

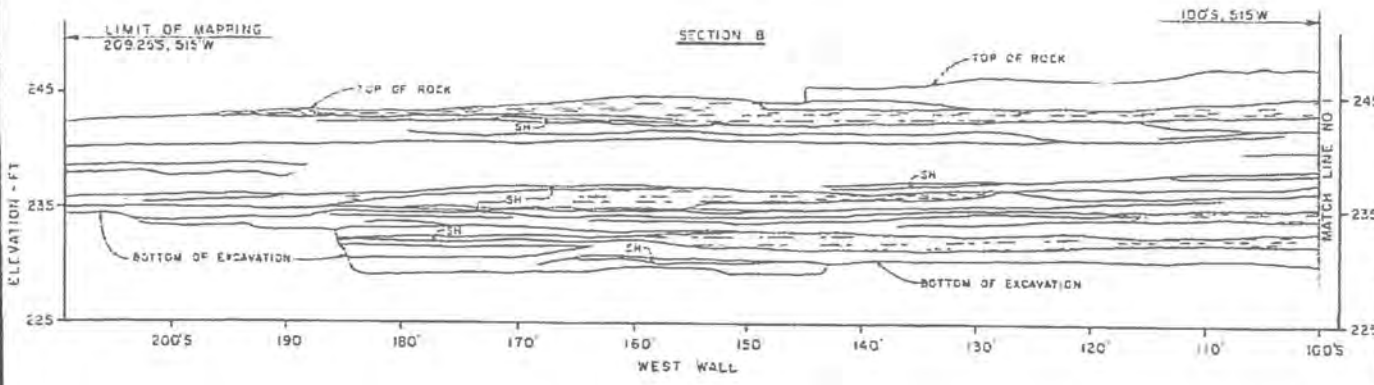
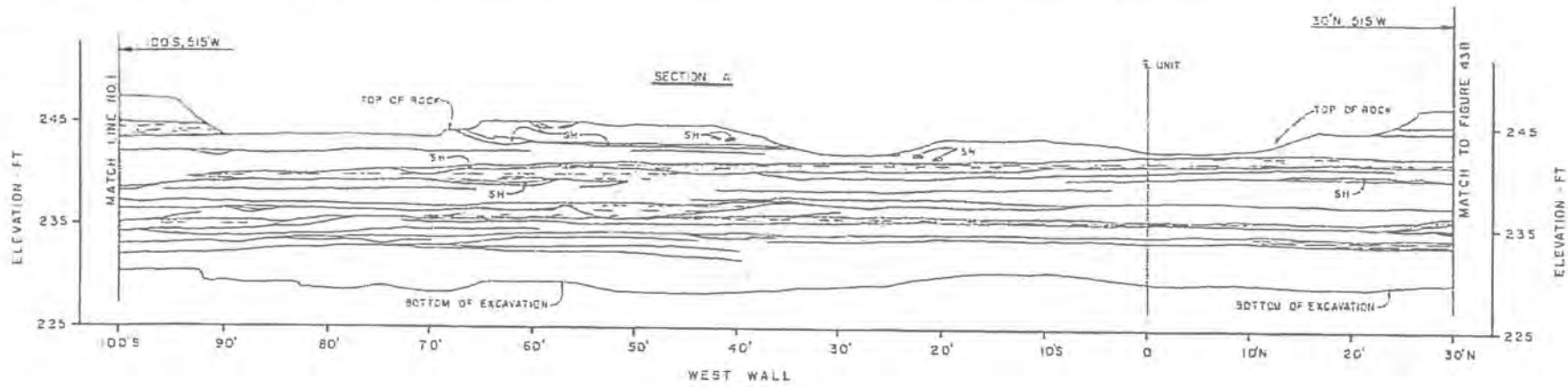
- LEGEND**
- SHALE (SH)
  - SANDSTONE (SS)
  - SILTSTONE (SLST)
  - SANDSTONE / SHALE / SILTSTONE



**FIGURE 2H-43**

**GEOLOGIC MAPPING—WALLS  
CIRCULATING WATER PIPING**

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



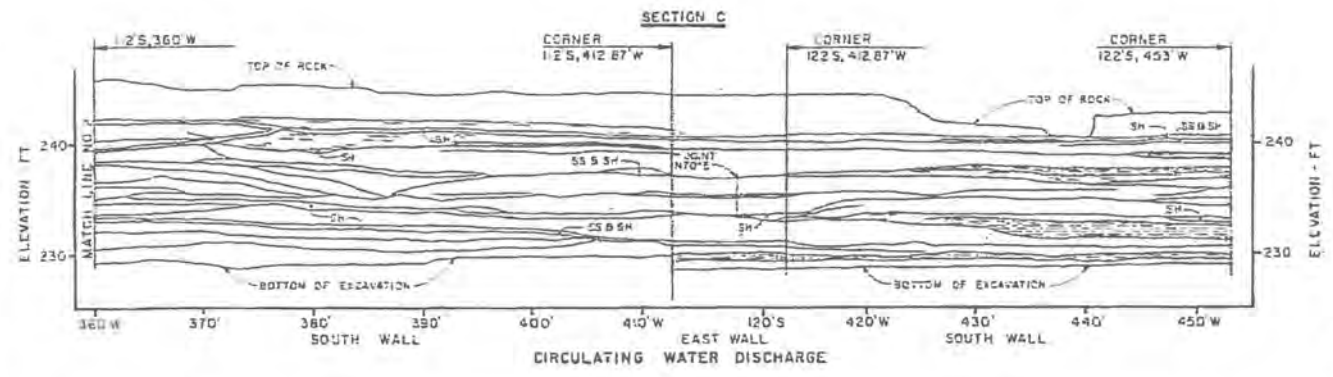
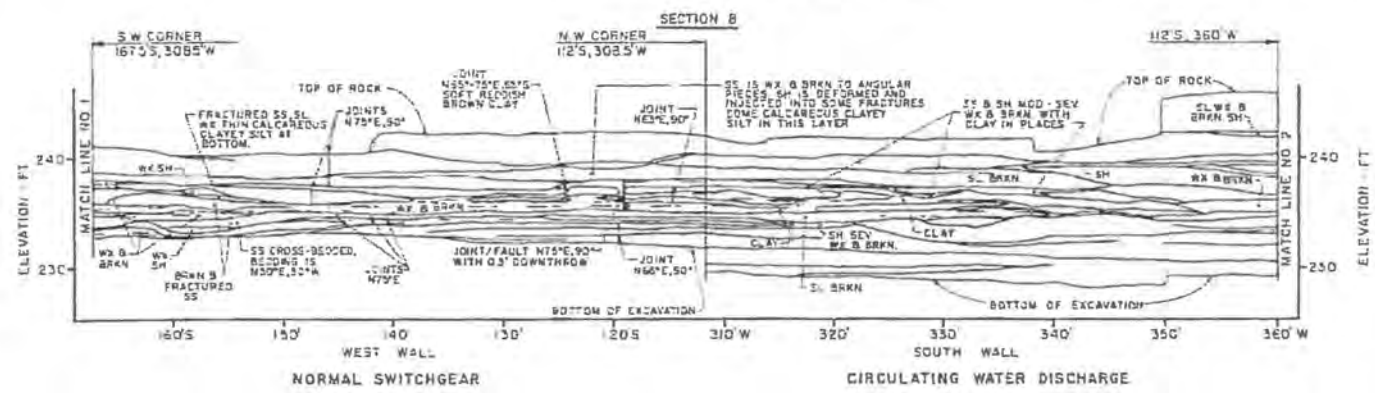
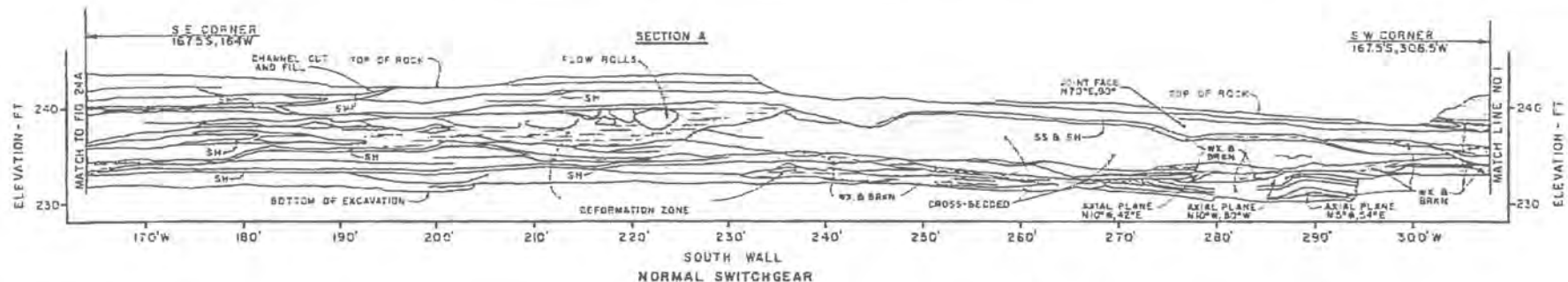
- LEGEND**
- SHALE (SH)
  - SANDSTONE (SD)
  - SILTSTONE (SLTST)
  - SANDSTONE / SHALE / SILTSTONE



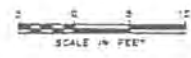
**FIGURE 2H-44**

**GEOLOGIC MAPPING—WALLS  
CIRCULATING WATER PIPING**

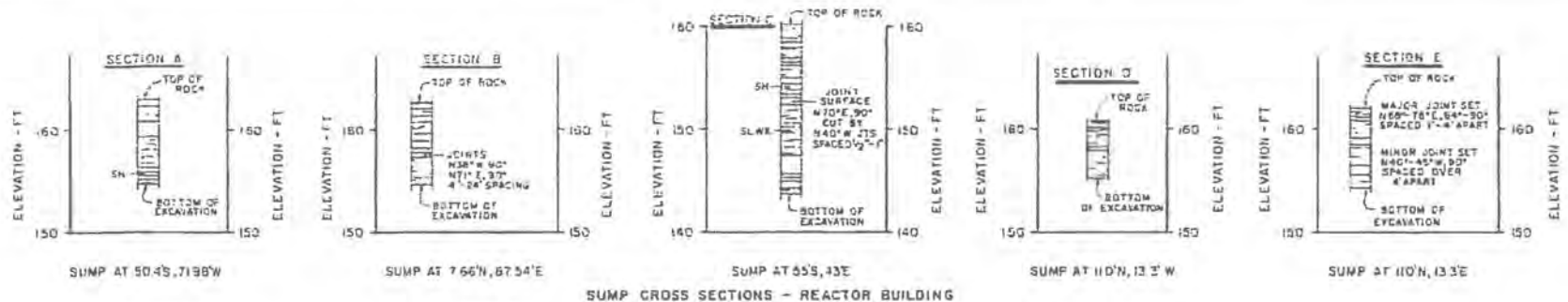
**NIAGARA MOHAWK POWER CORPORATION  
NINE MILE POINT-UNIT 2  
FINAL SAFETY ANALYSIS REPORT**



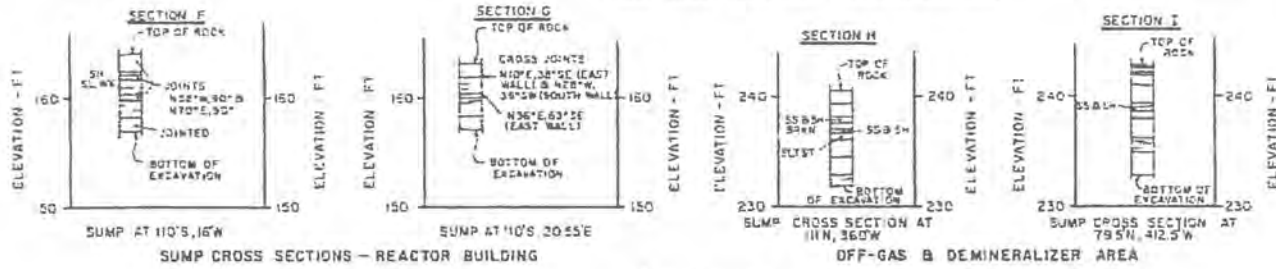
- LEGEND**
- SHALE (SH)
  - SANDSTONE (SS)
  - SILTSTONE (SL)
  - SANDSTONE / SHALE / SILTSTONE
  - WX** - WEATHERED    **BRKN** - BROKEN
  - S** - SLIGHTLY       **MOD** - MODERATELY
  - SEV** - SEVERELY



**FIGURE 2H-45**  
**GEOLOGIC MAPPING—WALLS**  
**CIRCULATING WATER DISCHARGE**  
**& NORMAL SWITCHGEAR**  
**NIAGARA MOHAWK POWER CORPORATION**  
**NINE MILE POINT-UNIT 2**  
**FINAL SAFETY ANALYSIS REPORT**

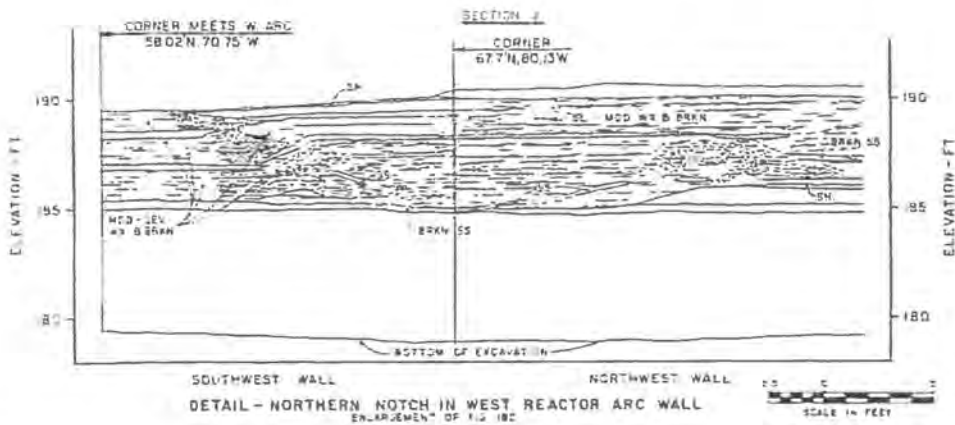


SUMP CROSS SECTIONS - REACTOR BUILDING



SUMP CROSS SECTIONS - REACTOR BUILDING

OFF-GAS B DEMINERALIZER AREA

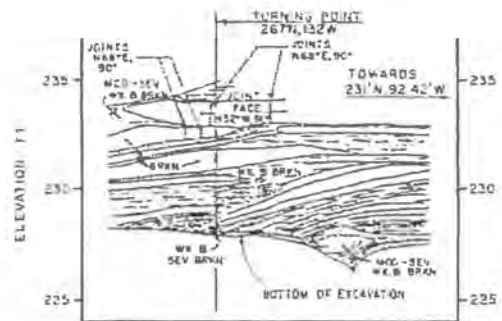


DETAIL - NORTHERN NOTCH IN WEST REACTOR ARC WALL  
ENLARGEMENT OF FIG. 18C

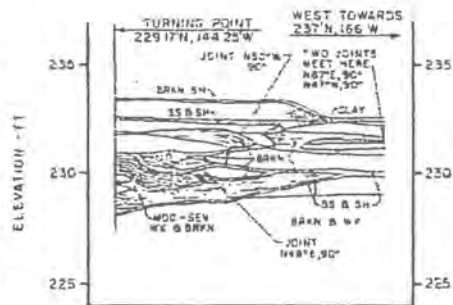
- LEGEND
- SHALE (SH)
  - SANDSTONE (SS)
  - SILTSTONE (SLTST)
  - SANDSTONE / SHALE / SILTSTONE
  - WA - WEATHERED
  - BRKN - BROKEN
  - SL - SLIGHTLY
  - MOD - MODERATELY
  - SEV - SEVERELY



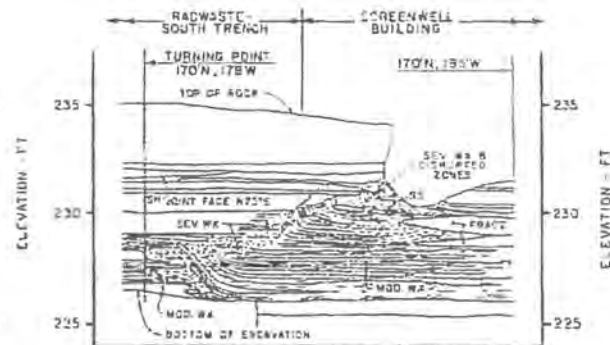
FIGURE 2H-46  
GEOLOGIC MAPPING—WALLS SUMPS,  
NOTCH—REACTOR BUILDING SUMPS—  
OFF-GAS & DEMINERALIZER BUILDING  
NIAGARA MOHAWK POWER CORPORATION  
NINE MILE POINT-UNIT 2  
FINAL SAFETY ANALYSIS REPORT



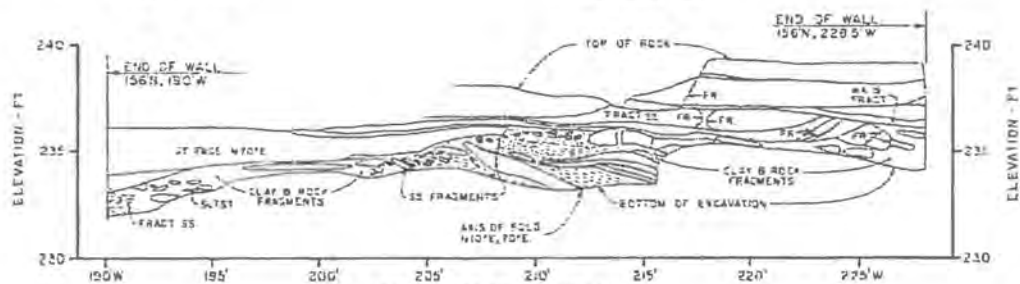
NORTH WALL NORTH DIAGONAL WALL  
NORTH RADWASTE TRENCH  
DETAIL A  
SEE FIGURE 29C



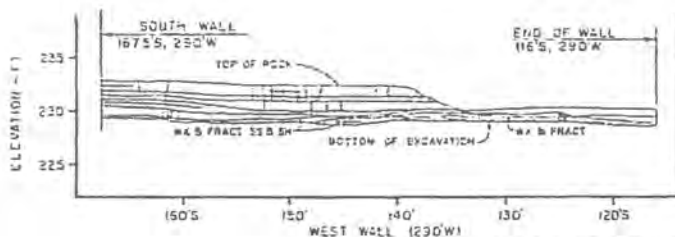
SOUTH DIAGONAL WALL  
NORTH RADWASTE TRENCH  
DETAIL B  
SEE FIGURE 29D



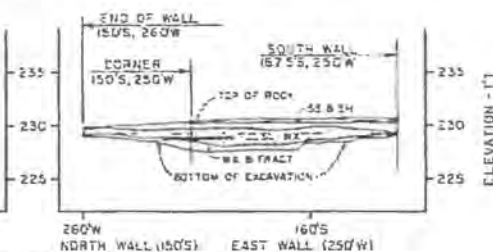
RADWASTE SOUTH TRENCH SCREENWELL BUILDING  
SOUTH WALL (170'N) SOUTH WALL (170'N) SOUTH WALL (170'N)  
DETAIL C  
SEE FIGURES 28A & 36A



HEATER BAY TRENCH WALL  
DETAIL D



WEST WALL (230'W)  
DETAIL E



NORTH WALL (150'S) EAST WALL (230'W)  
NORMAL SWITCHGEAR BUILDING - SHORT WALLS  
DETAIL F

LEGEND

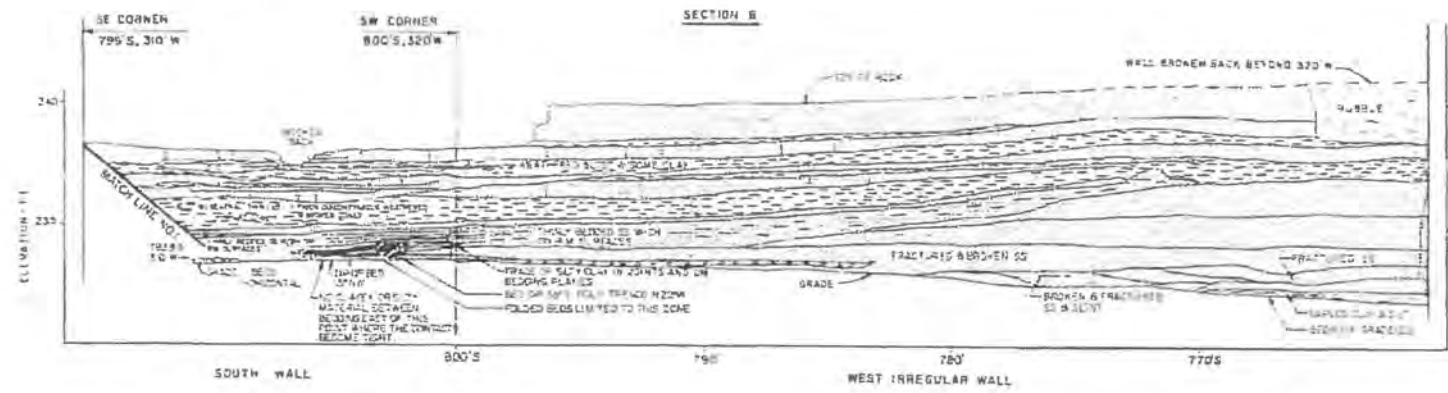
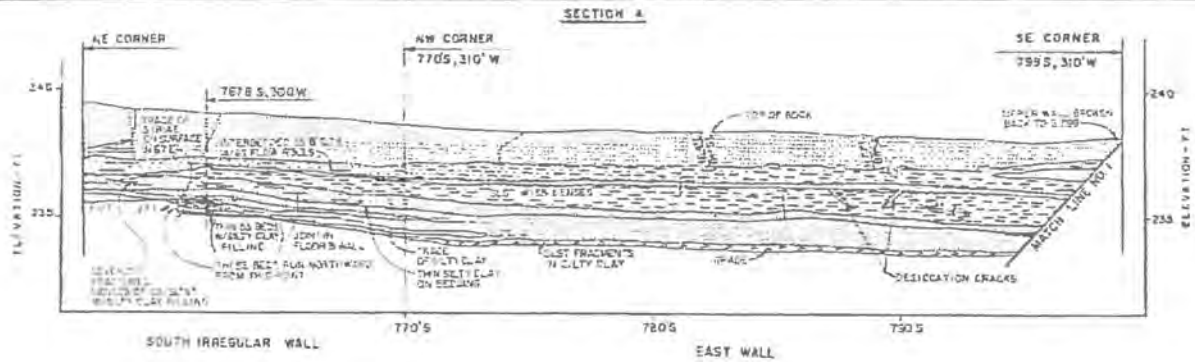
- SHALE (SH)
- SANDSTONE (SS)
- SILTSTONE (SLTST)
- SANDSTONE / SHALE / SILTSTONE
- BRN - SHOSON
- SEV - SEVERELY FRACT - FRACTURED
- WE - WEATHERED
- FR - FRACTURE



FIGURE 2H-47

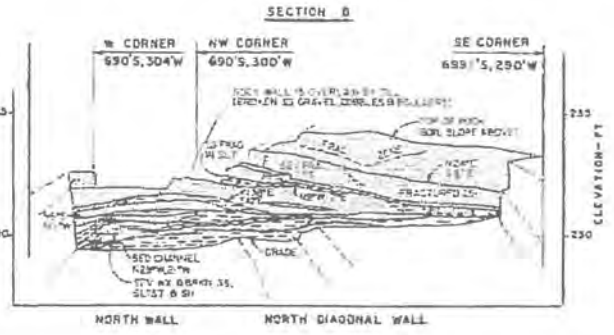
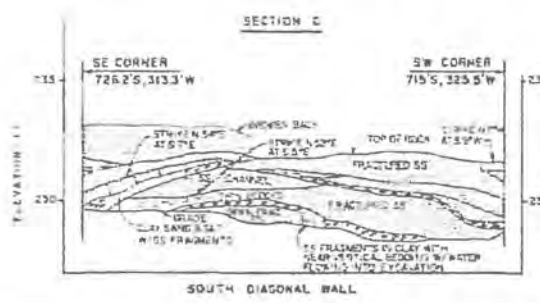
GEOLOGIC MAPPING—WALLS  
DETAILS

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



**LEGEND**

	SHALE "RIP-UP" ZONE IN SANDSTONE
	SHALE (SH)
	SANDSTONE (SS)
	SILTSTONE (SILTST)
	SANDSTONE/SHALE/SILTSTONE
	BRKN - BROKEN
	FRAC - FRACTURED
	FRAG - FRAGMENT
	SEV - SEVERELY
	WX - WEATHERED
	RM - RIPPLE MARKS



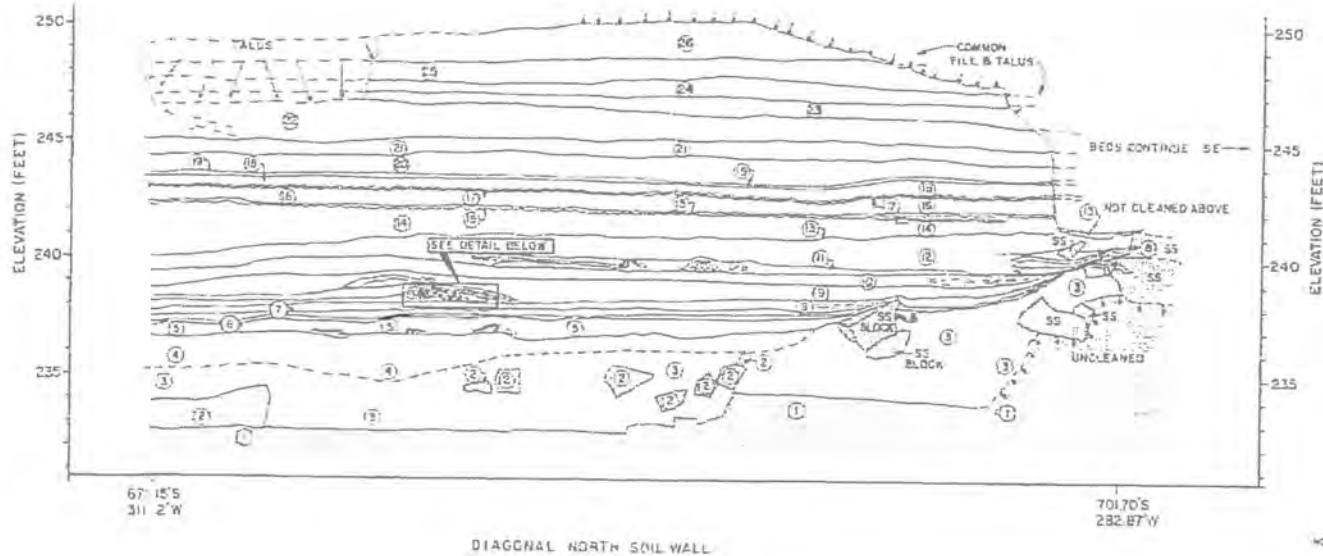
NOTE LOCATIONS OF WALLS ARE SHOWN ON KEY FIG. 3 AND ON INVERT FIG. 37



**FIGURE 2H-48**

**GEOLOGIC MAPPING—WALLS  
CIRCULATING WATER PIPING TRENCHES**

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



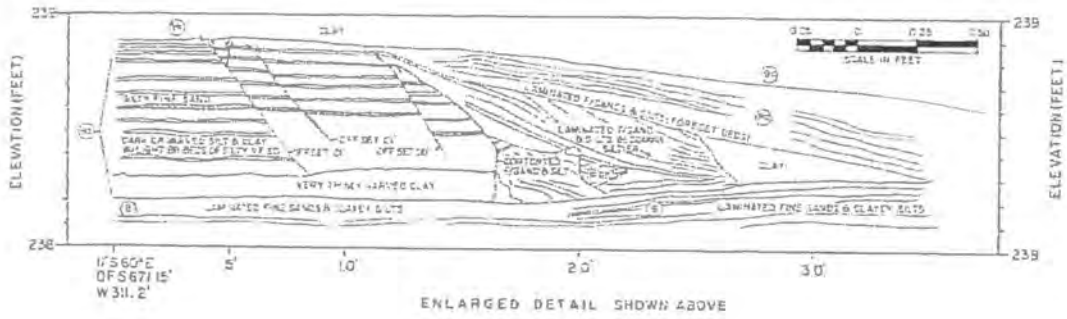
**STRATIGRAPHIC UNITS**

1. IN PLACE BEDROCK
2. DETACHED BEDROCK
3. COBBLE & SMOOTH TILL
4. GRAVEL
5. CONVULSED CLAY WITH SILT & SAND & OCCASIONAL ERRATICS
6. VERY FINE SAND WITH SILT INTERBED
7. ICE DRIFTED UNSORTED CLAYEY SANDS & GRAVEL WITH OCCASIONAL CONVULSED SANDS & CLAYEY SILT BEDS
8. VARVED FINE SAND & CLAYEY SILT
9. SEVERELY CONVULSED SAND, SILT & CLAY
10. LAMINATED & VARVED FINE SAND & SILT
11. VARVED FINE SAND & CLAYEY SILT
12. ICE DRIFTED ZONE WITH OCCASIONAL ERRATIC CONVULSED BED OF FINE SAND & SILT
13. VARVED SAND, SILT & CLAY
14. MEDIUM SAND
15. WHOLE MARKED SAND SILT & CLAY
16. GRAY CLAY
17. SPALL MARKED FINE TO VERY FINE SAND, SILT & CLAY
18. CLAY (A. P. F. WASH CO - SOLE CASTS)
19. TRIPPLE MARKED FINE TO VERY FINE SAND, SILT & CLAY
20. CLAY (VERY THIN)
21. CONVULSED SILT
22. SILT WITH LENSES OF FINE TO VERY FINE SAND
23. DARK SILT WITH CONVULSED FINE SAND BEDS WITH TRACE OF TALUS REPLACEMENT
24. WHOLE MARKED VERY FINE SAND & SILT
25. LIGHT TO MEDIUM GRAY FINE SAND & SILT WITH OCCASIONAL INCLINATIONS & BEDDING
26. LIGHT GRAY VERY FINE SAND & SILT WITH FINEST BEDDING, ABUNDANT ORGANICS & PEAT
27. DARK GRAY MEDIUM PEAT WITH MEDIUM VEGETATION

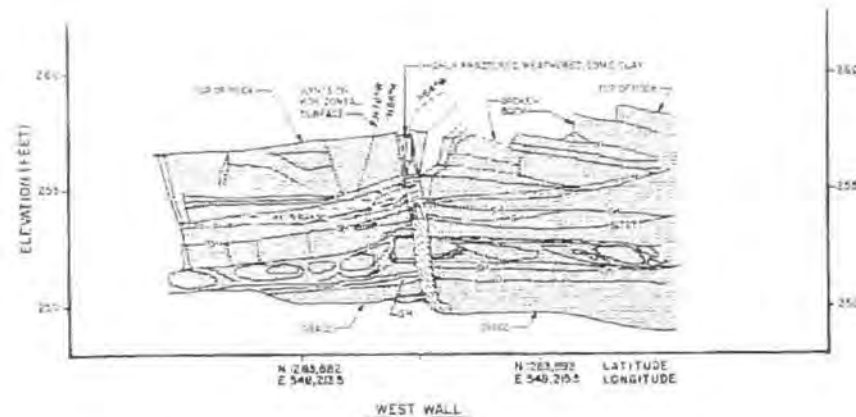
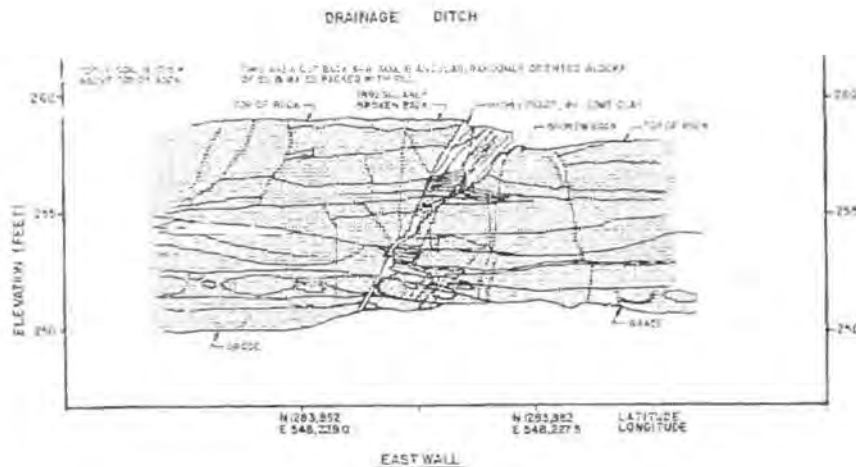
NOTE FOR SECTIONS OF UNDERLYING BEDROCK SEE FIG. 48

**LEGEND**

- SS - SANDSTONE
- Small arrows showing direction of relative movement
- Stratigraphic units described above
- CL - CLAY FF - FINE OR GREEN BR - BROWN

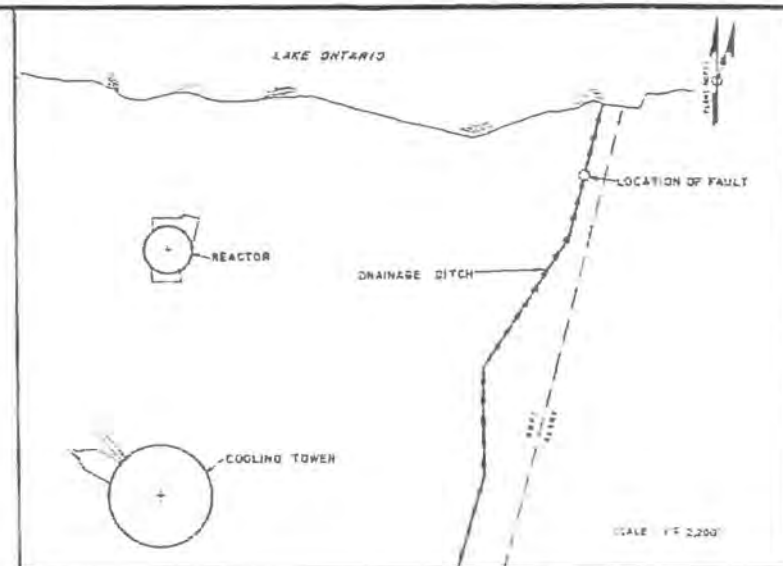


**FIGURE 2H-49**  
**NORTH SOIL WALL OF**  
**CIRCULATING WATER PIPING TRENCH**  
**NIAGARA MOHAWK POWER CORPORATION**  
**NINE MILE POINT-UNIT 2**  
**FINAL SAFETY ANALYSIS REPORT**



NOTE - THE DRAINAGE DITCH IS 14' WIDE WITH ITS MIDPOINT AT THE FAULT LOCATED AT PLANT COORDINATES -N 1265', 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
- BR4N - 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**



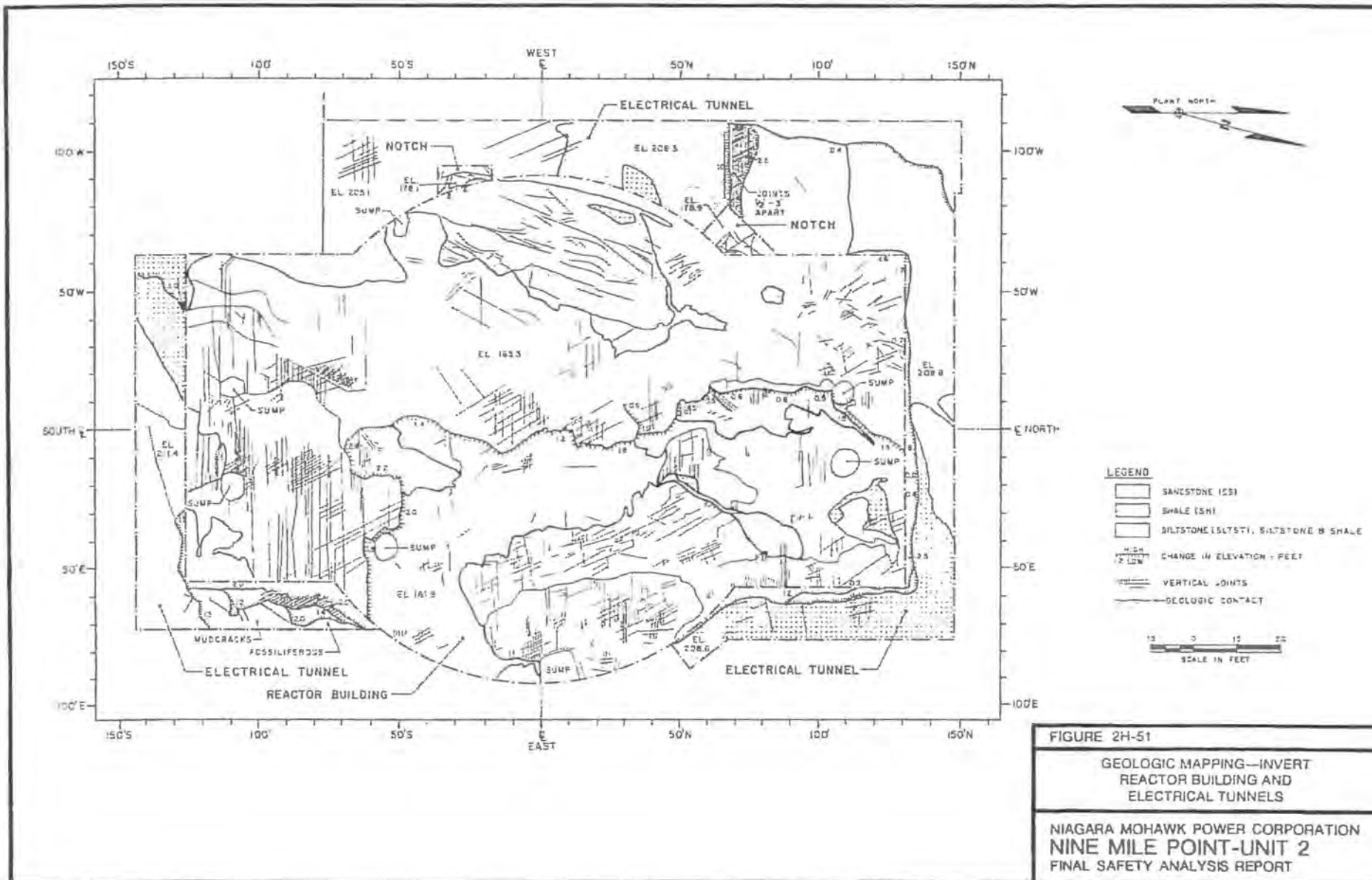
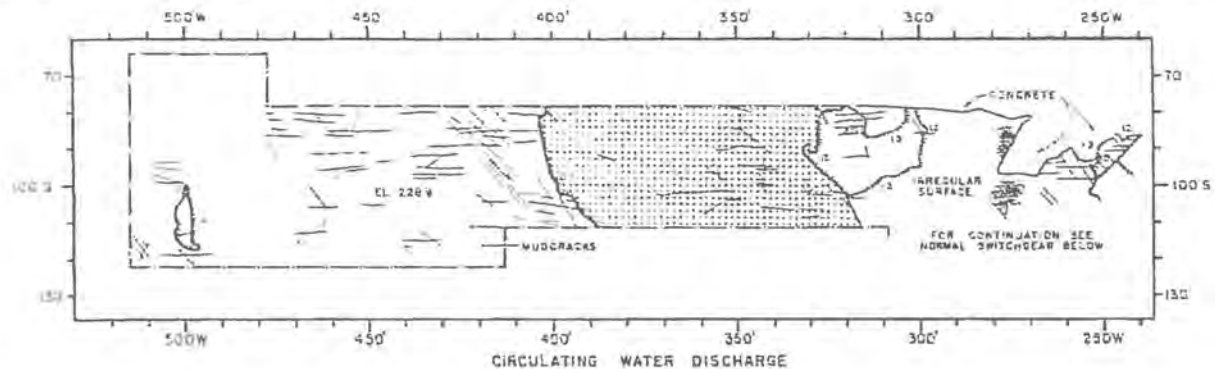


