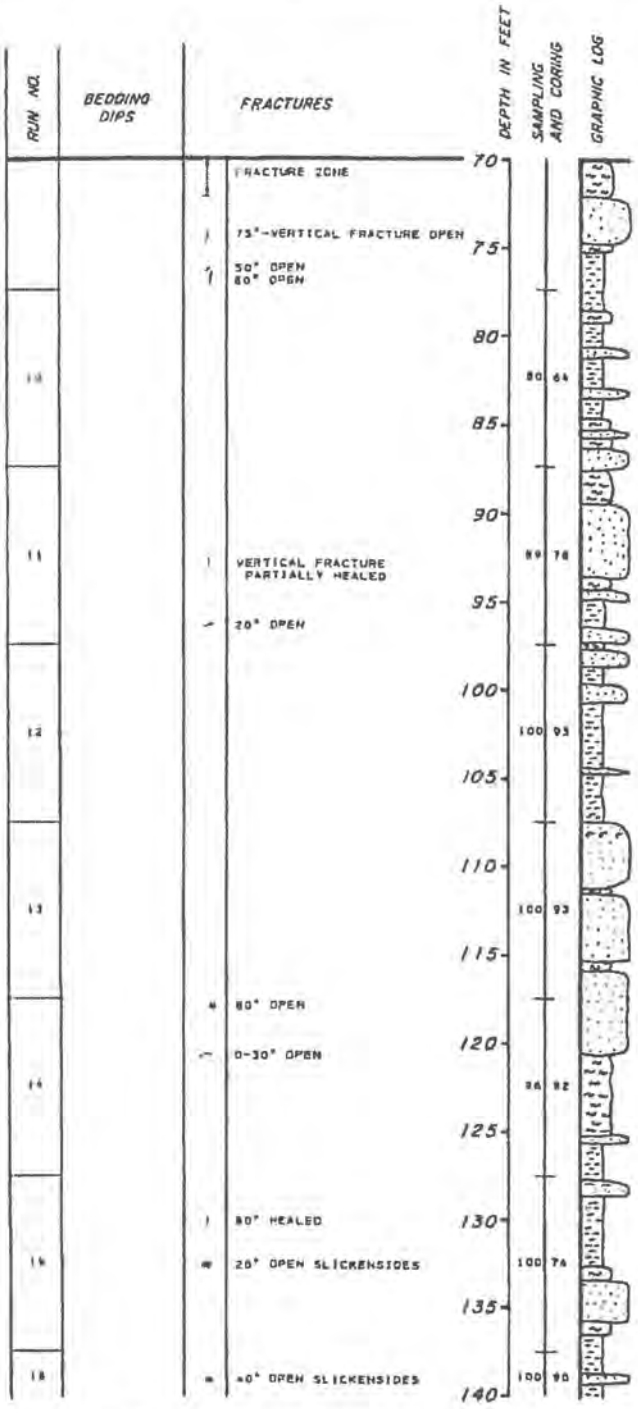
FIGURE 2K-29C

LOG OF BORING SI-4

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


BORING S1-5
SURFACE ELEVATION 232.0'
COORDINATES N 360.17 W 300.00
DESCRIPTIVE GEOLOGIC NOTES
RUN NO.
BEDDING DIPS
FRACTURES
DEPTH IN FEET
SAMPLING AND CORING
GRAPHIC LOG
CONCRETE
10-20° OPEN
85° OPEN
45° OPEN
VERTICAL FRACTURE OPEN, IRREGULAR 85° OPEN
VERTICAL FRACTURES OPEN
VERTICAL FRACTURE OPEN
VERTICAL FRACTURE OPEN
VERTICAL FRACTURE OPEN
70° HEALED
50°-VERTICAL FRACTURE OPEN, IRREGULAR 85°OPEN
VERTICAL FRACTURE OPEN
100 N/A
100 54
100
100
100 92
100 85
100 88
100 81
83 33
OSWEGO SANDSTONE
TRANSITION ZONE
PULASKI FORMATION
UNIT F
UNIT B
LIGHT GRAY MEDIUM GRAINED THICKLY BEDDED SILICEOUS SANDSTONE WITH THIN BEDS OF SILTSTONE, CROSSBEDDING AND CLAY CLASTS COMMON, 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
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
Core run
100 95 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 intraclasts
Cross-bedding
Shale laminae
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

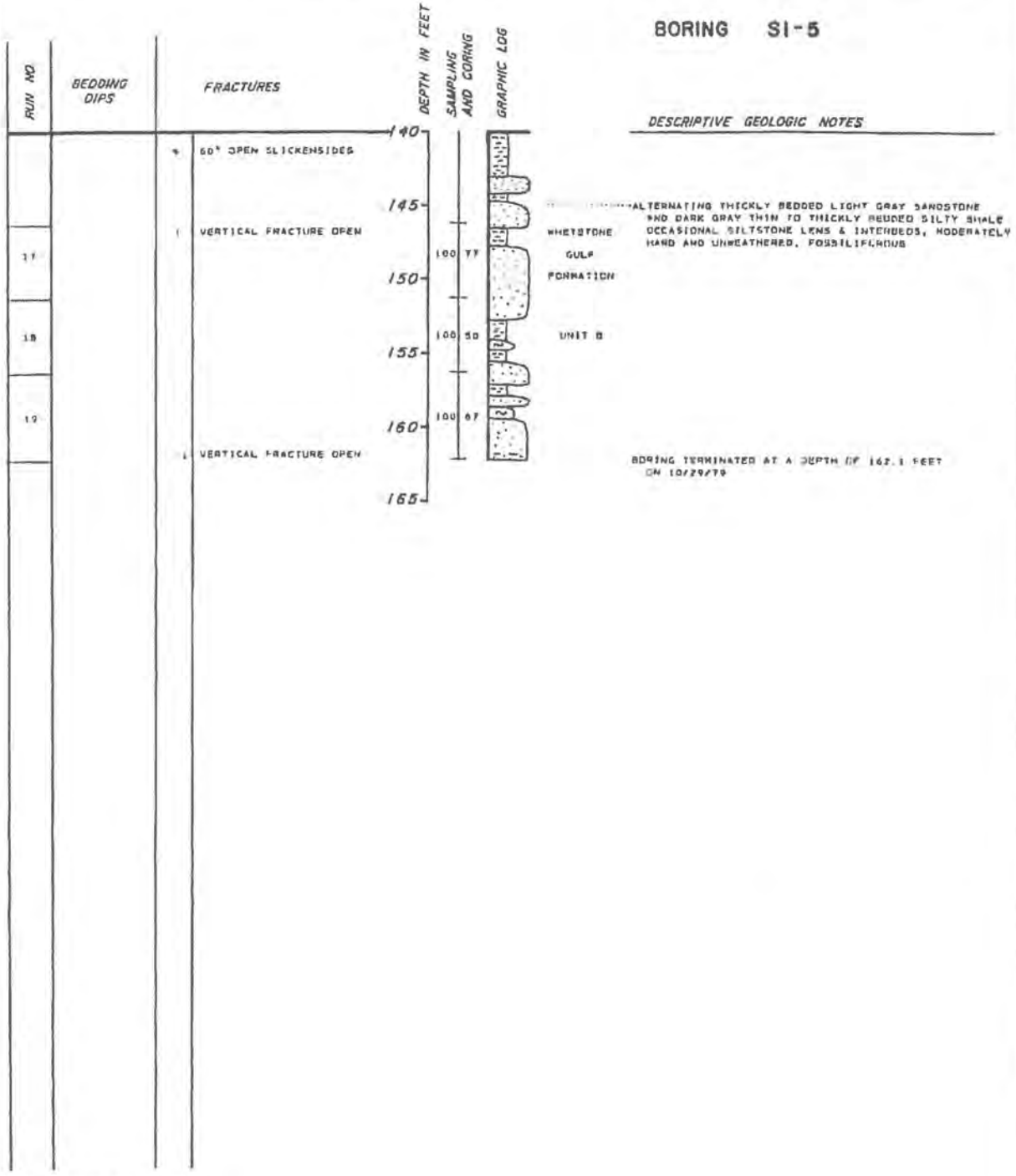
- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

FIGURE 2K-218

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
- 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 2A-21C

LOG OF BORING SI-5

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

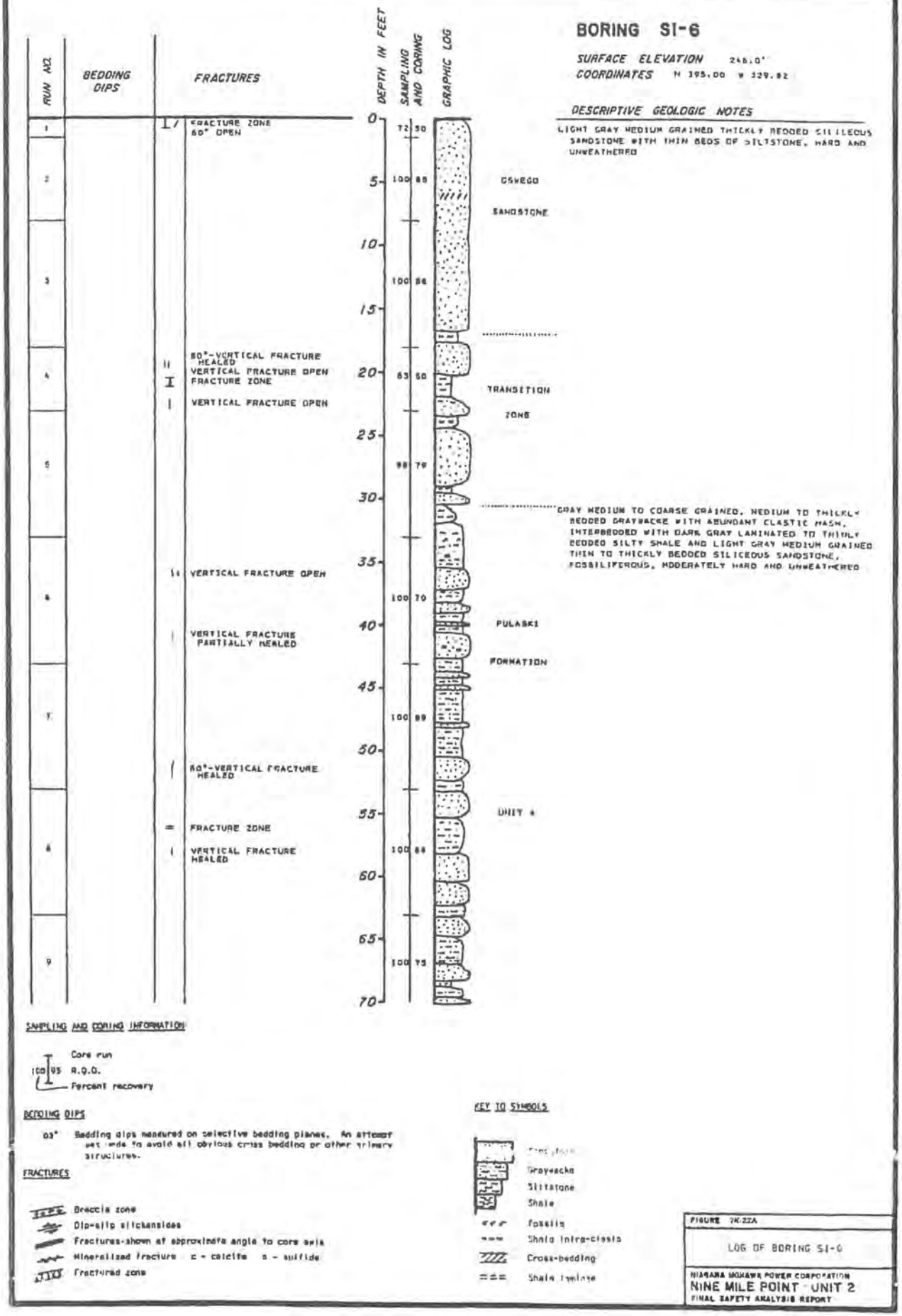
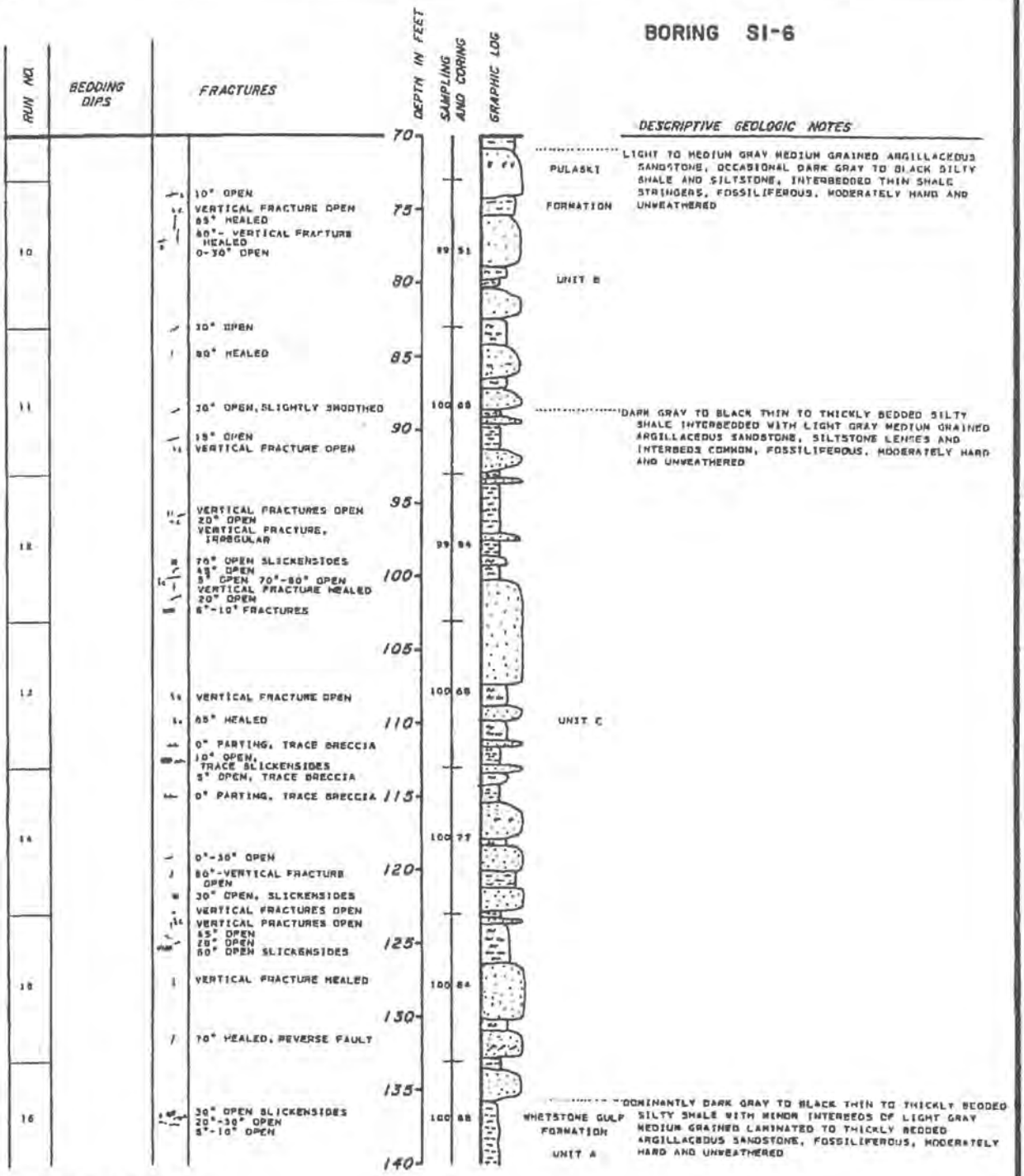