FIGURE 2H-51

GEOLOGIC MAPPING—INVERT  
REACTOR BUILDING AND  
ELECTRICAL TUNNELS

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



LEGEND

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

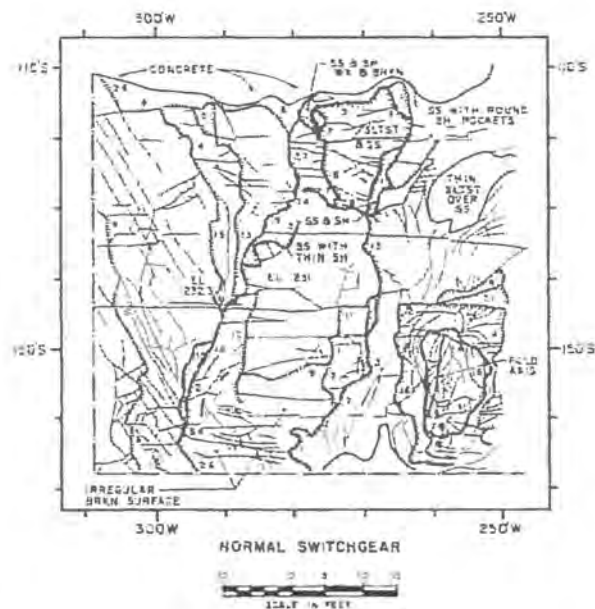
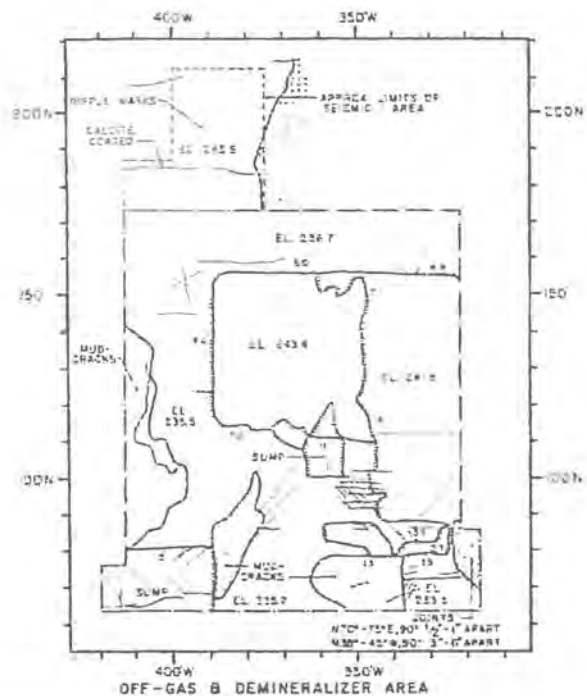
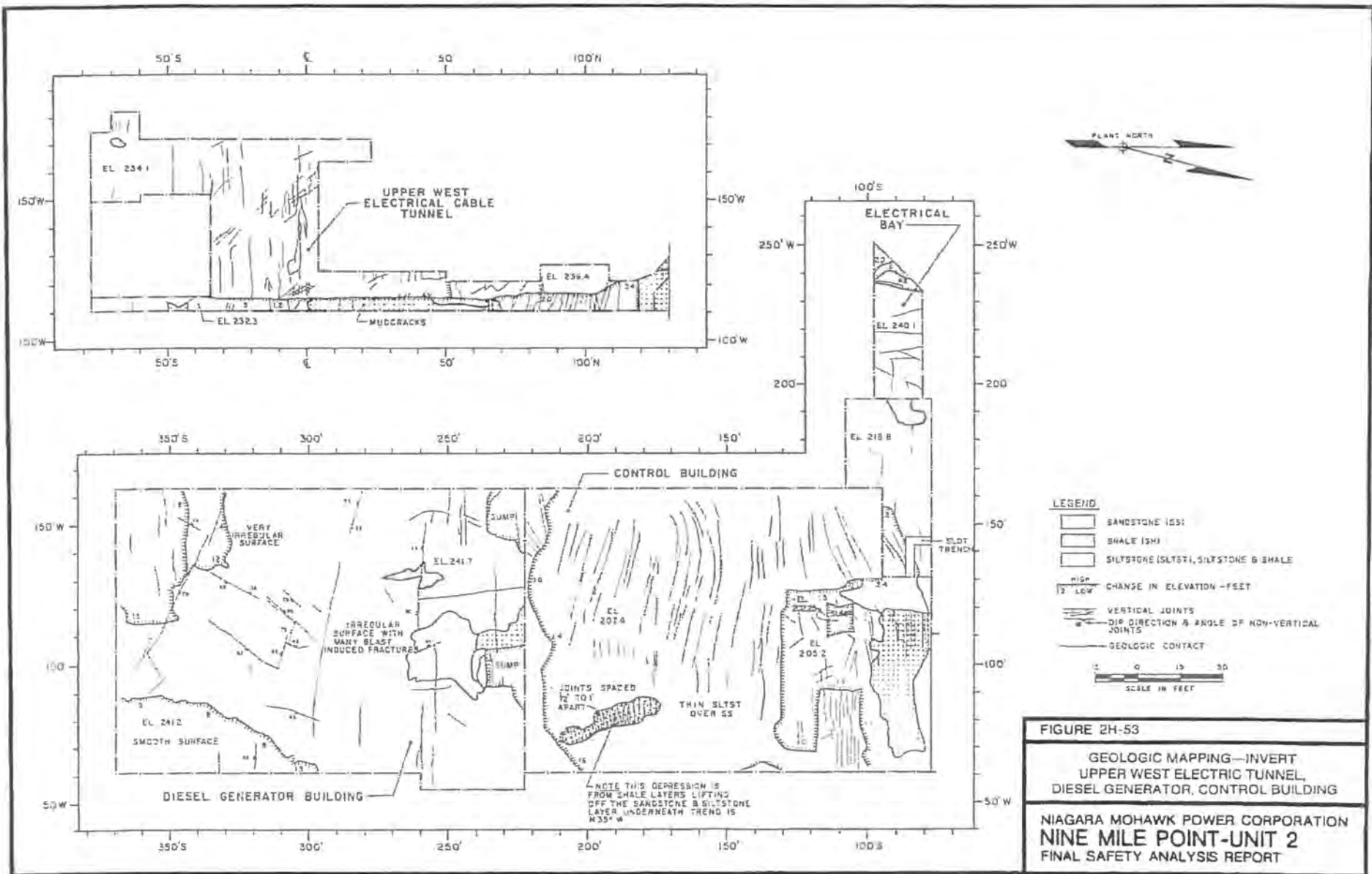


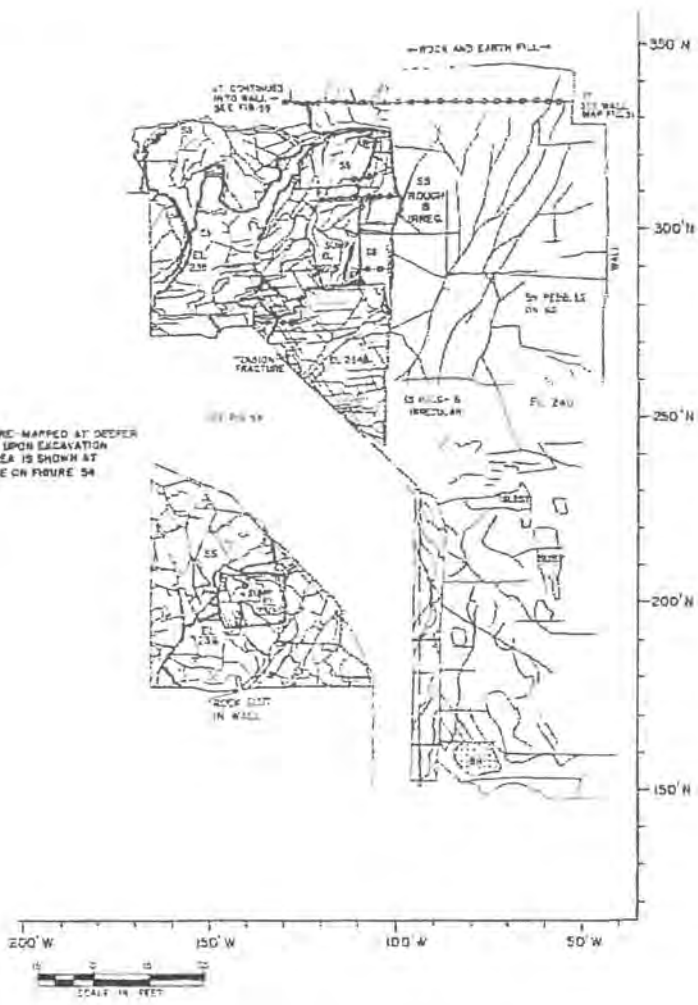
FIGURE 2H-52  
 GEOLOGIC MAPPING—INVERT CIRCULATING WATER DISCHARGE, OFF-GAS & DEMINERALIZER BUILDING, NORMAL SWITCHGEAR  
 NIAGARA MOHAWK POWER CORPORATION  
 NINE MILE POINT-UNIT 2  
 FINAL SAFETY ANALYSIS REPORT



**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**



NOTE  
 THIS AREA WAS RE-MAPPED AT DEEPER  
 NEW ELEVATION UPON EXCAVATION  
 IN 1991. THE AREA IS SHOWN AT  
 A HIGHER GRADE ON FIGURE 54

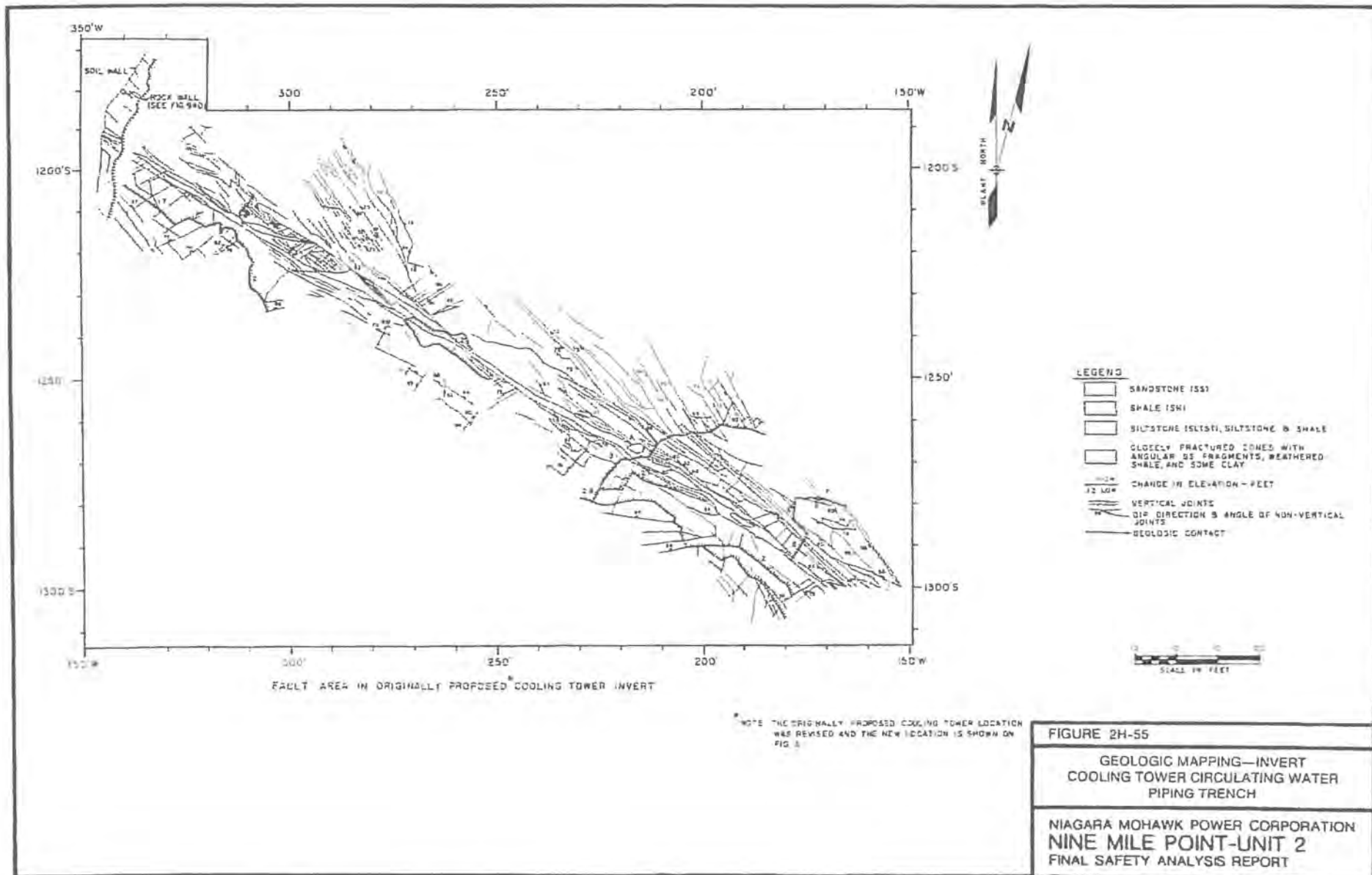


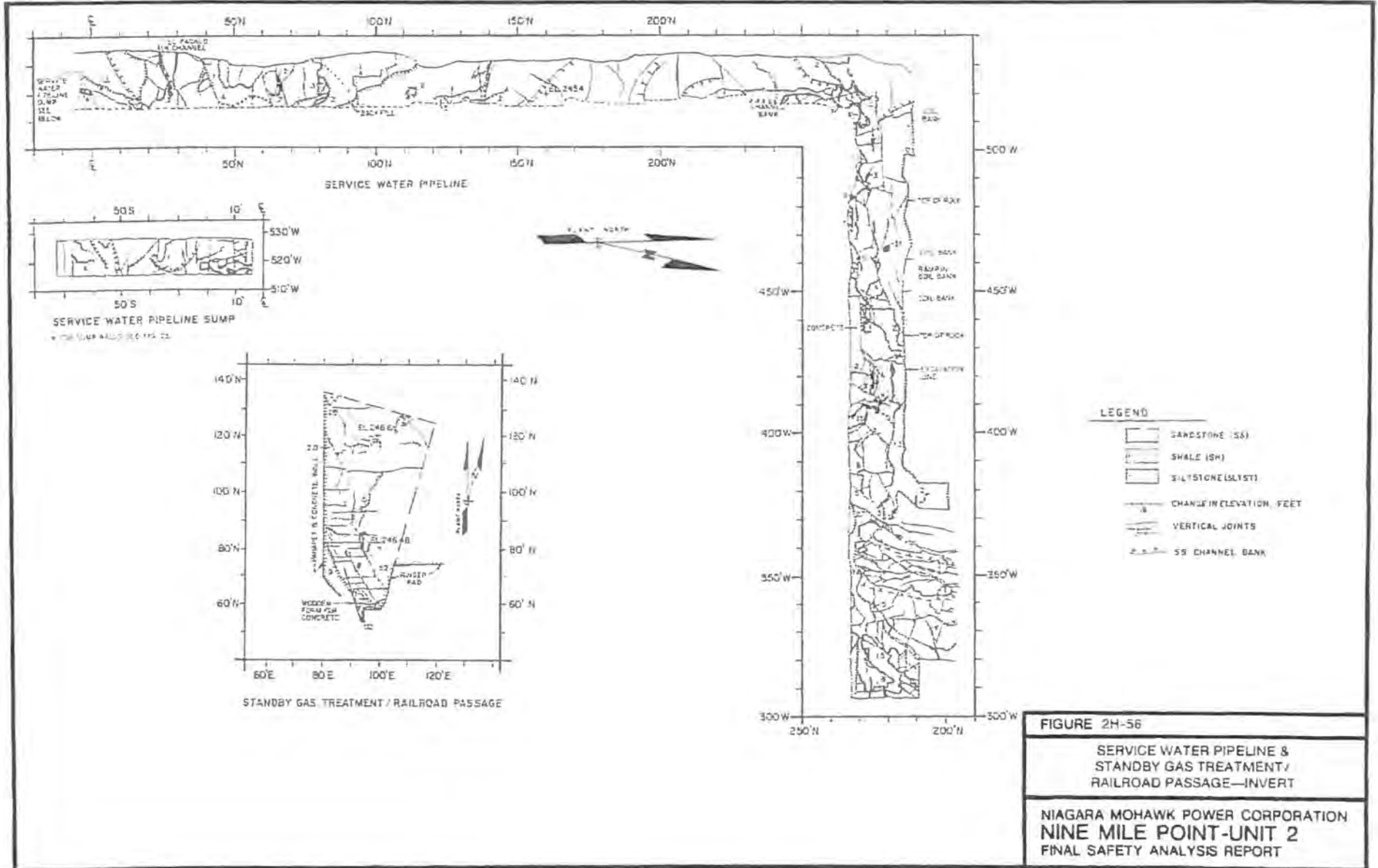
- LEGEND
- SANDSTONE (STN)
  - SHALE (SH)
  - SILTSTONE (SILTST), SILTSTONE & SHALE
  - CHANGE IN ELEVATION—FEET
  - CHANGE IN ELEVATION, CLAY WITH SS & SH FRAGMENTS AT BASE OF WALL OR IN WALL
  - BRECCIATED, CLAY FILLED ZONE
  - VERTICAL JOINTS INTERSECTING BRECCIATED, CLAY FILLED ZONE

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





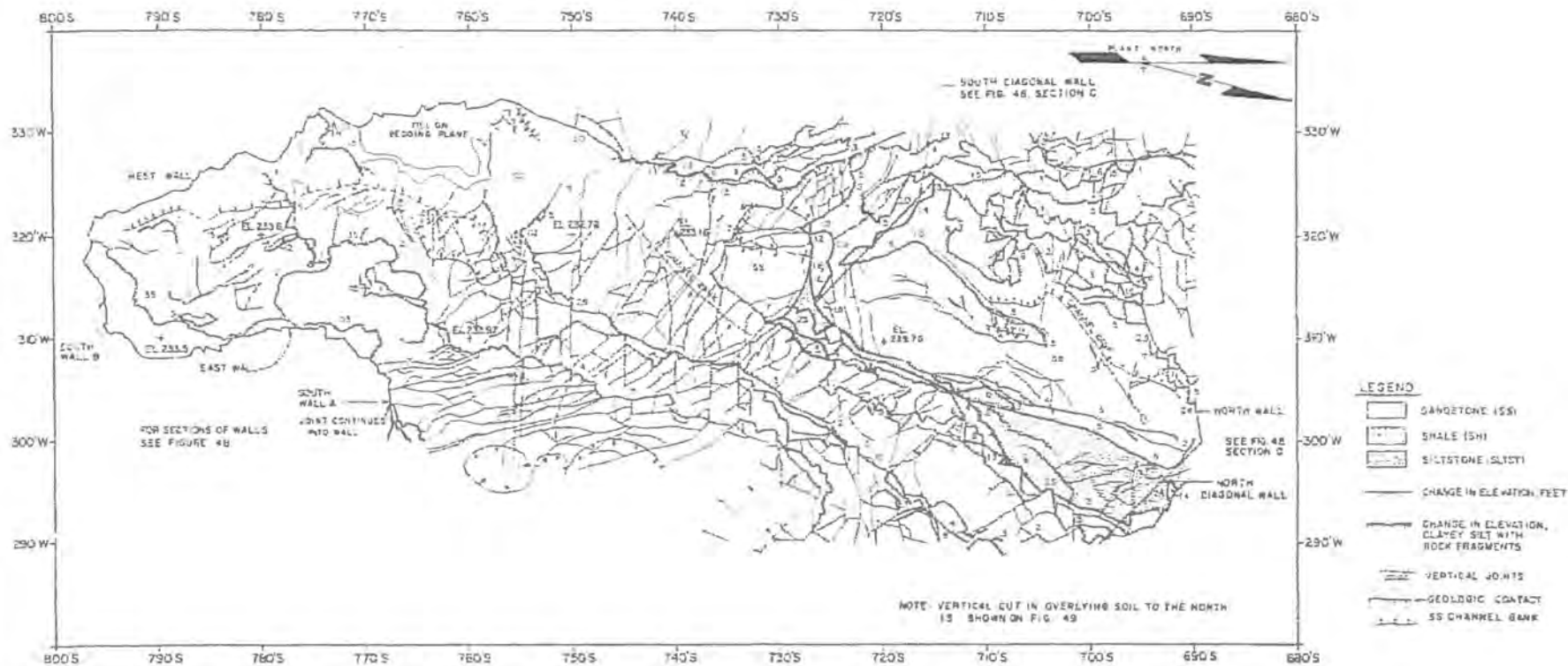
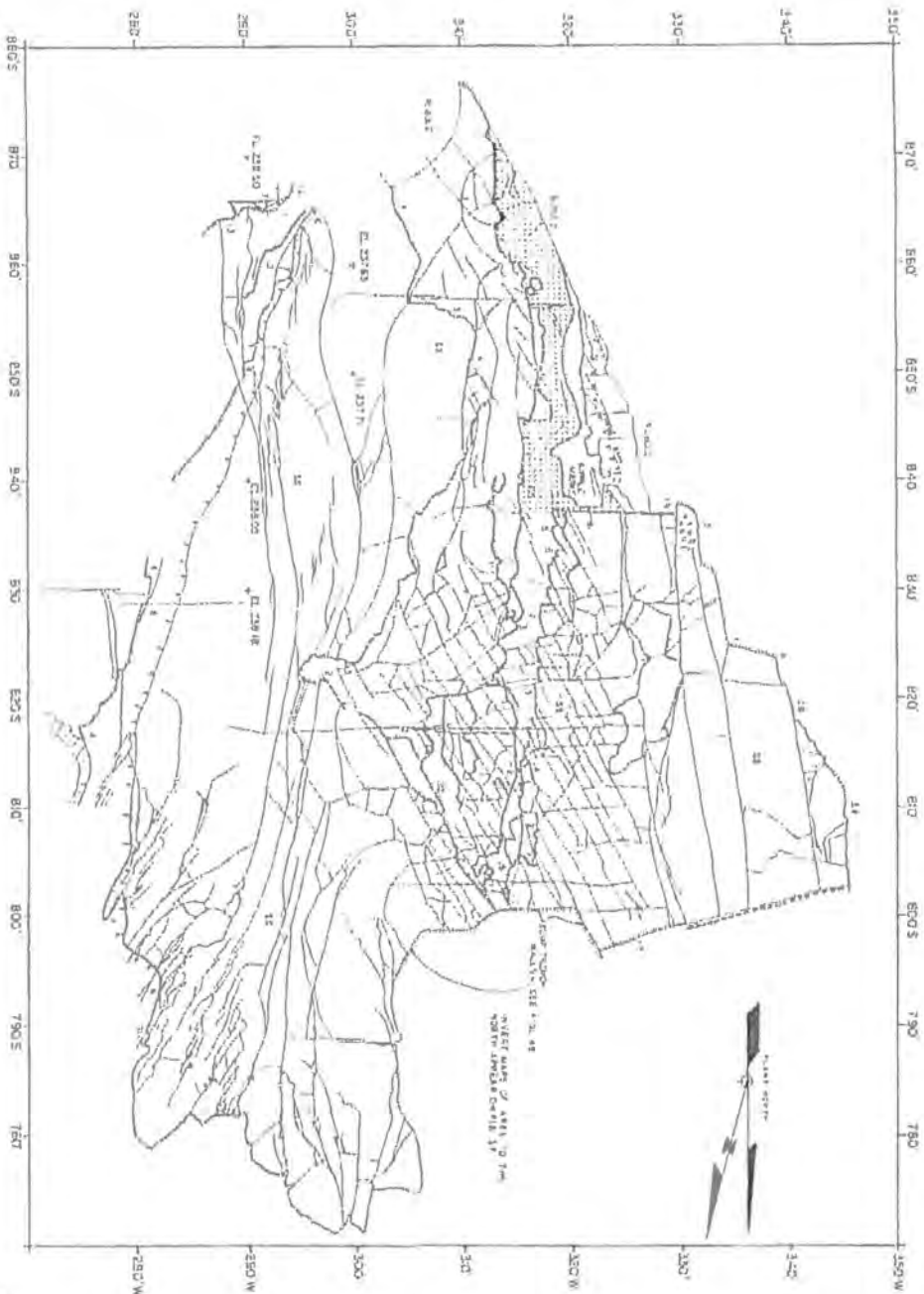


FIGURE 2H-57

GEOLOGIC MAPPING—INVERT  
CIRCULATING WATER PIPING TRENCHES

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

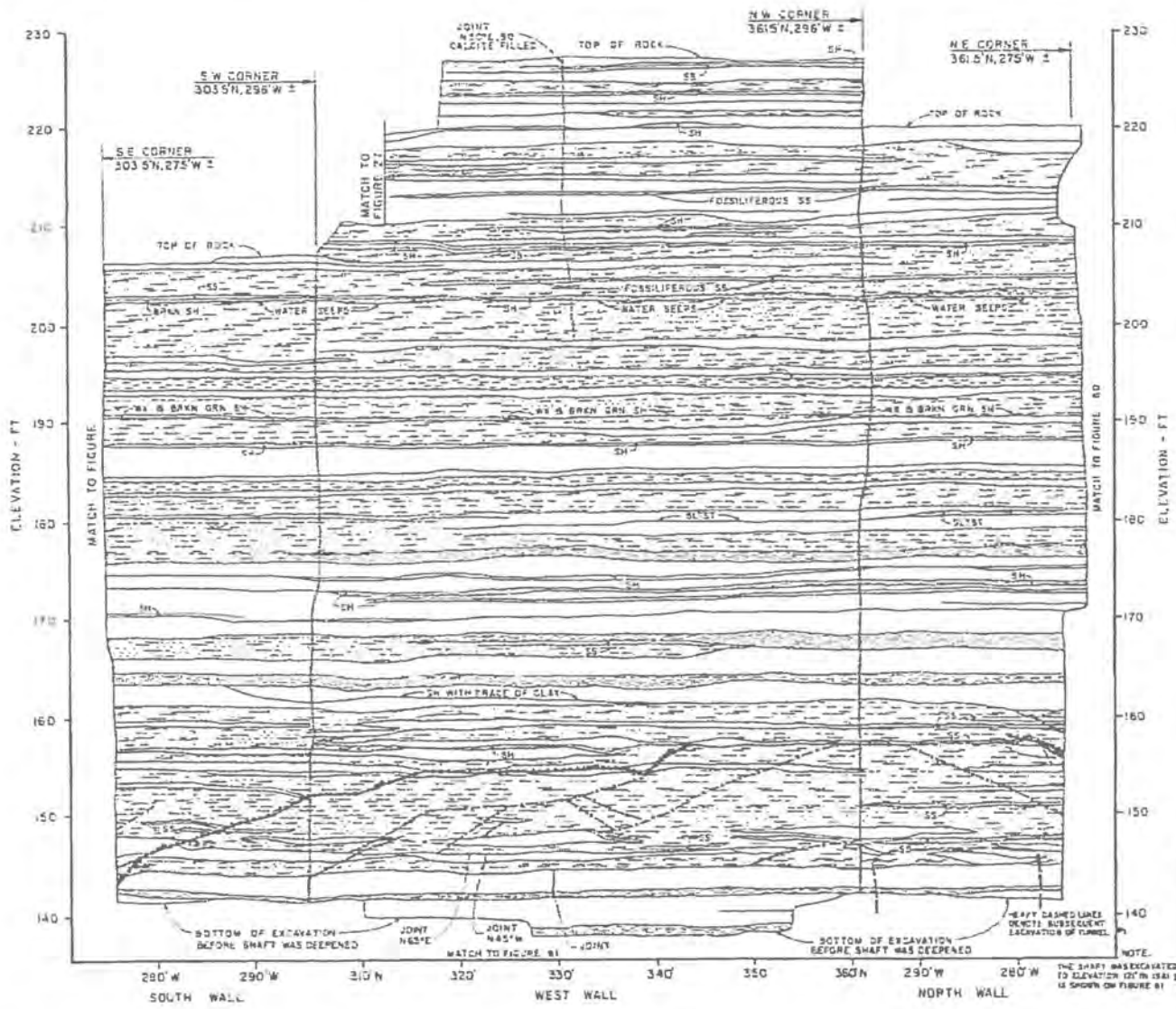




- LEGEND**
- [Symbol] SANDSTONE (SS)
  - [Symbol] SHALE (Sp)
  - [Symbol] SILTY SHALE (SLST)
  - [Symbol] CHANGE IN ELEVATION - FEET
  - [Symbol] VERTICAL JOINTS
  - [Symbol] GRAVEL CONTACT
  - [Symbol] 1:1.25 SS CHANNEL BANK

**FIGURE 2H-58**

**GEOLOGIC MAPPING—INVERT  
CIRCULATING WATER PIPING TRENCHES  
NINE MILE POINT—UNIT 2  
FINAL SAFETY ANALYSIS REPORT**



**LEGEND**

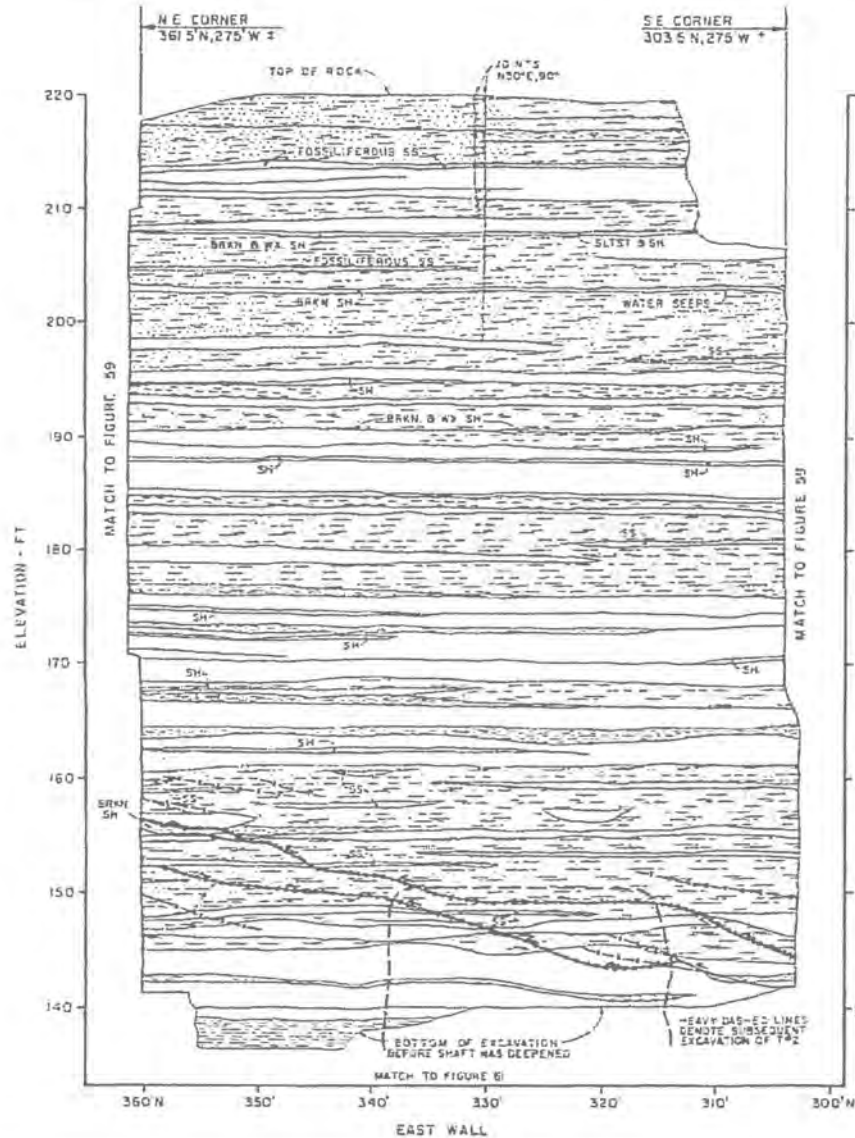
- SHALE (SH)
- SANDSTONE (SS)
- SILTSTONE (SLTST)
- SANDSTONE / SHALE / SILTSTONE
- THRUST
- SHEAR
- WL - WEATHERED GRN - GREEN
- BRKN - BROKEN



**FIGURE 2H-59**

**GEOLOGIC MAPPING—WALLS  
SCREENWELL SHAFT**

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



ELEVATION - FT

ELEVATION - FT

- LEGEND**
- SHALE (SH)
  - SANDSTONE (SS)
  - SILTSTONE (SST)
  - SANDSTONE + SHALE + SILTSTONE
  - SHEAR
  - THRUST
  - WX - WEATHERED BRKN - BROKEN

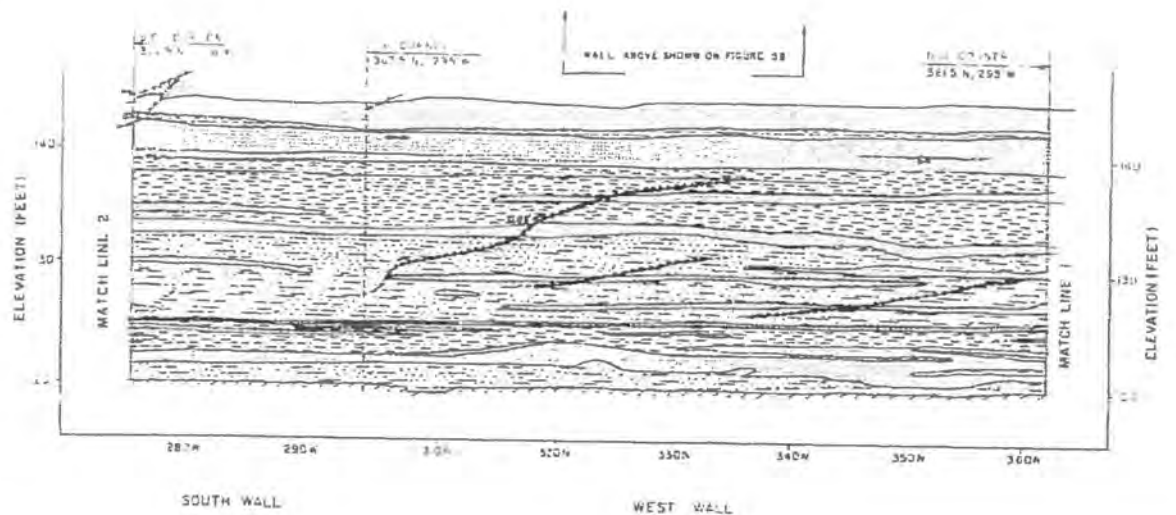
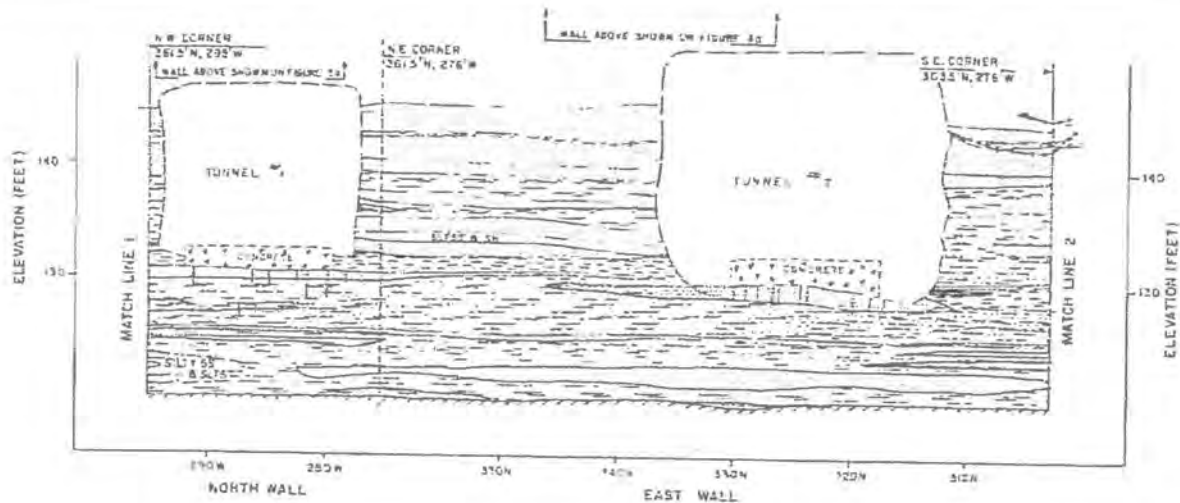


NOTE  
THE SHAFT WAS EXCAVATED TO ELEVATION 140 IN 1981  
AND IS SHOWN ON FIGURE 61

**FIGURE 2H-60**

**GEOLOGIC MAPPING—WALLS  
SCREENWELL SHAFT**

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



**LEGEND**

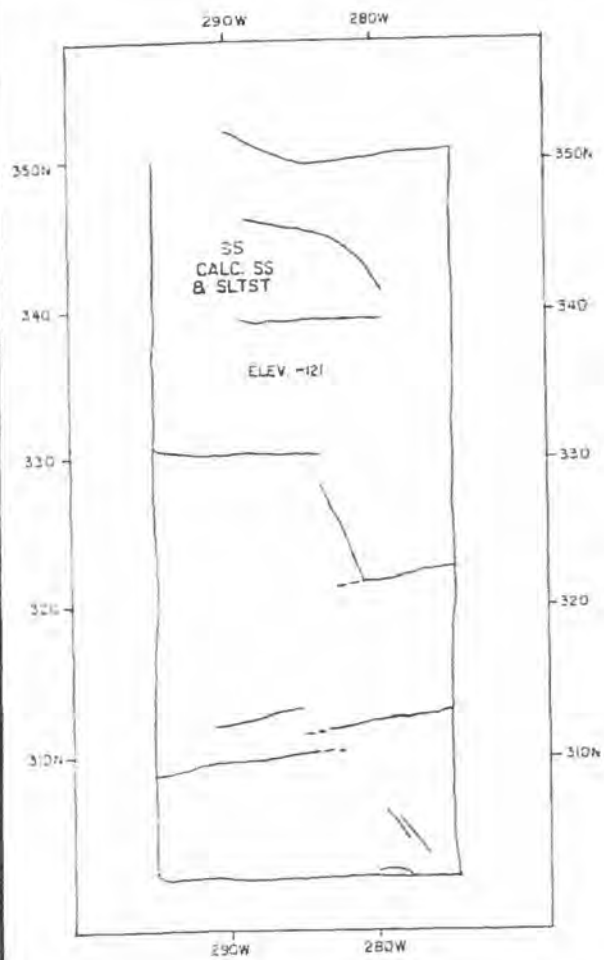
- SHALE (SH)
- SANDSTONE (SS)
- SILTSTONE (SLYST)
- SANDSTONE / SHALE / SILTSTONE
- SHAFT
- INVERT

NOTE: THE SHAFT WAS FURTHER EXCAVATED IN 1981 AND IS SHOWN ON THIS FIGURE. THE UPPER WALLS ARE SHOWN ON FIGURES 53 AND 54. THE INVERT AT ELEVATION 140 IS SHOWN ON FIGURE 54. THE INVERT AT ELEVATION 121 IS SHOWN ON FIGURE 52.