FIGURE 2K-22A

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

KEY TO SYMBOLS

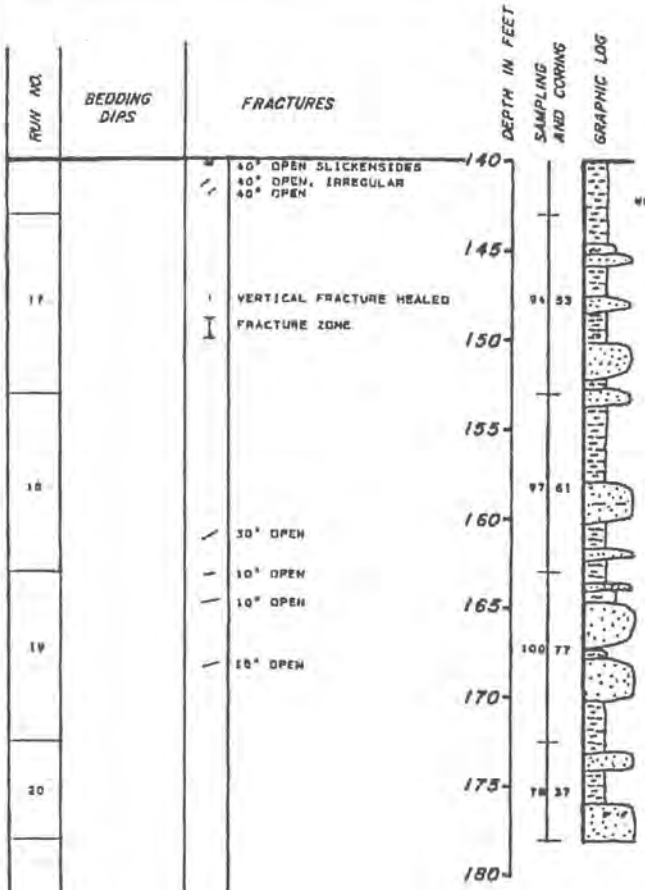
- Greywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

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 features

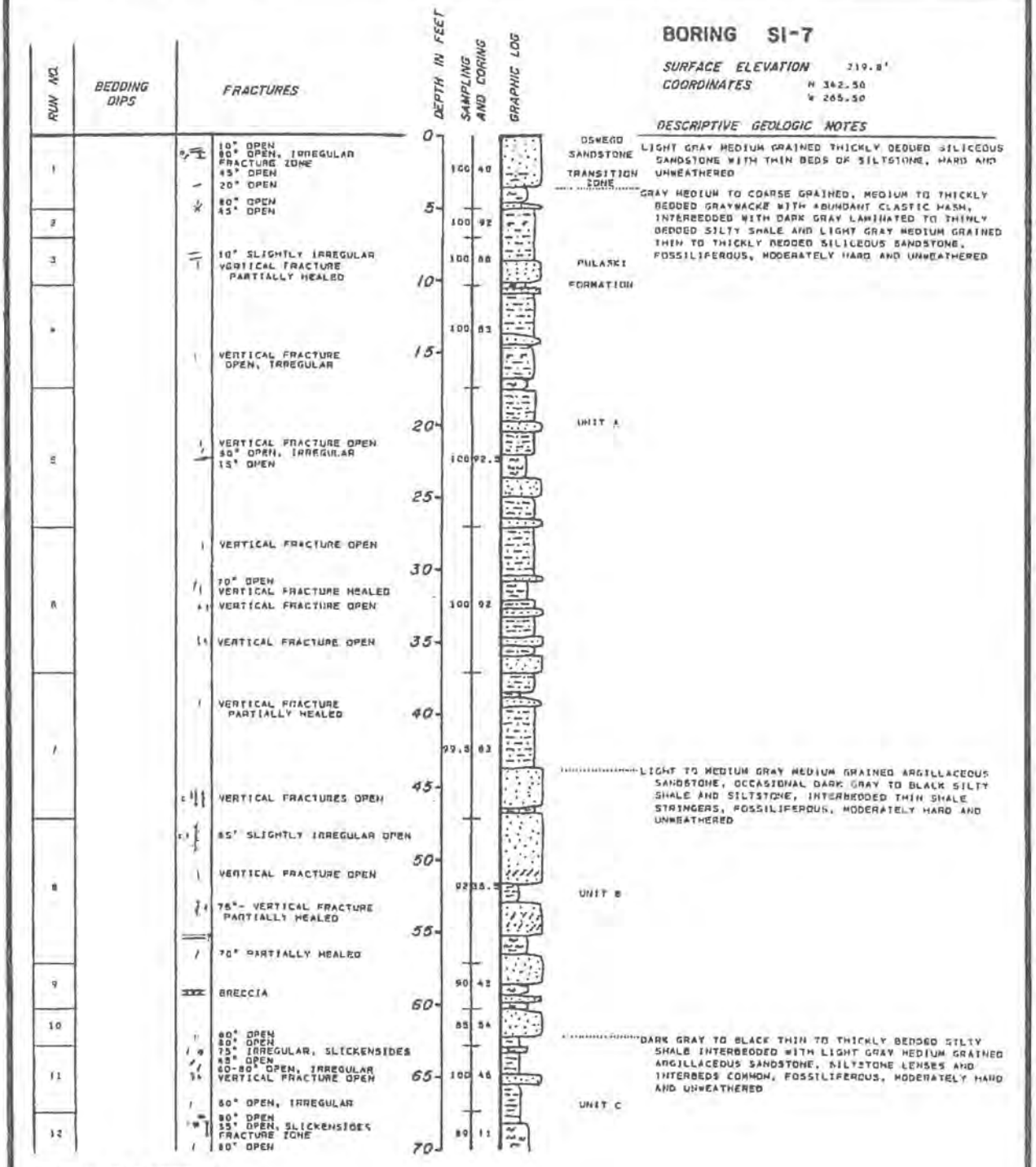
FIGURE 2R-22C

LOG OF BORING SI-6

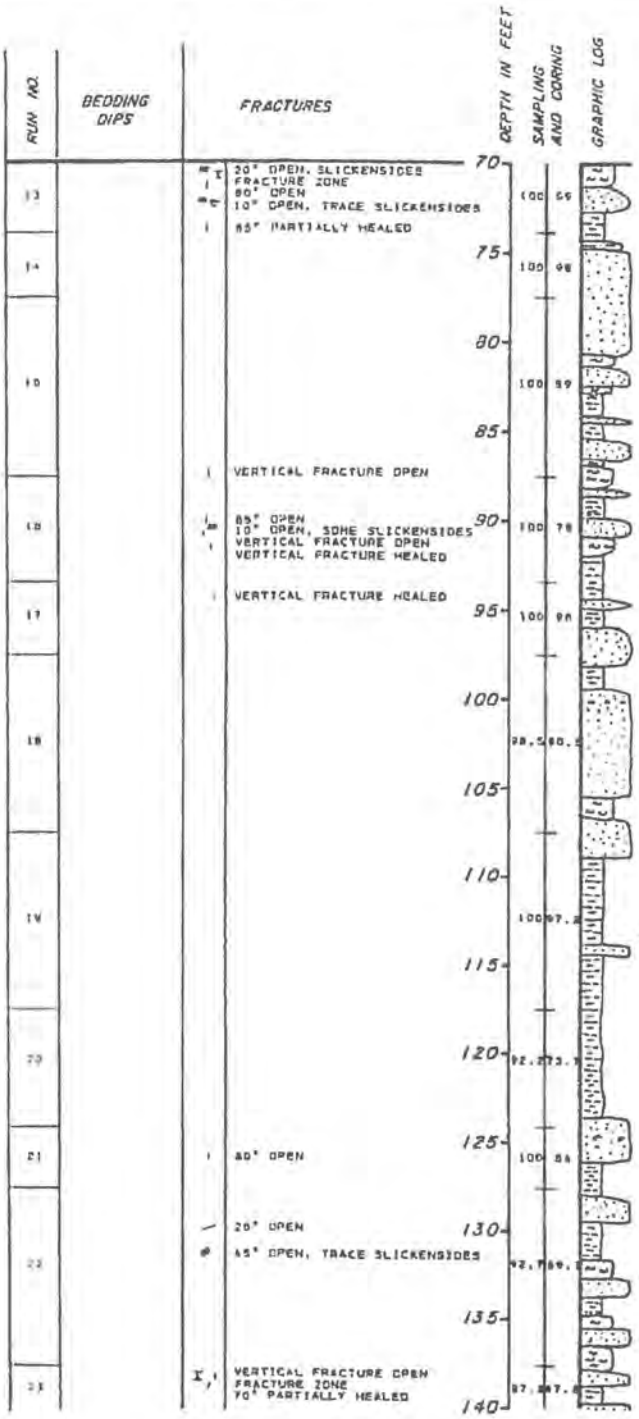
NIAGARA MOHAWK POWER CORPORATION

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
RUN NO.
BEDDING DIPS
FRACTURES
DEPTH IN FEET
SAMPLING AND CORING
GRAPHIC LOG
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 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
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
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 g - 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