**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 1951. A PREVIOUS MAP AT ELEV. -140 IS SHOWN ON FIGURE 54.

FIGURE 2H-62

GEOLOGIC MAPPING—INVERT  
SCREENWELL SHAFT

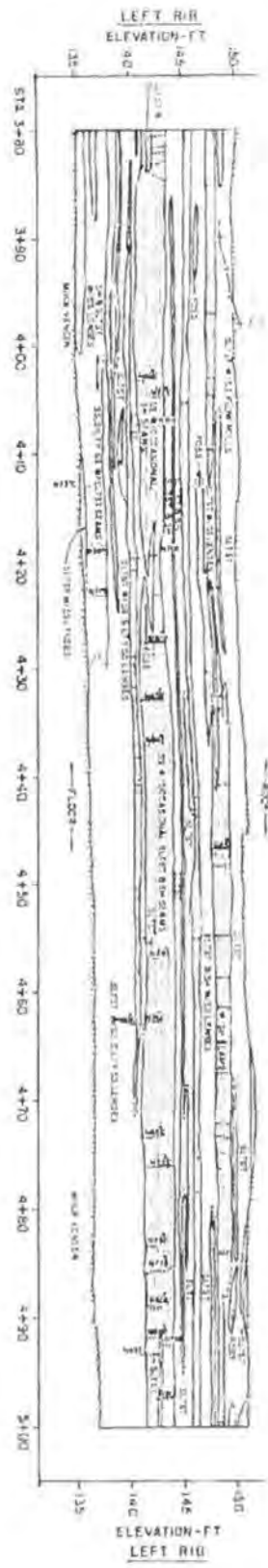
NIAGARA MOHAWK POWER CORPORATION  
NINE MILE POINT-UNIT 2  
FINAL SAFETY ANALYSIS REPORT





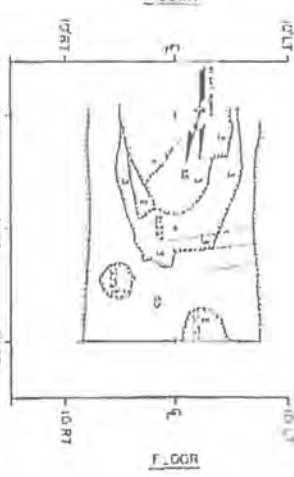






NOTE (LEFT RIB)  
SHEAR ZONES RISE AND MERGE INTO  
SHEAR MASS ON RIGHT RIB

NOTES  
1. SECTION SHOWN IS A REPRESENTATIVE  
SECTION OF THE RIB. THE RIB IS  
NOT A SINGLE MASSIVE BLOCK BUT IS  
COMPOSED OF SEVERAL SUB-UNITS  
SEPARATED BY SHEAR ZONES.  
2. THE RIB IS A MASSIVE BLOCK  
COMPOSED OF SEVERAL SUB-UNITS  
SEPARATED BY SHEAR ZONES.  
3. THE RIB IS A MASSIVE BLOCK  
COMPOSED OF SEVERAL SUB-UNITS  
SEPARATED BY SHEAR ZONES.



\* DISPLACEMENTS MEASURED IN FEET

- NOTES (RIGHT RIB)
1. GRAVITY MEASUREMENTS
  2. GRAVITY OFFSET: 0.03 VERTICAL
  3. GRAVITY OFFSET: 0.03 HORIZONTAL
  4. GRAVITY OFFSET: 0.03 VERTICAL
  5. GRAVITY OFFSET: 0.03 HORIZONTAL
  6. GRAVITY OFFSET: 0.03 VERTICAL
  7. GRAVITY OFFSET: 0.03 HORIZONTAL
  8. GRAVITY OFFSET: 0.03 VERTICAL
  9. GRAVITY OFFSET: 0.03 HORIZONTAL
  10. GRAVITY OFFSET: 0.03 VERTICAL
  11. GRAVITY OFFSET: 0.03 HORIZONTAL

- LEGEND
- SANDSTONE
  - SILTSTONE
  - SHALE
  - TRANSITIONAL LITHOLOGIC BOUNDARY
  - FAULT
  - FAULT WITH DIRECTION OF DIP AND STRIKE ORIENTATION
  - ADJUT WITH DIRECTION OF STRIKE
  - OTHER RIBS NOTED
  - CLC. CALCAREOUS
  - FESS. FERRUGINOUS
  - SH. SHALE

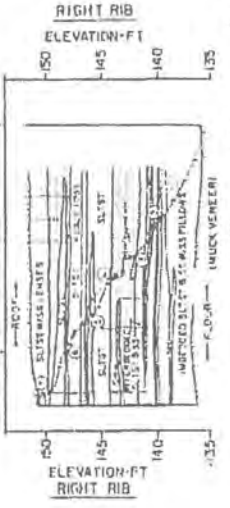
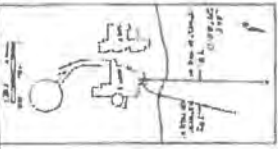
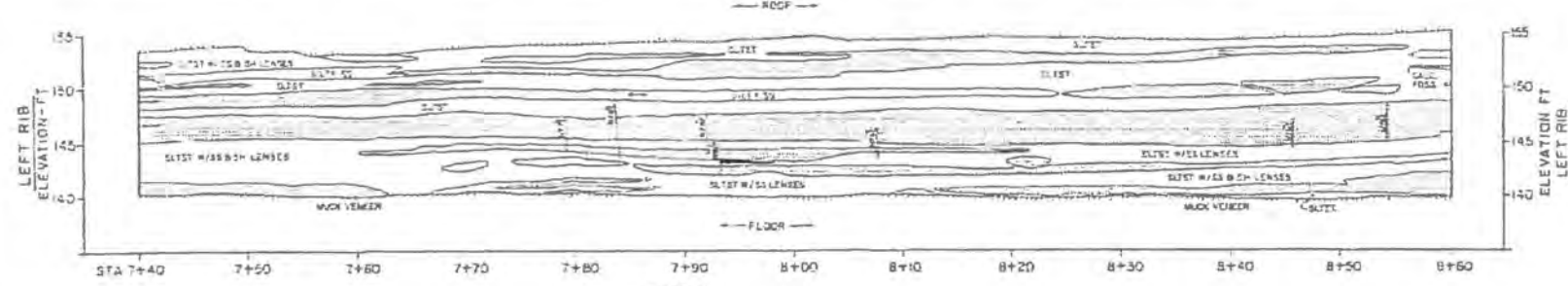
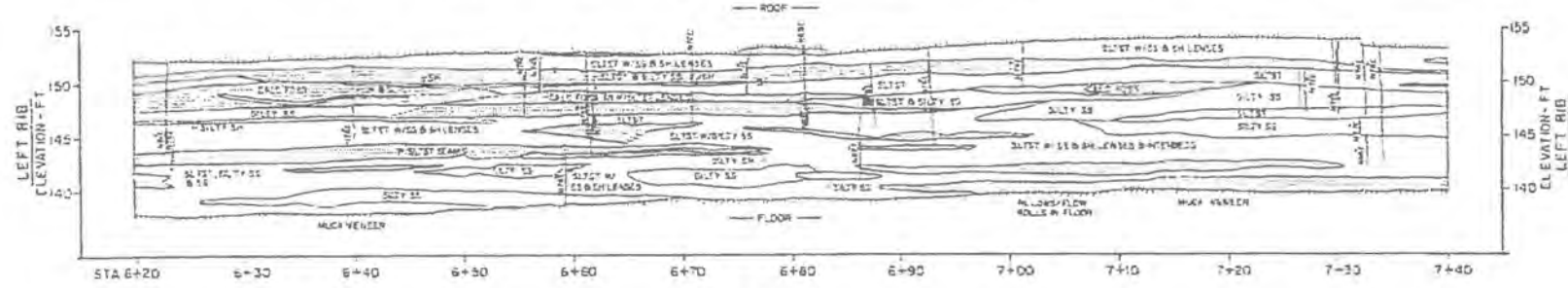
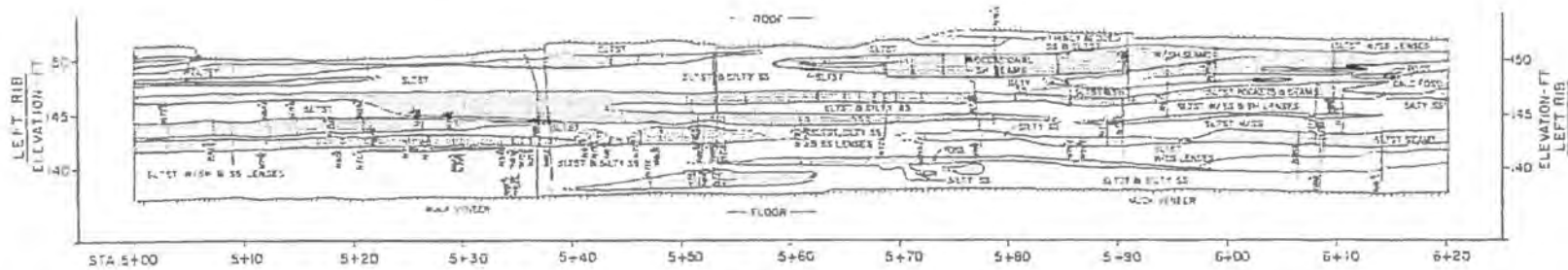
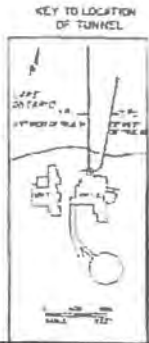


FIGURE 2H-66  
GEOLOGIC MAPPING—LEFT RIB, FLOOR &  
RIGHT RIB OF LAKE WATER TUNNEL NO. 1.  
NIAGARA MOHAWK POWER CORPORATION  
NINE MILE POINT-UNIT 2  
FINAL SAFETY ANALYSIS REPORT



- LEGEND**
- SANDSTONE
  - VERTICAL JOINT WITH STRIKE ORIENTATION, UNLESS OTHERWISE NOTED
  - JOINT WITH DIRECTION & ANGLE OF DIP AND STRIKE ORIENTATION
  - SS SANDSTONE CALC. CALCAREOUS
  - SILT SILTSTONE FOSSE FOSSEIFEROUS
  - SH SHALE
  - TRANSITIONAL LITHOLOGIC BOUNDARY



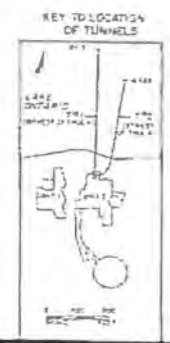
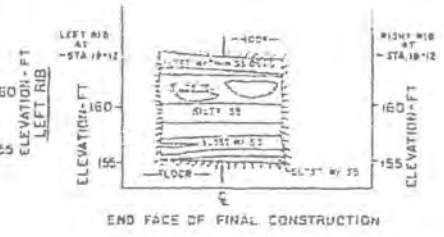
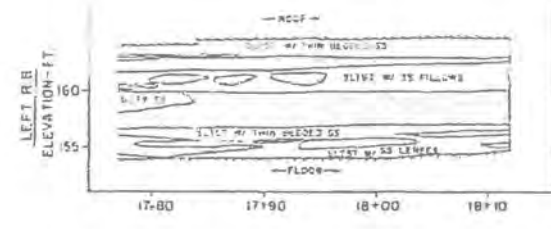
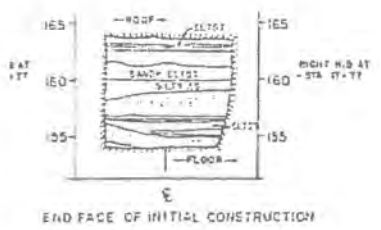
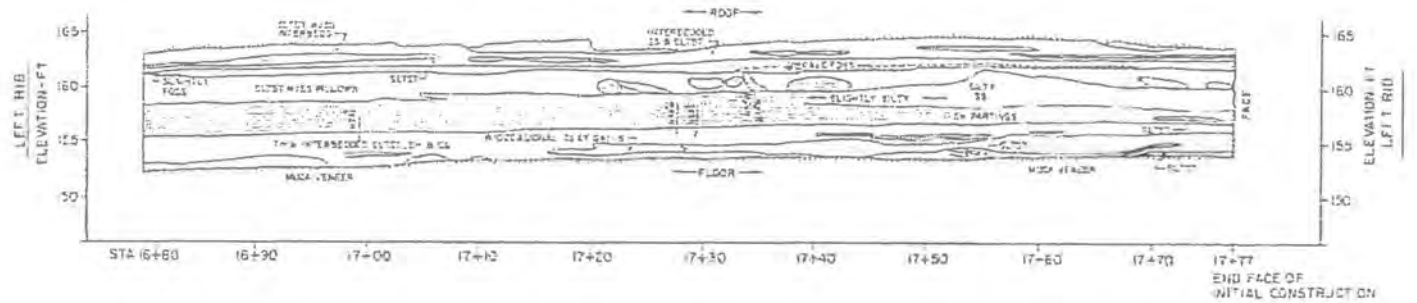
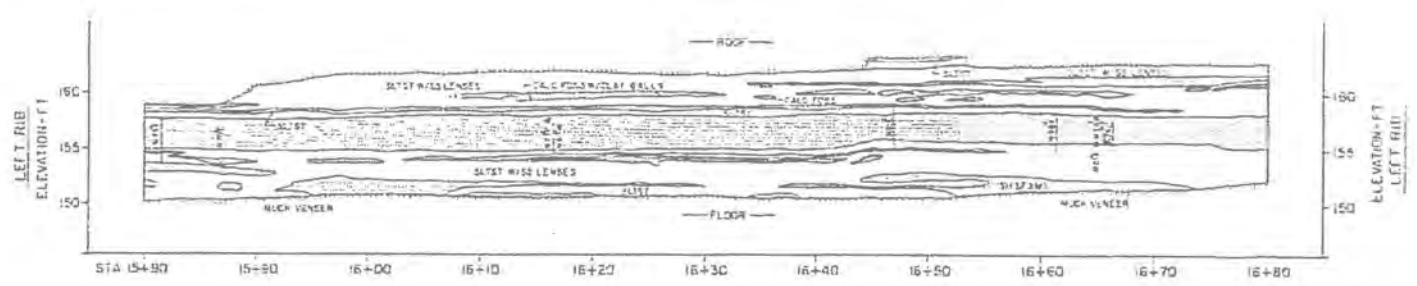
**FIGURE 2H-67**

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

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







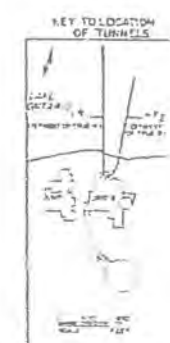
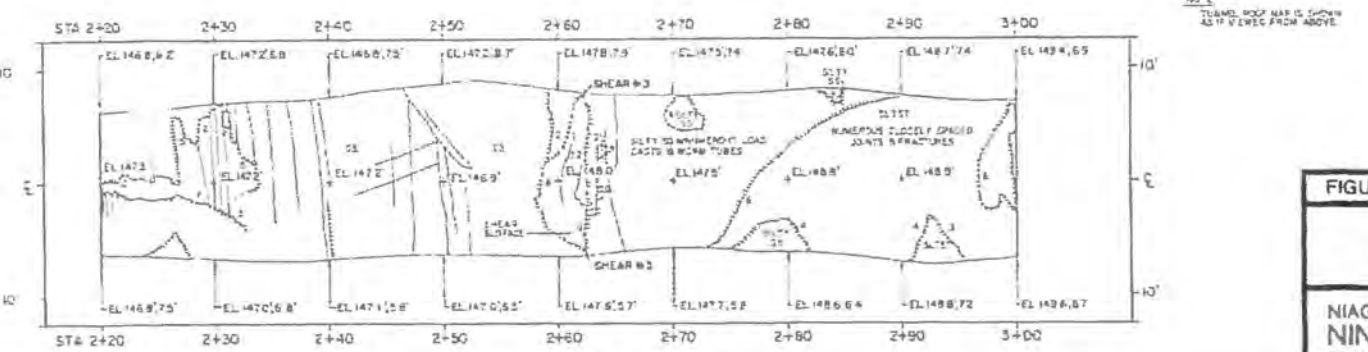
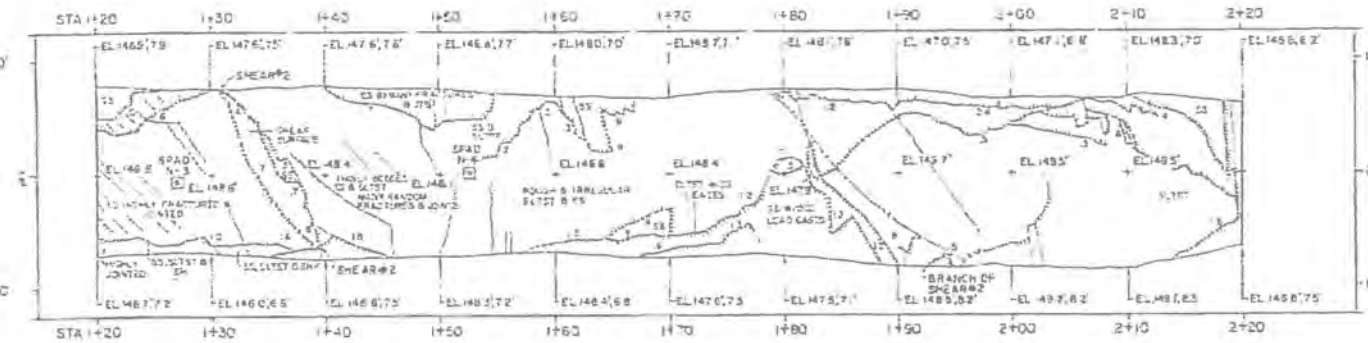
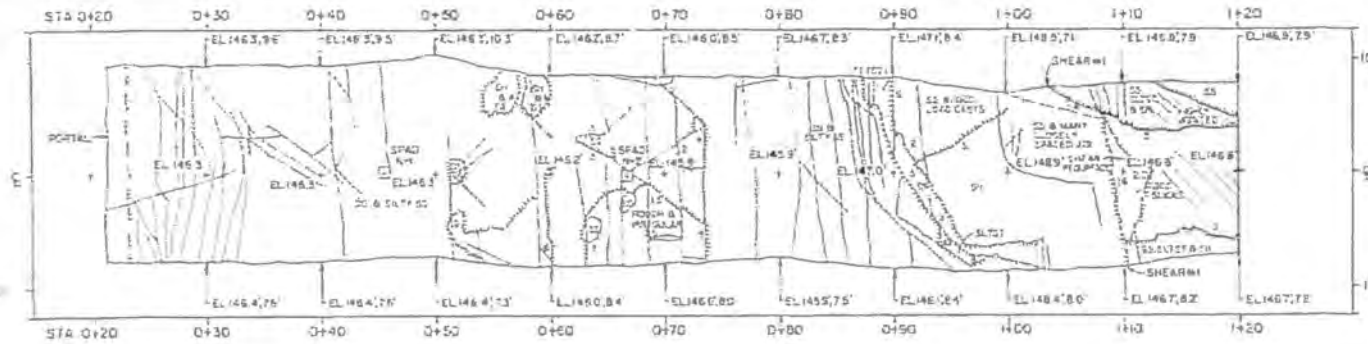
- LEGEND**
- SANDSTONE
  - VERTICAL JOINT WITH STRIKE ORIENTATION, UNLESS OTHERWISE NOTED
  - JOINT WITH DIRECTION & ANGLE OF DIP, AND STRIKE ORIENTATION
  - SS SANDSTONE
  - CALC. CALCAREOUS
  - SILTST SILTSTONE
  - FOS. FOSILIFEROUS
  - SH SHALE
  - TRANSITIONAL LITHOLOGIC BOUNDARY



**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**



- LEGEND**
- SHEAR
  - CHANGE IN ELEVATION (FT) (MATCHLINES TOWARD LOWER ELEV.)
  - VERTICAL JOINTS
  - SS SANDSTONE
  - SH SHALE
  - DCC OCCASIONAL
  - SILT ST SILTSTONE
  - JT JOINT

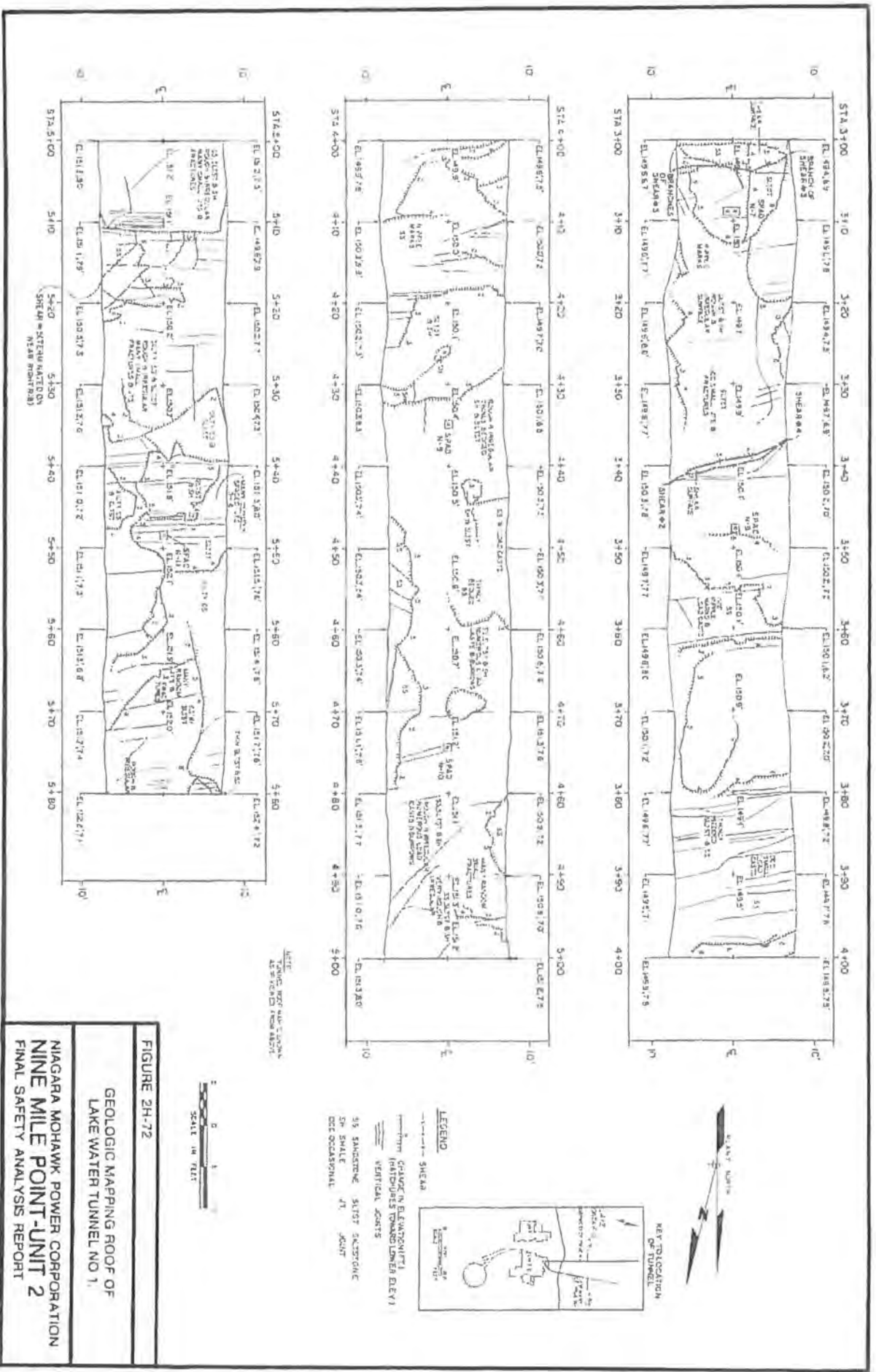
NOTE  
TUNNEL ROOF MAP IS SHOWN  
AS IT WOULD BE FROM ABOVE

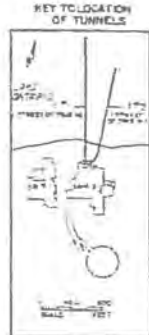
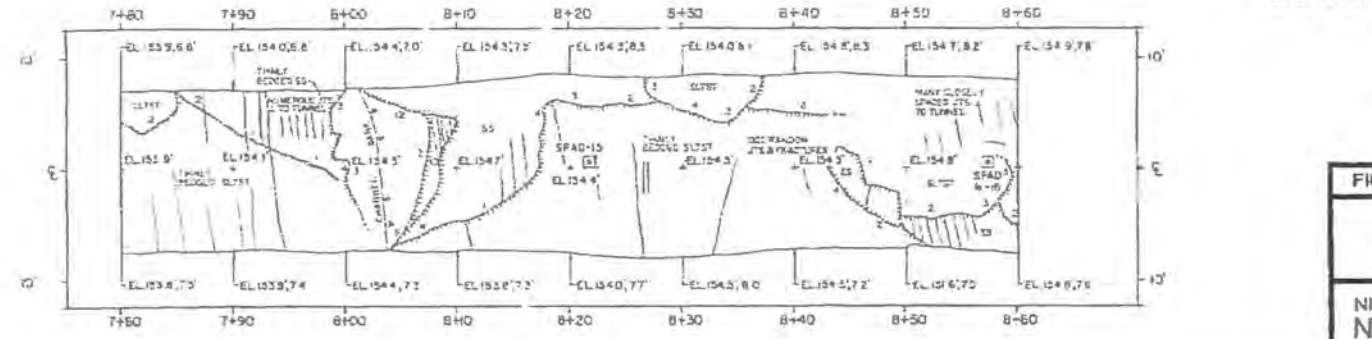
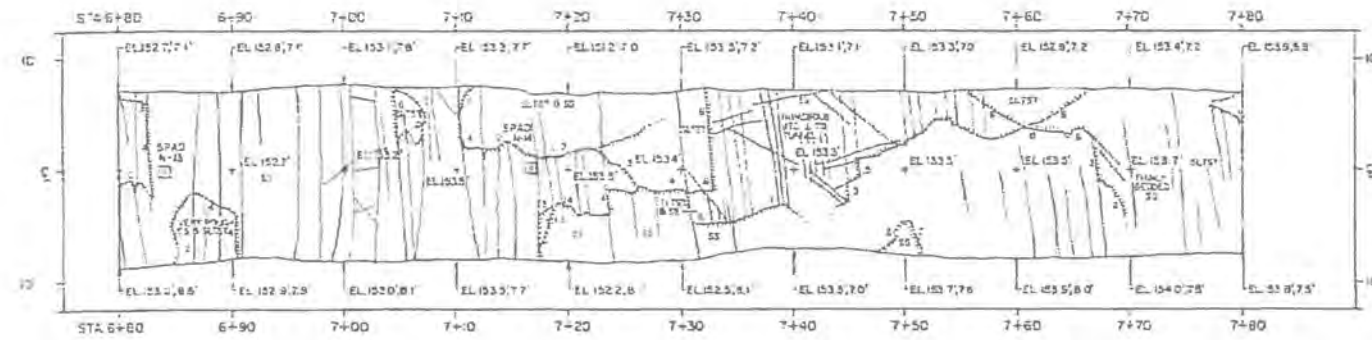
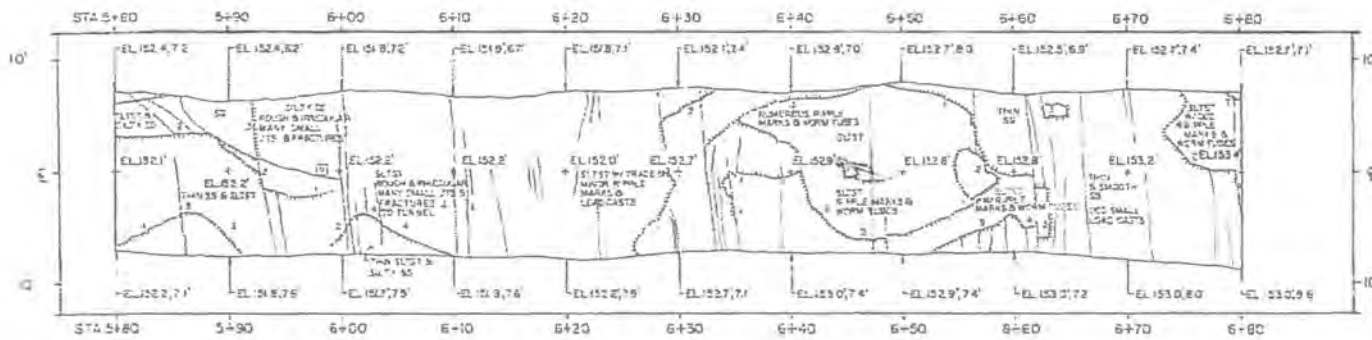