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

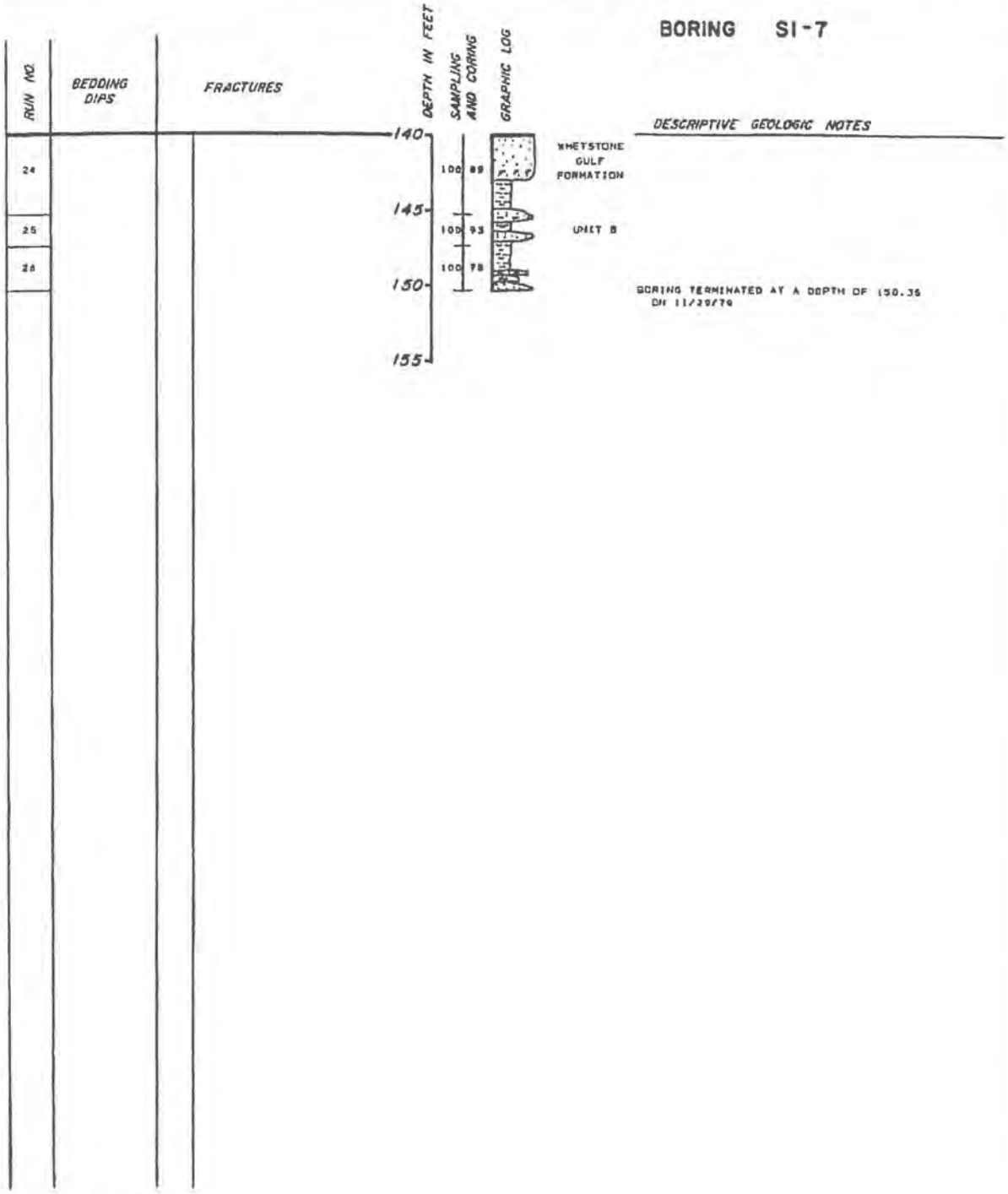
LOG OF BORING SI-7

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

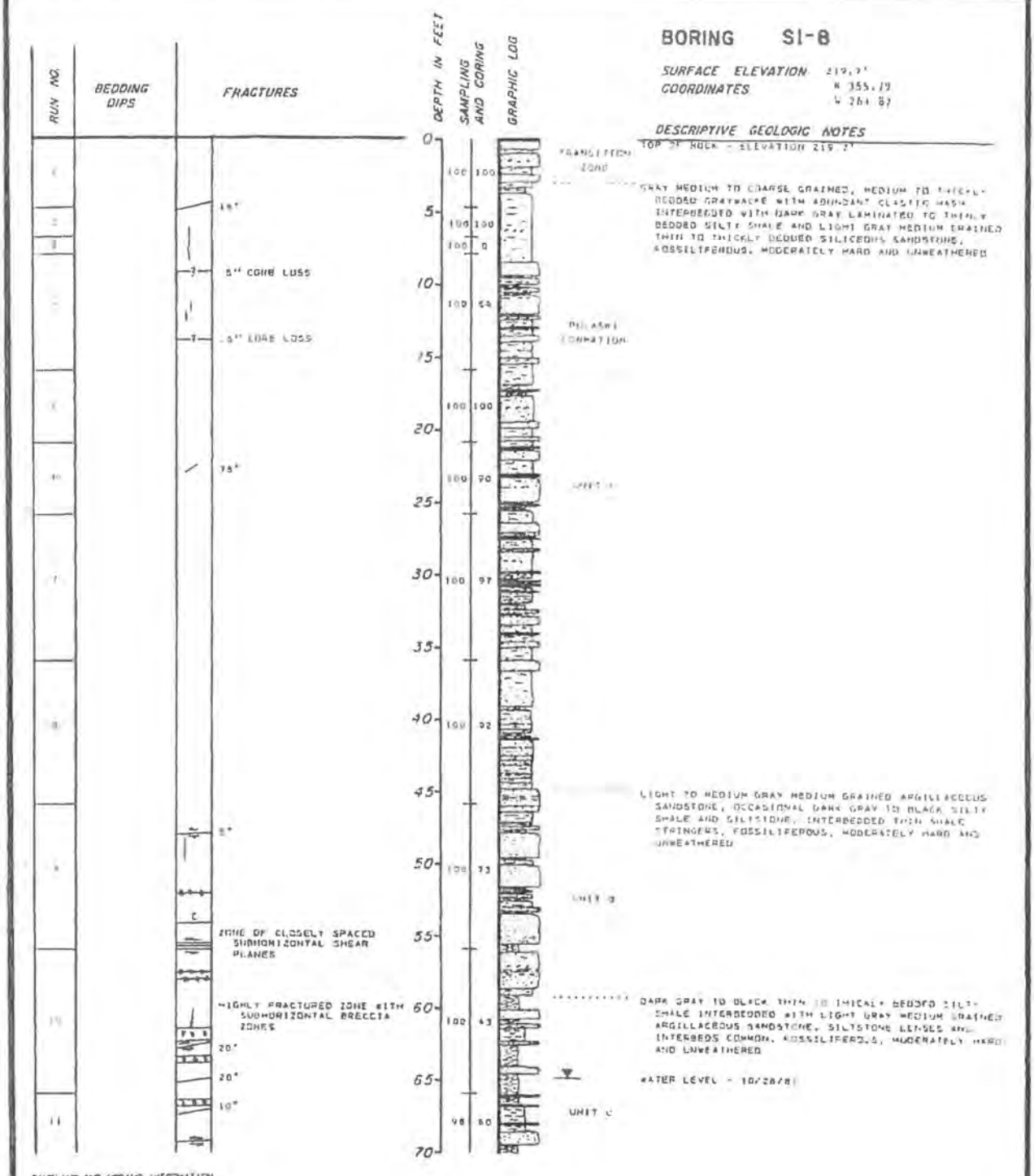
FIGURE 2K-23C

LOG OF BORING SI-7

MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT



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 [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

Graywacke
Siltstone
Shale
Fossils
Shale interbeds
Cross-bedding
Shale [illegible]

FIGURE 2K.2AA

LOG OF BORING SI-8

NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING SI-8

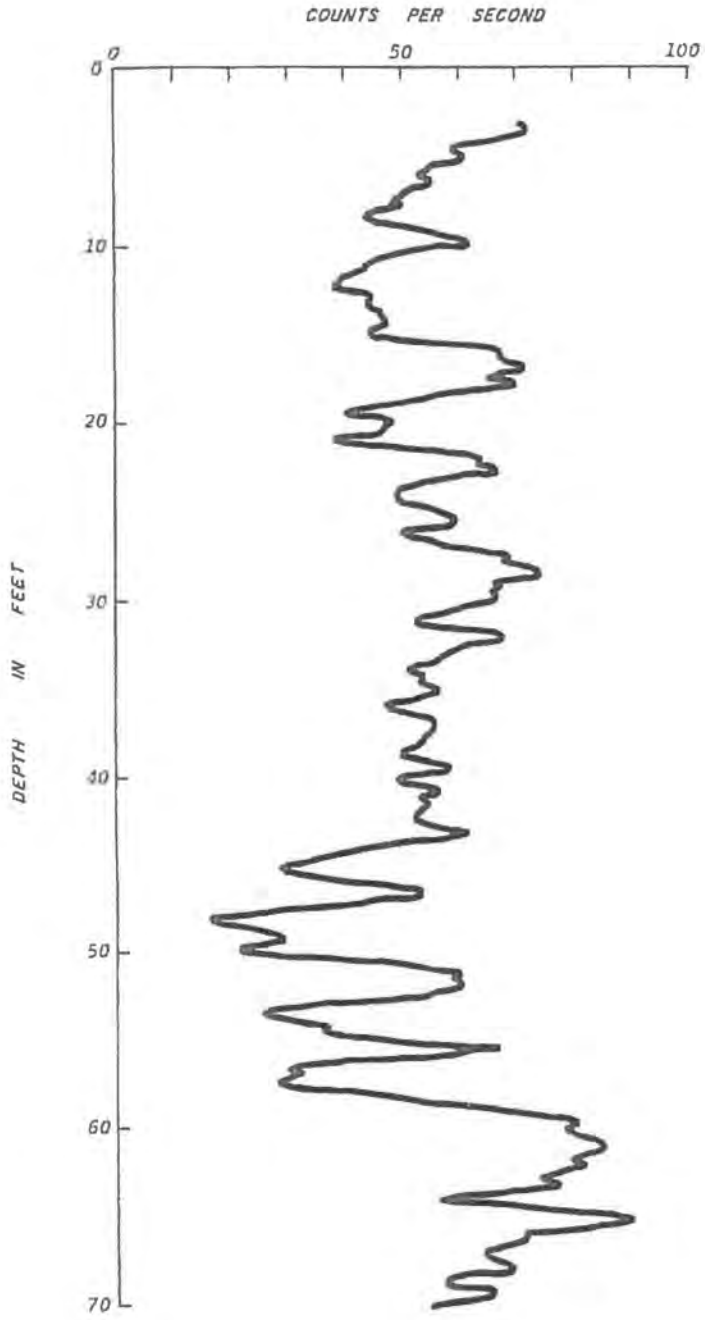
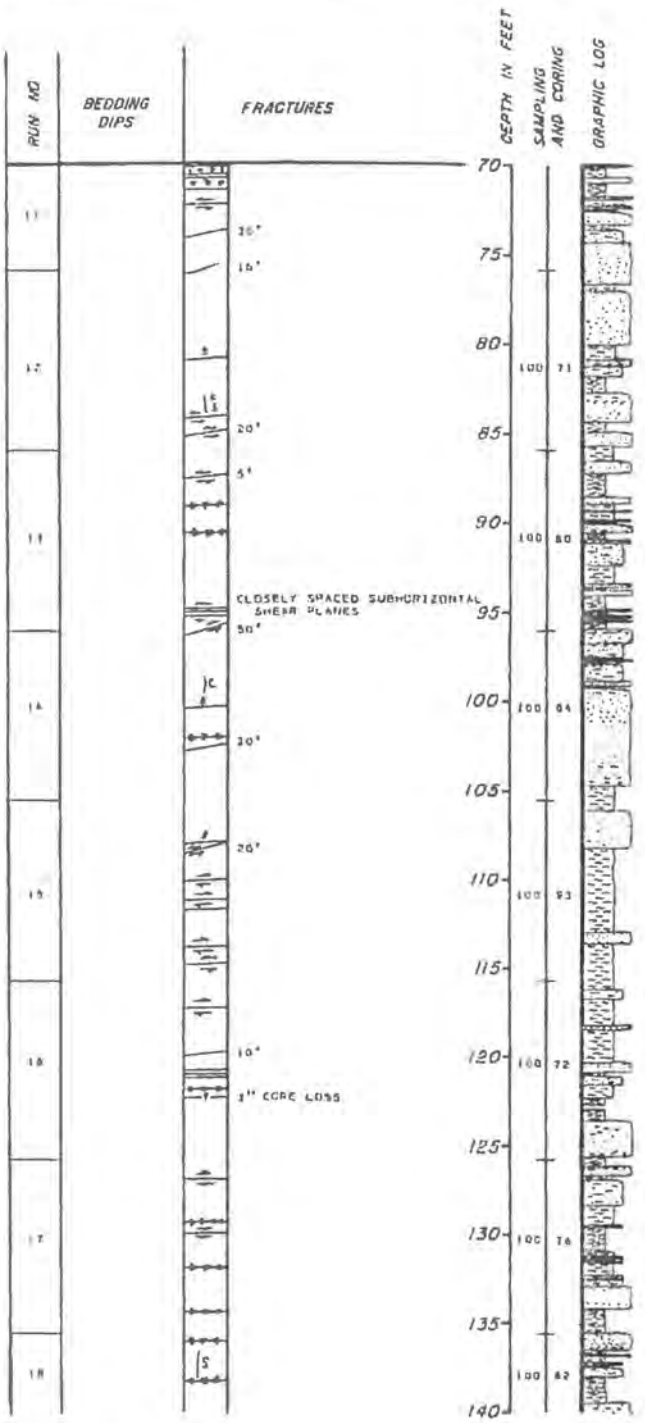


FIGURE 2K-24B

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

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 [illegible] structures.

FRACTURES

- Breccia zone
- 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

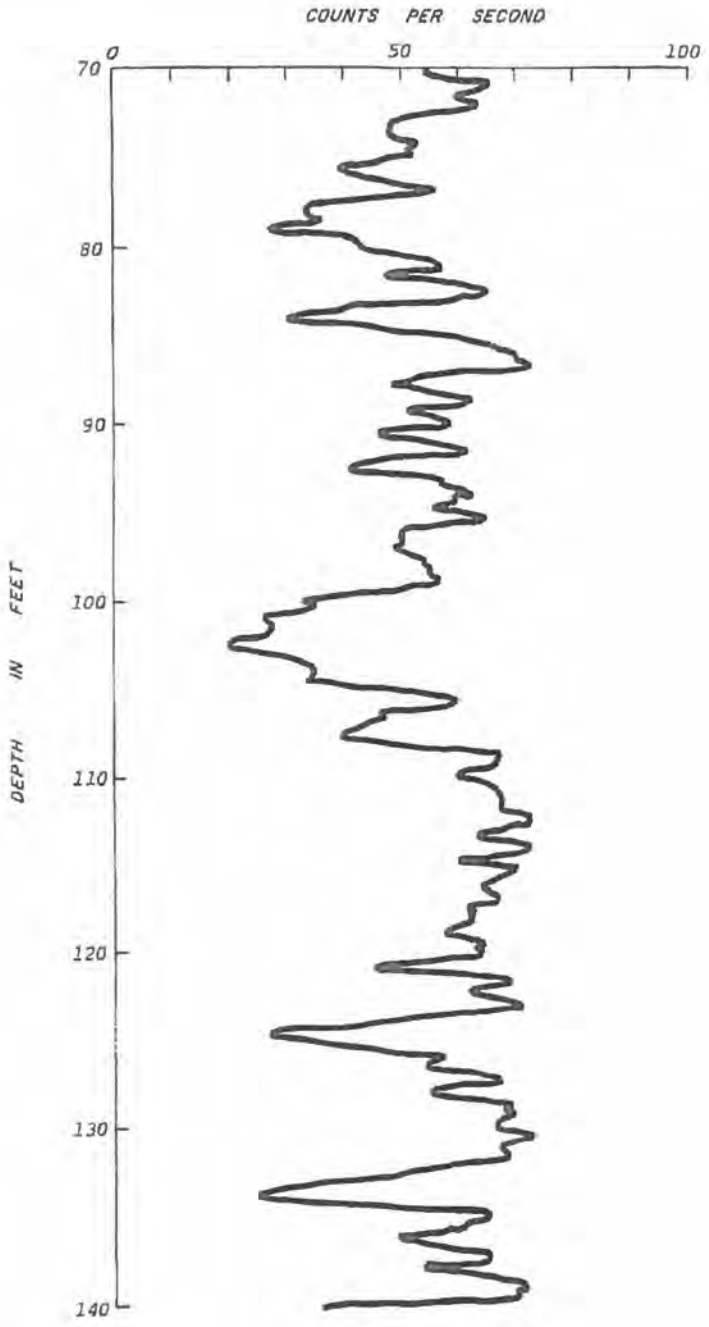
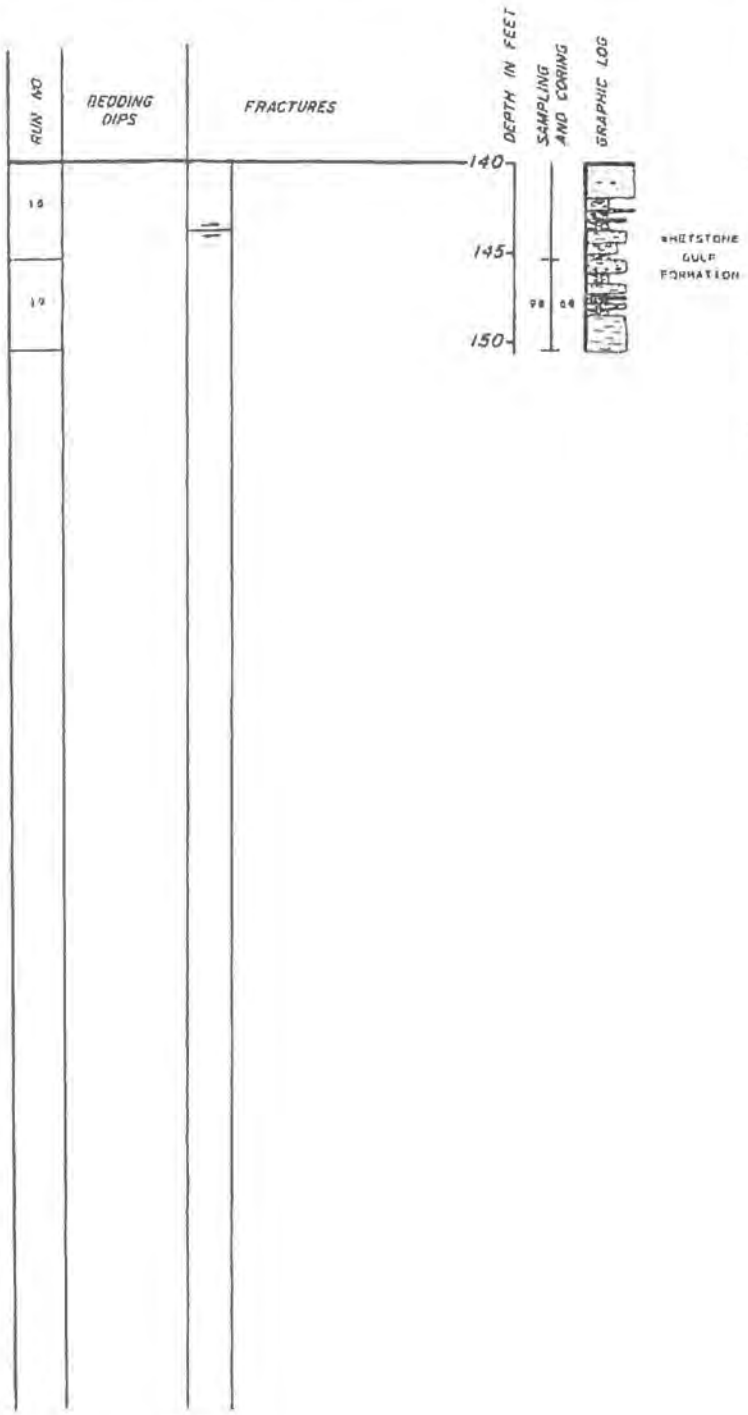


FIGURE 2.5-24D

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

- Greywacke
- 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

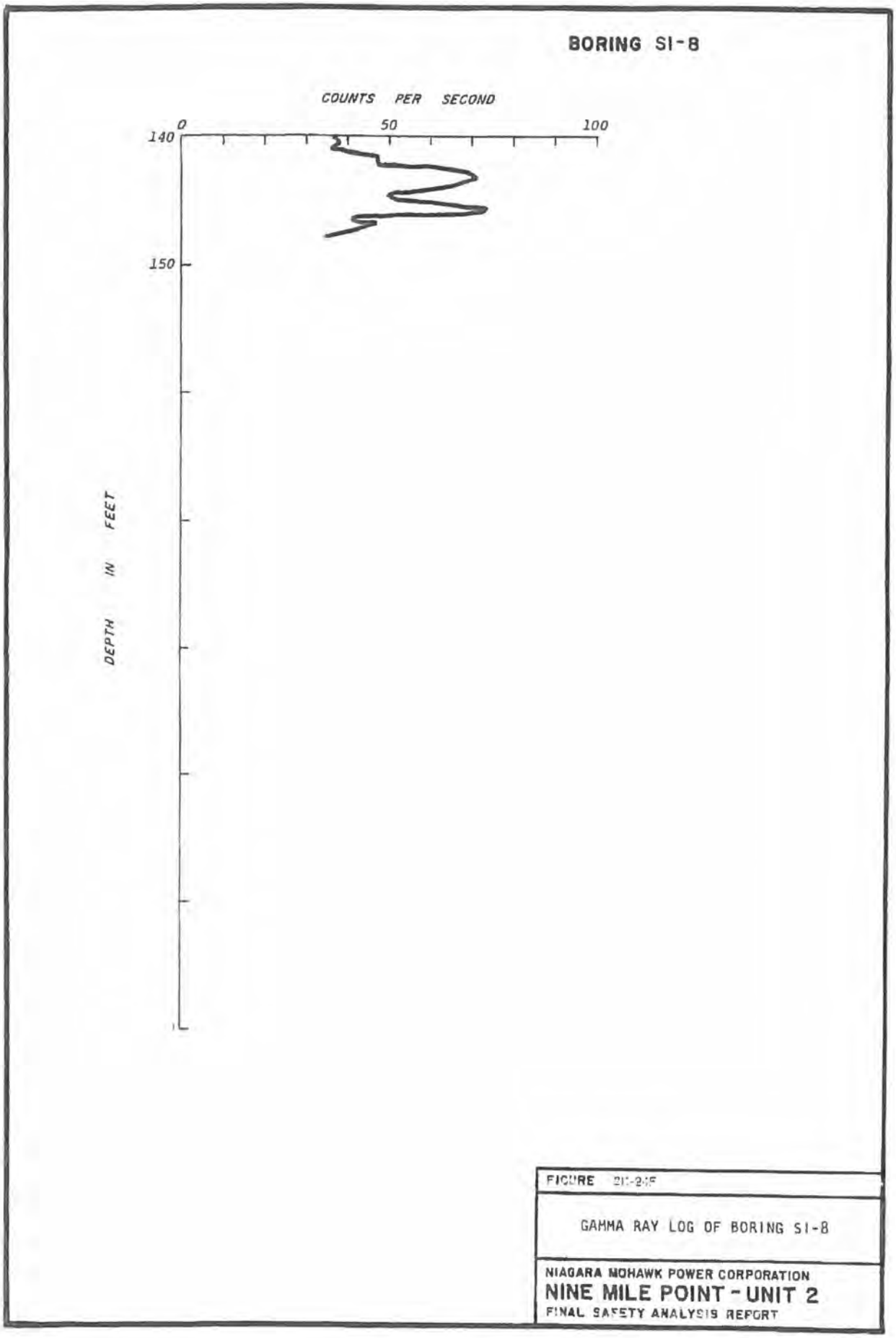
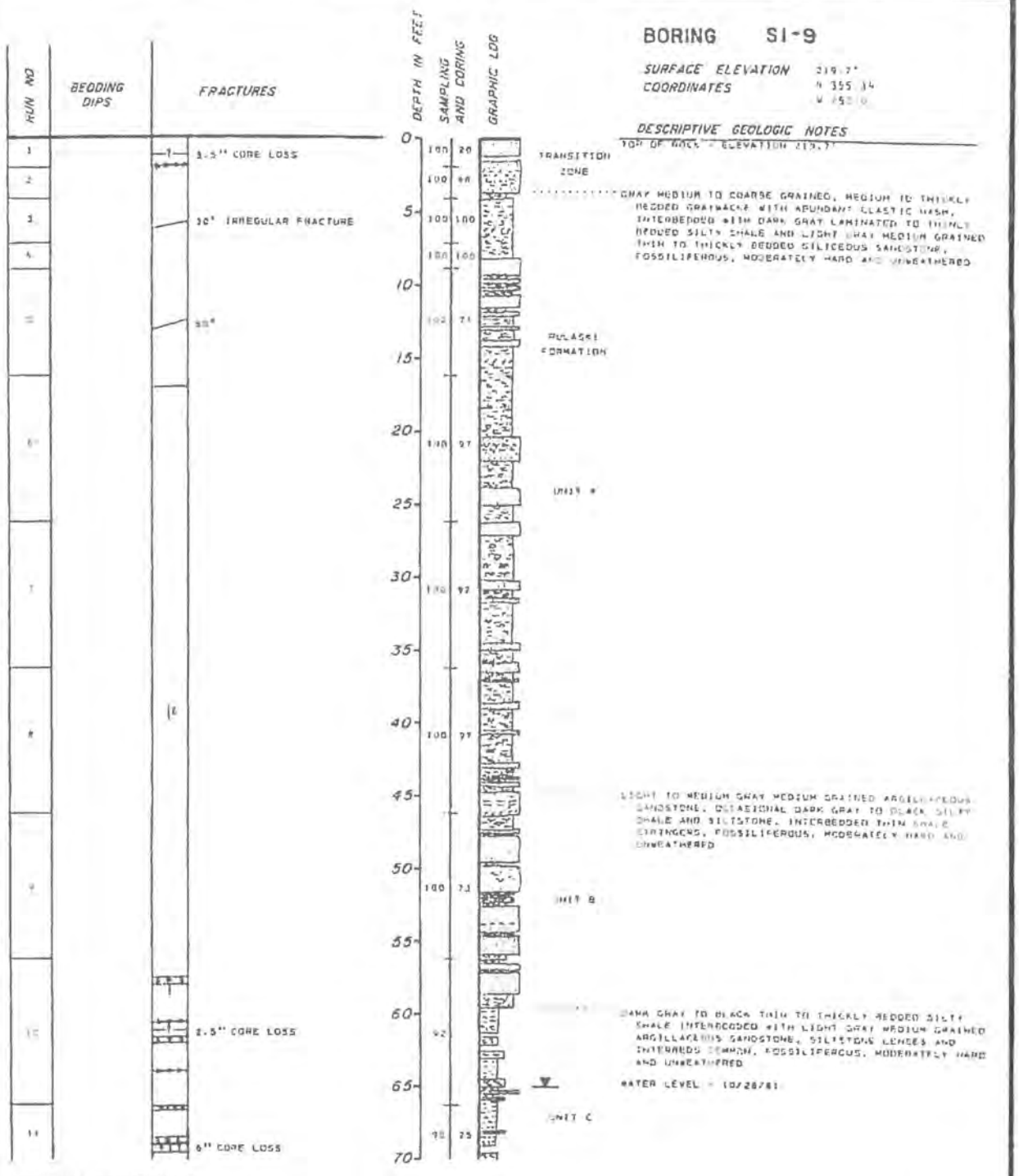


FIGURE 2II-24F

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 219.7'

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 planar structures.

FRACTURES

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

LEGEND

- Claystone
- Siltstone
- Shale
- Fossils
- Shale intraclasts
- Cross-bedding
- Rock 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

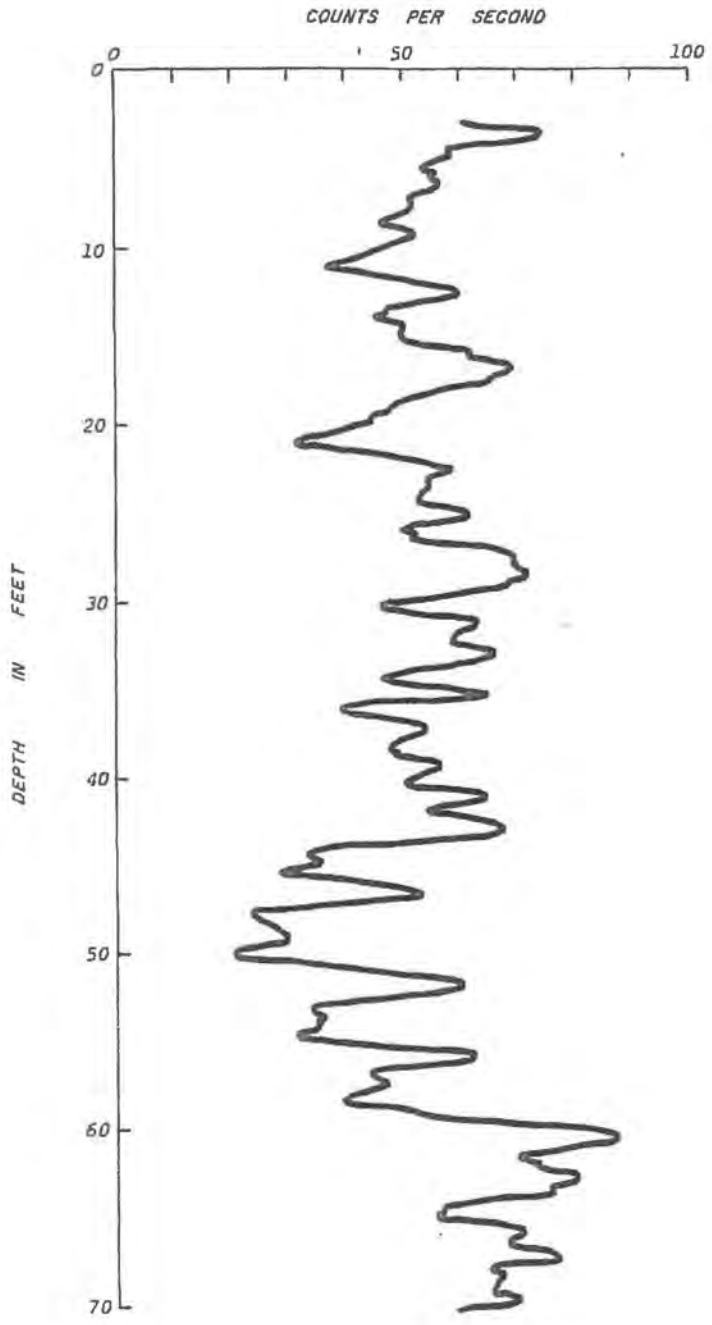
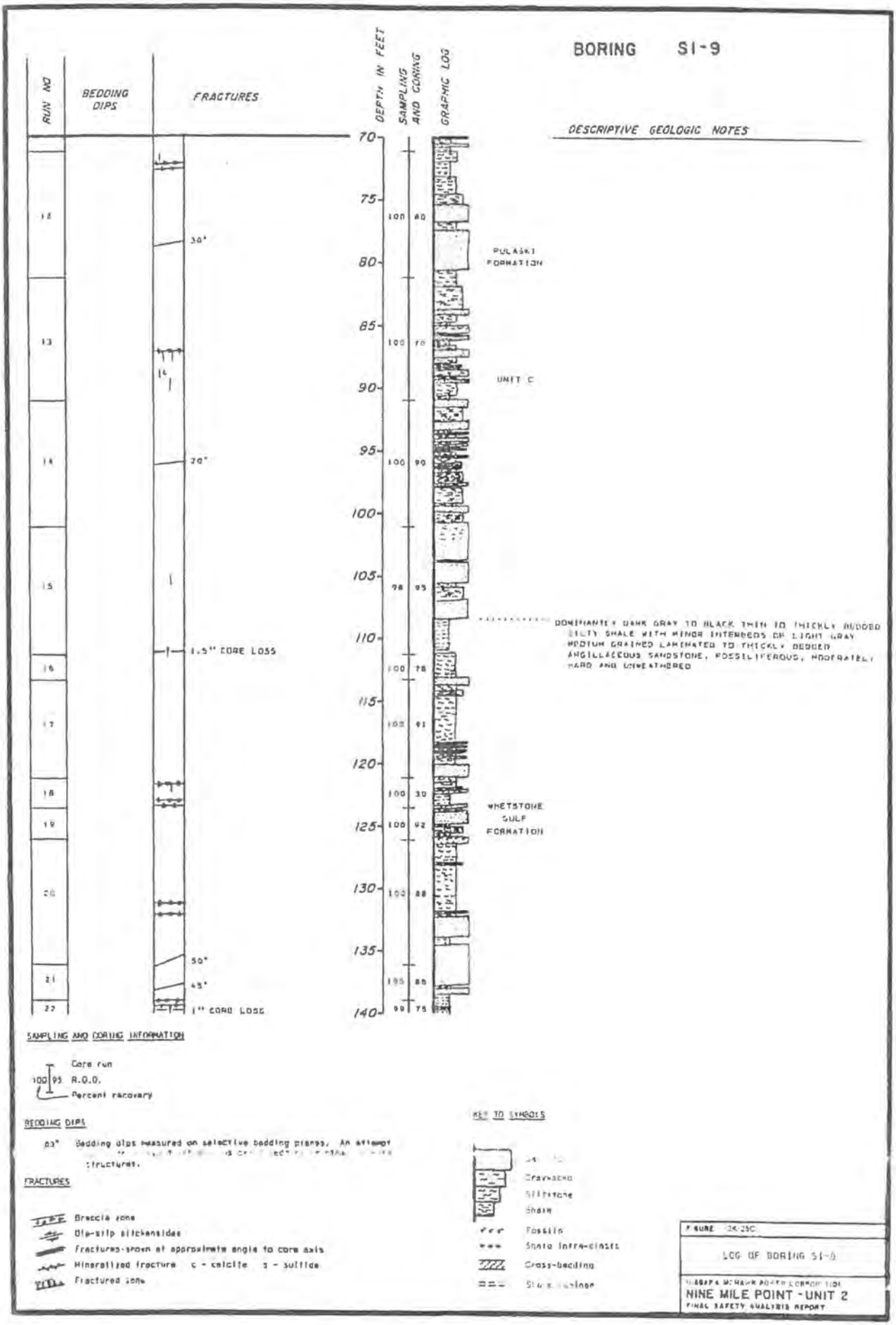