**FIGURE 2H-71**

**GEOLOGIC MAPPING ROOF OF LAKE WATER TUNNEL NO. 1.**

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





**LEGEND**

--- CHANGE IN ELEVATION (FT)  
(MATCHES TOWARD LOWER ELEV)

||| VERTICAL JOINTS

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

NOTE  
TUNNEL ROOF HAS IS SHOWN  
AS IF VIEWED FROM ABOVE



**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**



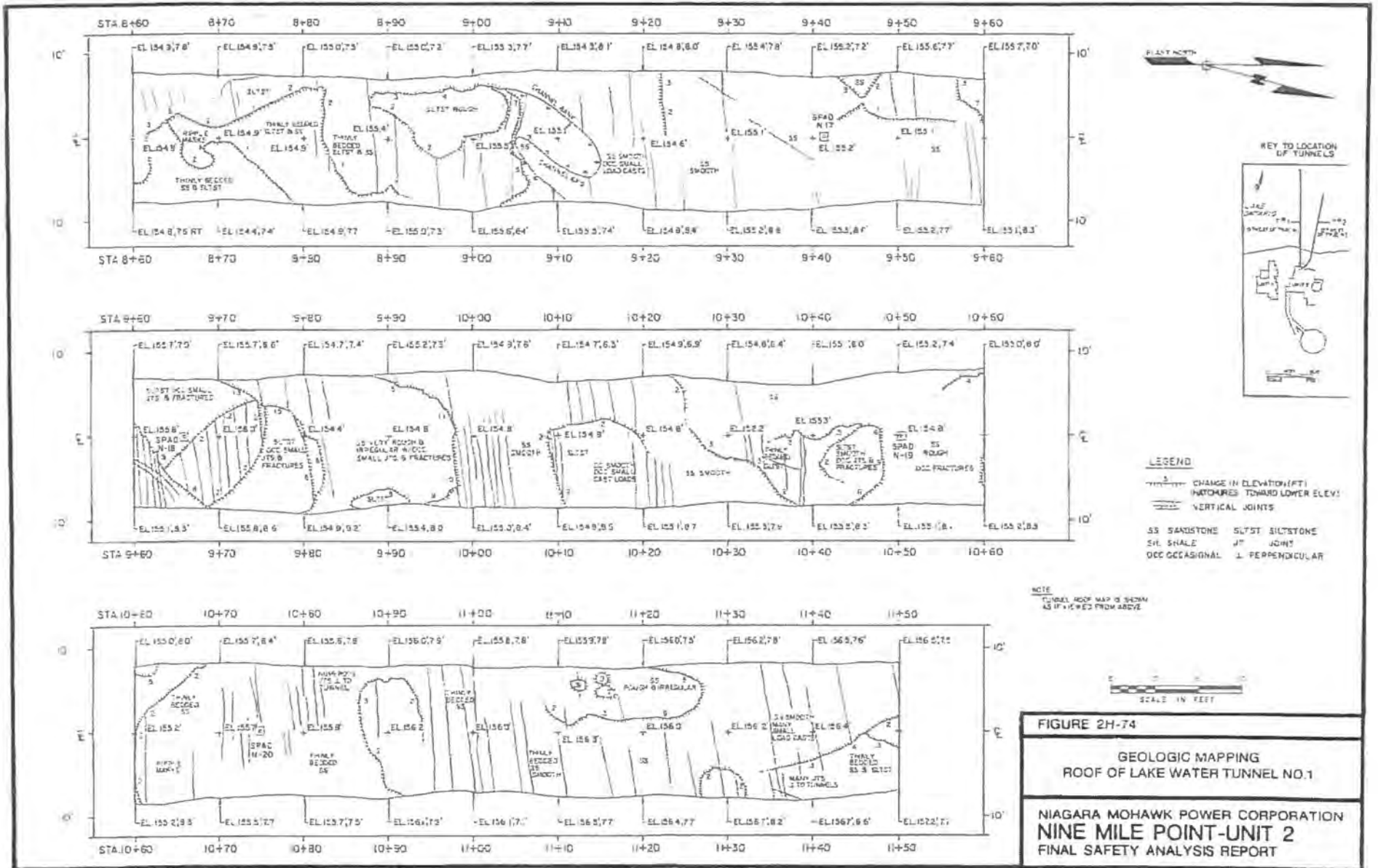
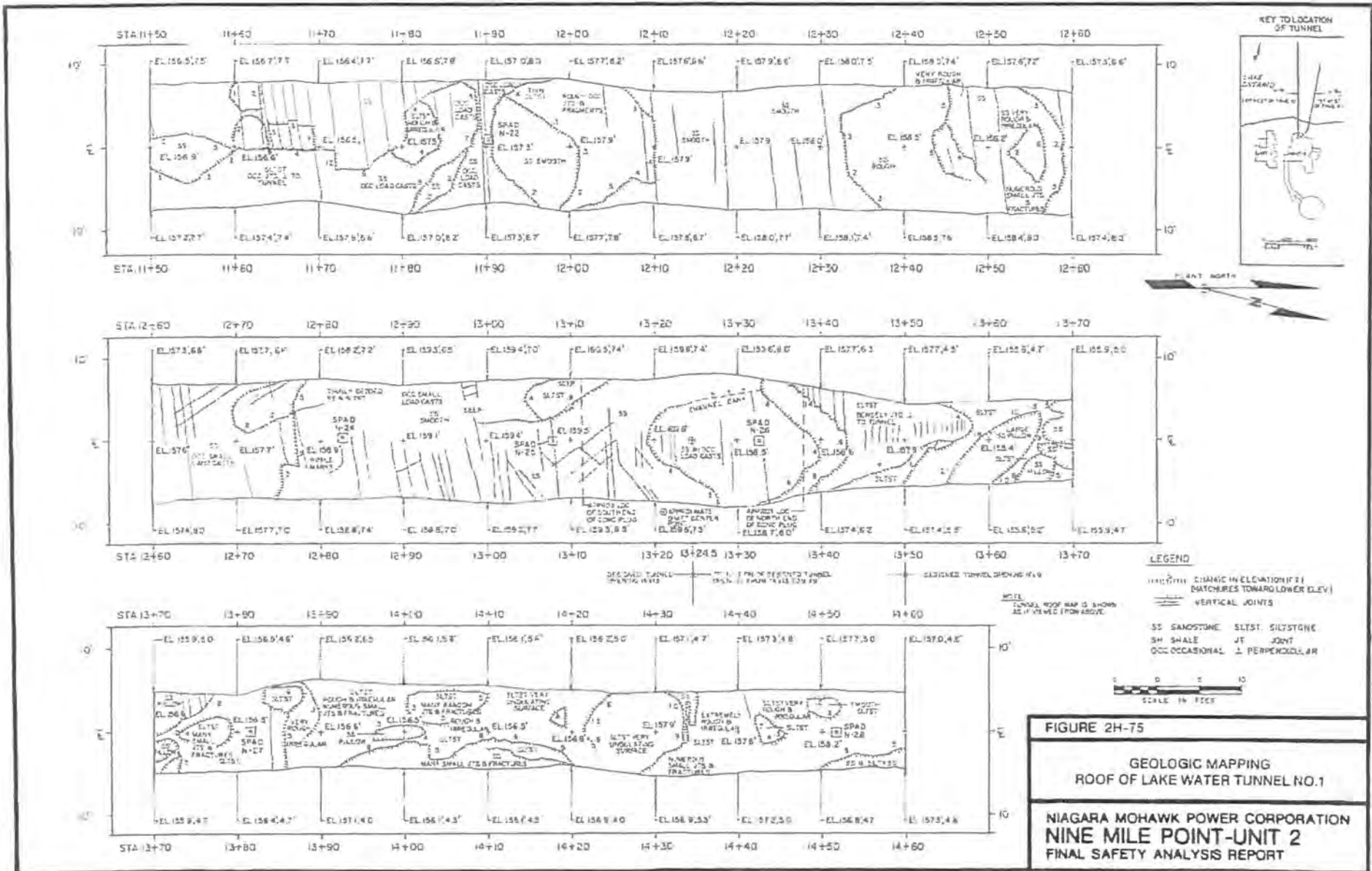
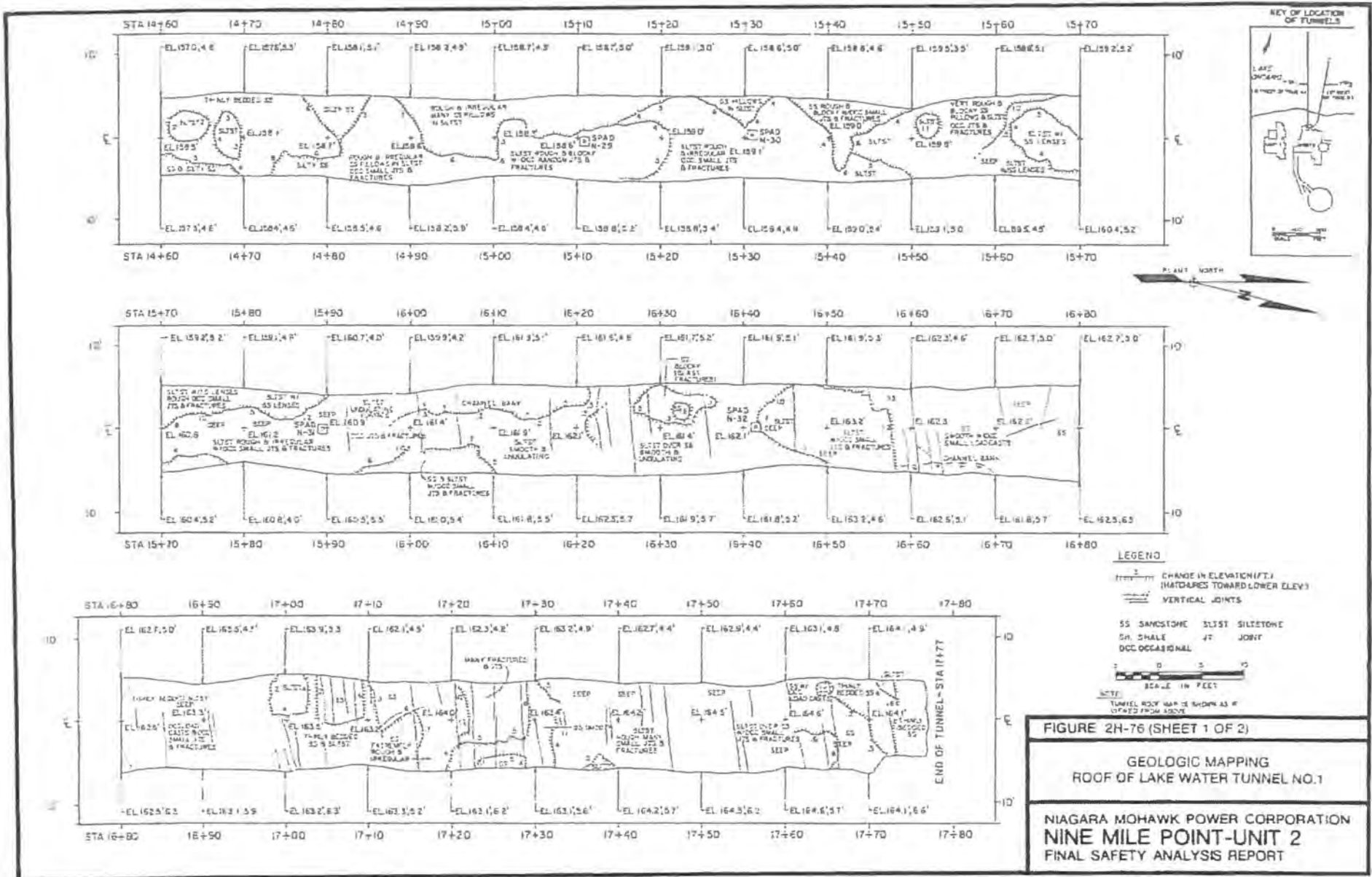


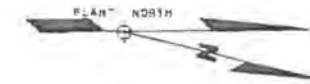
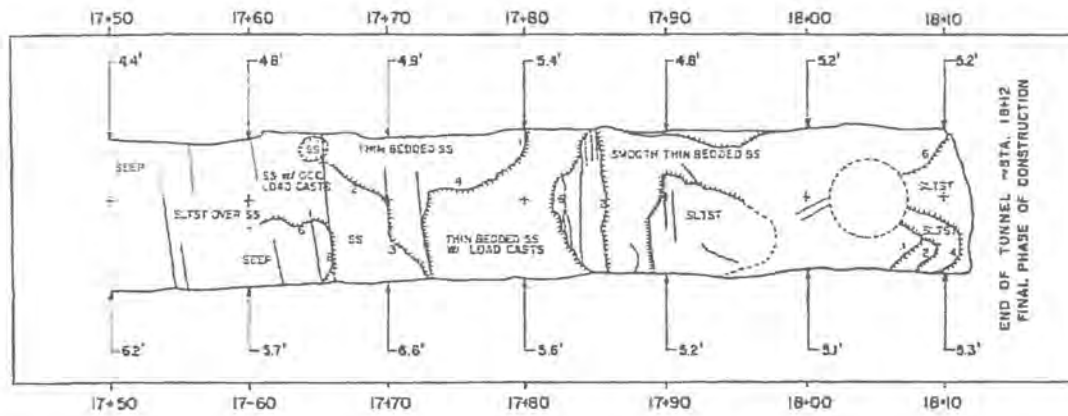
FIGURE 2H-74

**GEOLOGIC MAPPING  
ROOF OF LAKE WATER TUNNEL NO. 1**

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







**LEGEND**

CHANGE IN ELEVATION (FT.)  
(MATCHURES TOWARD LOWER ELEV.)

VERTICAL JOINTS

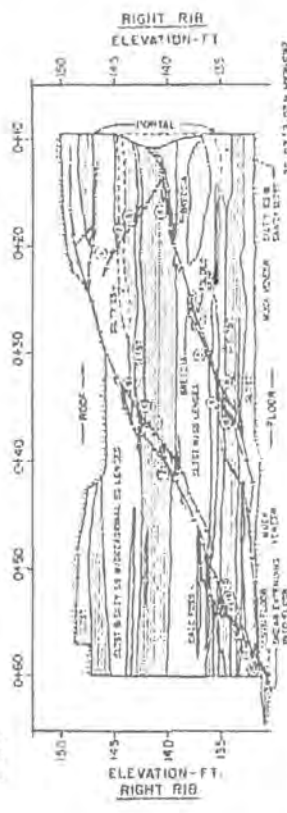
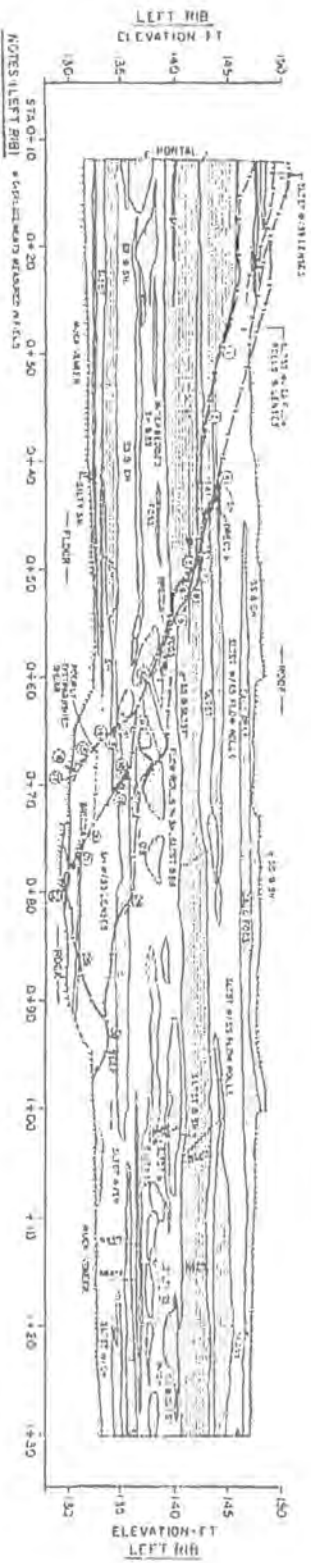
SS SANDSTONE    SLTST. SILTSTONE  
SH SHALE        JT. JOINT  
OCC OCCASIONAL



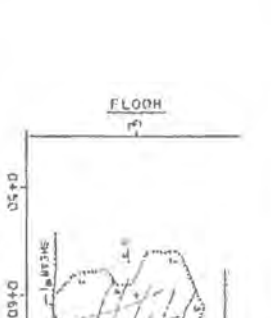
FIGURE 2H-76 (SHEET 2 OF 2)

GEOLOGIC MAPPING  
ROOF OF LAKE WATER TUNNEL NO.1

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

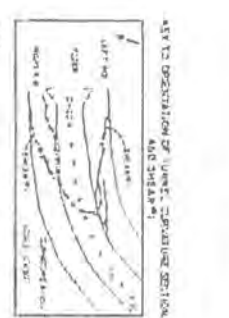


- NOTES (LEFT RIB) \* SHEAR ZONE DEVELOPED IN FLOOR
1. STRATA IN FLOOR ARE
  2. SANDSTONE
  3. SANDSTONE
  4. SANDSTONE
  5. SANDSTONE
  6. SANDSTONE
  7. SANDSTONE
  8. SANDSTONE
  9. SANDSTONE
  10. SANDSTONE
  11. SANDSTONE
  12. SANDSTONE
  13. SANDSTONE
  14. SANDSTONE
  15. SANDSTONE
  16. SANDSTONE
  17. SANDSTONE
  18. SANDSTONE
  19. SANDSTONE
  20. SANDSTONE



- NOTES (RIGHT RIB) \* SHEAR ZONE DEVELOPED IN FLOOR
1. STRATA IN FLOOR ARE
  2. SANDSTONE
  3. SANDSTONE
  4. SANDSTONE
  5. SANDSTONE
  6. SANDSTONE
  7. SANDSTONE
  8. SANDSTONE
  9. SANDSTONE
  10. SANDSTONE
  11. SANDSTONE
  12. SANDSTONE
  13. SANDSTONE
  14. SANDSTONE
  15. SANDSTONE
  16. SANDSTONE
  17. SANDSTONE
  18. SANDSTONE
  19. SANDSTONE
  20. SANDSTONE

- LEGEND
- SANDSTONE
  - SHALE
  - SHALE
  - SHALE
  - SHALE
  - SHALE
  - SHALE
  - SHALE
  - SHALE
  - SHALE
  - SHALE
  - SHALE
  - SHALE
  - SHALE
  - SHALE
  - SHALE
  - SHALE
  - SHALE
  - SHALE
  - SHALE



- NOTE: \* SHEAR ZONE DEVELOPED IN FLOOR
1. STRATA IN FLOOR ARE
  2. SANDSTONE
  3. SANDSTONE
  4. SANDSTONE
  5. SANDSTONE
  6. SANDSTONE
  7. SANDSTONE
  8. SANDSTONE
  9. SANDSTONE
  10. SANDSTONE
  11. SANDSTONE
  12. SANDSTONE
  13. SANDSTONE
  14. SANDSTONE
  15. SANDSTONE
  16. SANDSTONE
  17. SANDSTONE
  18. SANDSTONE
  19. SANDSTONE
  20. SANDSTONE

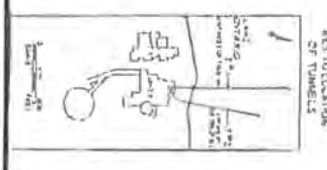
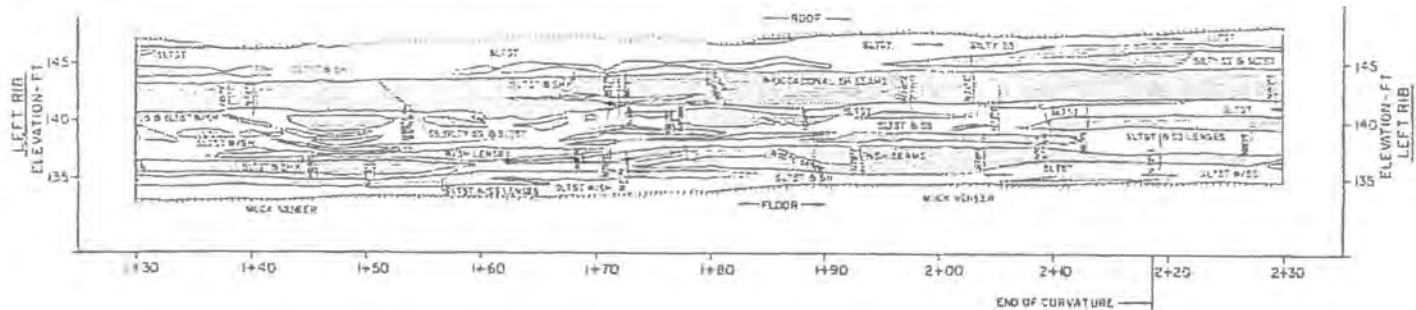
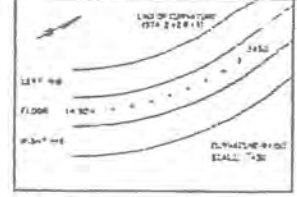


FIGURE 2H-77  
 GEOLOGIC MAPPING—LEFT RIB, FLOOR &  
 RIGHT RIB OF LAKE WATER TUNNEL NO.2  
 NIAGARA MOHAWK POWER CORPORATION  
 NINE MILE POINT-UNIT 2  
 FINAL SAFETY ANALYSIS REPORT

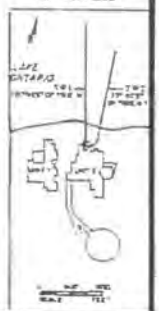


KEY TO ORIENTATION OF TUNNEL CURVATURE



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 THE  
 DRAWING AS PLANE SURFACES

KEY TO LOCATION OF TUNNEL

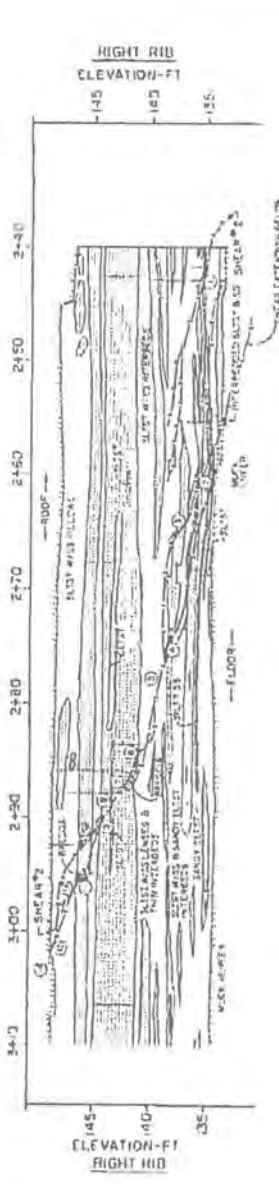
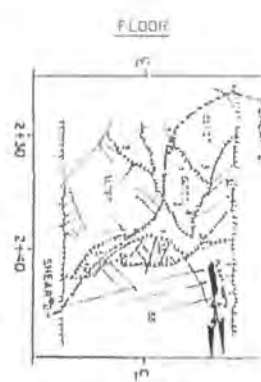


LEGEND:

- SANDSTONE
- VERTICAL JOINT WITH STRIKE ORIENTATION, UNLESS OTHERWISE NOTED
- JOINT WITH DIRECTION, ANGLE OF DIP, AND STRIKE ORIENTATION
- SS SANDSTONE CALC. CALCAREOUS
- SS FOS SANDSTONE FOS. 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

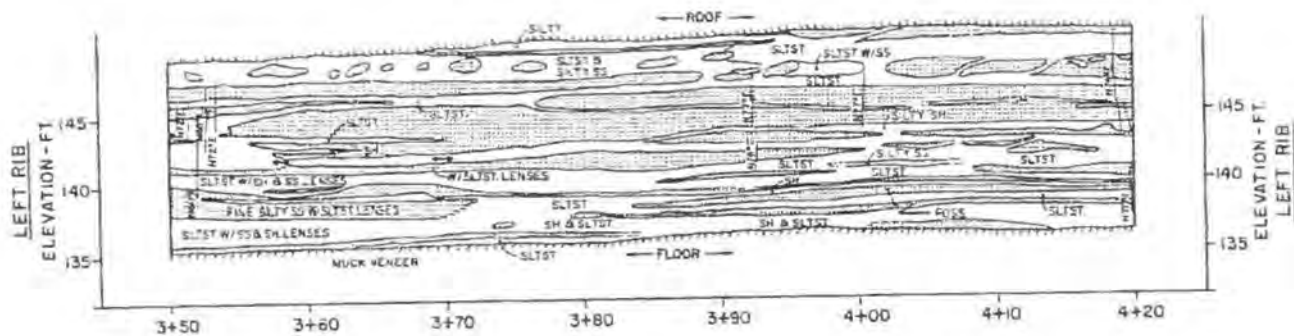


NOTES: (LEFT RIB) 1. REVERSE OFFSET, 10.00' VERTICAL 2. SHEAR WAS FOR 20' OF SECTION, 10.00' VERTICAL 3. GRAVITY OFFSET, 0.22' VERTICAL 4. SHEAR IN OFF SET, 0.22' VERTICAL 5. GRAVITY OFFSET, 0.14' VERTICAL 6. SHEAR IN OFF SET, 0.14' VERTICAL 7. SHEAR IN OFF SET, 0.14' VERTICAL 8. SHEAR IN OFF SET, 0.14' VERTICAL 9. SHEAR IN OFF SET, 0.14' VERTICAL 10. SHEAR IN OFF SET, 0.14' VERTICAL

LEGEND: SANDSTONE SHEAR VERTICAL JOINT WITH STRIKE CRACKING, UNLESS OTHERWISE NOTED 45° OF DR AND STRIKE ORIENTATION 45° SANDSTONE CALL CALCAREOUS LUST SANDSTONE ROSS CALCAREOUS SANDSTONE TRANSITIONAL STRATIGRAPHIC BOUNDARY

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

KEY TO LOCATION OF TUNNEL 2  
1. TUNNEL NO. 2  
2. TUNNEL NO. 1  
3. TUNNEL NO. 3  
4. TUNNEL NO. 4  
5. TUNNEL NO. 5  
6. TUNNEL NO. 6  
7. TUNNEL NO. 7  
8. TUNNEL NO. 8  
9. TUNNEL NO. 9  
10. TUNNEL NO. 10



**LEGEND**

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

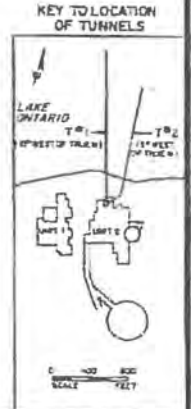
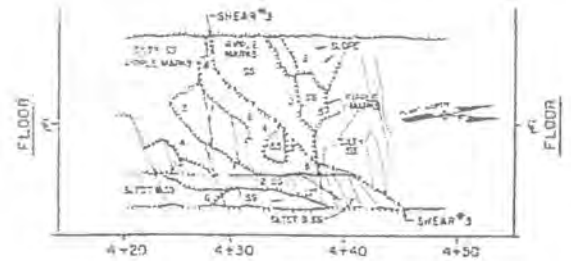
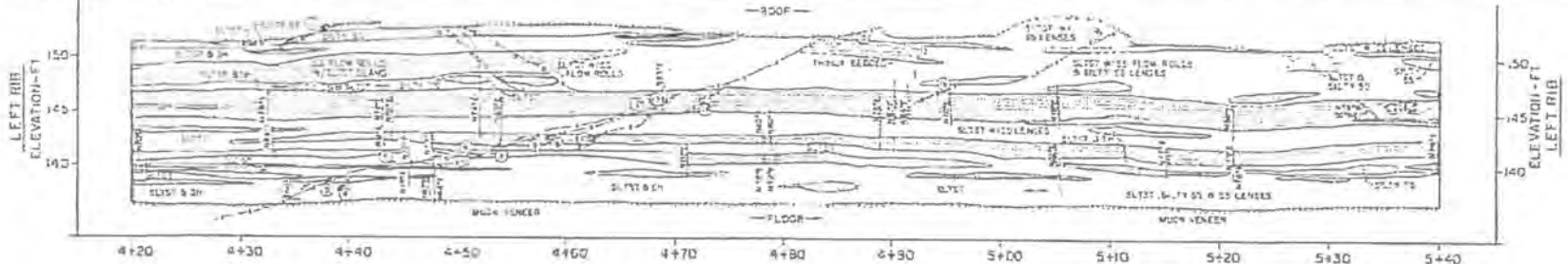


FIGURE 2H-80

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

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

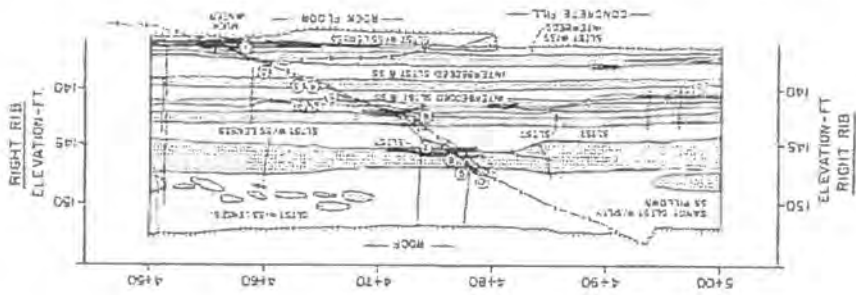




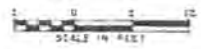
TUNNEL ROOF AND LEFT RIB WERE MARKED CONTINUOUSLY, WHILE FLOOR AND RIGHT RIB WERE MARKED ONLY IN SHEAR ZONES.  
 2. MARKED TUNNEL SURFACES, SUCH AS THIS POINT ARE ARRANGED TO ALLOW SPATIAL VISUALIZATION OF SHEAR ZONE AND TUNNEL POSITION BY FOLDING IN 90°-SIDES OF THE DRAWING.

NOTES (LEFT RIB) # DISPLACEMENTS MEASURED IN FIELD

- 1 GRAVITY OFFSET, 0.04' VERTICAL
- 2 REVERSE OFFSET, 0.2' VERTICAL
- 3 REVERSE OFFSET, 0.25' VERTICAL, 0.1' APPARENT
- 4 GRAVITY OFFSET, 0.05' VERTICAL
- 5 REVERSE OFFSET, 0.12' VERTICAL
- 6 SHEAR N 10° E, 47° SE, REVERSE OFFSET, 0.2' VERTICAL, 1.5' APPARENT, 0.5' ACTUAL
- 7 SHEAR N 50° E, 30° SE
- 8 SHEAR N 41° E, 45° SE; GRAVITY OFFSET, 0.02' VERTICAL
- 9 SHEAR N 42° E, 40° SE; GRAVITY OFFSET, 0.07' VERTICAL
- 10 SHEAR N 33° E, 54° SE, SLICKENSIDES 56° E / 50° GRAVITY OFFSET, 0.08' VERTICAL
- 11 SHEAR N 51° W, 57° NE
- 12 SHEAR N 41° E, 24° SE
- 13 SHEAR N 25° E, 49° SE; SLICKENSIDES CONCORD WITH DIP OF SHEAR
- 14 SHEAR N 04° E, 30° SE, GRAVITY OFFSET, 0.15' VERTICAL
- 15 SHEAR N 55° E, 25° SE
- 16 SHEAR N 53° E, 17° SE
- 17 SHEAR N 50° E, 40° SE, SLICKENSIDES CONCORD WITH DIP OF SHEAR.



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



- NOTES (RIGHT RIB) # DISPLACEMENTS MEASURED IN FIELD
- 1 GRAVITY OFFSET, 0.08' VERTICAL
  - 2 SHEAR N 4° E, 27° SE
  - 3 GRAVITY OFFSET, 0.07' VERTICAL
  - 4 GRAVITY OFFSET, 0.07' VERTICAL
  - 5 GRAVITY OFFSET, 0.07' VERTICAL
  - 6 SHEAR N 04° E, 30° SE
  - 7 CHECKED SHEAR N 04° E, 30° SE
  - 8 GRAVITY OFFSET, 0.1' VERTICAL
  - 9 SHEAR N 04° E, 30° SE
  - 10 SHEAR N 04° E, 30° SE
  - 11 GRAVITY OFFSET, 0.07' VERTICAL
  - 12 GRAVITY OFFSET, 0.07' VERTICAL
  - 13 GRAVITY OFFSET, 0.07' VERTICAL
  - 14 GRAVITY OFFSET, 0.07' VERTICAL
  - 15 GRAVITY OFFSET, 0.07' VERTICAL
  - 16 GRAVITY OFFSET, 0.07' VERTICAL
  - 17 GRAVITY OFFSET, 0.07' VERTICAL
  - 18 GRAVITY OFFSET, 0.07' VERTICAL
  - 19 GRAVITY OFFSET, 0.07' VERTICAL
  - 20 GRAVITY OFFSET, 0.07' VERTICAL
  - 21 GRAVITY OFFSET, 0.07' VERTICAL
  - 22 GRAVITY OFFSET, 0.07' VERTICAL
  - 23 GRAVITY OFFSET, 0.07' VERTICAL
  - 24 GRAVITY OFFSET, 0.07' VERTICAL
  - 25 GRAVITY OFFSET, 0.07' VERTICAL
  - 26 GRAVITY OFFSET, 0.07' VERTICAL
  - 27 GRAVITY OFFSET, 0.07' VERTICAL
  - 28 GRAVITY OFFSET, 0.07' VERTICAL
  - 29 GRAVITY OFFSET, 0.07' VERTICAL
  - 30 GRAVITY OFFSET, 0.07' VERTICAL
  - 31 GRAVITY OFFSET, 0.07' VERTICAL
  - 32 GRAVITY OFFSET, 0.07' VERTICAL
  - 33 GRAVITY OFFSET, 0.07' VERTICAL
  - 34 GRAVITY OFFSET, 0.07' VERTICAL
  - 35 GRAVITY OFFSET, 0.07' VERTICAL
  - 36 GRAVITY OFFSET, 0.07' VERTICAL
  - 37 GRAVITY OFFSET, 0.07' VERTICAL
  - 38 GRAVITY OFFSET, 0.07' VERTICAL
  - 39 GRAVITY OFFSET, 0.07' VERTICAL
  - 40 GRAVITY OFFSET, 0.07' VERTICAL
  - 41 GRAVITY OFFSET, 0.07' VERTICAL
  - 42 GRAVITY OFFSET, 0.07' VERTICAL
  - 43 GRAVITY OFFSET, 0.07' VERTICAL
  - 44 GRAVITY OFFSET, 0.07' VERTICAL
  - 45 GRAVITY OFFSET, 0.07' VERTICAL
  - 46 GRAVITY OFFSET, 0.07' VERTICAL
  - 47 GRAVITY OFFSET, 0.07' VERTICAL
  - 48 GRAVITY OFFSET, 0.07' VERTICAL
  - 49 GRAVITY OFFSET, 0.07' VERTICAL
  - 50 GRAVITY OFFSET, 0.07' VERTICAL
  - 51 GRAVITY OFFSET, 0.07' VERTICAL
  - 52 GRAVITY OFFSET, 0.07' VERTICAL
  - 53 GRAVITY OFFSET, 0.07' VERTICAL
  - 54 GRAVITY OFFSET, 0.07' VERTICAL
  - 55 GRAVITY OFFSET, 0.07' VERTICAL
  - 56 GRAVITY OFFSET, 0.07' VERTICAL
  - 57 GRAVITY OFFSET, 0.07' VERTICAL
  - 58 GRAVITY OFFSET, 0.07' VERTICAL
  - 59 GRAVITY OFFSET, 0.07' VERTICAL
  - 60 GRAVITY OFFSET, 0.07' VERTICAL
  - 61 GRAVITY OFFSET, 0.07' VERTICAL
  - 62 GRAVITY OFFSET, 0.07' VERTICAL
  - 63 GRAVITY OFFSET, 0.07' VERTICAL
  - 64 GRAVITY OFFSET, 0.07' VERTICAL
  - 65 GRAVITY OFFSET, 0.07' VERTICAL
  - 66 GRAVITY OFFSET, 0.07' VERTICAL
  - 67 GRAVITY OFFSET, 0.07' VERTICAL
  - 68 GRAVITY OFFSET, 0.07' VERTICAL
  - 69 GRAVITY OFFSET, 0.07' VERTICAL
  - 70 GRAVITY OFFSET, 0.07' VERTICAL
  - 71 GRAVITY OFFSET, 0.07' VERTICAL
  - 72 GRAVITY OFFSET, 0.07' VERTICAL
  - 73 GRAVITY OFFSET, 0.07' VERTICAL
  - 74 GRAVITY OFFSET, 0.07' VERTICAL
  - 75 GRAVITY OFFSET, 0.07' VERTICAL
  - 76 GRAVITY OFFSET, 0.07' VERTICAL
  - 77 GRAVITY OFFSET, 0.07' VERTICAL
  - 78 GRAVITY OFFSET, 0.07' VERTICAL
  - 79 GRAVITY OFFSET, 0.07' VERTICAL
  - 80 GRAVITY OFFSET, 0.07' VERTICAL
  - 81 GRAVITY OFFSET, 0.07' VERTICAL
  - 82 GRAVITY OFFSET, 0.07' VERTICAL
  - 83 GRAVITY OFFSET, 0.07' VERTICAL
  - 84 GRAVITY OFFSET, 0.07' VERTICAL
  - 85 GRAVITY OFFSET, 0.07' VERTICAL
  - 86 GRAVITY OFFSET, 0.07' VERTICAL
  - 87 GRAVITY OFFSET, 0.07' VERTICAL
  - 88 GRAVITY OFFSET, 0.07' VERTICAL
  - 89 GRAVITY OFFSET, 0.07' VERTICAL
  - 90 GRAVITY OFFSET, 0.07' VERTICAL
  - 91 GRAVITY OFFSET, 0.07' VERTICAL
  - 92 GRAVITY OFFSET, 0.07' VERTICAL
  - 93 GRAVITY OFFSET, 0.07' VERTICAL
  - 94 GRAVITY OFFSET, 0.07' VERTICAL
  - 95 GRAVITY OFFSET, 0.07' VERTICAL
  - 96 GRAVITY OFFSET, 0.07' VERTICAL
  - 97 GRAVITY OFFSET, 0.07' VERTICAL
  - 98 GRAVITY OFFSET, 0.07' VERTICAL
  - 99 GRAVITY OFFSET, 0.07' VERTICAL
  - 100 GRAVITY OFFSET, 0.07' VERTICAL

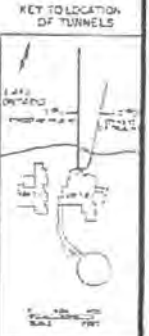
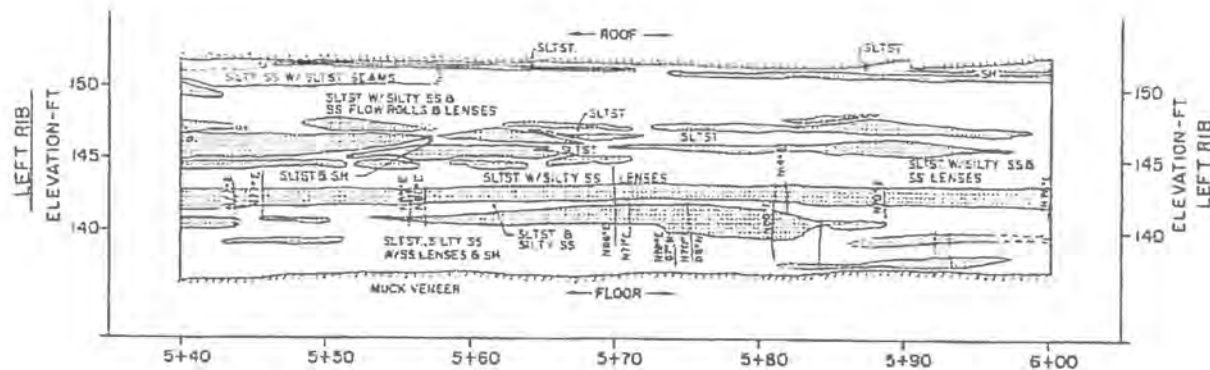





FIGURE 2H-81  
 GEOLOGIC MAPPING—LEFT RIB, FLOOR & RIGHT RIB OF LAKE WATER TUNNEL NO.2  
 NIAGARA MOHAWK POWER CORPORATION  
 NINE MILE POINT-UNIT 2  
 FINAL SAFETY ANALYSIS REPORT



**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

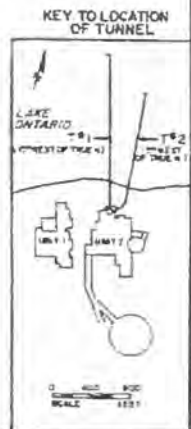
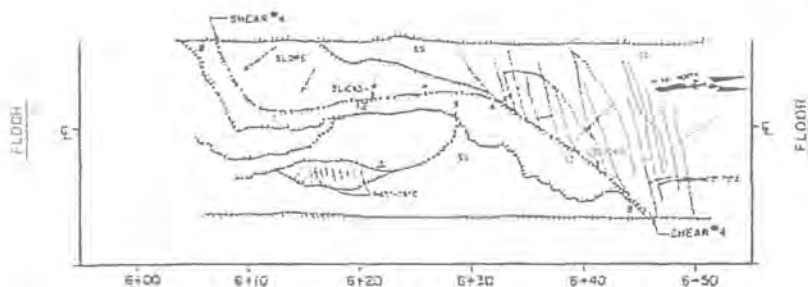
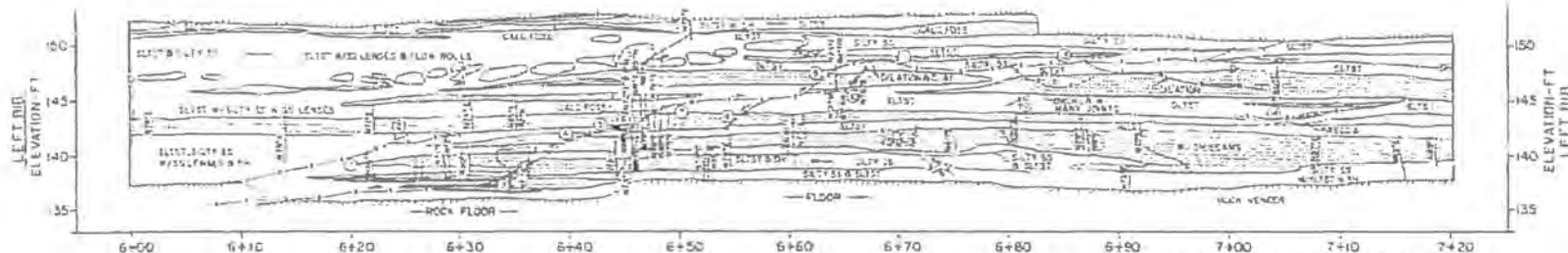


FIGURE 2H-82

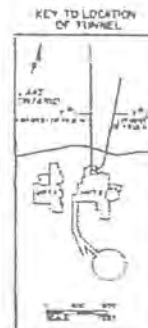
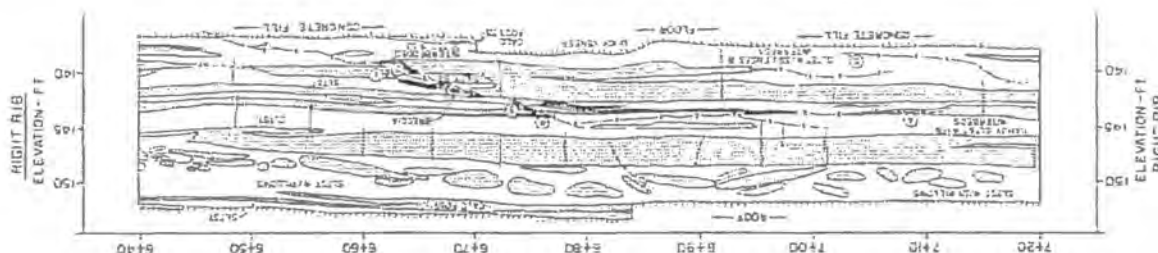
GEOLOGIC MAPPING—LEFT RIB OF  
LAKE WATER TUNNEL NO.2

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



- NOTES (LEFT RIB) DIMENSIONS MEASURED IN FIELD
- 1 SHEAR N40°E, 25°SE, SLICKENSIDES CONCORD WITH DIP, NO OFFSET
  - 2 SHEAR N35°E, 27°SE, SLICKENSIDES CONCORD WITH DIP OF SHEAR
  - 3 REVERSE OFFSET, 0.5' VERTICAL, 0.5' APPARENT
  - 4 SHEAR N24°E, 18°SE, REVERSE OFFSET, 0.5' VERTICAL, 0.2' APPARENT
  - 5 SLICKENSIDES 56°E/18°
  - 6 SHEAR N40°E, 27°SE
  - 7 REVERSE OFFSET, 0.3' VERTICAL, 0.8' APPARENT
  - 8 DRAKET OFFSET, 0.05' VERTICAL
  - 9 SHEAR N37°E, 27°SE, REVERSE OFFSET, 0.3' VERTICAL, 0.3' APPARENT
  - 10 SHEAR N34°E, 25°SE, GRAVITY OFFSET, 0.05' VERTICAL
  - 11 SHEAR N45°E, 45°SE, WATER SEEPAGE
  - 12 SHEAR N30°E, 37°SE
  - 13 SHEAR N35°E, 40°SE
  - 14 SHEAR N31°E, 38°SE

- NOTE
- 1 TUNNEL FLOOR AND LEFT RIB WERE MAPPED INDIVIDUALLY WHILE FLOOR AND RIGHT RIB WERE MAPPED IN SHEAR ZONES
  - 2 MAPPED TUNNEL SURFACES SHOWN IN THIS FIGURE ARE ADJUSTED TO ALLOW SPATIAL CORRELATION OF SHEAR ZONES AND TUNNEL PROFILE BY FOLDING UP RIB SECTIONS OF THE DRAWING



- NOTES (RIGHT RIB) DIMENSIONS MEASURED IN FIELD
- 1 SHEAR N30°E, 31°SE
  - 2 REVERSE OFFSET, 0.3' VERTICAL, 0.3' APPARENT
  - 3 SHEAR N37°E, 45°SE, SLICKENSIDES CONCORD WITH DIP OF SHEAR
  - 4 NO SLIPAGE
  - 5 DOWNDIP EXTENSION OF SHEAR UNLESS OTHERWISE NOTED
  - 6 SIGNATURE ONE (FROM TYPE FOLD ALONG SHEAR TO FLOORED FLOOR)

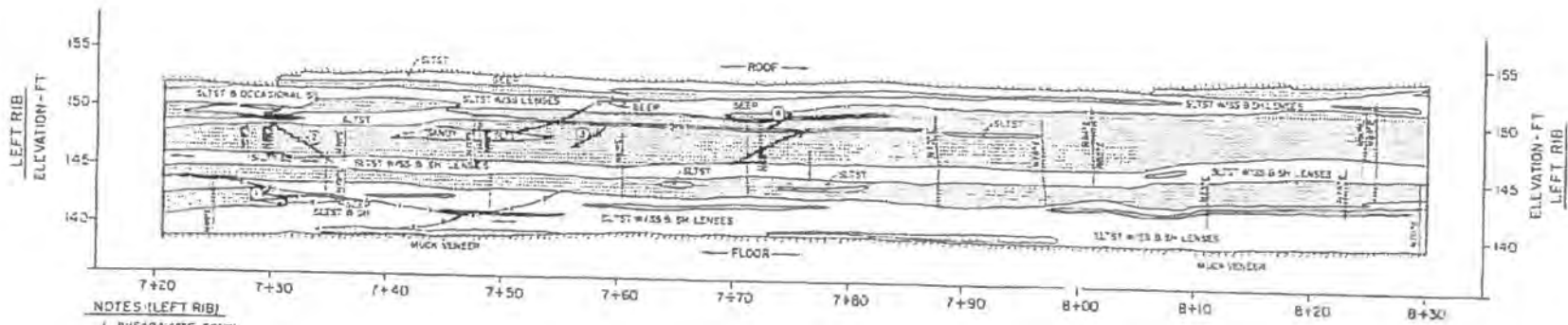
- LEGEND
- SANDSTONE
  - SHEAR
  - VERTICAL JOINT WITH SHEAR ORIENTATION, UNLESS OTHERWISE NOTED
  - JOINT WITH DIRECTION & ANGLE OF DIP AND STRIKE ORIENTATION
  - SS SANDSTONE CALC. CALCAREOUS
  - SILT SILTSTONE FOSSE. FOSSILIFEROUS
  - SH SHALE
  - TRANSITIONAL LITHOLOGIC BOUNDARY



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 N40°E, 30°NW
  2. SHEAR N13°E, 36°NW
  3. SHEAR N38°E, 33°SE
  4. SHEAR N40°E, 64°SE

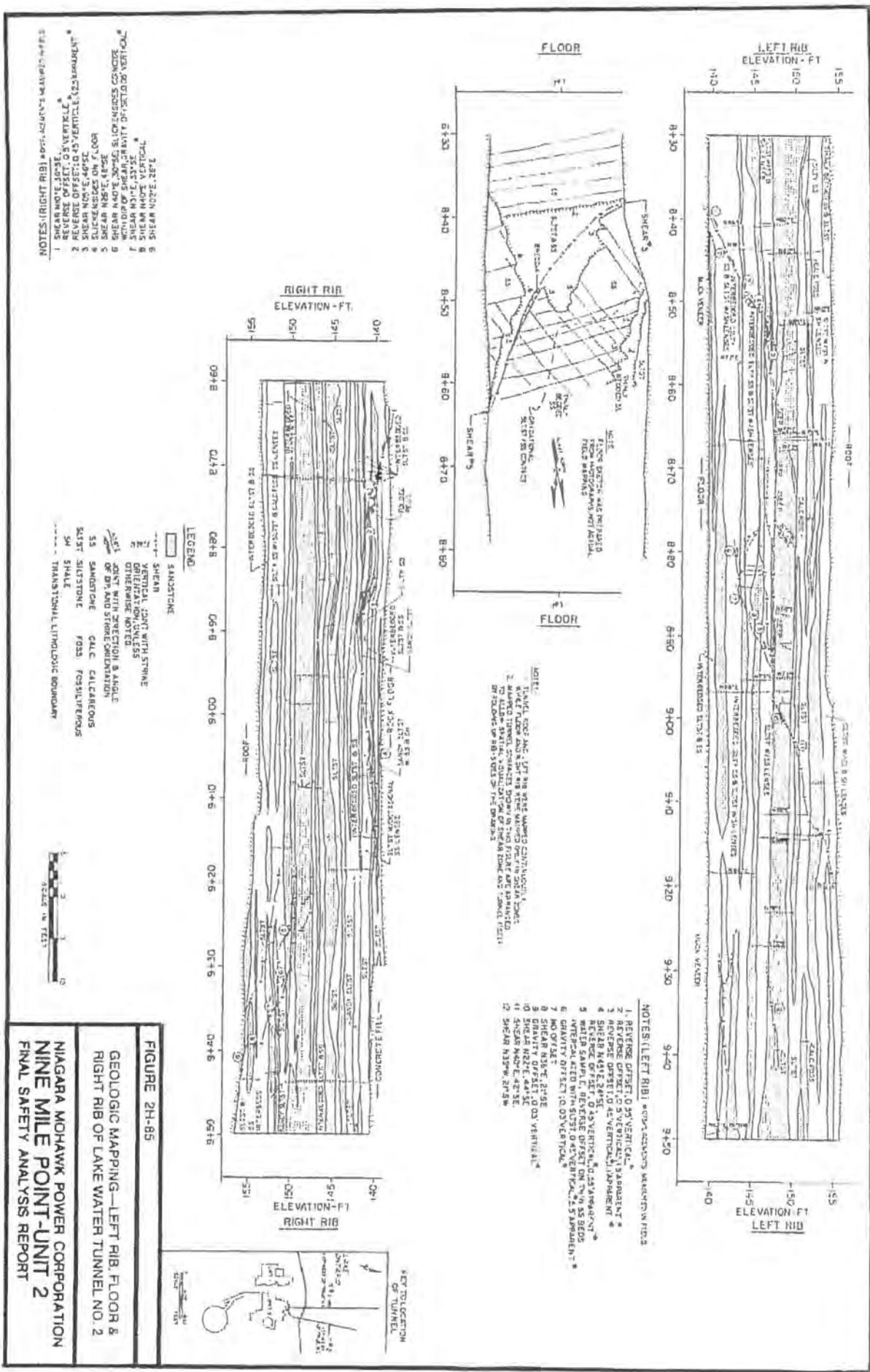
- LEGEND:
- SANDSTONE
  - SHEAR
  - VERTICAL JOINT WITH STRIKE ORIENTATION, UNLESS OTHERWISE NOTED.
  - JOINT WITH DIRECTION & ANGLE OF DIP, AND STRIKE ORIENTATION.
  - SS SANDSTONE CALC. CALCAREOUS
  - SLTST. SILTSTONE FOSS. FOSSILIFEROUS
  - SH. SHALE
  - TRANSITIONAL LITHOLOGIC BOUNDARY



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

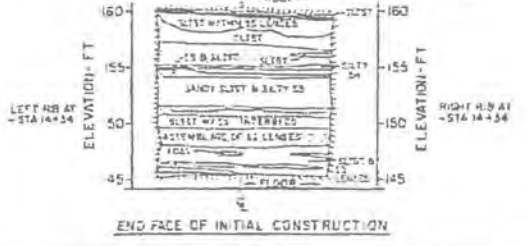
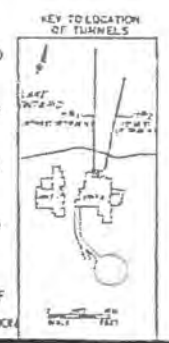
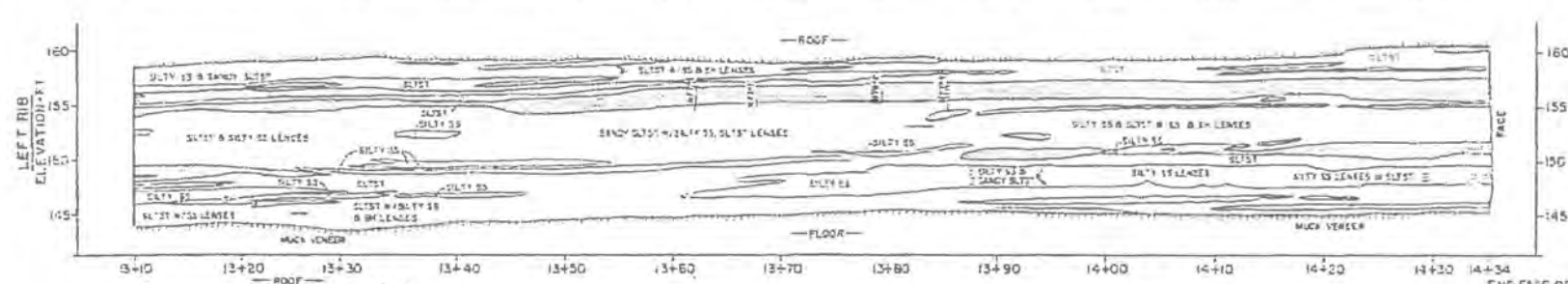
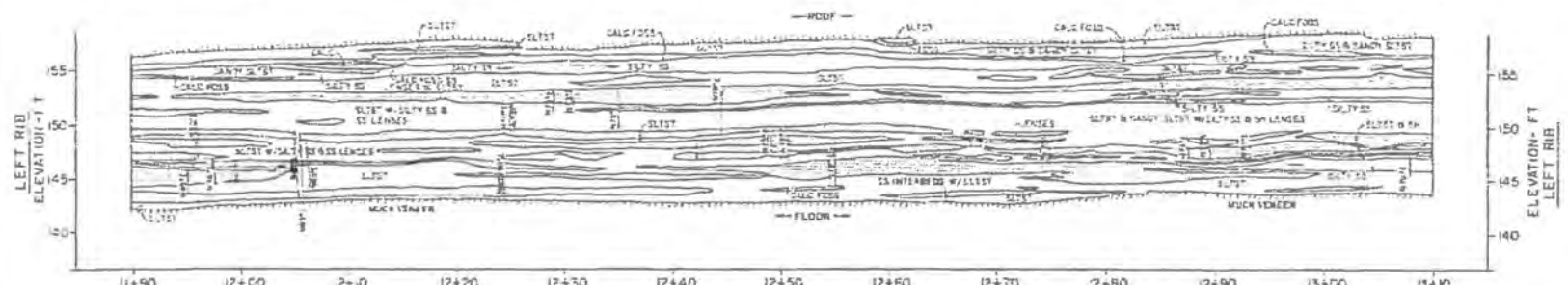
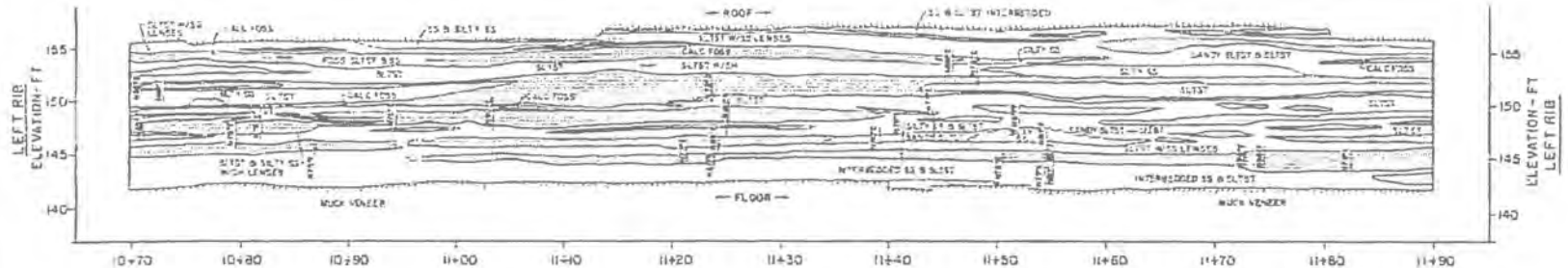
**NOTES (RIGHT RIB) \*0+30 TO 0+516\***

1. SHEAR ZONE WITH STRIKE
2. SHEAR ZONE WITH STRIKE AND DIP
3. SHEAR ZONE WITH STRIKE AND DIP
4. SHEAR ZONE WITH STRIKE AND DIP
5. SHEAR ZONE WITH STRIKE AND DIP
6. SHEAR ZONE WITH STRIKE AND DIP
7. SHEAR ZONE WITH STRIKE AND DIP
8. SHEAR ZONE WITH STRIKE AND DIP
9. SHEAR ZONE WITH STRIKE AND DIP
10. SHEAR ZONE WITH STRIKE AND DIP
11. SHEAR ZONE WITH STRIKE AND DIP
12. SHEAR ZONE WITH STRIKE AND DIP

**NOTES (LEFT RIB) \*8+30 TO 9+50\***

1. REVERSE OFFSET, 0.5 VERTICAL
2. REVERSE OFFSET, 0.5 VERTICAL
3. REVERSE OFFSET, 0.5 VERTICAL
4. SHEAR ZONE WITH STRIKE AND DIP
5. WATER SAMPLE L, REVERSE OFFSET ON T.V. 55 BEDS
6. VERTICAL OFFSET WITH STRIKE, 0.5 VERTICAL
7. NO OFFSET
8. SHEAR ZONE WITH STRIKE
9. GRAVITY OFFSET, 0.03 VERTICAL
10. SHEAR ZONE WITH STRIKE
11. SHEAR ZONE WITH STRIKE
12. SHEAR ZONE WITH STRIKE





**LEGEND**

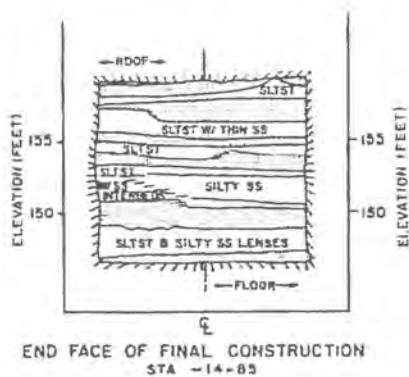
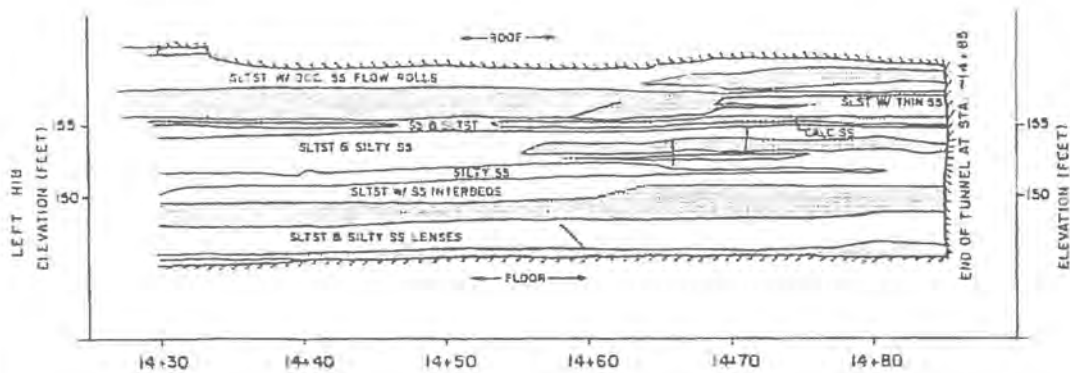
- SANDSTONE
- VERTICAL JOINT WITH STRIKE ORIENTATION, UNLESS OTHERWISE NOTED
- JOINT WITH DIRECTION OF DIP AND STRIKE DIRECTION
- SS SANDSTONE CALC. CALCAREOUS
- SILTST SILTSTONE FOSS. FOSSILIFEROUS
- SH SHALE
- TRANSITIONAL LITHOLOGIC BOUNDARY



**FIGURE 2H-B7 (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**



LEGEND.




-  SANDSTONE
-  JOINT
- SS SANDSTONE
- SLTST SILTSTONE
- CALC CALCAREOUS
- SH SHALE
-  TRANSITIONAL LITHOLOGIC BOUNDARY

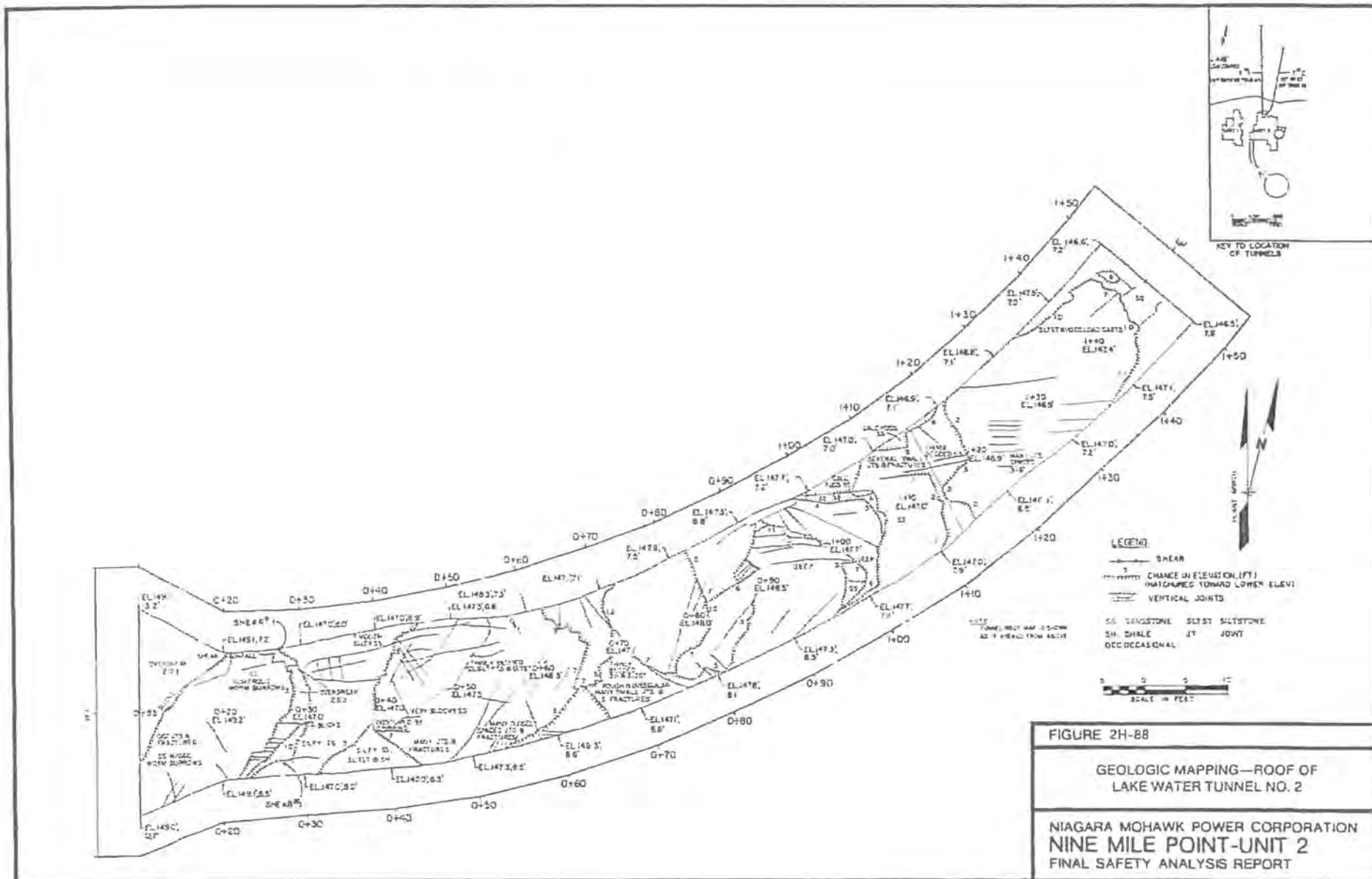


FIGURE 2H-87 (SHEET 2 OF 2)

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





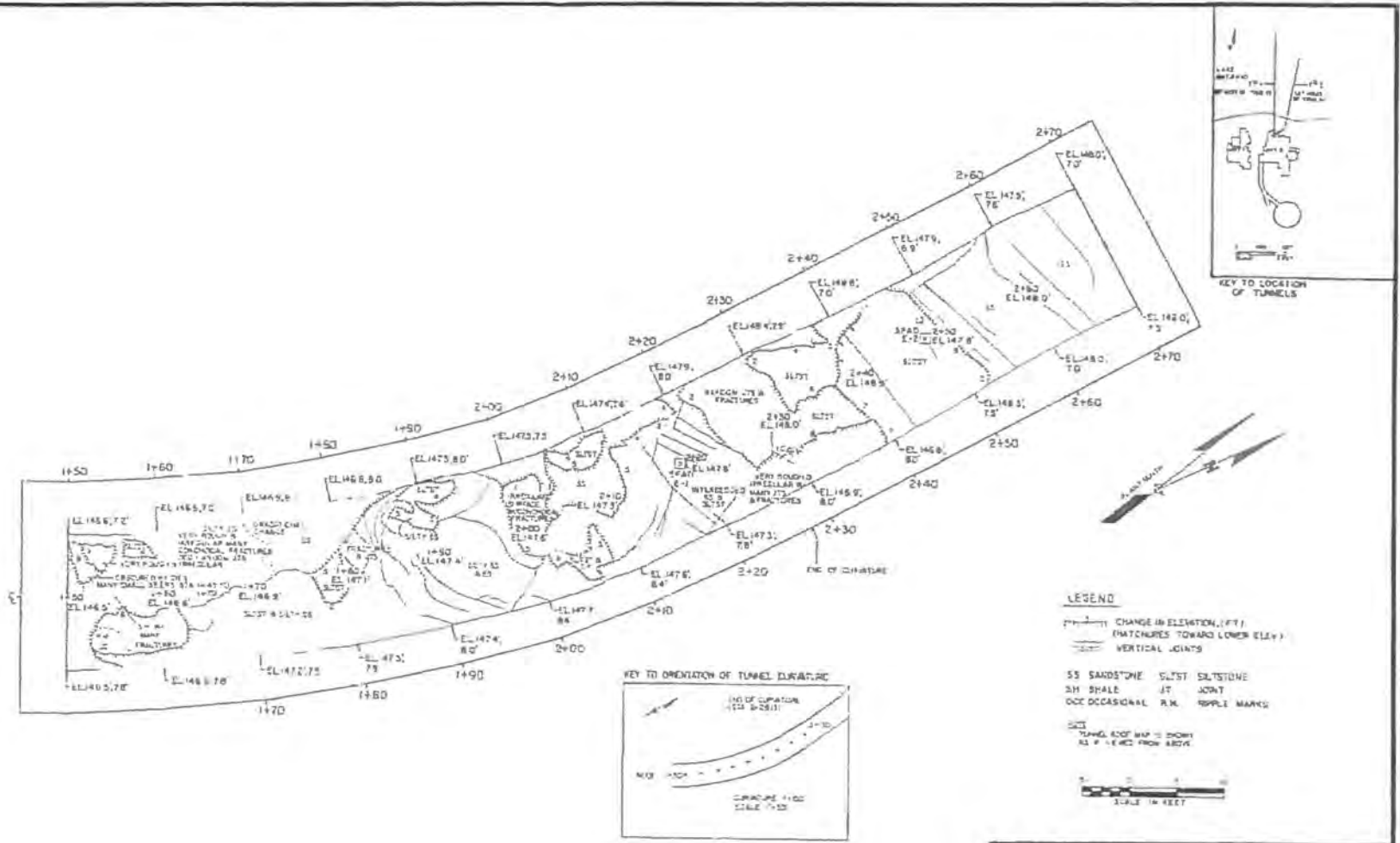
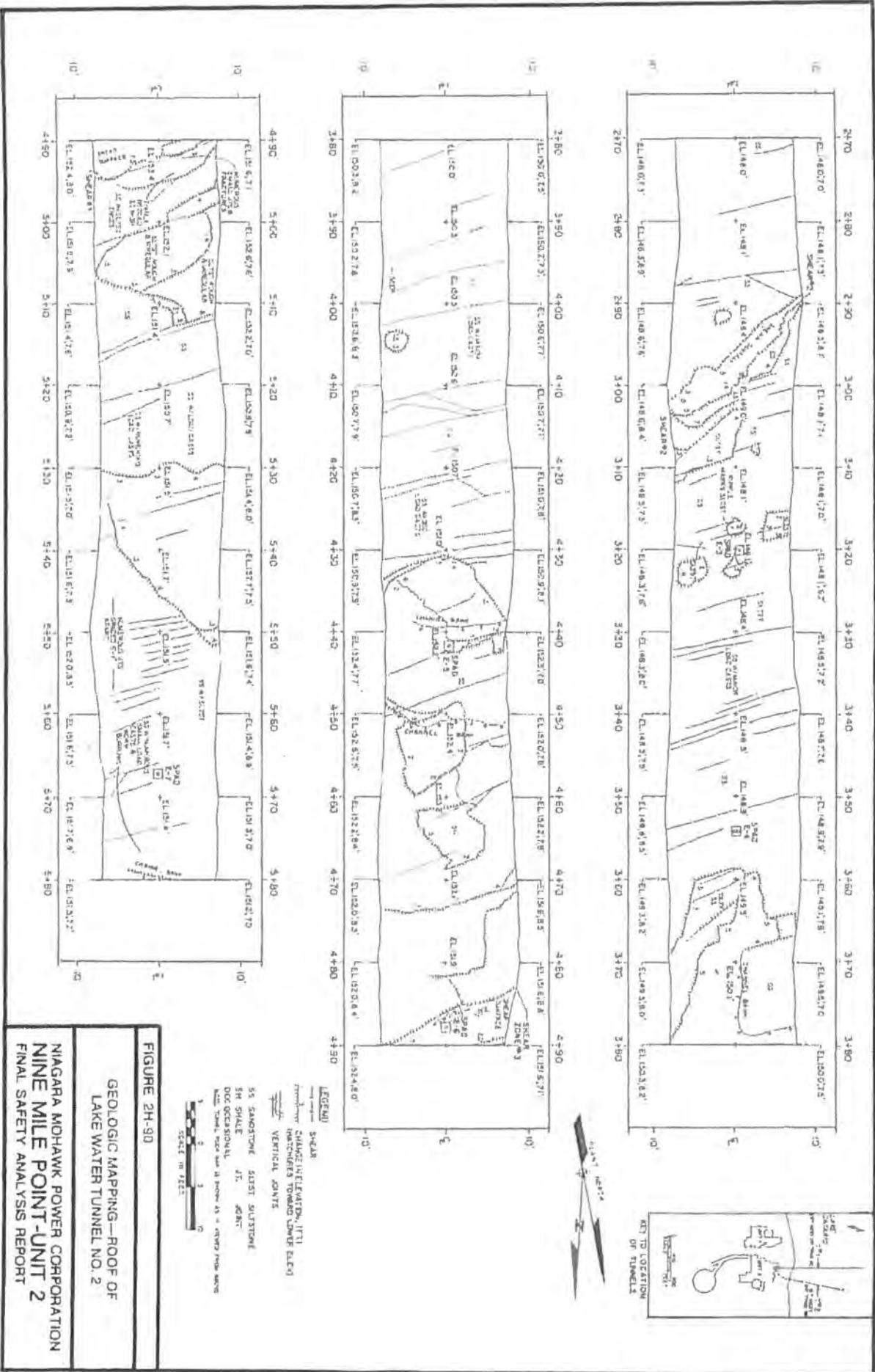
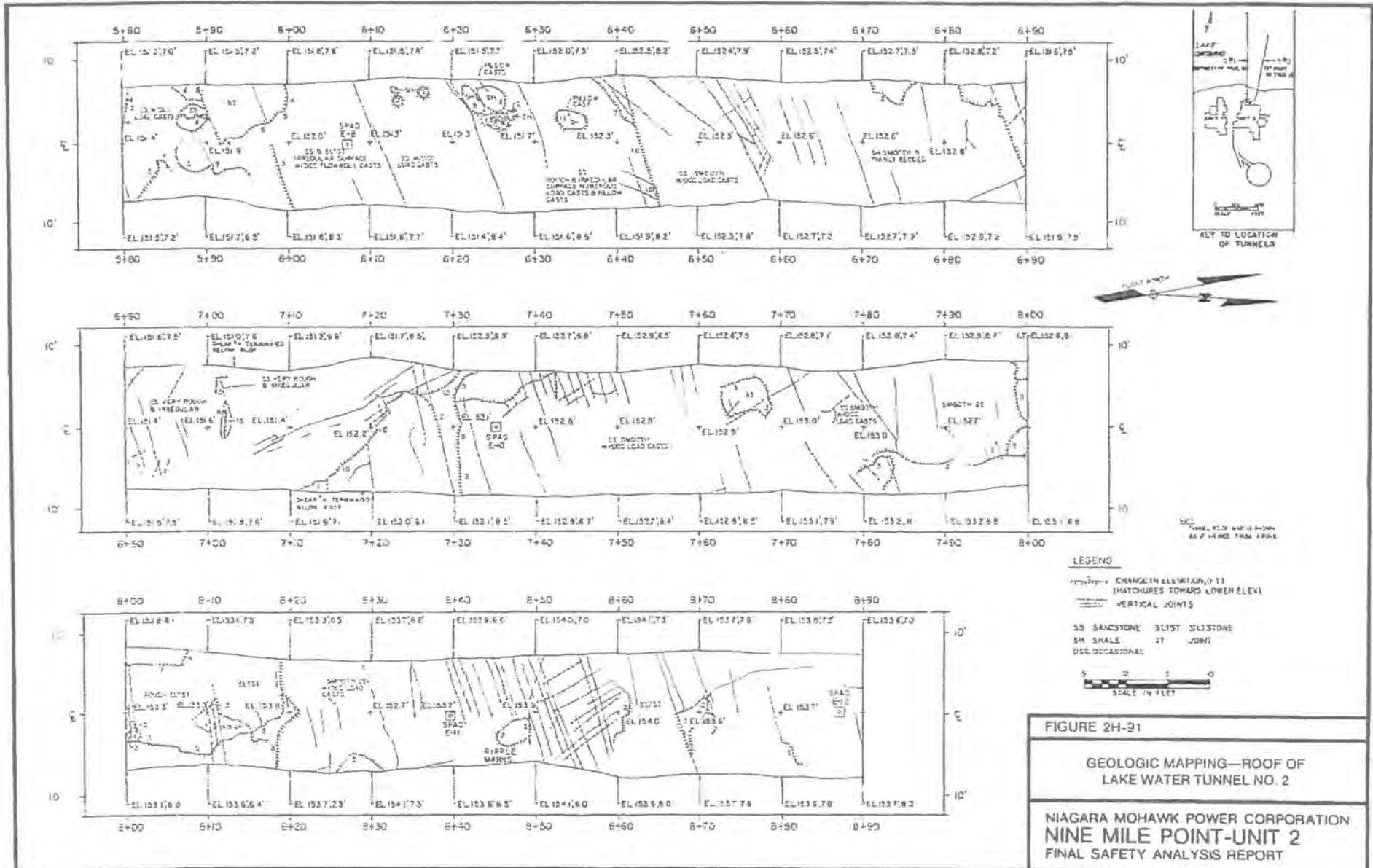


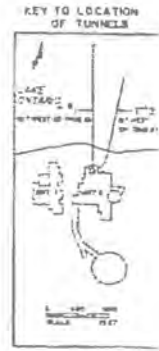
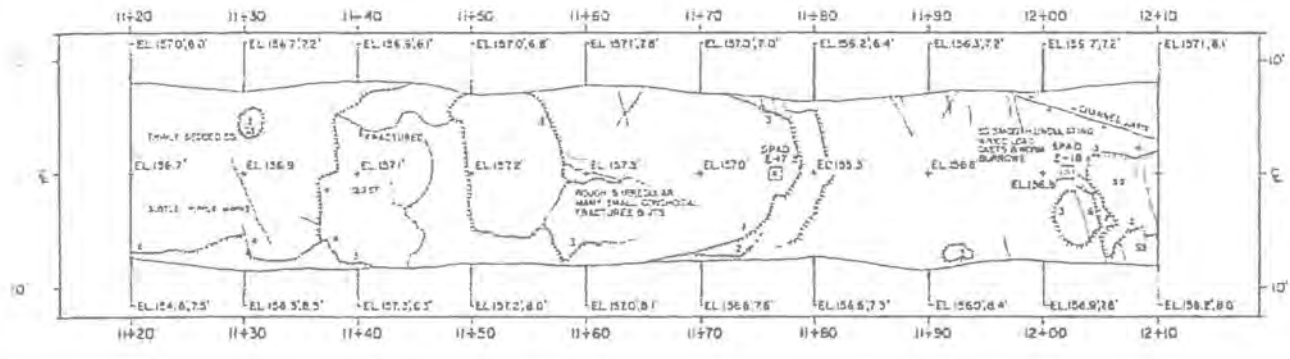
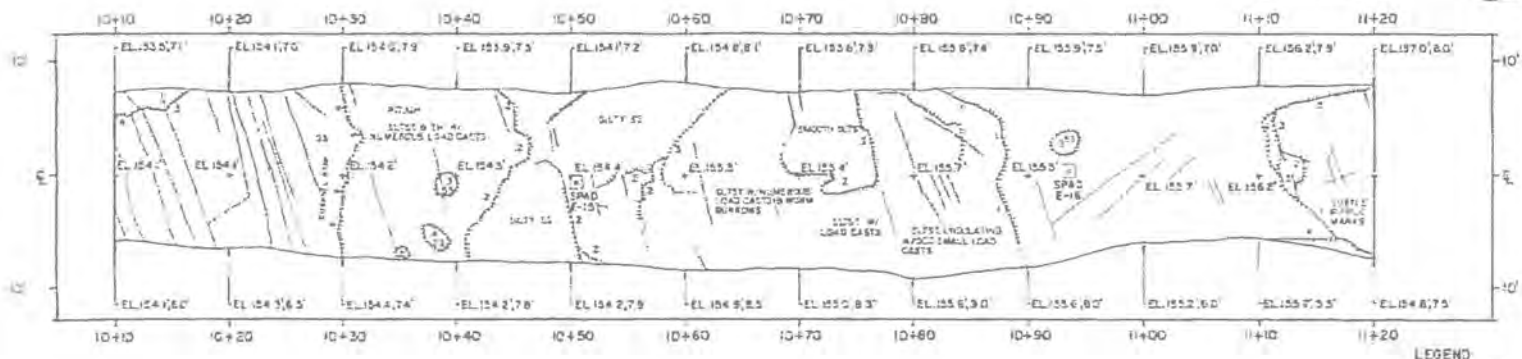
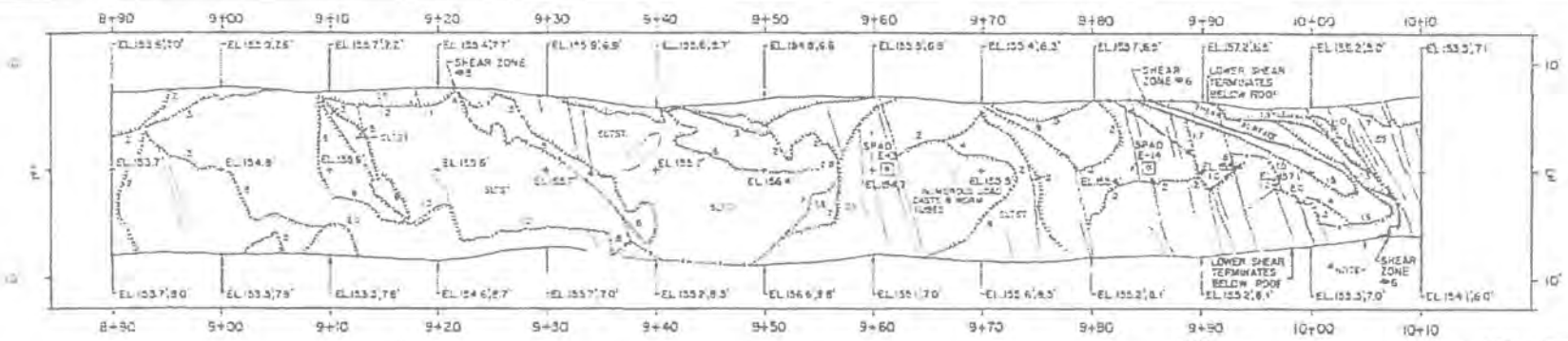
FIGURE 2H-89