FIGURE 2K-28

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 SLIGHTLY WEATHERED
SAMPLING AND CORING INFORMATION
Core run
R.Q.D.
Percent recovery
BEDDING DIPS
FRACTURES
Breccia zone
Dip-slip slickensides
Mineralized fracture c - calcite s - sulfide
Fractured zone
KEY TO SYMBOLS
Sandstone
Siltstone
Shale
Fossils
Shale intra-clasts
Cross-bedding
LOG OF BORING SI-9
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

BORING SI-9

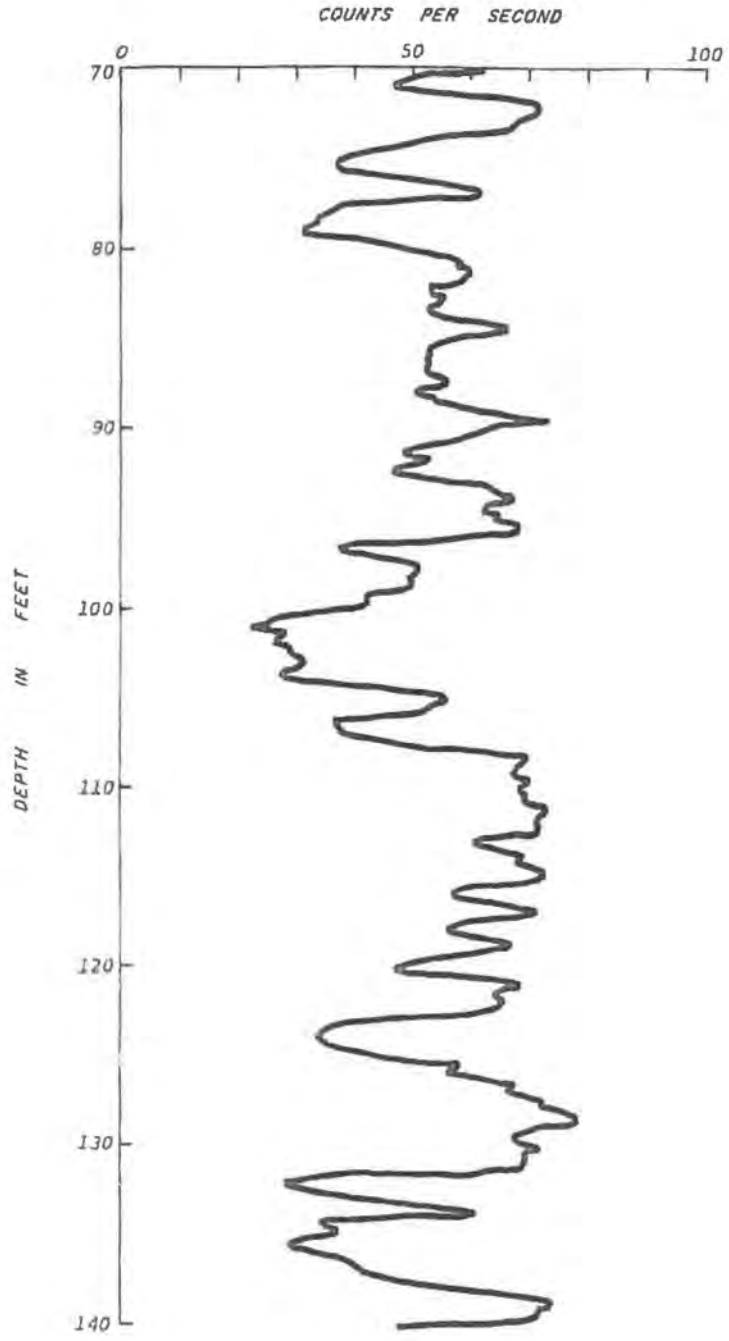
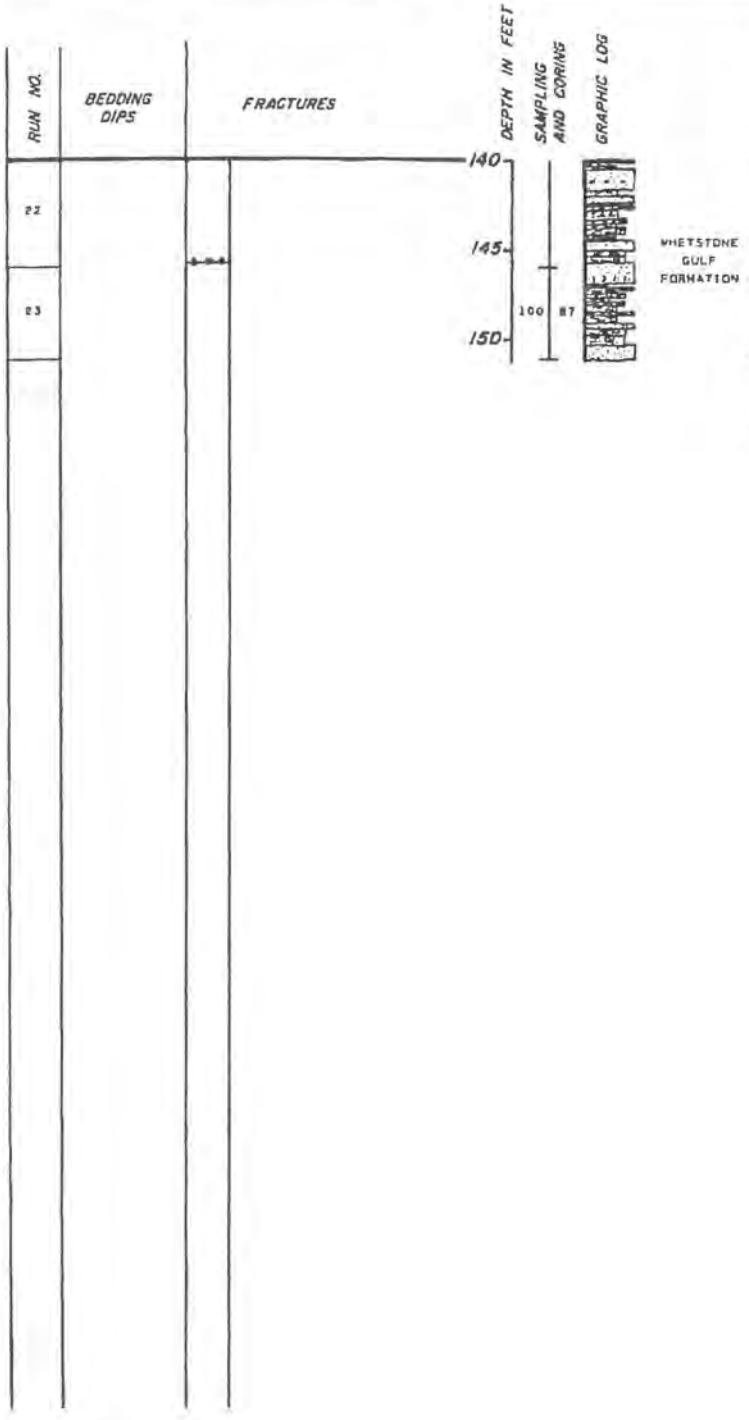


FIGURE 2K-25D

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

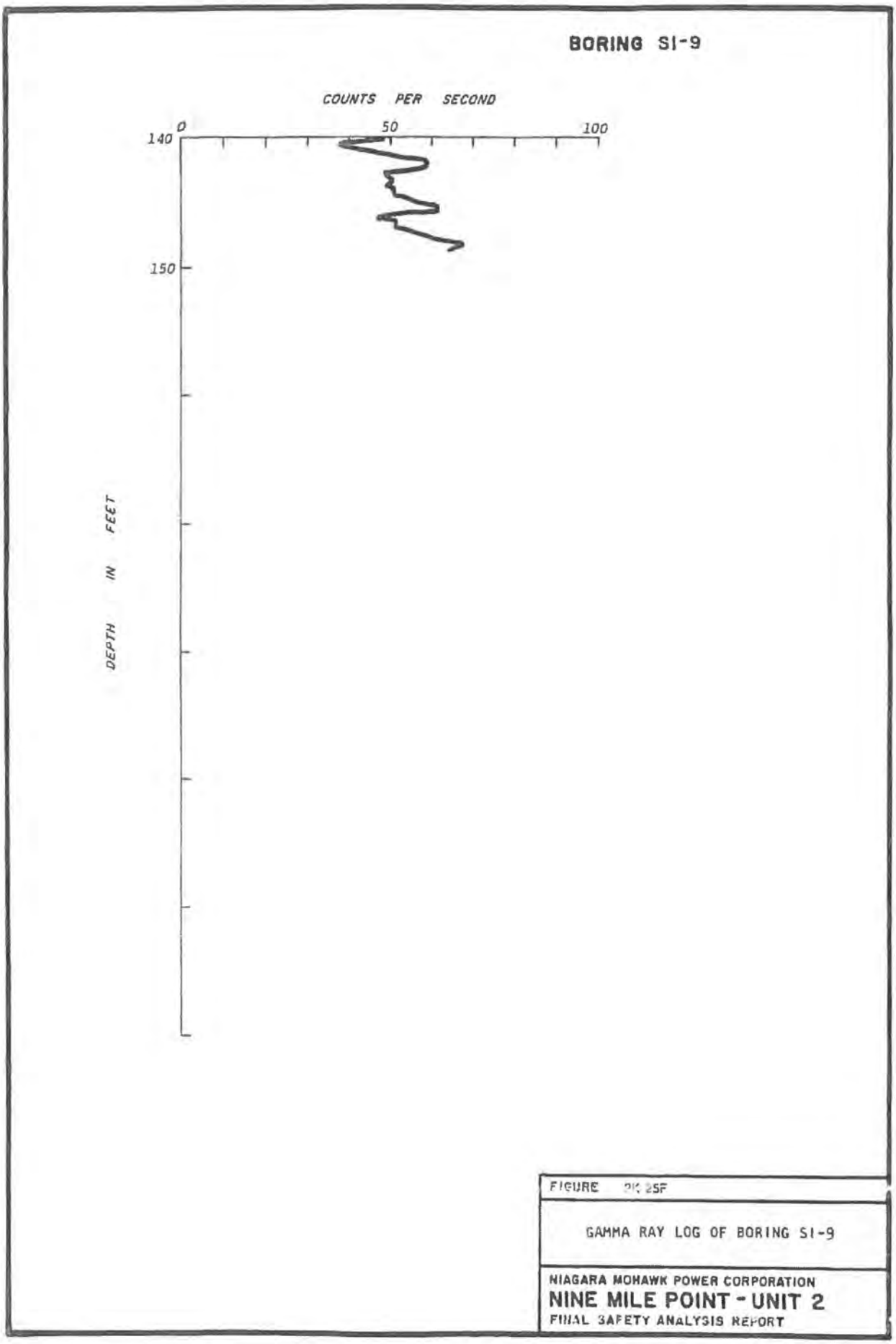
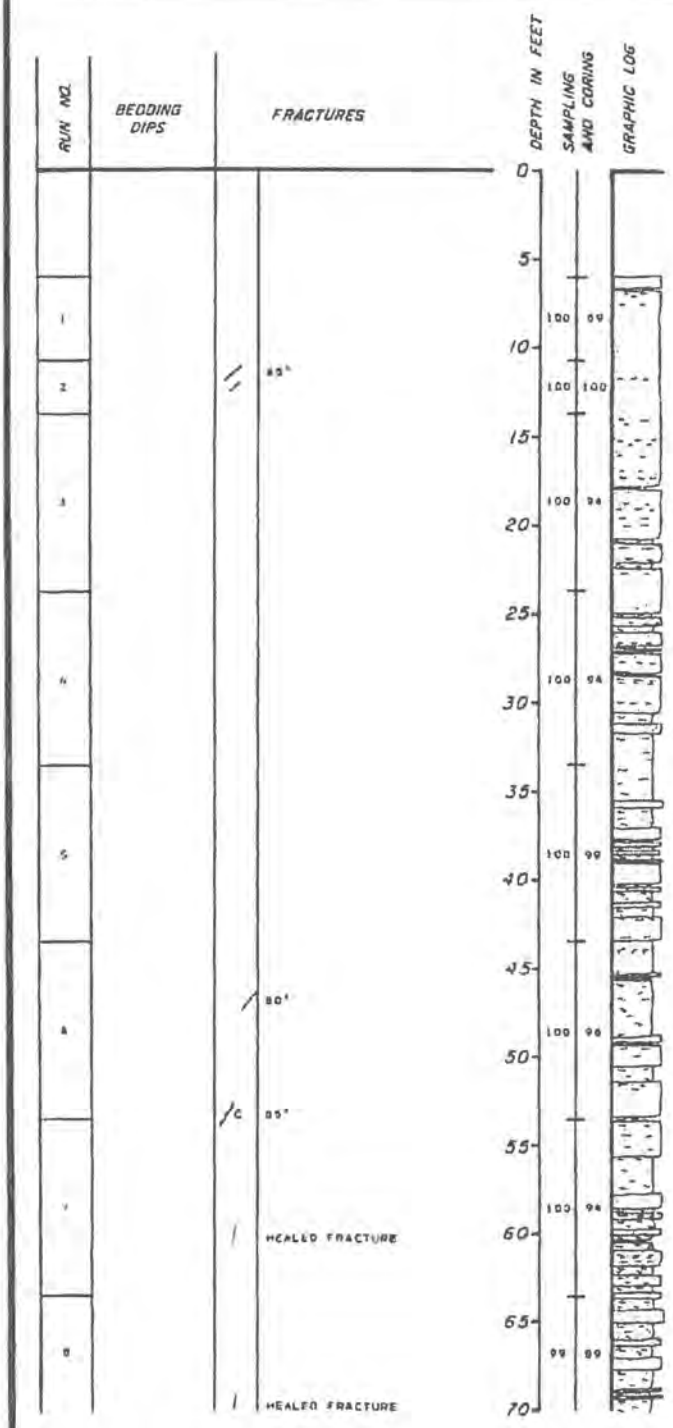