GEOLOGIC MAPPING—ROOF OF  
LAKE WATER TUNNEL NO. 2

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







**LEGEND**

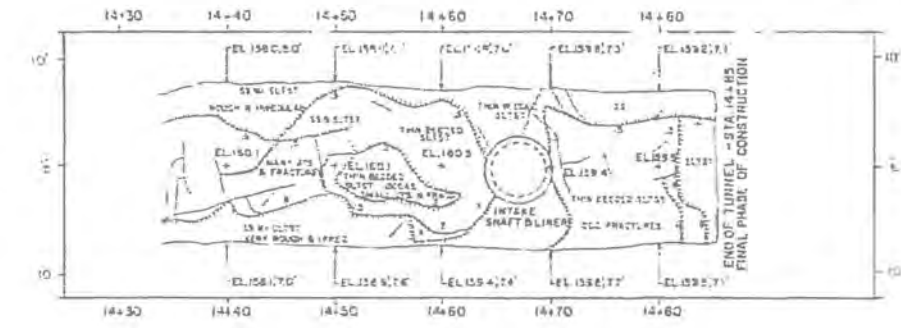
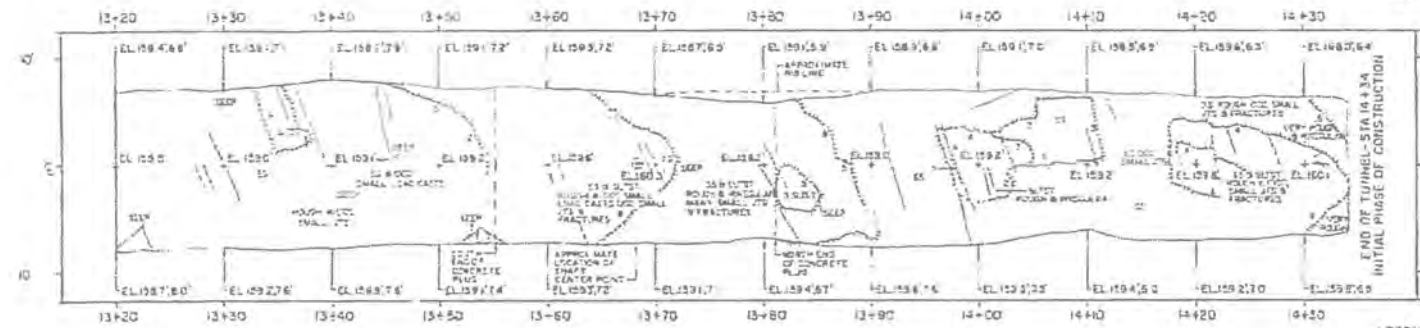
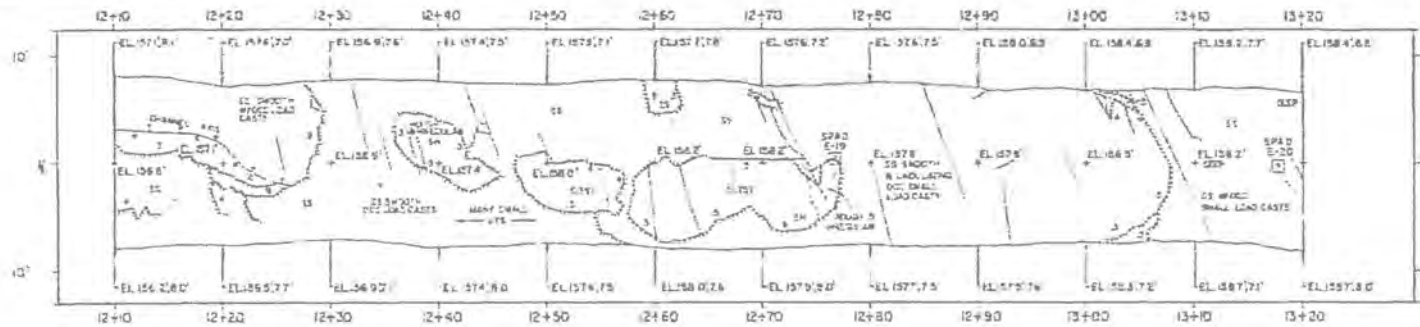
- SHEAR
- - - CHANGE IN ELEVATION (FT)
- - - DATUMS TOWARD LOWER ELEV.
- || VERTICAL JOINTS
- SS SANDSTONE SLTST SLTSTONE
- SH SHALE JT JOINT
- OCC OCCASIONAL
- NOTE: TUNNEL RISE MAY BE SHOWN AS IF PIVOTED FROM ABOVE

SCALE IN FEET

**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**



**LEGEND**

— CHANGE IN ELEVATION, 1 FT.  
(HATCHURES TOWARD LOWER ELEV.)

— VERTICAL JOINTS

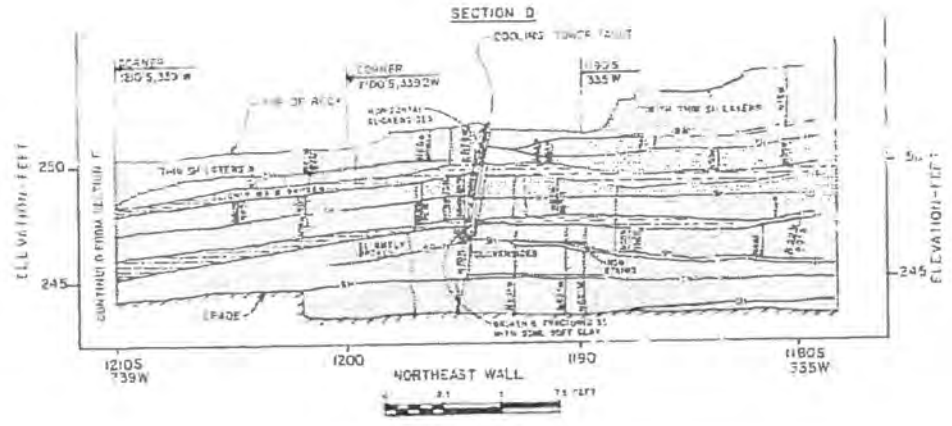
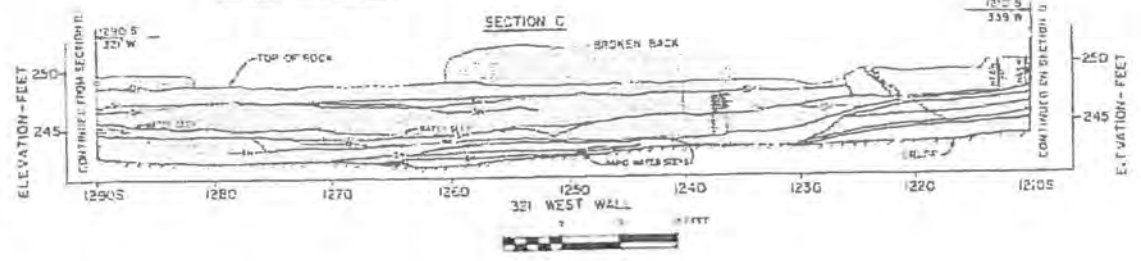
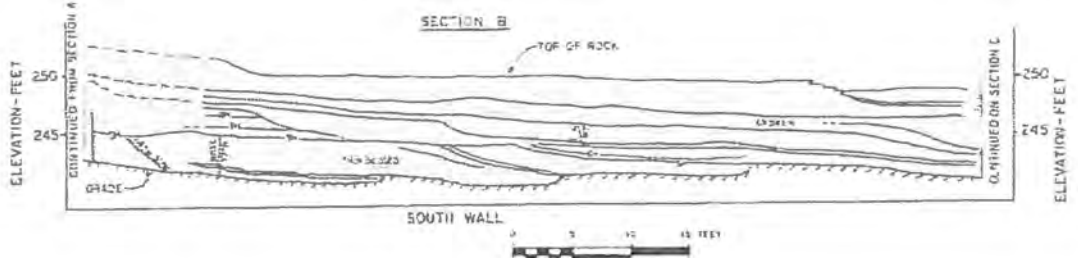
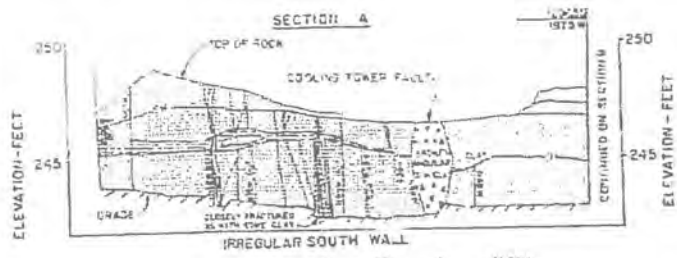
SS SANDSTONE SLTST SILTSTONE  
SH SHALE JT JOINTS  
DCC OCCASIONAL

SCALE IN FEET






**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**

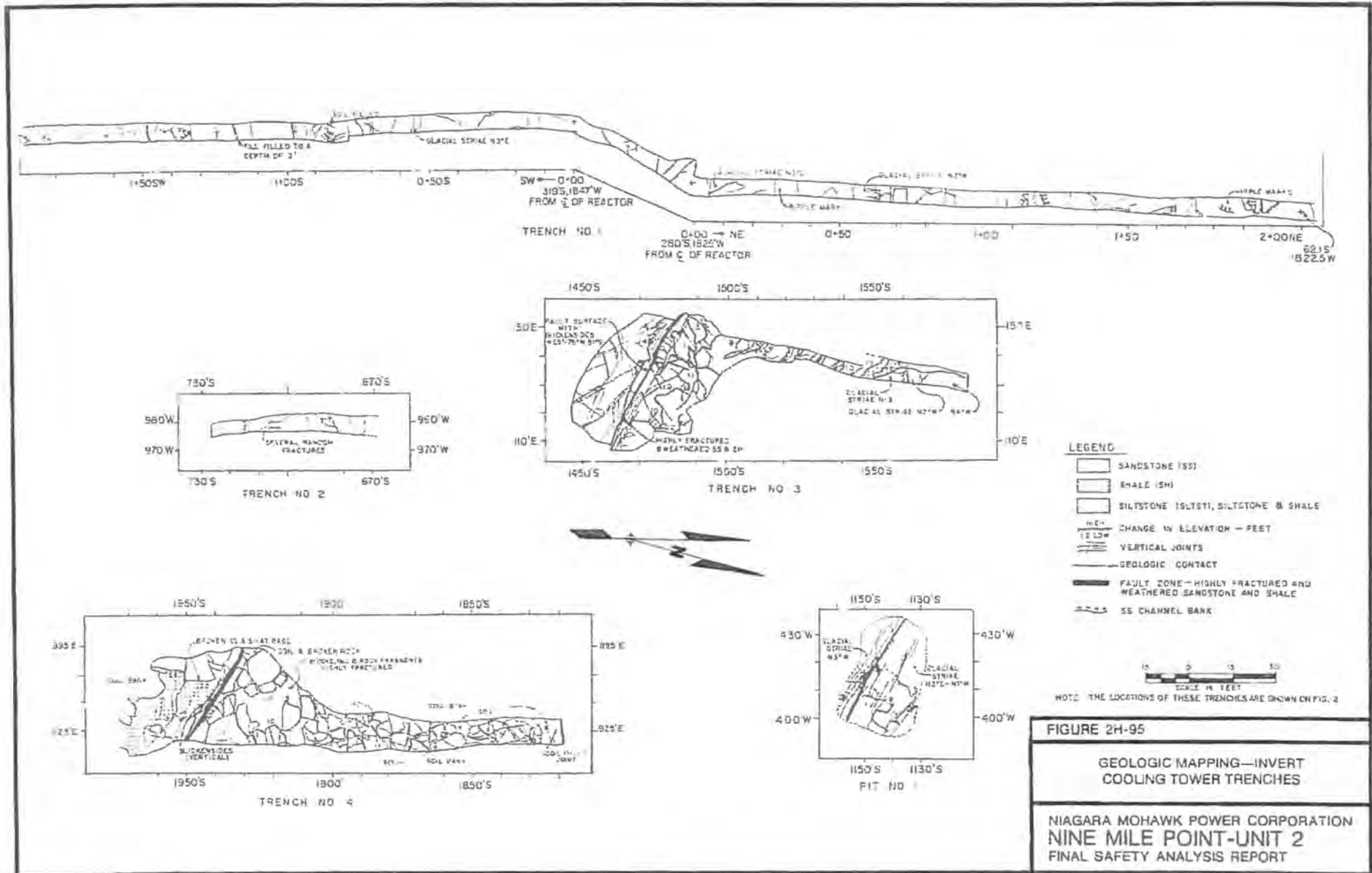


LEGEND

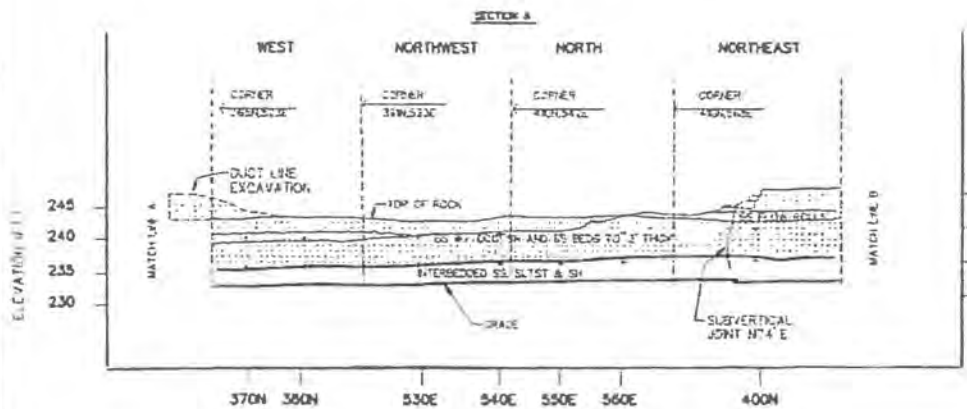
-  SANDSTONE (SS)
-  SHALE (SH)
-  JOINT WITH ORIENTATION SHOWN
-  WA - WEATHERED
-  BRECCIA

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

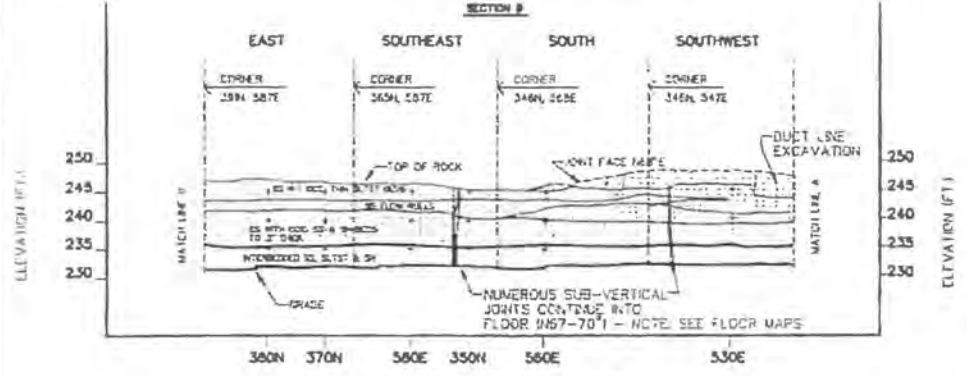
**FIGURE 2H-94**  
**COOLING TOWER CIRCULATING WATER PIPING TRENCH**  
 NIAGARA MOHAWK POWER CORPORATION  
**NINE MILE POINT-UNIT 2**  
 FINAL SAFETY ANALYSIS REPORT





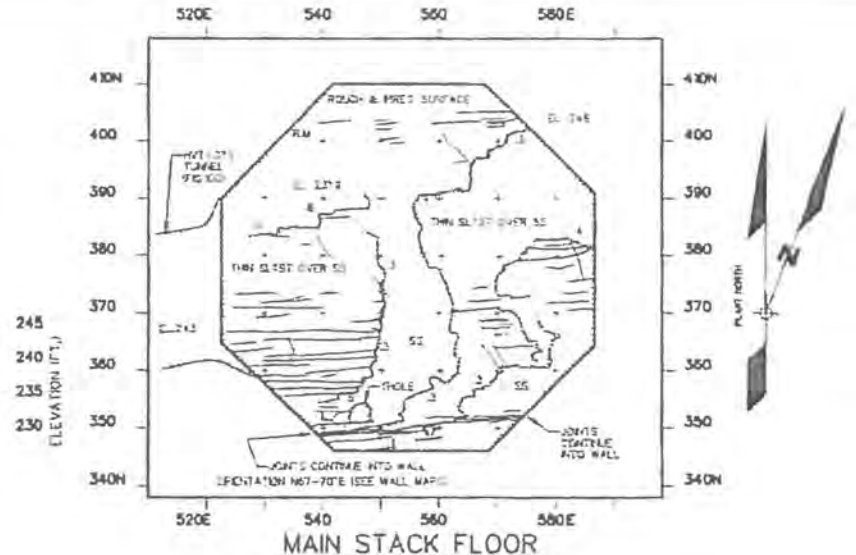


MAIN STACK WALLS



MAIN STACK WALLS

- LEGEND
- SANDSTONE (SS)
  - SH - SHALE
  - CHANGE IN ELEVATION (ft)
  - VERTICAL JOINTS, PLAN VIEW
  - SS - SANDSTONE
  - SS - SANDSTONE
  - SS - SANDSTONE
  - SH - SHALE
  - SS - SANDSTONE
  - SS - SANDSTONE

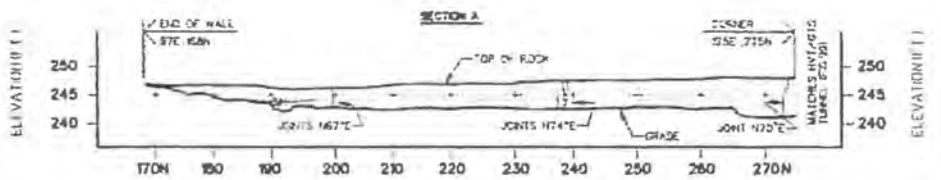
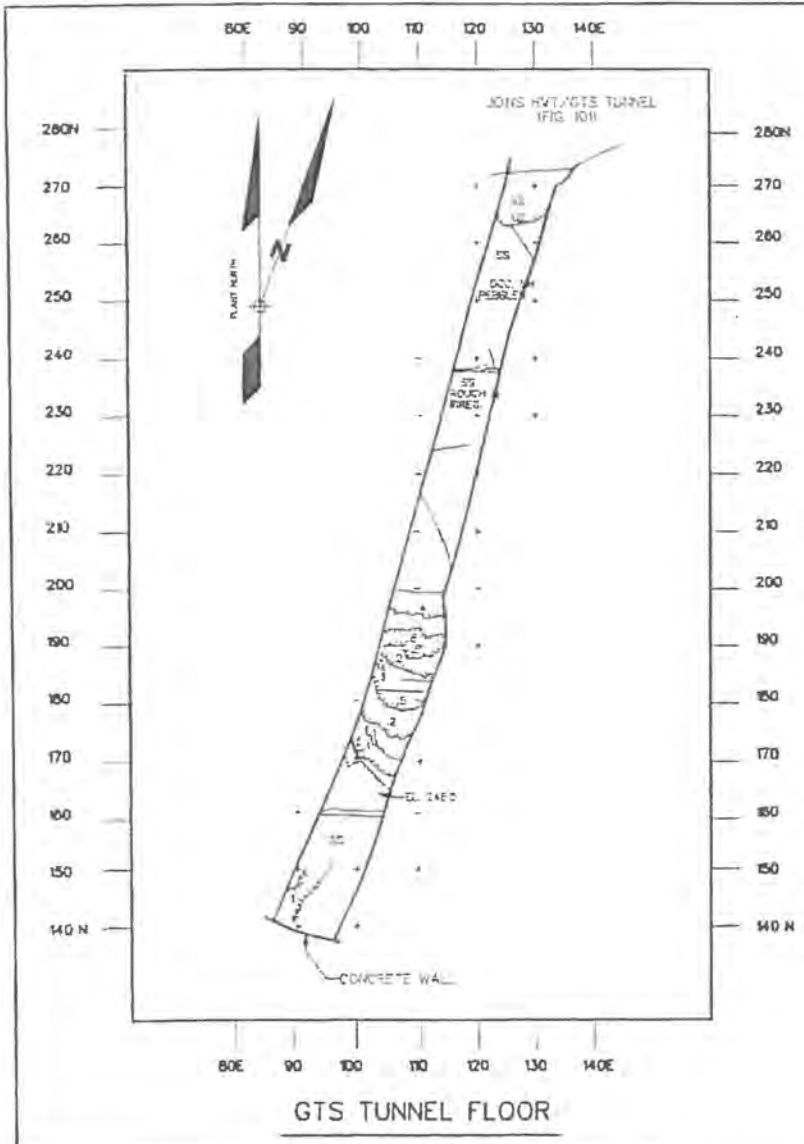


MAIN STACK FLOOR

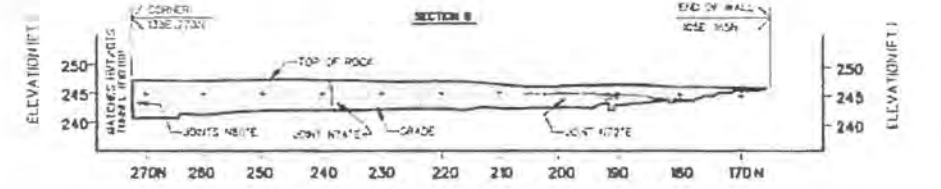
FIGURE 2M-96

MAIN STACK — WALLS & FLOOR

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



GTS TUNNEL - WEST WALL

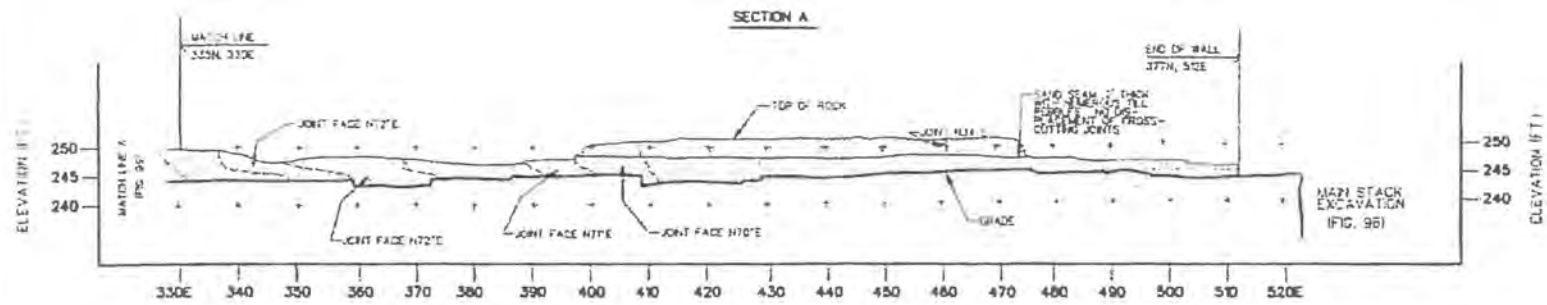


GTS TUNNEL - EAST WALL

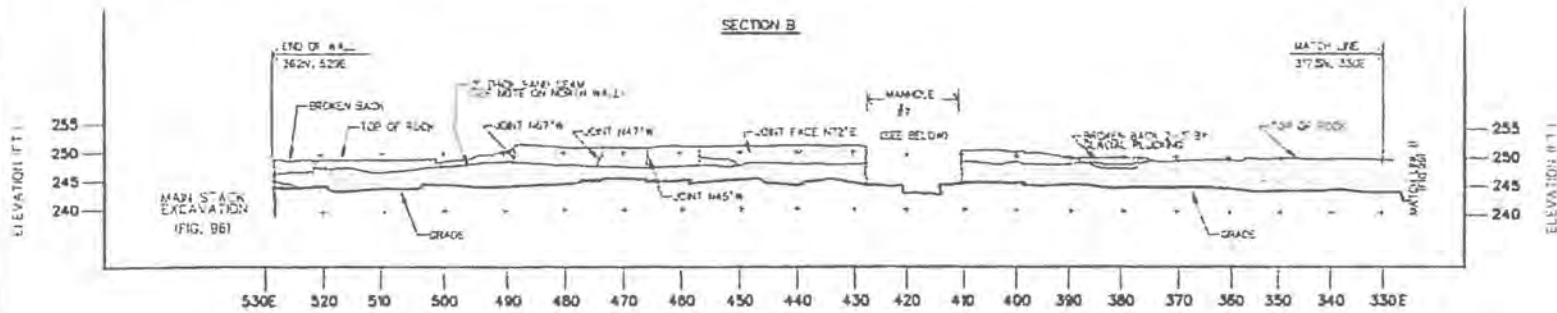


- LEGEND**
- SANDSTONE (SS)
  - CHANGE IN ELEVATION (FT)
  - VERTICAL JOINTS PLAN VIEW
  - SH - SHALE
  - OC - OCCASION

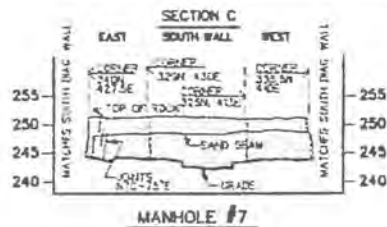
FIGURE 2H-97  
 GTS TUNNEL - WALLS & FLOOR  
 NIAGARA MOHAWK POWER CORPORATION  
 NINE MILE POINT-UNIT 2  
 FINAL SAFETY ANALYSIS REPORT



HVT/GTS TUNNEL - NORTH DIAGONAL WALL



HVT/GTS TUNNEL - SOUTH DIAGONAL WALL




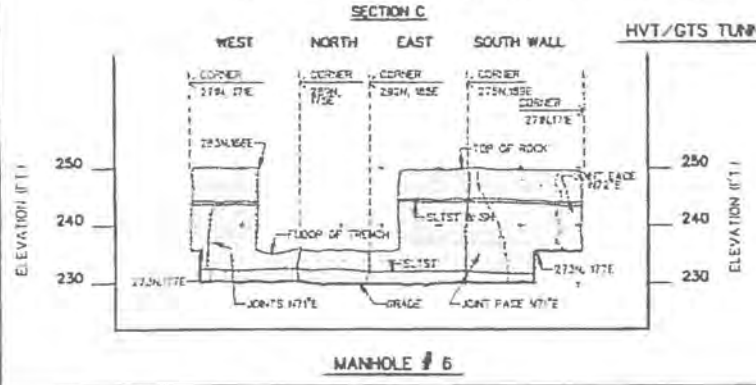
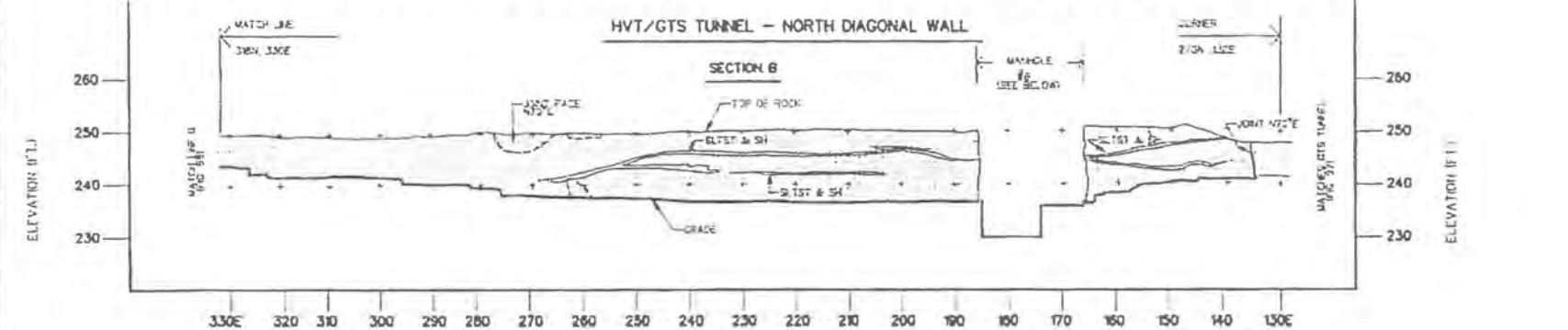
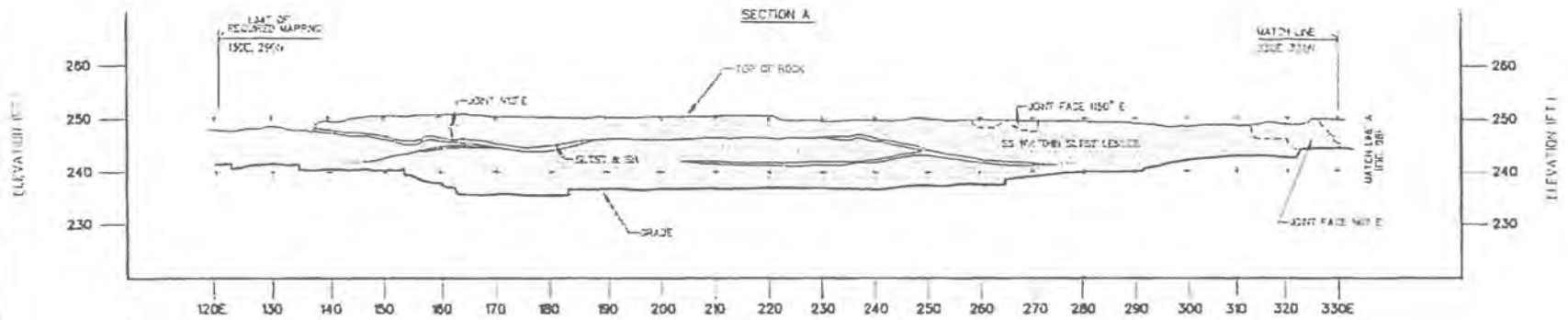
LEGEND  
 SANDSTONE (S)



FIGURE 2H-98

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

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



- LEGEND**
- SANDSTONE (SS)
  - SLISTICKLE - (SL-152)
  - SHALE - (SH)