FIGURE 2K.2SF

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

85° 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
- Shale laminae

FIGURE 2R-25A

LOG OF BORING SI-10

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

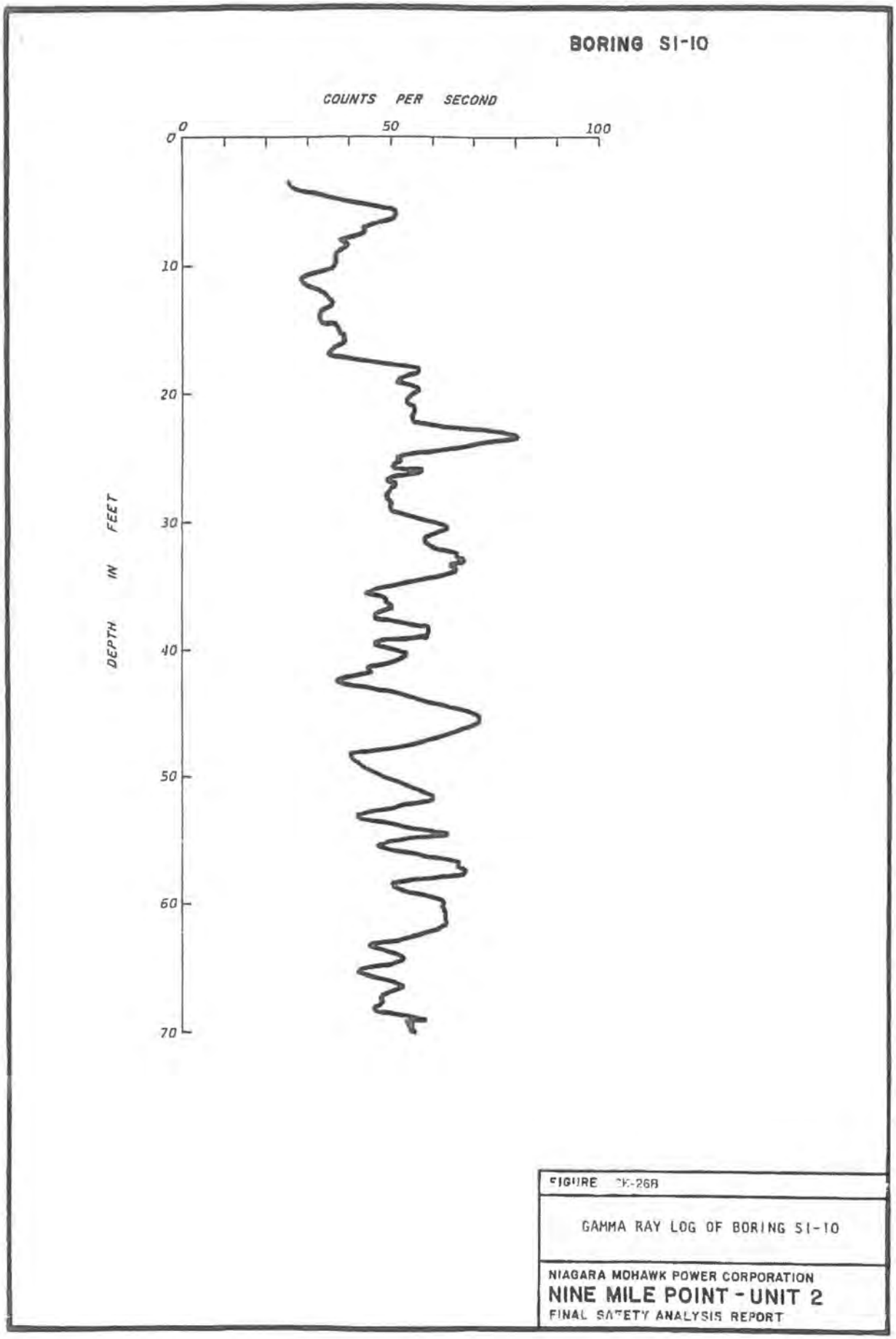
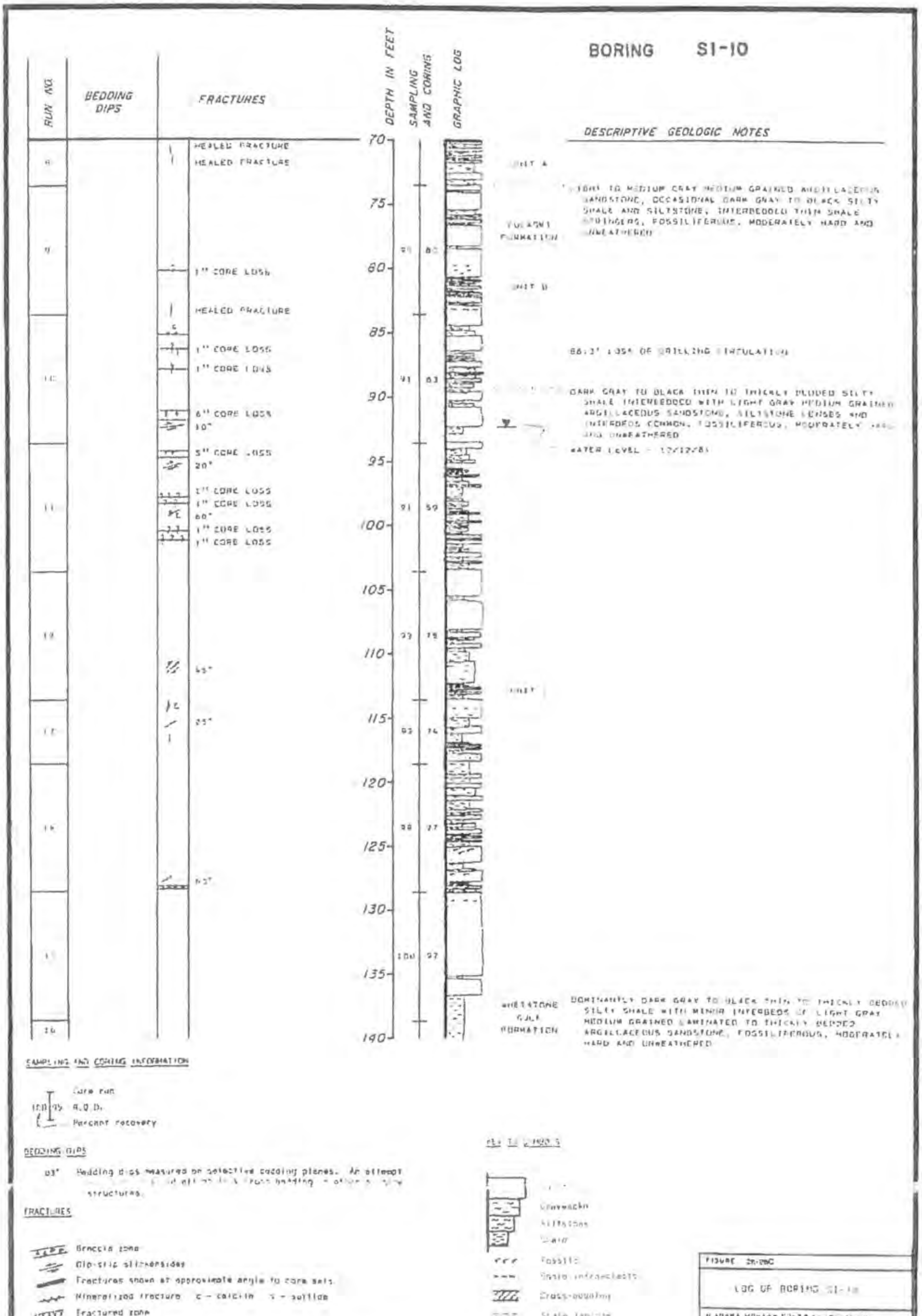


FIGURE 2K-26B

GAMMA RAY LOG OF BORING SI-10

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



LOG OF BORING S1-10

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT

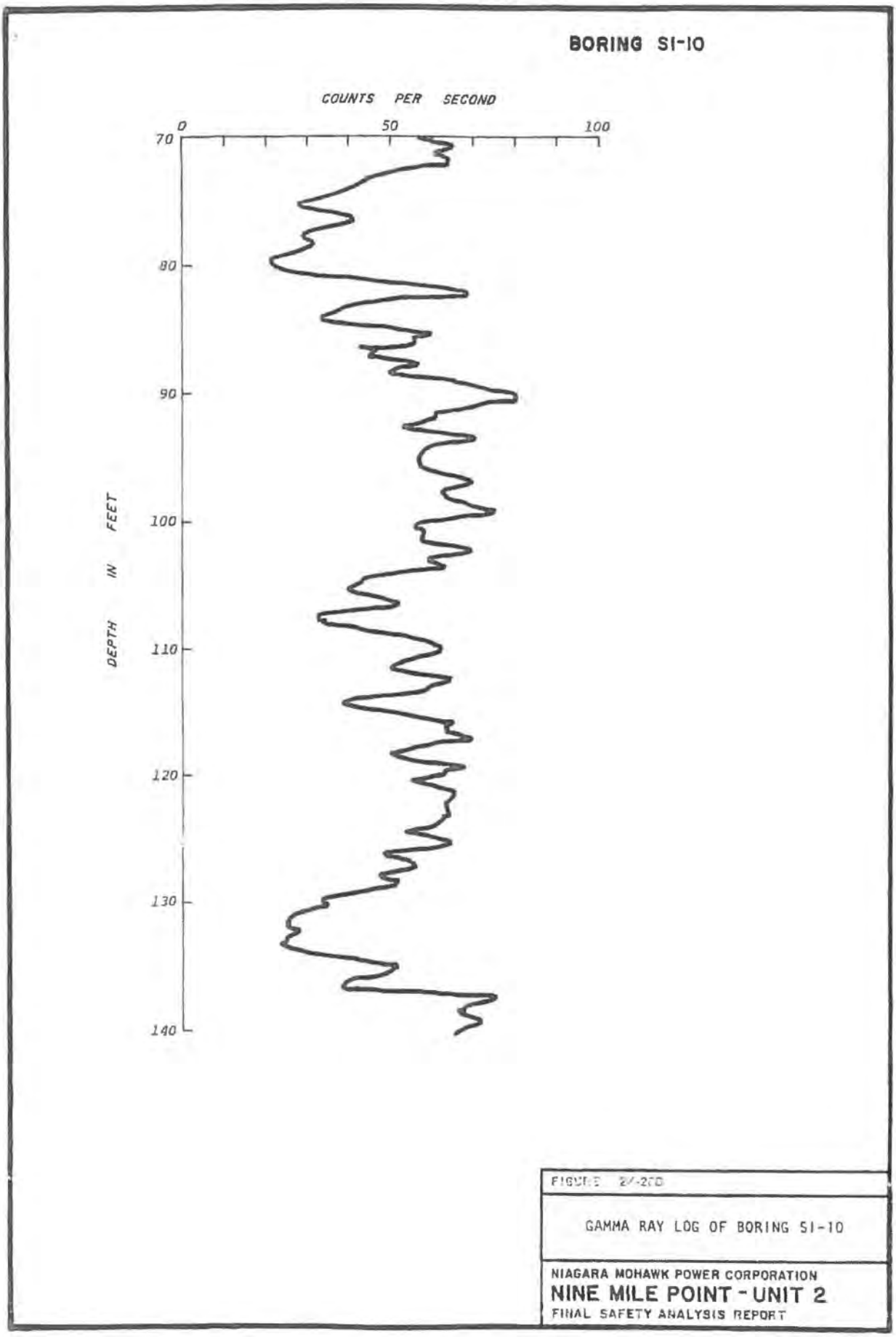
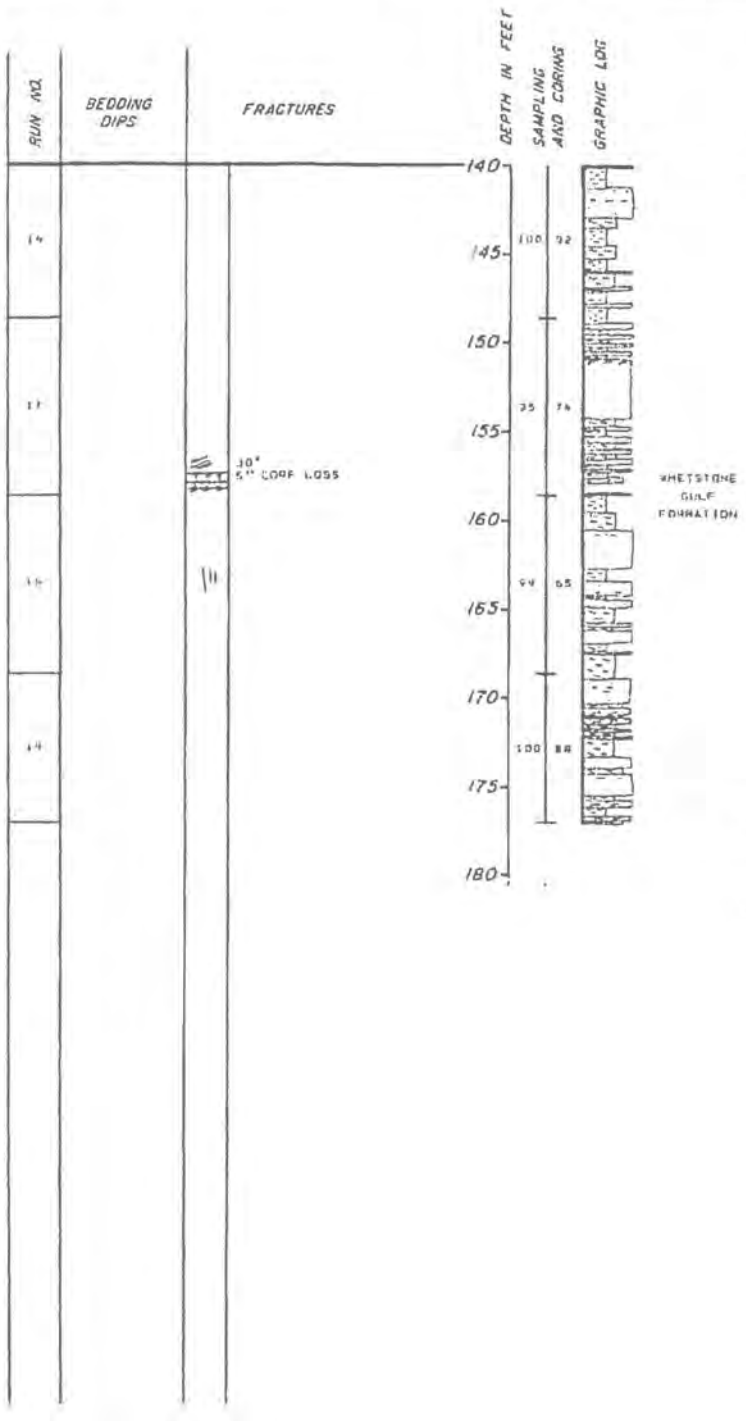


FIGURE 2.4-20

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 q - quartz
- Fractured zone

KEY TO SYMBOLS

- Fossils
- Shale intra-clasts
- Cross-bedding

FIGURE 2A-20B

LOG OF BORING SI-10

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

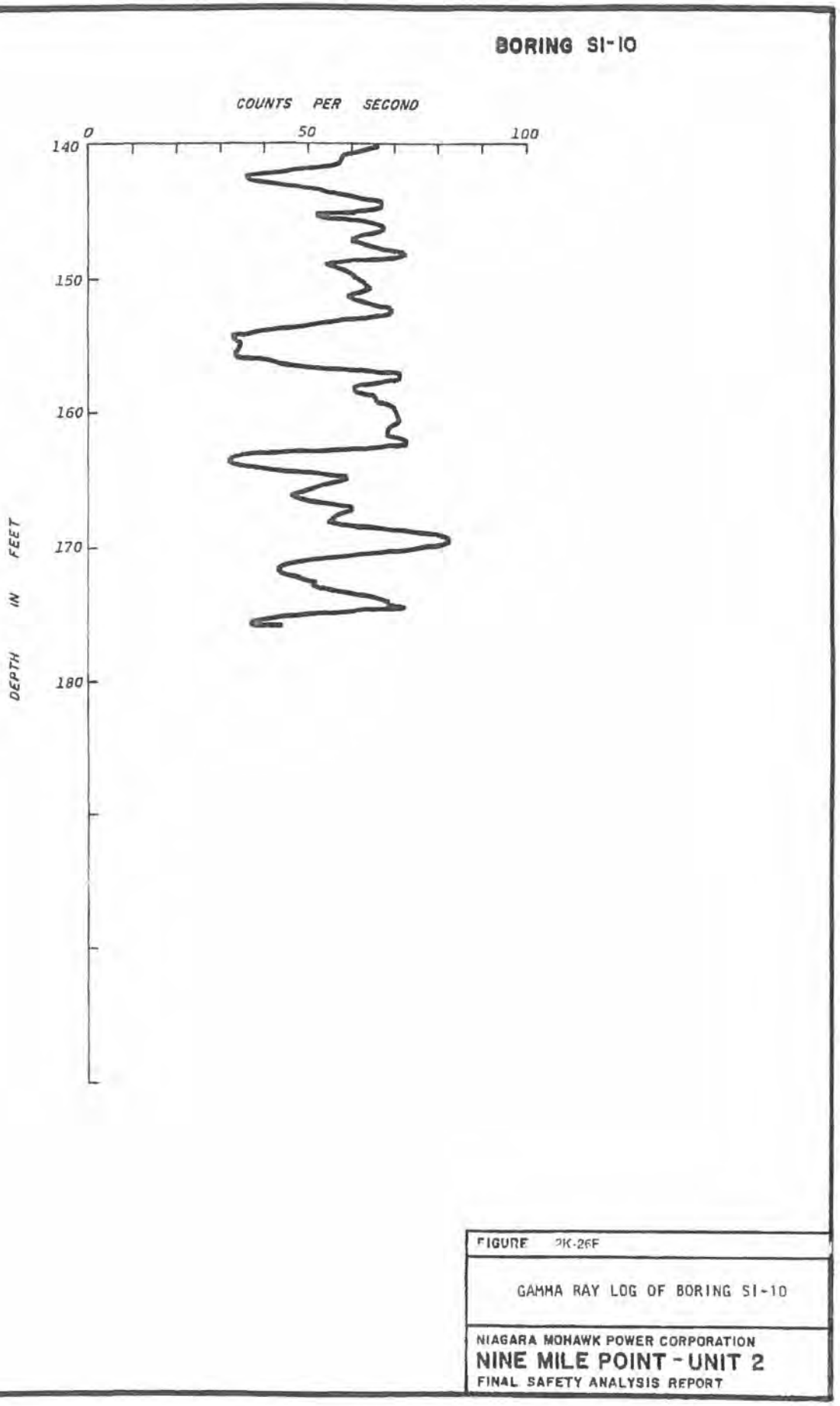


FIGURE 2K-26F

GAMMA RAY LOG OF BORING SI-10

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

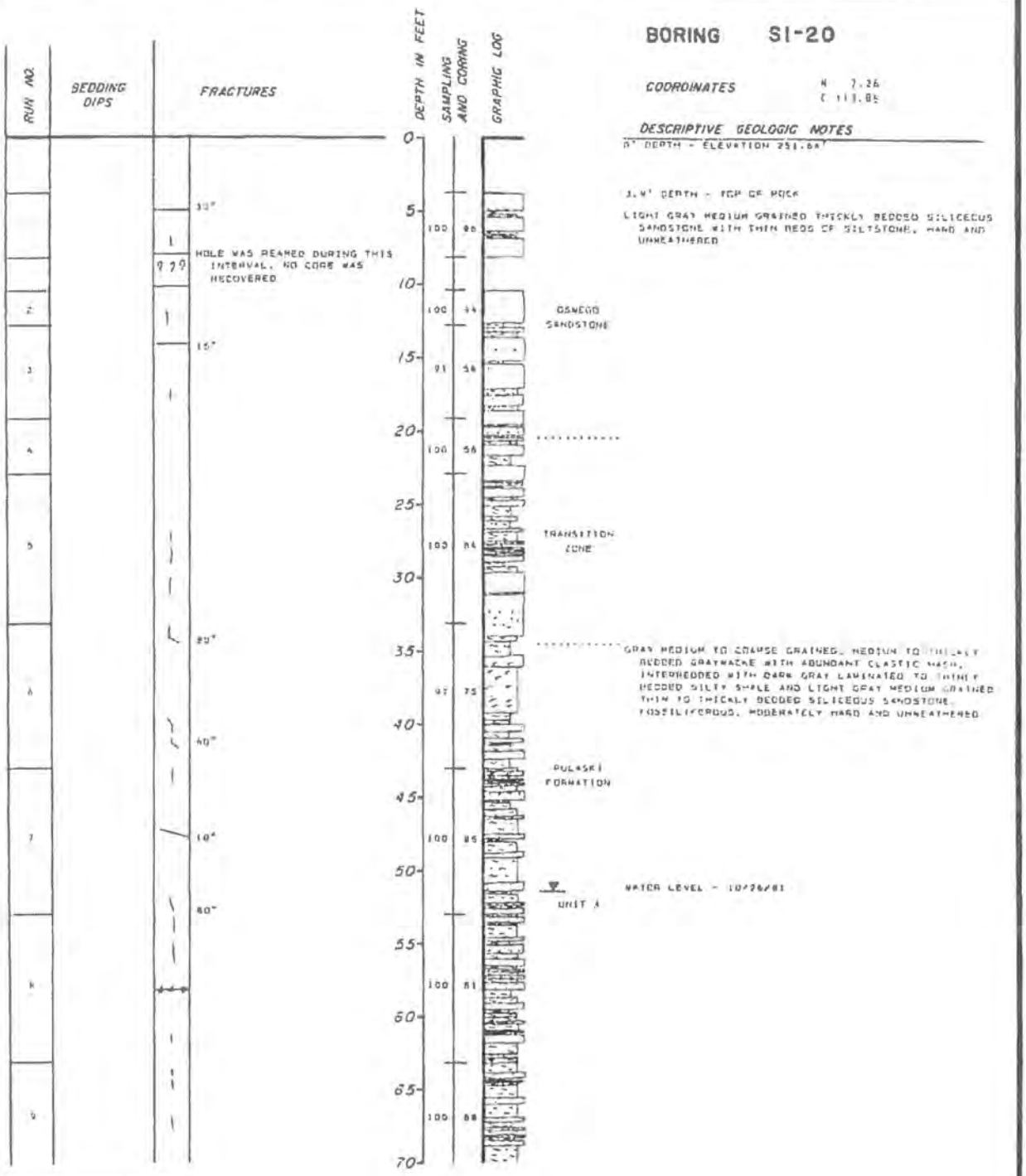


FIGURE 2A-22A

LOG OF BORING SI-20

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

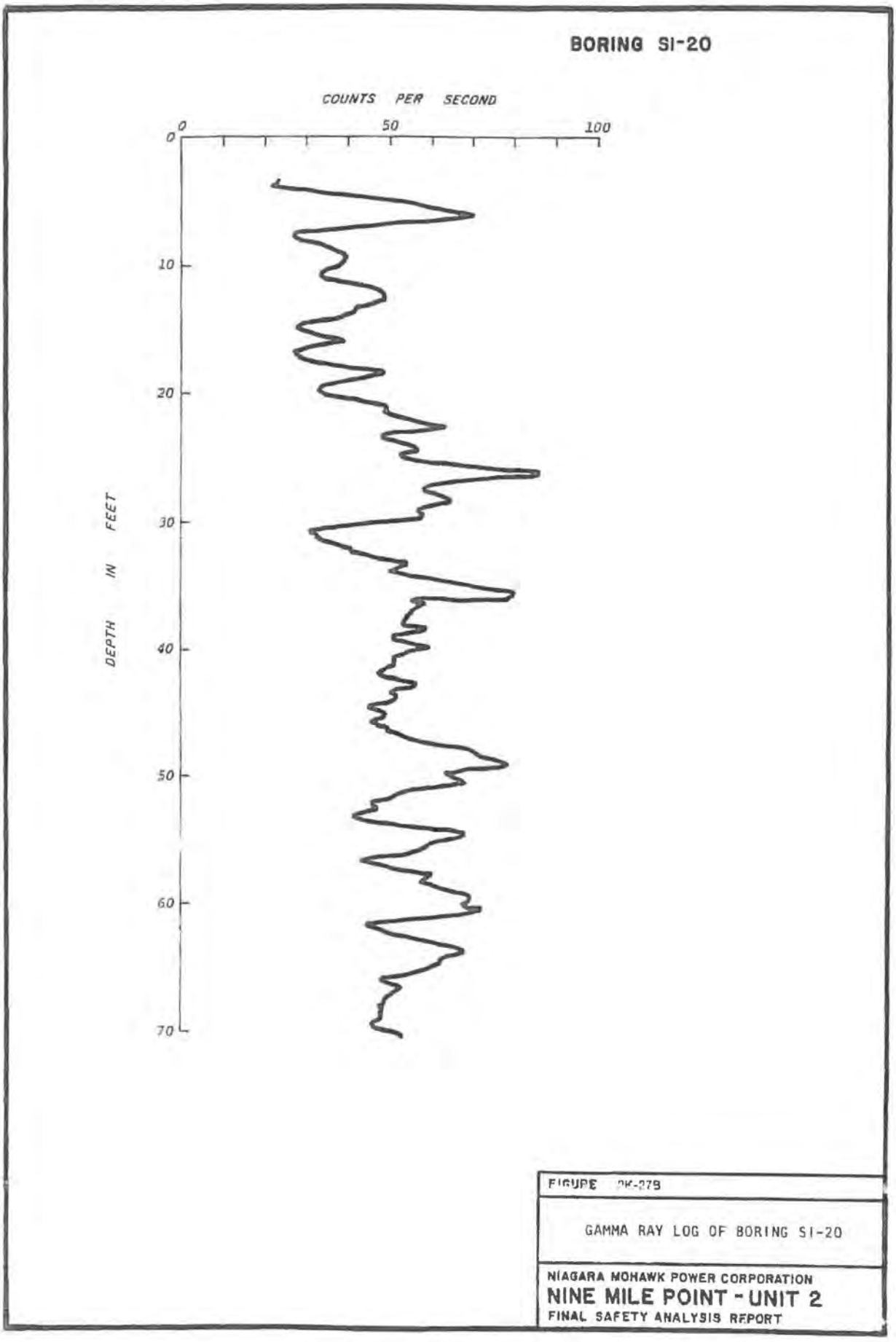
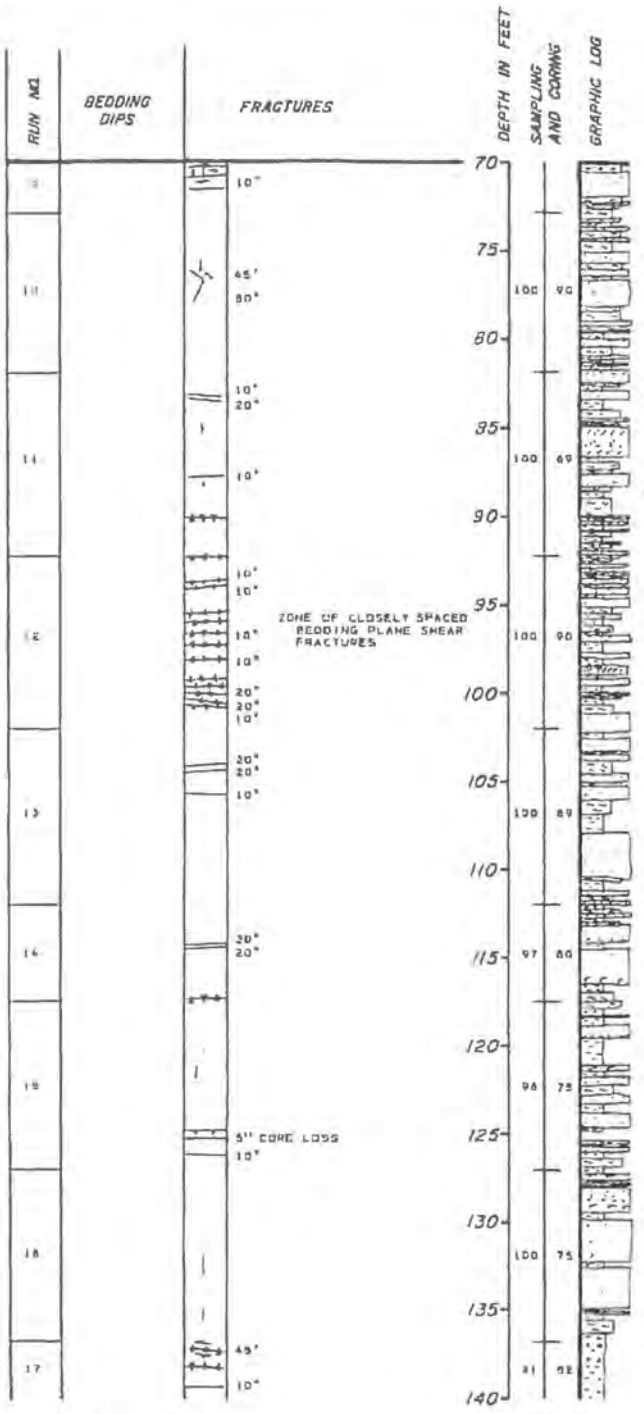


FIGURE 2K-27B