**FIGURE 2H-99**

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

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

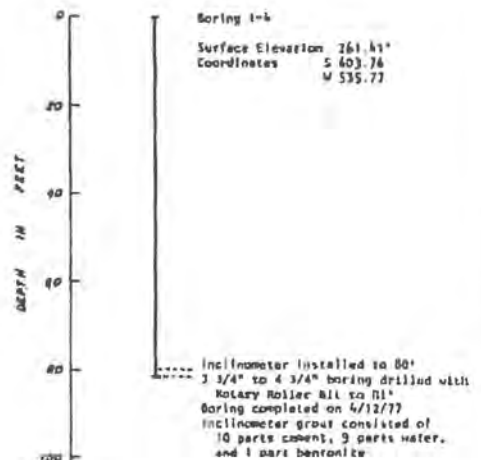
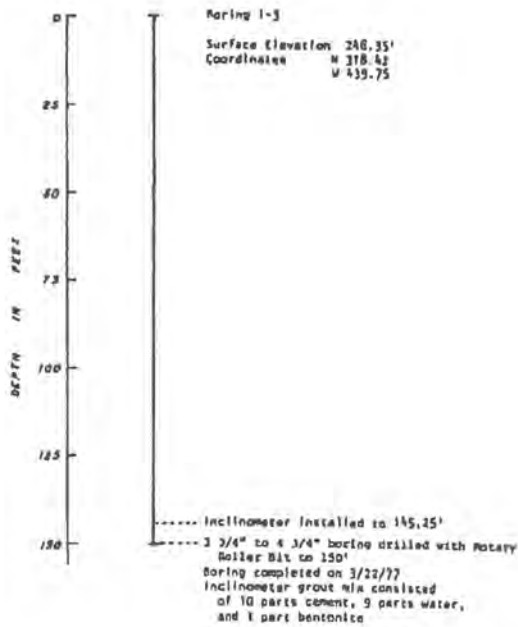
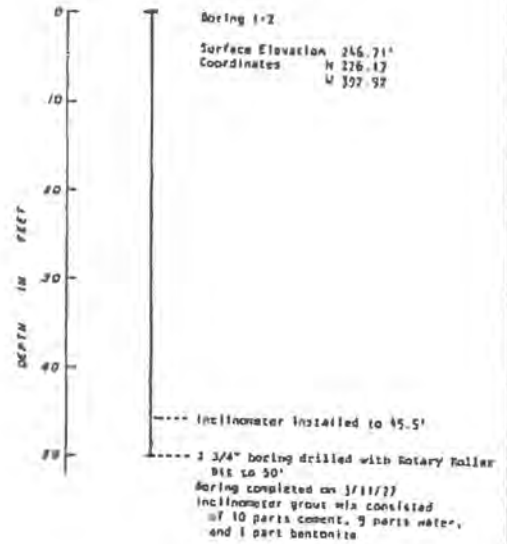
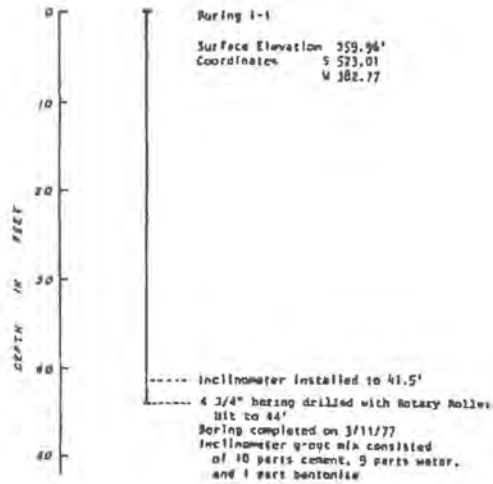
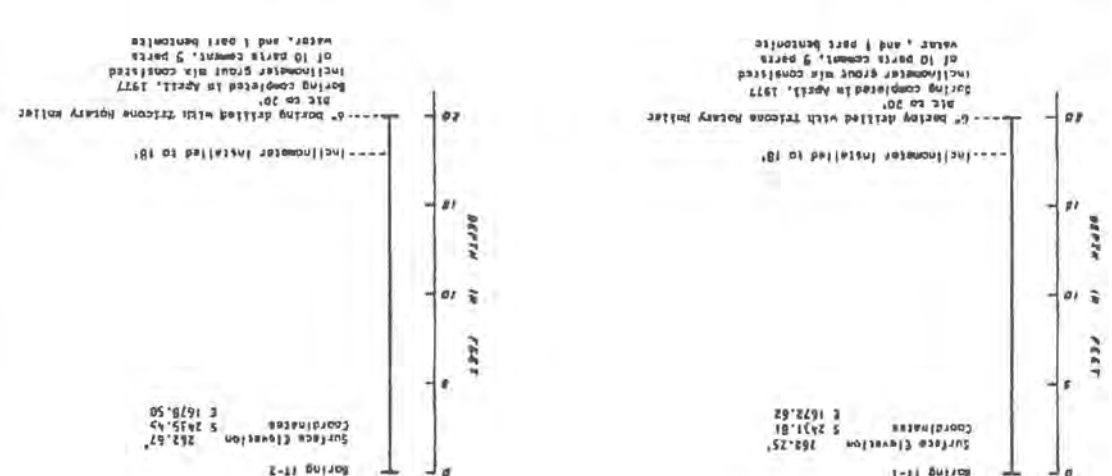
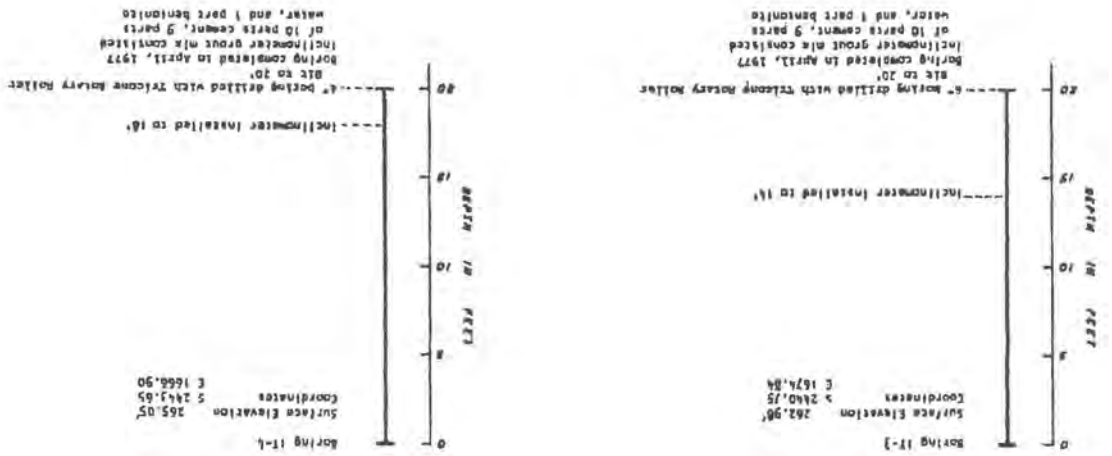
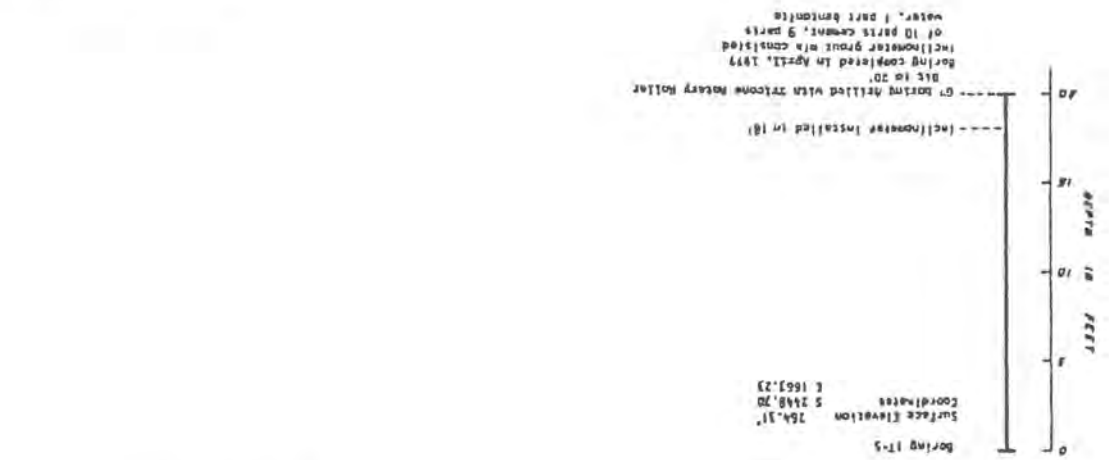
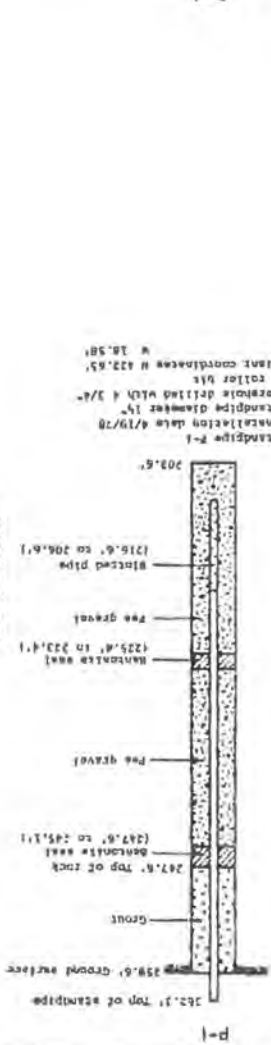
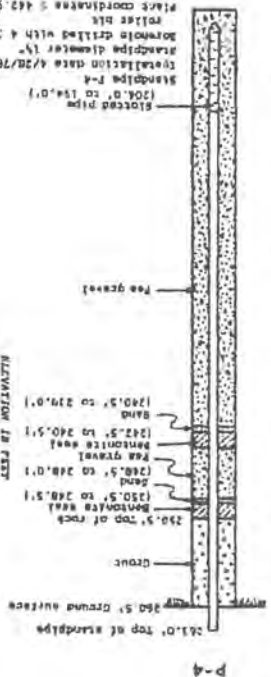
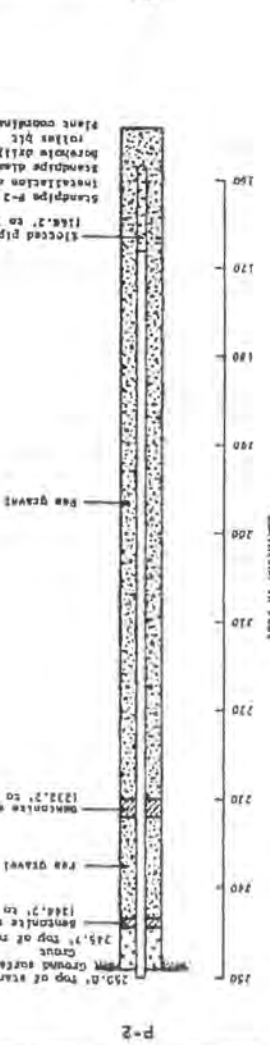
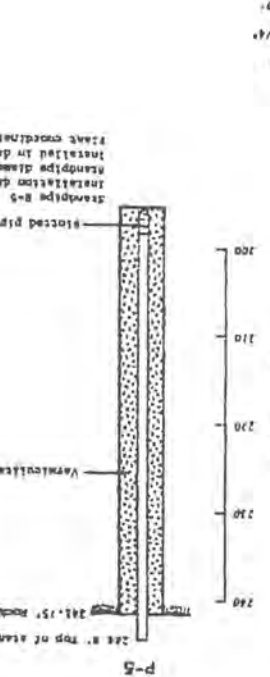
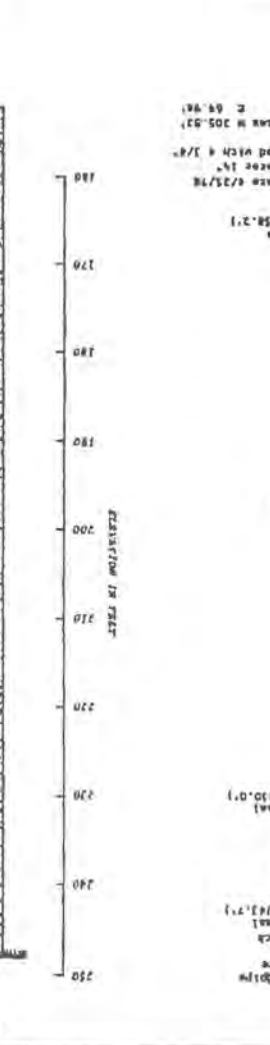
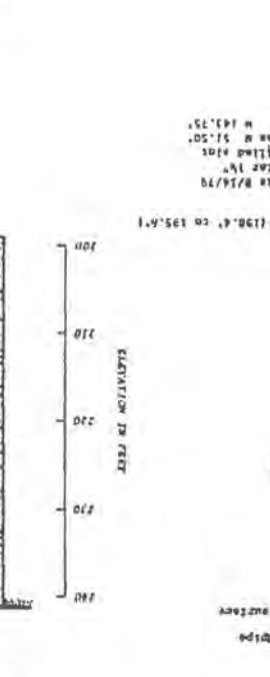
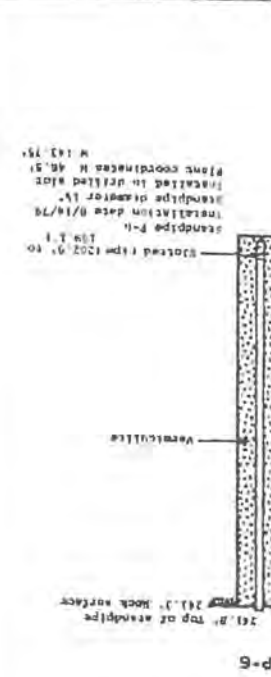


FIGURE 26-1  
 LOGS OF BORINGS I-1, I-2,  
 I-3, AND I-4  
 NIASARA MOHAWK POWER CORPORATION  
 NINE MILE POINT - UNIT 2  
 FINAL SAFETY ANALYSIS REPORT

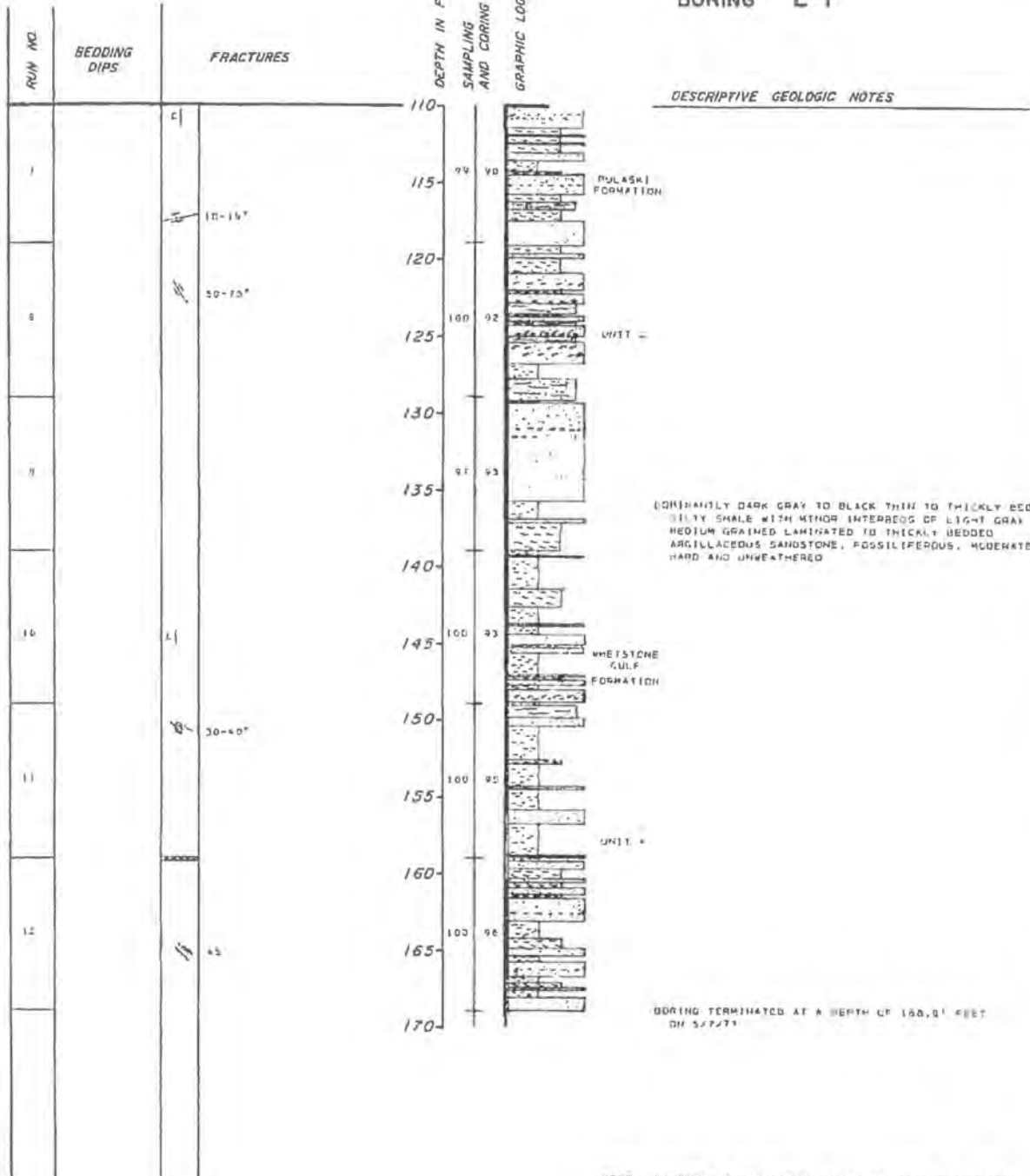




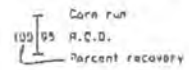




# BORING L-1



**SAMPLING AND CORING INFORMATION**



**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

**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 OR OCCURRENCE OF THESE SUBHORIZONTAL FRACTURES IS REFLECTED IN THE ROD VALUES SHOWN.

**KEY TO SYMBOLS**

- Sandstone
- Siltstone
- Shale
- Fossils
- Shale intra-clastic
- Cross-bedding
- Sand laminae

**FIGURE 26-48**

**LOG OF BORING L-1**

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

# BORING L-2

COORDINATES N 1,284,706.11  
E 545,932.63

## DESCRIPTIVE GEOLOGIC NOTES

5' DEPTH (DRILL COLLAR ELEVATION 261.25')

LAKE SURFACE ELEVATION = 246'

19.3' DEPTH - SEDIMENT

43.0' DEPTH - TOP OF ROCK  
GRAY MEDIUM TO COARSE GRAINED, MEDIUM TO THICKLY BEDDED GRAWACK WITH ABUNDANT CLASTIC MASS, 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

MINER GAS DISCHARGE 60-65'

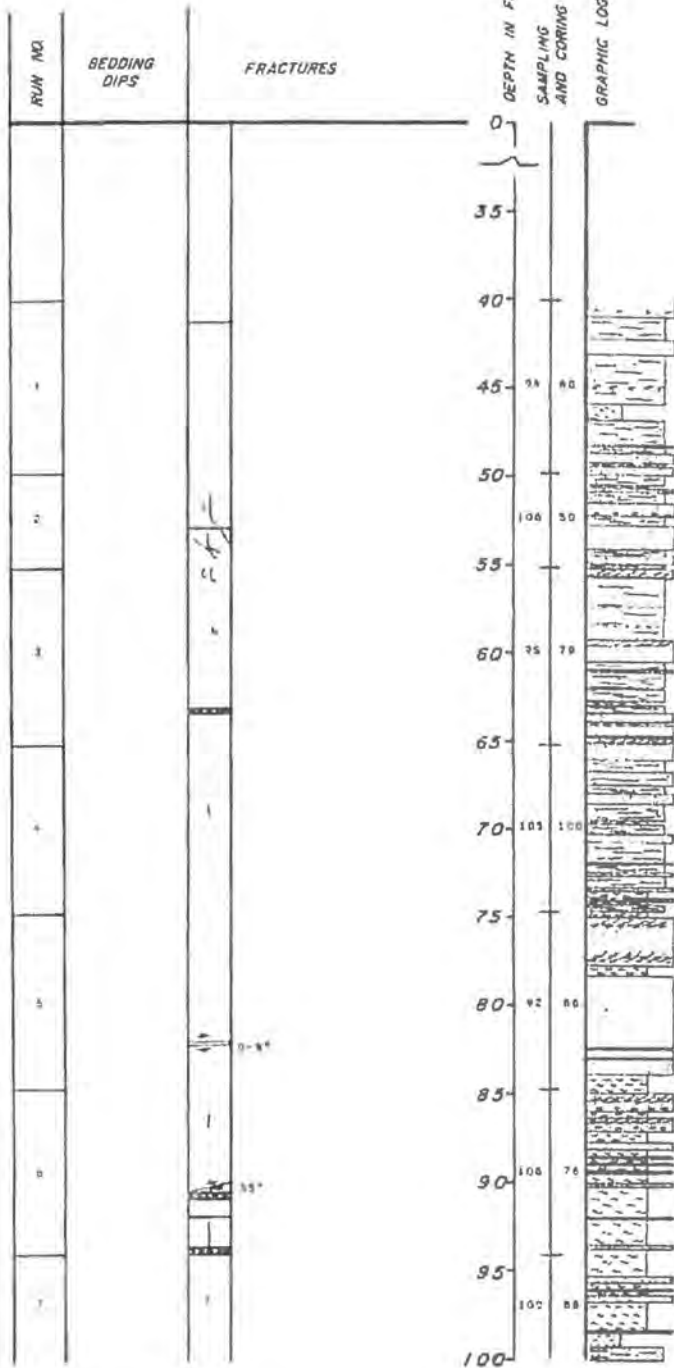
UNIT 4

LIGHT TO MEDIUM GRAY MEDIUM GRAINED ANGULACEOUS SANDSTONE, OCCASIONAL DARK GRAY TO BLACK SILTY SHALE AND SILTSTONE, INTERBEDDED WITH 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 ANGULACEOUS SANDSTONE, SILTSTONE LENSES AND INTERBEDS COMMON, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

UNIT C



### SAMPLING AND CORING INFORMATION

Core run  
100/95 R.O.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

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

### KEY TO SYMBOLS

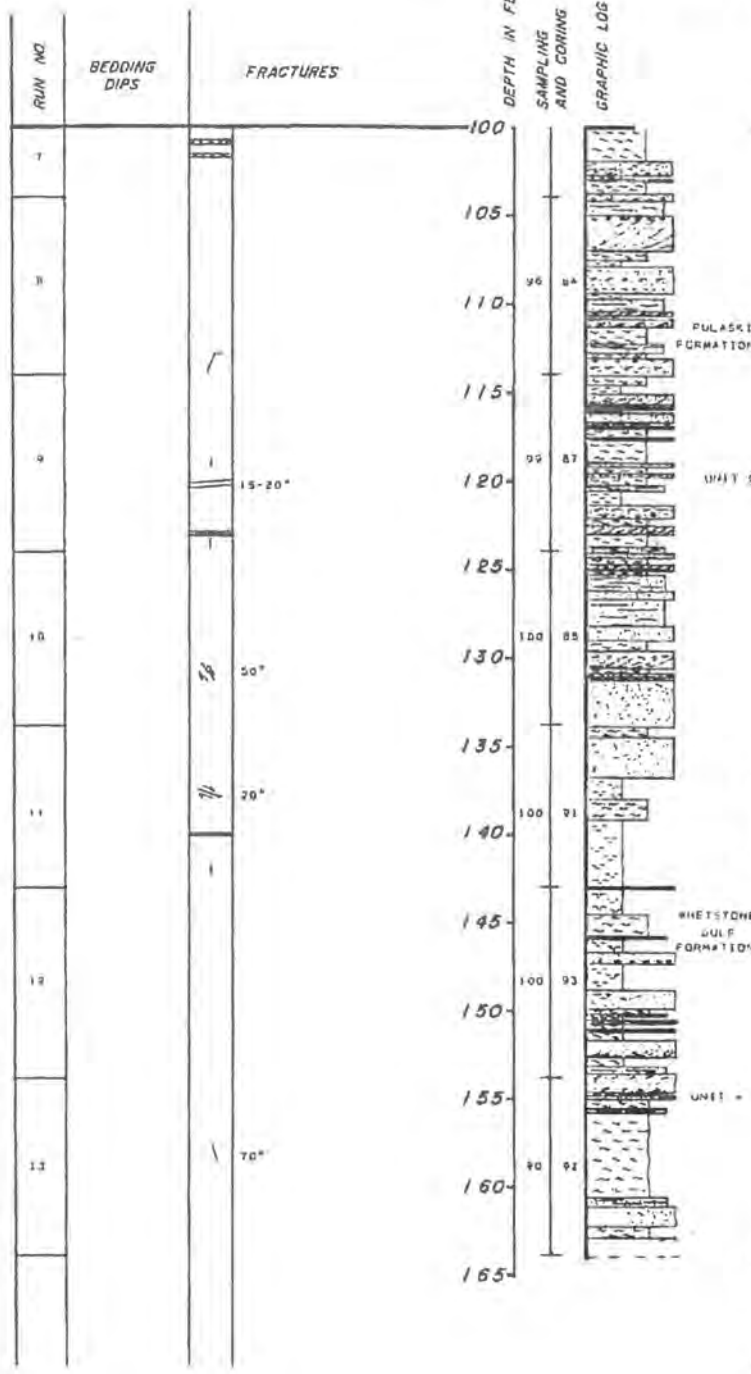
Sandstone  
Graywack  
Siltstone  
Shale  
Fossils  
Shale intra-lenses  
Cross-bedding  
Shale laminae

FIGURE 20.5A

DEPT OF MINING | 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

133.0' 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 CORE FROM THIS BORING. THEY HAVE BEEN IDENTIFIED 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 RFD VALUES SHOWN.

### SAMPLING AND CORING INFORMATION

Core run  
100/95 R.O.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 - silica
- Fractured zone

### KEY TO SYMBOLS

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

FIGURE 2K-50

LOG OF BORING L-2

MIHARA NUCLEAR POWER COMPANY IN  
NINE MILE POINT - UNIT 2  
FINAL SAFETY ANALYSIS REPORT

# BORING L-3

COORDINATES  
 (NYS 6010) N 1,284,399.72  
 E 566,015.83

## DESCRIPTIVE GEOLOGIC NOTES

21' BIRTH DRILL COLLAR ELEVATION 261.0'

LAND SURFACE ELEVATION #246'

34.4' DEPTH - TOP OF ROCK

### TRANSITION ZONE

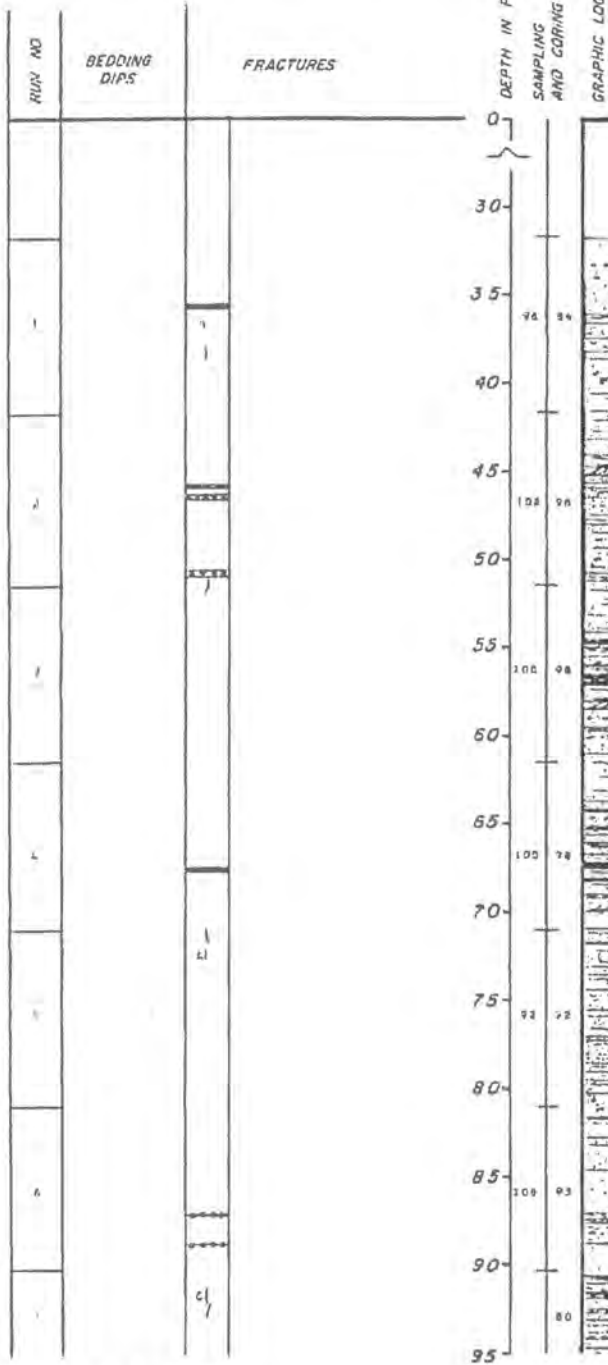
GRAY MEDIUM TO COARSE GRAINED, MEDIUM TO THICKLY BEDDED GRAYWACKE WITH ABUNDANT CLASTIC MASS, INTERBEDDED WITH DARK GRAY LAMINATED TO THINLY BEDDED SILTY SHALE AND LIGHT GRAY MEDIUM GRAINED FINE TO THICKLY BEDDED SILICEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

### PHASIS FORMATION

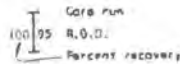
### UNIT A

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



### BEDDING DIPS

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

### FRACTURES

- Diacite 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
- Slate texture

FIGURE 2K-CA

LOG OF BORING L-3

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

# BORING L-3

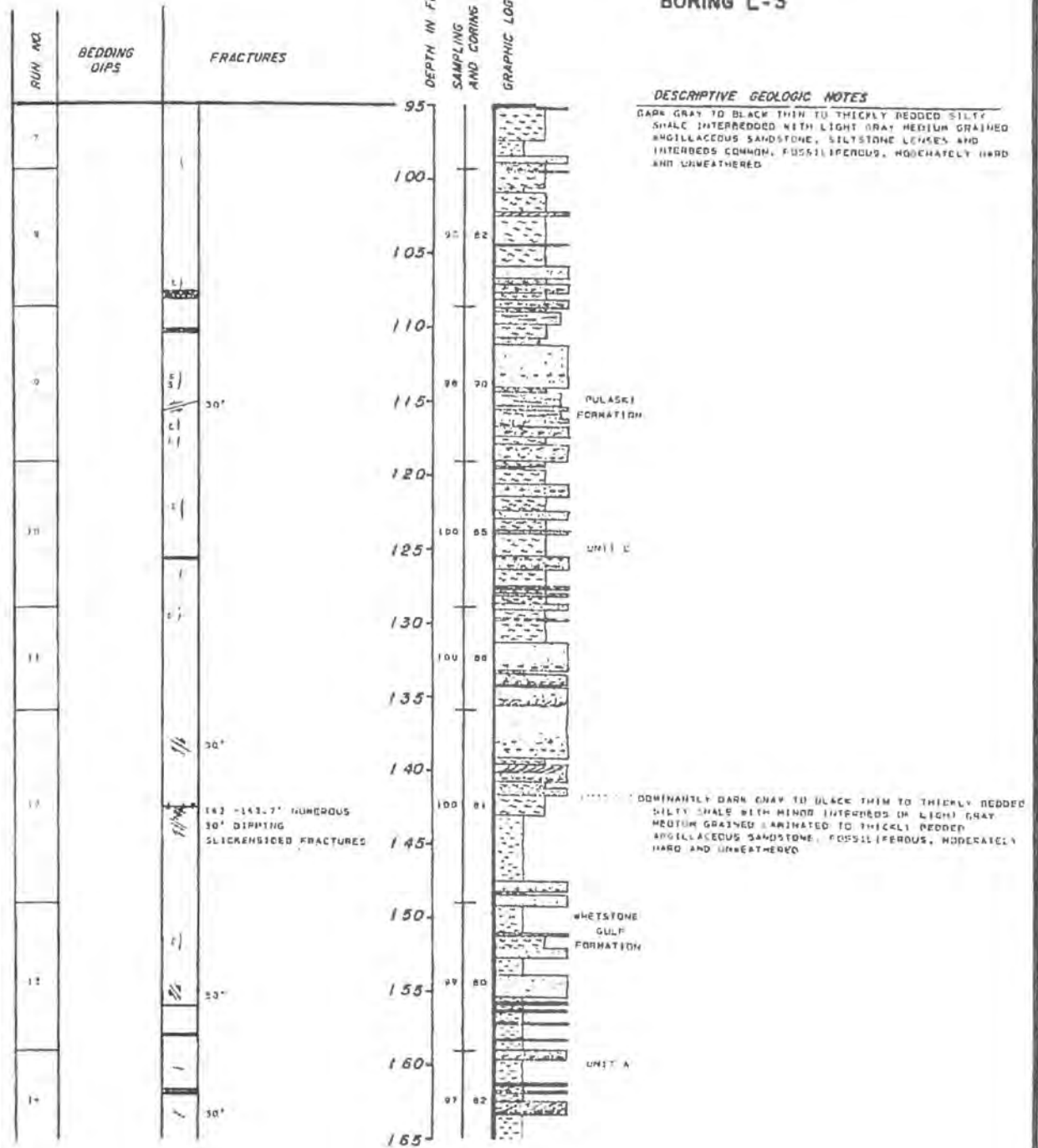


FIGURE 16-60  
 LOG IN BORING L-3  
 WINDRA MONITOR POWER CORPORATION  
 NINE MILE POINT - UNIT 2  
 FINAL SAFETY ANALYSIS REPORT

# BORING L-3

RUN NO.	BEDDING DIPS	FRACTURES	DEPTH IN FEET SAMPLING AND CORING	GRAPHIC LOG
14			165	
15			170	
			175	
			180	

## DESCRIPTIVE GEOLOGIC NOTES

BORING TERMINATED AT A DEPTH OF 178.5 FEET ON 5/15/77

NOTE: NUMEROUS FRACTURES PARALLEL TO BEDDING SURFACES WERE OBSERVED IN THE LOGS FROM THIS BORING. THEY HAVE BEEN LISTED BUT IN THE REDUCTION 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

Core run  
100% R.O.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
- Fracture zone

### KEY TO SYMBOLS

- Sandstone
- Graywacke
- Siltstone
- Clay
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale lenses

FIGURE 2A-60

LOG OF BORING L-3

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

# BORING L-4

COORDINATES N 11,284,462.38  
E 545,100.78

## DESCRIPTIVE GEOLOGIC NOTES

0' DEPTH - DRILL COLLAR (ELEVATION 260.97')

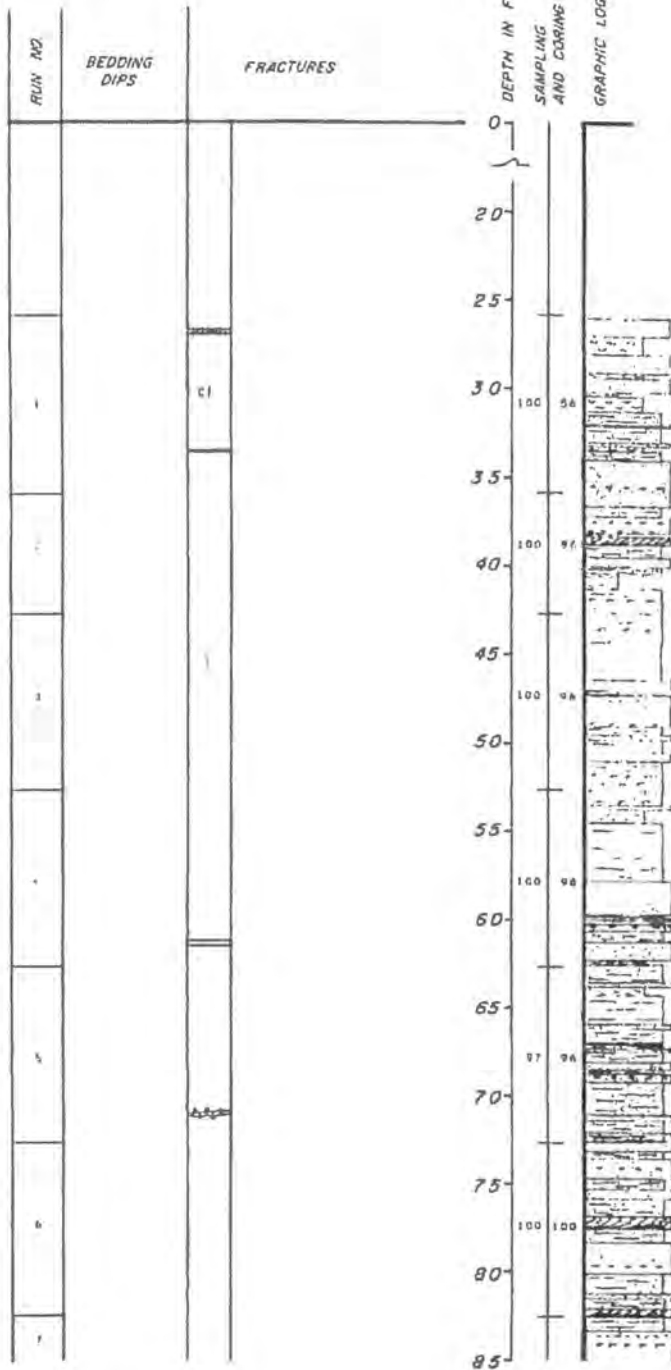
LAKE ONTARIO (ELEVATION 244')

25.3' DEPTH - TOP OF ROCK

GRAY MEDIUM TO COARSE GRAINED, MEDIUM TO THICKLY BEDDED GRAYWACKE WITH ABUNDANT ELASTIC MASS, INTERBEDDED WITH DARK GRAY LAMINATED TO THINLY BEDDED SILTY SHALE AND LIGHT GRAY MEDIUM GRAINED THIN TO THICKLY BEDDED SILICEOUS SANDSTONE, (65%) SILTIERING, MODERATELY HARD AND UNWEATHERED

UNIT 4  
87' 1/2" THICK ILLITE LAYER

UNIT 2  
LIGHT TO MEDIUM GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, OCCASIONAL DARK GRAY TO BLACK SILTY SHALE AND SILTSTONE, INTERBEDDED WITH SHALE STRINGERS, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED



### SAMPLING AND CORING INFORMATION

Core run  
100% R.O.C.  
Percent recovery

### BEDDING DIPS

0.1° Bedding dip measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

### FRACTURES

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

### LEG TO SYMBOLS

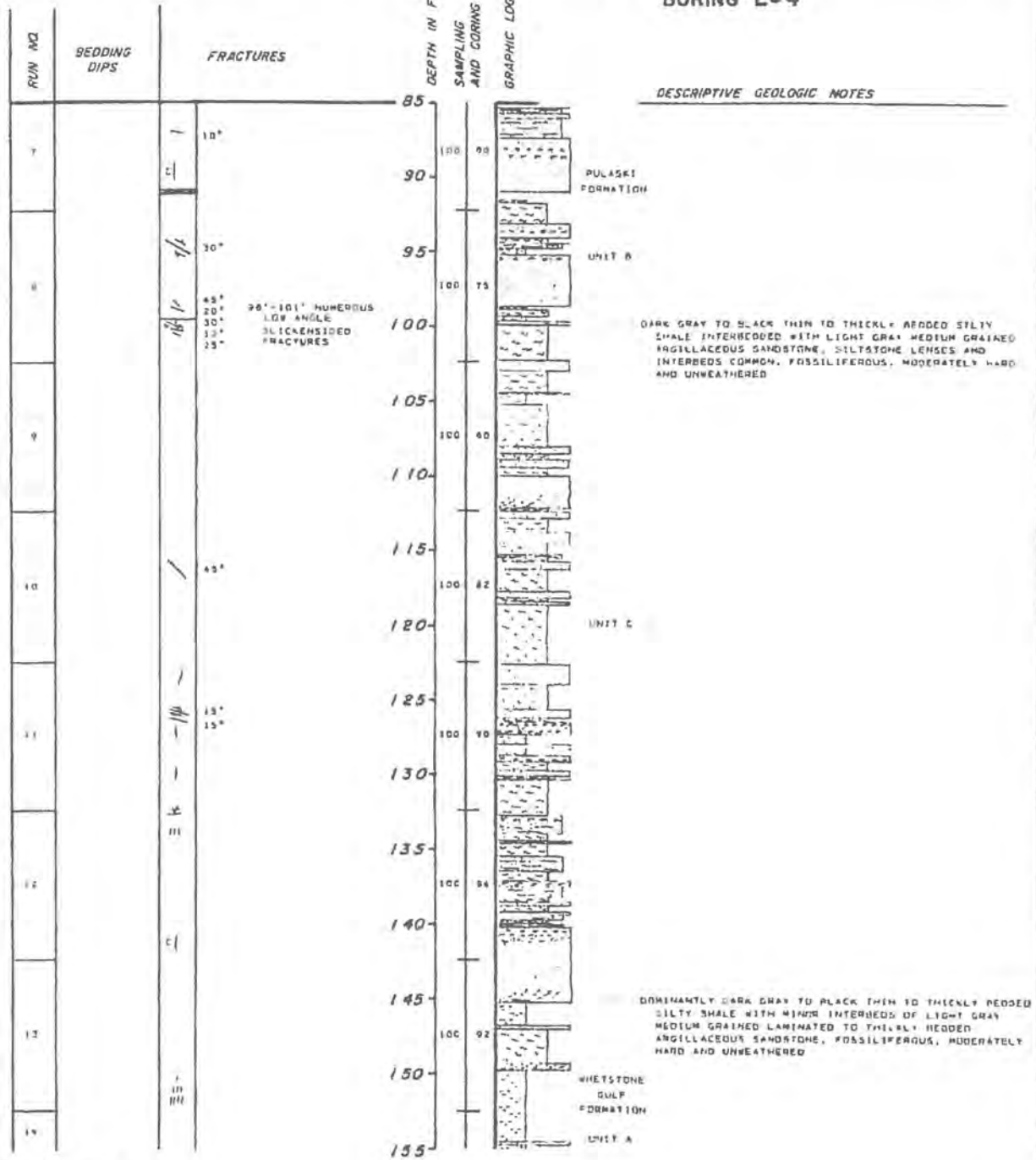
Sandstone  
Graywacke  
Siltstone  
Shale  
Fossils  
Shale stringers  
Cross-bedding  
Slate laminae

FIGURE 2K-7A

LOG OF BORING L-4

NIAGARA MOHAWK POWER CORPORATION  
(ONE MILE POINT - UNIT 2)  
FINAL SAFETY ANALYSIS REPORT

# BORING L-4



### SAMPLING AND CORING INFORMATION

Core run  
100% P.O.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
- Claystone
- Siltstone
- Shale
- Fossiliferous
- Shale intra-bedded
- Cross-bedding
- Shale lenticular

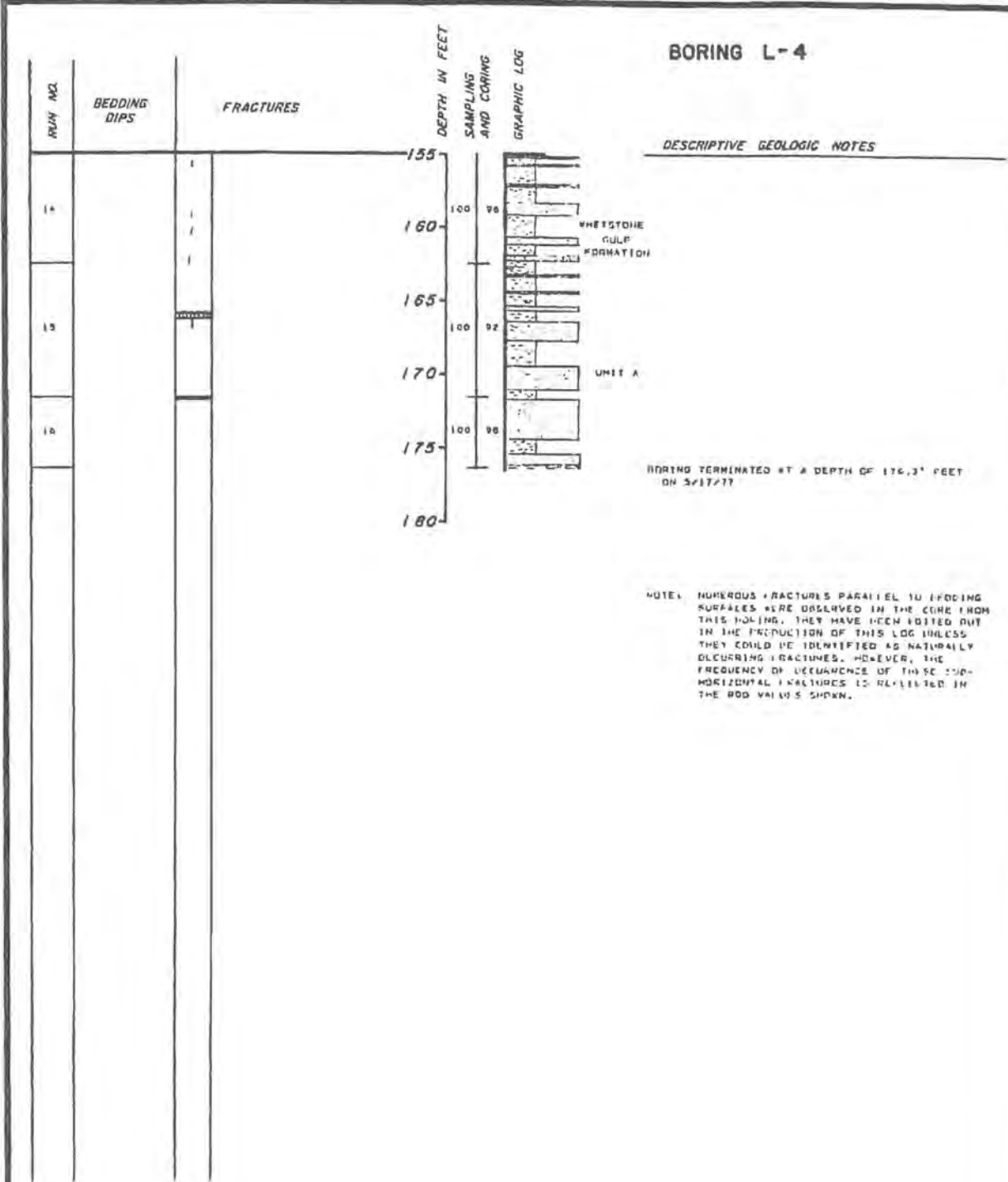
FIGURE 24-70

10000 BORE L-4

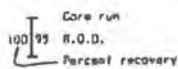
NIXARA MONARK POWER CORPORATION  
NINE MILE POINT - UNIT 2  
FINAL SAFETY ANALYSIS REPORT



# BORING L-4



**SAMPLING AND CORING INFORMATION**



**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
- Fracture zone

**KEY TO SYMBOLS**

- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossiliferous
- Shale intra-clasts
- Cross-bedding
- Thin laminae

FIGURE 26-1C

LOG OF BORING L-4

NINE MILE POINT - UNIT 2  
FINAL SAFETY ANALYSIS REPORT

# BORING L-5

COORDINATES N 1.284.122.83  
(NYS GRID) 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

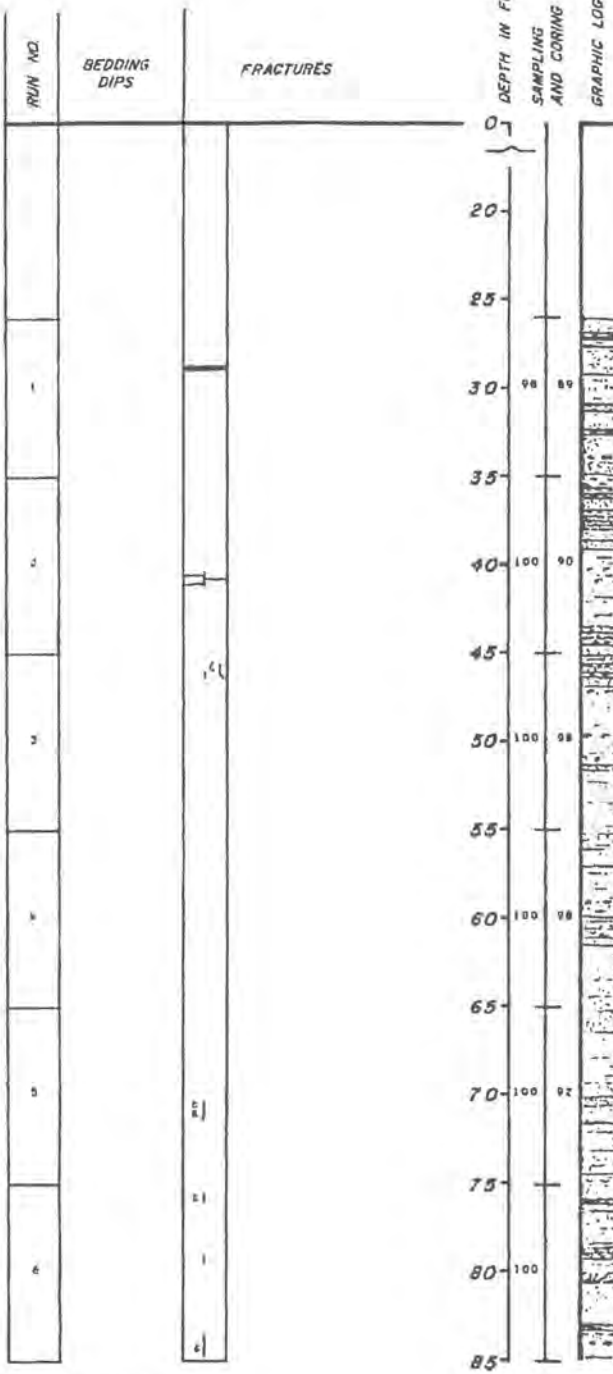
GRAY MEDIUM TO COARSE GRAINED, MEDIUM TO THICKLY BEDDED GRAYWACKE WITH ABUNDANT CLASTIC WASH, INTERBEDDED WITH DARK GRAY LAMINATED TO THINLY BEDDED SILTY SHALE AND LIGHT GRAY MEDIUM GRAINED THIN TO THICKLY BEDDED SILICEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

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

Done 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

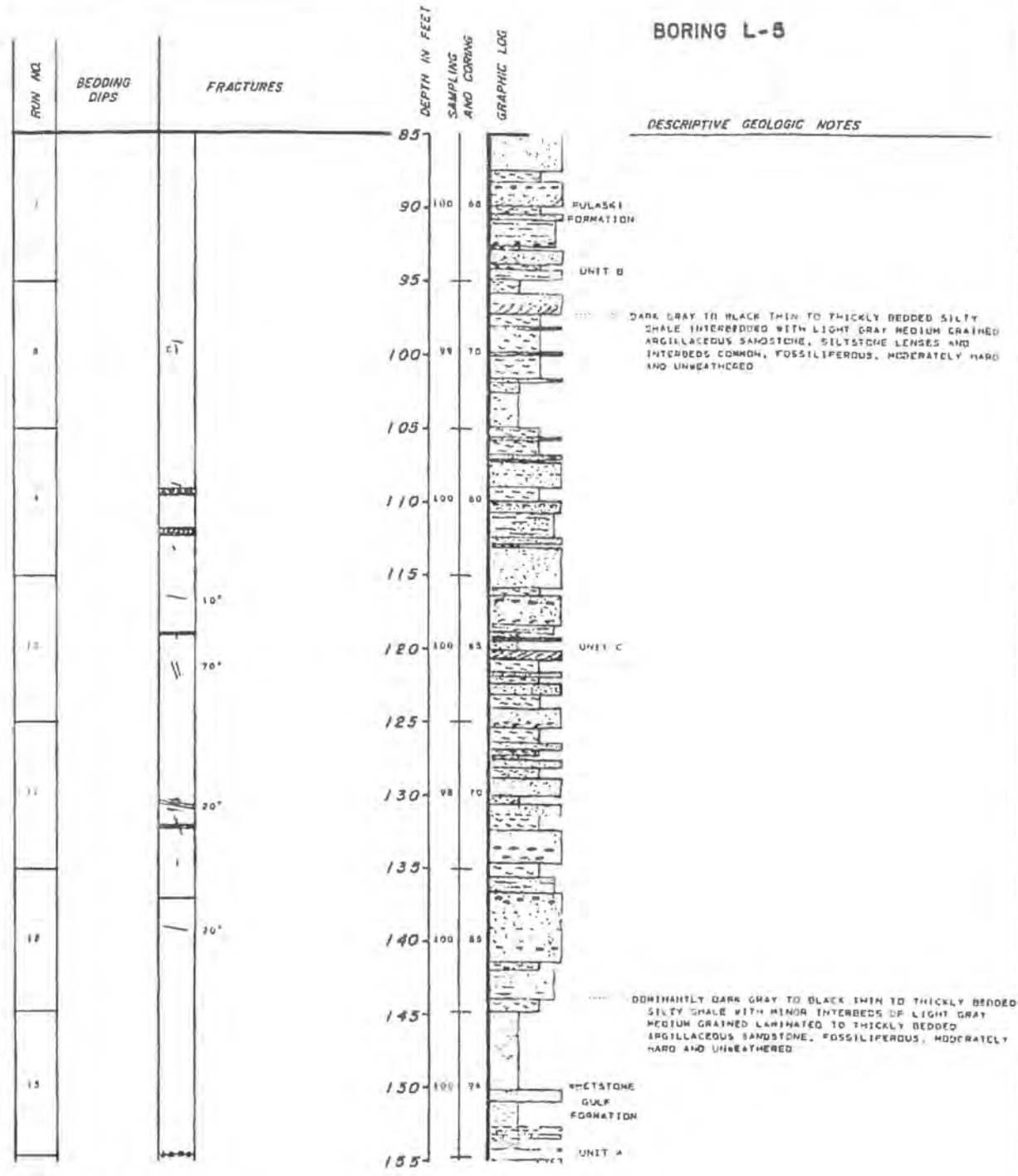
- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Sand laminae

FIGURE 2K-5A

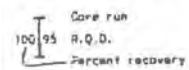
LOG OF BORING L 5

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

# BORING L-5



**SAMPLING AND CORING INFORMATION**



**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
- Crinoidal
- Siltstone
- Shale
- Fossils
- Shale intraclasts
- Cross-bedding
- Shale laminae

FIGURE 28-80

(LOG OF BORING) 5

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

# BORING L-5

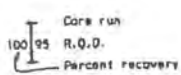
RUN NO	BEDDING DIPS	FRACTURES	DEPTH IN FEET SAMPLING AND CORING GRAPHIC LOG
14			155 160
15			165 170
16			175 180

## DESCRIPTIVE GEOLOGIC NOTES

BORING TERMINATED AT A DEPTH OF 178.1' 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 ROD VALUES SHOWN.

### SAMPLING AND CORING INFORMATION



### 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

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

### LEG TO SYMBOLS

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

FIGURE 2N-6C

LOG OF BORING L-5

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

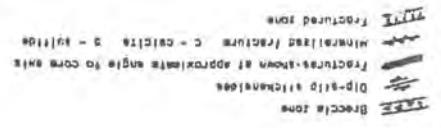
MINERAL MOVERS POWER COMPANY  
 NINE MILE POINT - UNIT 2  
 FINAL SAFETY ANALYSIS REPORT

LOG OF BORING L-6

FIGURE 26-9A



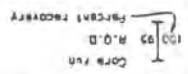
KEY TO SYMBOLS



FAULTS

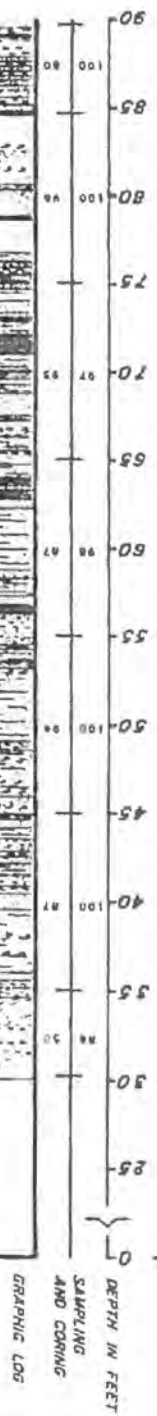
Dip-slip measured on selected bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

MEASUREMENTS



SAMPLING AND CORING INFORMATION

RUN NO.	BEDDING DIPS	FRACTURES
1		
2		
3		
4		
5		
6		
7		



... LIGHT TO MEDIUM GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, OCCASIONAL DARK GRAY TO BLACK SILTY SHALE AND SILTSTONE, INTERBEDDED WITH SHALE 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 SANDSTONE, OCCASIONAL SILTY SANDSTONE, MODERATELY HARD AND UNWEATHERED

30' DEPTH - TOP OF ROCK

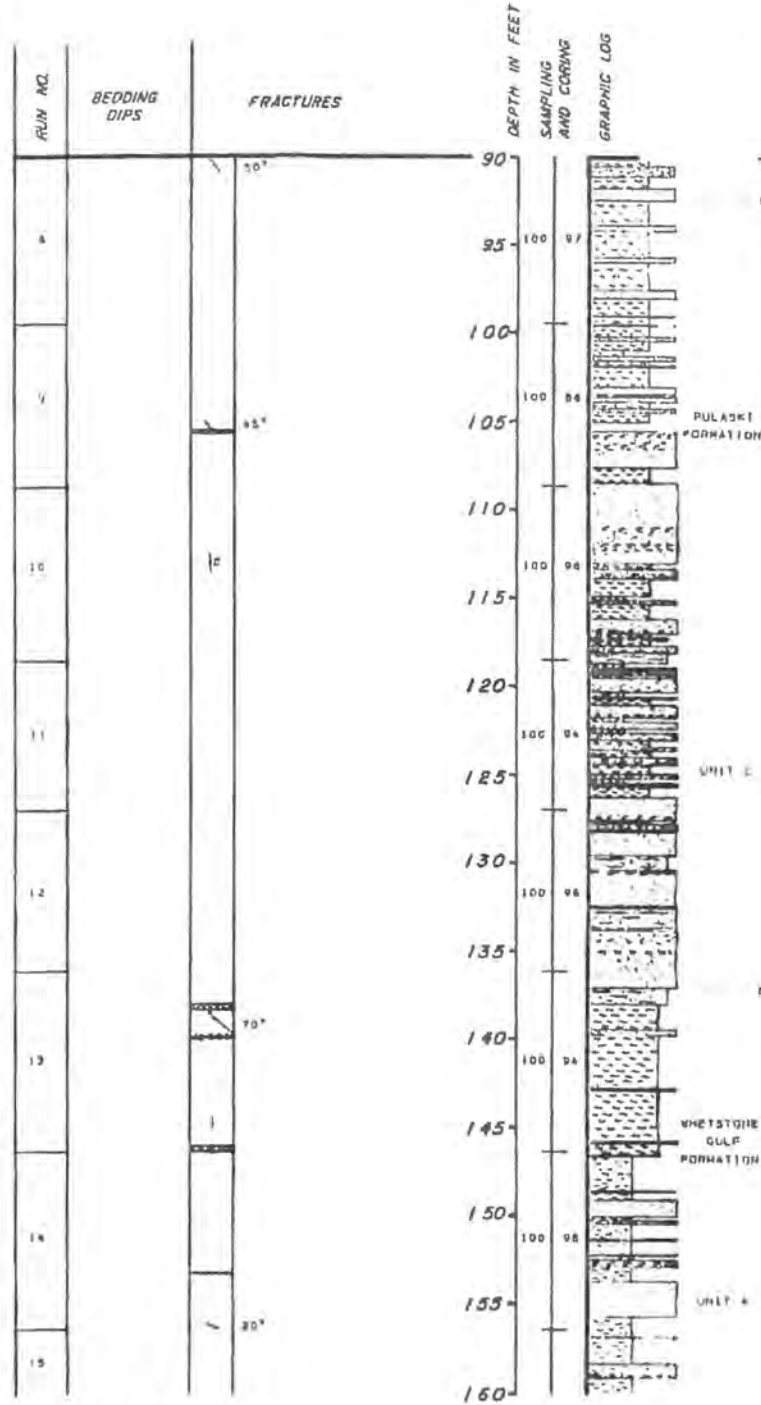
0' DEPTH - HILL COLLAR (ELEVATION 260.97')  
 14.0' DEPTH - LAKE SURFACE (ELEVATION 260.1')

DESCRIPTIVE GEOLOGIC NOTES

COORDINATES  
 N 1284430.26 E 540332.02

BORING L-6

# 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

PULASKI FORMATION

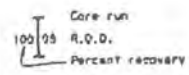
UNIT C

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

WHEATSTONE GULF FORMATION

UNIT A

### SAMPLING AND CORING INFORMATION



### BEDDING DIPS

30° 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

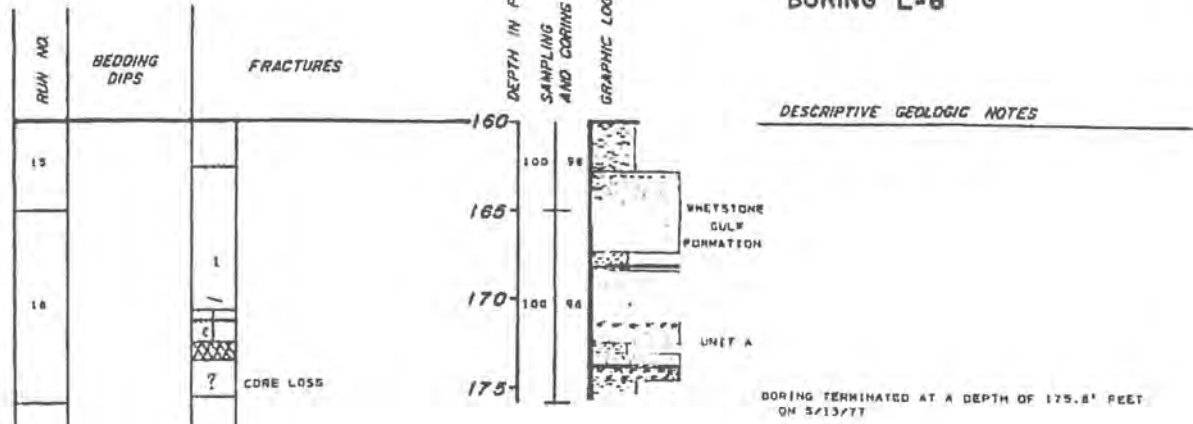
- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clastic
- Cross-bedding
- Shale laminae

FIGURE 2K 08

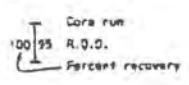
LOG OF BORING L-6

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

# BORING L-6



**SAMPLING AND CORING INFORMATION**



**BEDDING DIPS**

03' Bedding dips measured on selective bedding planes. An attempt was made to hold a 10' interval cross bedding or other primary structures.

**FRACTURES**

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

**KEY TO SYMBOLS**

- Sandstone
- Gray-schale
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale lenticles

FIGURE 2K-9C

LOG OF BORING L-6

WABPS MONARK POWER CORPORATION  
NINE MILE POINT - UNIT 2  
FINAL SAFETY ANALYSIS REPORT

# BORING L-7

COORDINATES  
 INYS GRID) N 1.284.810.61  
 E 586.109.67

## DESCRIPTIVE GEOLOGIC NOTES

0' DEPTH - DRILL COLLAR (ELEVATION 262.05')  
 15.6' DEPTH - LAKE SURFACE (ELEVATION 246')

34.8' DEPTH - TOP OF ROCK

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

PULASKI FORMATION

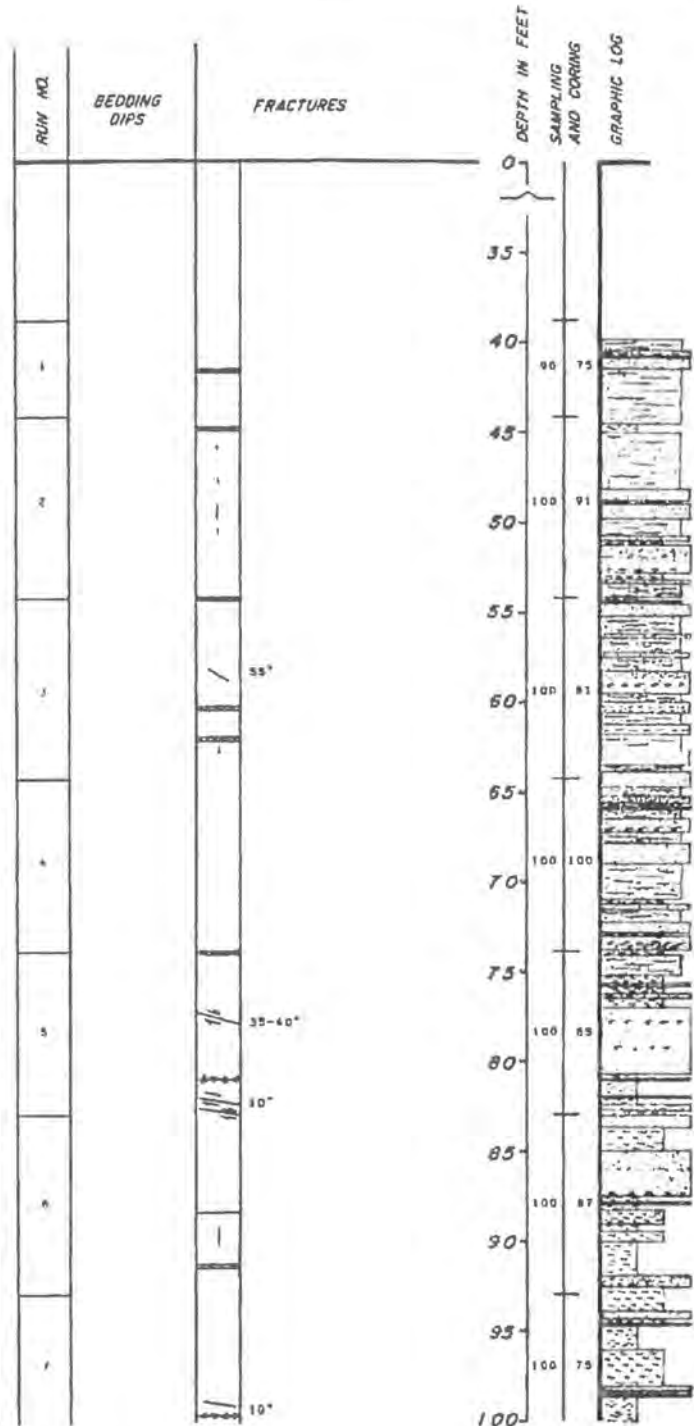
UNIT A

UNIT B

UNIT C

LIGHT TO MEDIUM GRAY MEDIUM GRAINED ARGILLACEOUS SANDSTONE, OCCASIONAL DARK GRAY TO BLACK SILTY SHALE AND SILTSTONE, INTERBEDDED WITH 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



### SAMPLING AND CORING INFORMATION

Core run  
 R.O.D.  
 Percent recovery

### BEDDING DIPS

0-1' (incl.) dips measured in selective boring 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 1000

LOG OF BORING L-7

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



FINAL SAFETY ANALYSIS REPORT  
 NINE MILE POINT - UNIT 2  
 NUCLEAR ENERGY POWER CORPORATION

LOG OF BORING L-7

FIGURE 3-10

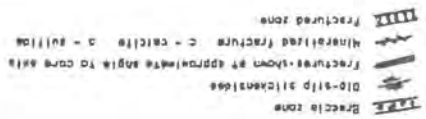
BORING TERMINATED AT A DEPTH OF 172.5 FEET ON 5/12/77

UNIT 1  
 MULTIPLE FRACTURES PARALLEL TO BEDDING

UNIT 2  
 FRACTURES ALMOST OBSERVED IN THE CORE FROM THIS BORING, THEY HAVE BEEN FOUND OUT IN THE PRODUCTION OF THIS LOG INTERVALS. THEY COULD BE IDENTIFIED AS NATURAL OCCURRING FRACTURES. HOWEVER, THE FREQUENCY OF OCCURRENCE OF THESE VERTICAL FRACTURES IS REFLECTED IN THE LOG WHICH IS SHOWN.



SEE TO SYMBOL



Fractures

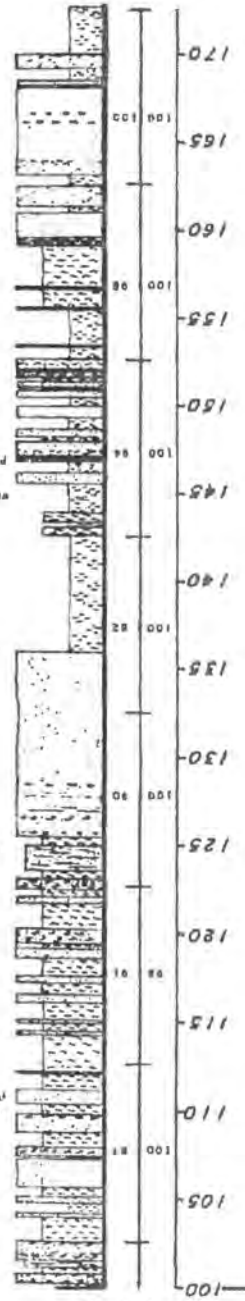
Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary structures.

BEDDING DIPS

Core run  
 100% R.O.D.  
 Percent recovery

SAMPLING AND CORING INFORMATION

ROW AND BEDDING DIPS	DEPTH IN FEET	FRACTURES
14	170	
13	165	45°
12	160	40°
11	155	48°
10	150	25°, 15°
9	145	30°
8	140	10°
7	135	



DEPTH IN FEET  
 SAMPLING AND CORING  
 GRAPHIC LOG

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, POSSIBLY FOSSELI-FEROUS, HOORFALL HARD AND UNWEATHERED

DESCRIPTIVE GEOLOGIC NOTES

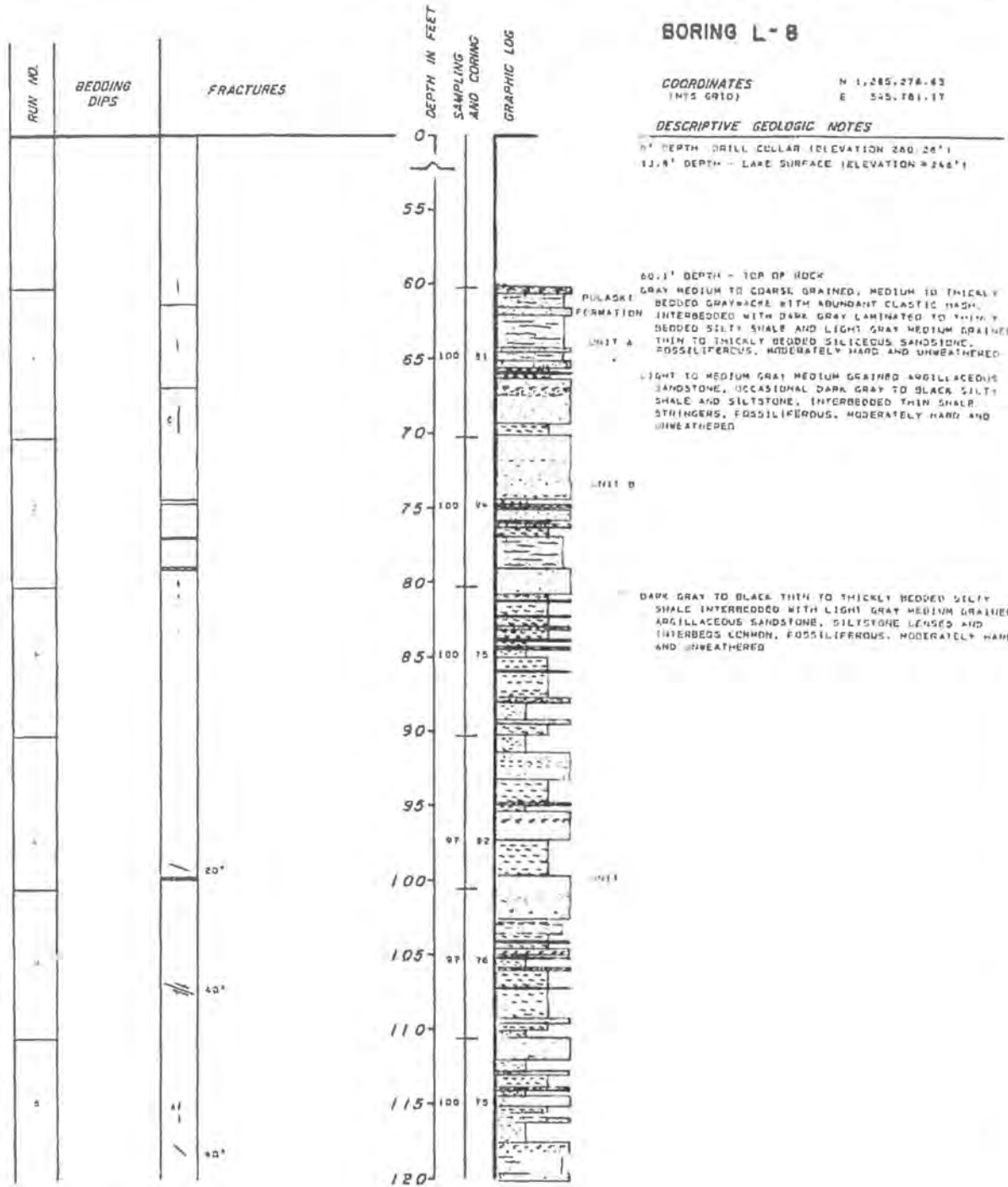
BORING L-7

# BORING L-8

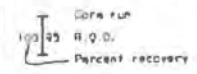
COORDINATES  
 (MGS GRID) N 1,285,278.43  
 E 345,781.17

## DESCRIPTIVE GEOLOGIC NOTES

0' DEPTH - DRILL COLLAR (ELEVATION 240.26')  
 13.8' DEPTH - LAKE SURFACE (ELEVATION 246.1')



### SAMPLING AND CORING INFORMATION



### 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

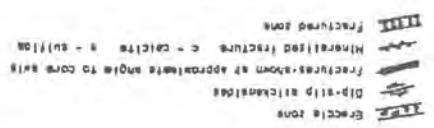
- Breccia zone
- (10-45) slickensides
- Fractures shown at approximate angle to core axis
- Mineralized fracture: z - calcite s - sulfide
- Fractured zone

### KEY TO SYMBOLS

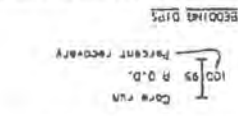
- Sandstone
- Claystone
- Siltstone
- Shale
- Fossils
- Chain intra-clasts
- Cross-bedding
- Mud laminae

FIGURE 24-114  
 LOG OF BORING L-8  
 NIAGARA MOHAWK POWER CORPORATION  
 NINE MILE POINT - UNIT 2  
 FINAL SAFETY ANALYSIS REPORT

WESTERN SLOANER POWER CORPORATION  
 THREE MILE POINT - UNIT 2  
 LOG OF BORING L-8  
 FIGURE 28-118



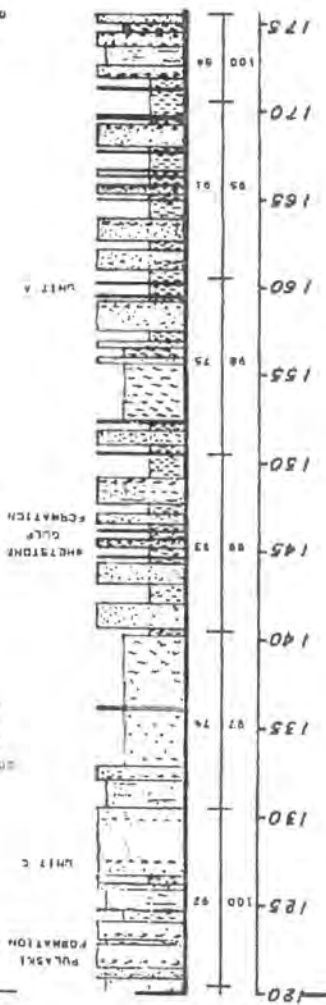
03' Bedding dip measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding of other primary structures.



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 on these and horizontal fractures is reflected in the log values shown.

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

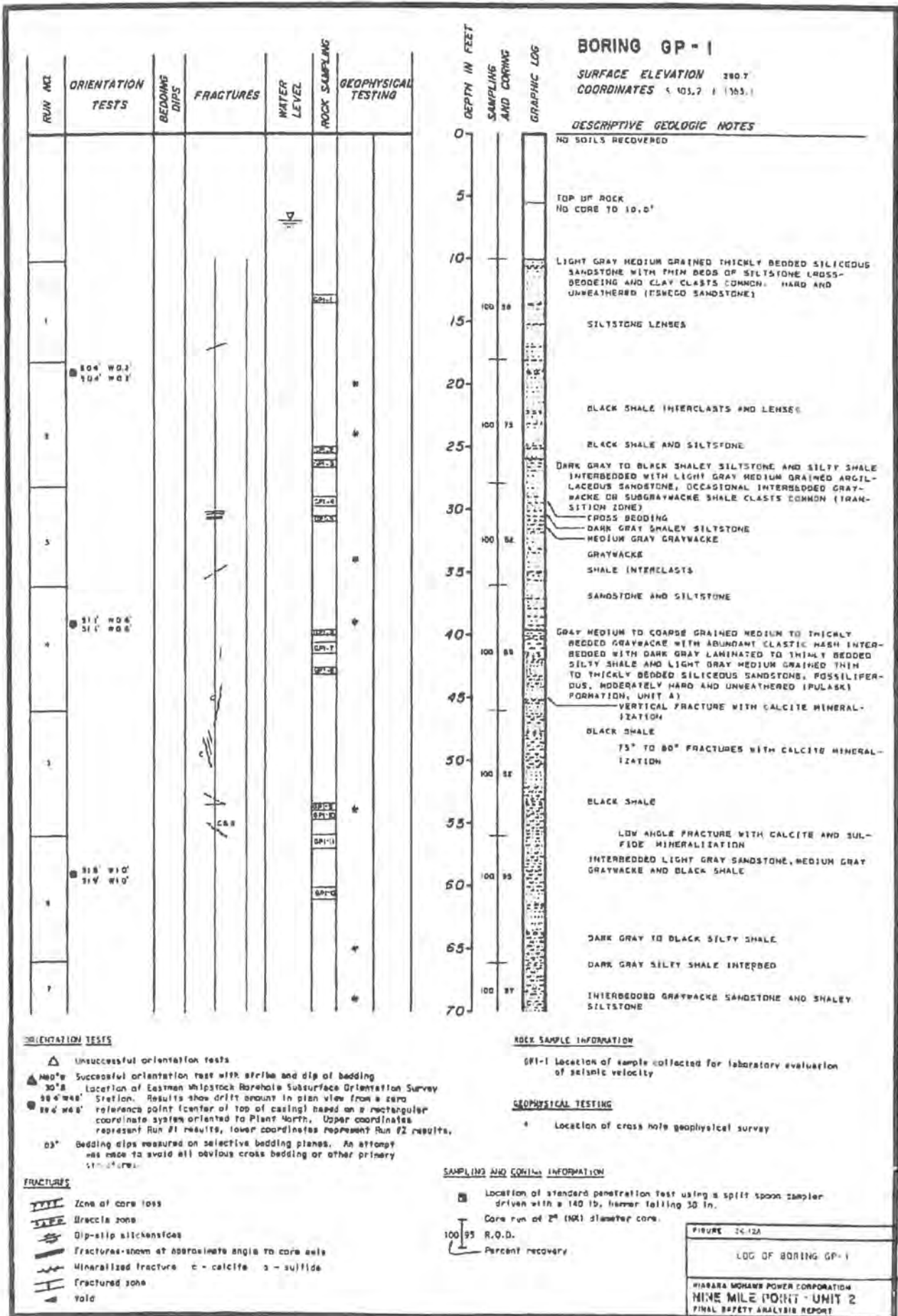
DESCRIPTIONAL DAM GRAY TO BLACK TAIN TO THICKLY BEDDED SILT SHALE WITH MINOR INTERBEDS OF LIGHT GRAY ARGILLACEOUS SANDSTONE. POSSIBLY, MODERATELY HARD AND WEATHERED.