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

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

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

45° 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

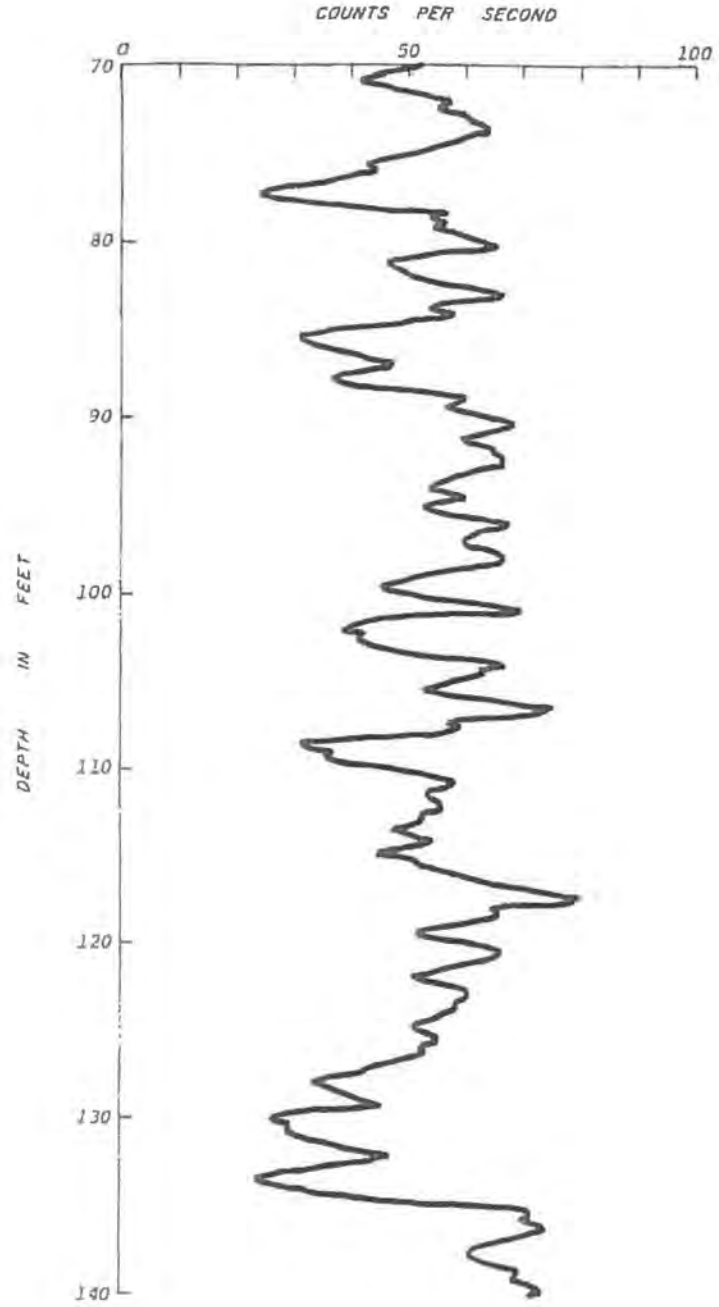
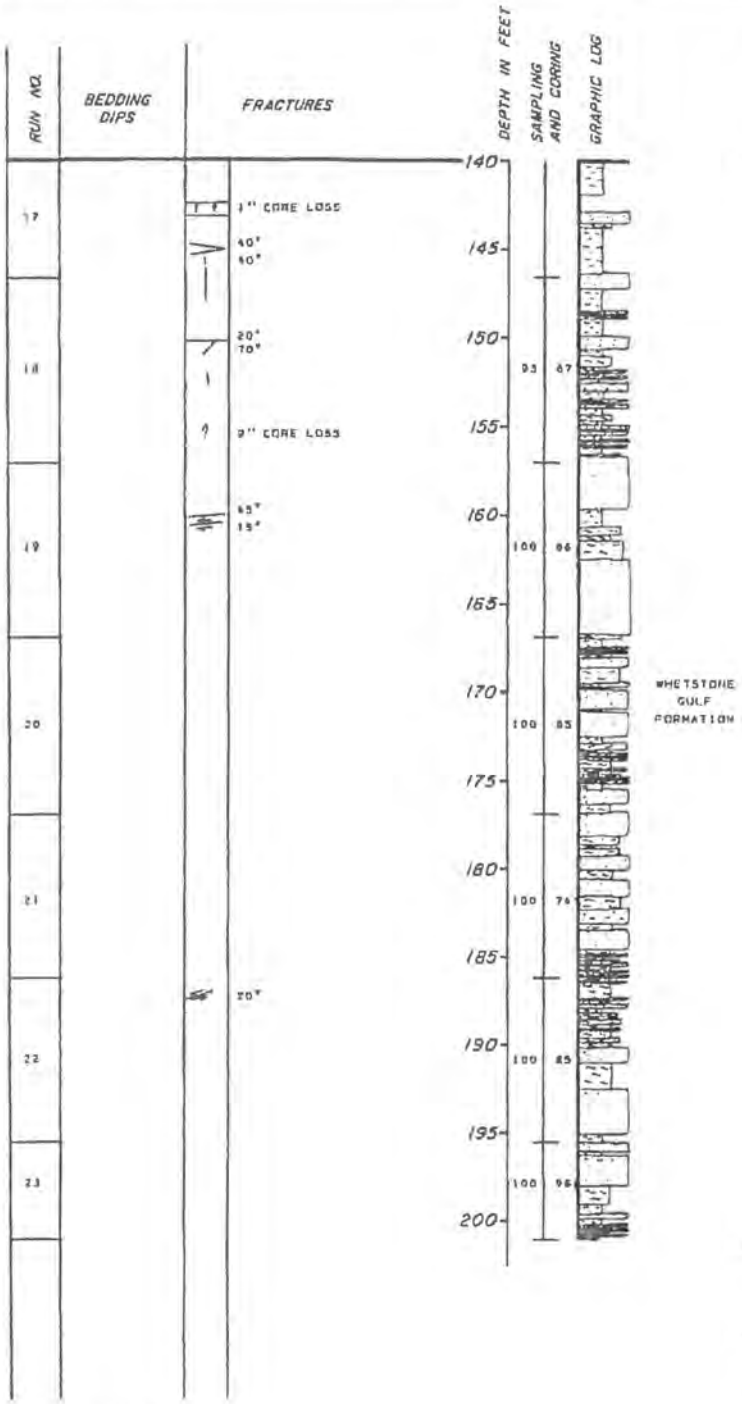


FIGURE [illegible]

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

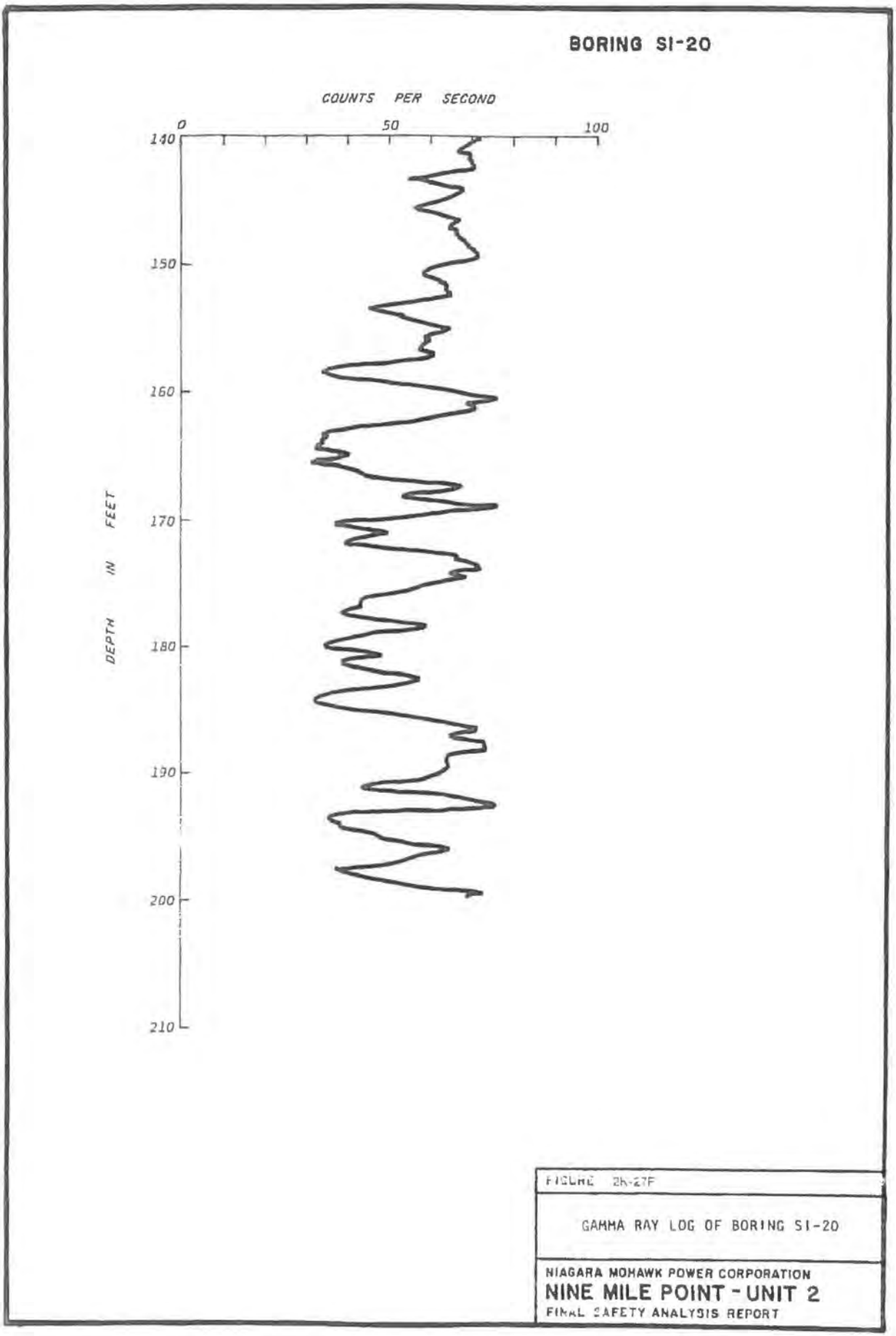
KEY TO SYMBOLS

- 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


BORING SI-20
COUNTS PER SECOND
0
50
100
140
150
160
170
180
190
200
210
DEPTH IN FEET
FIGURE 2A-27F
GAMMA RAY LOG OF BORING SI-20
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT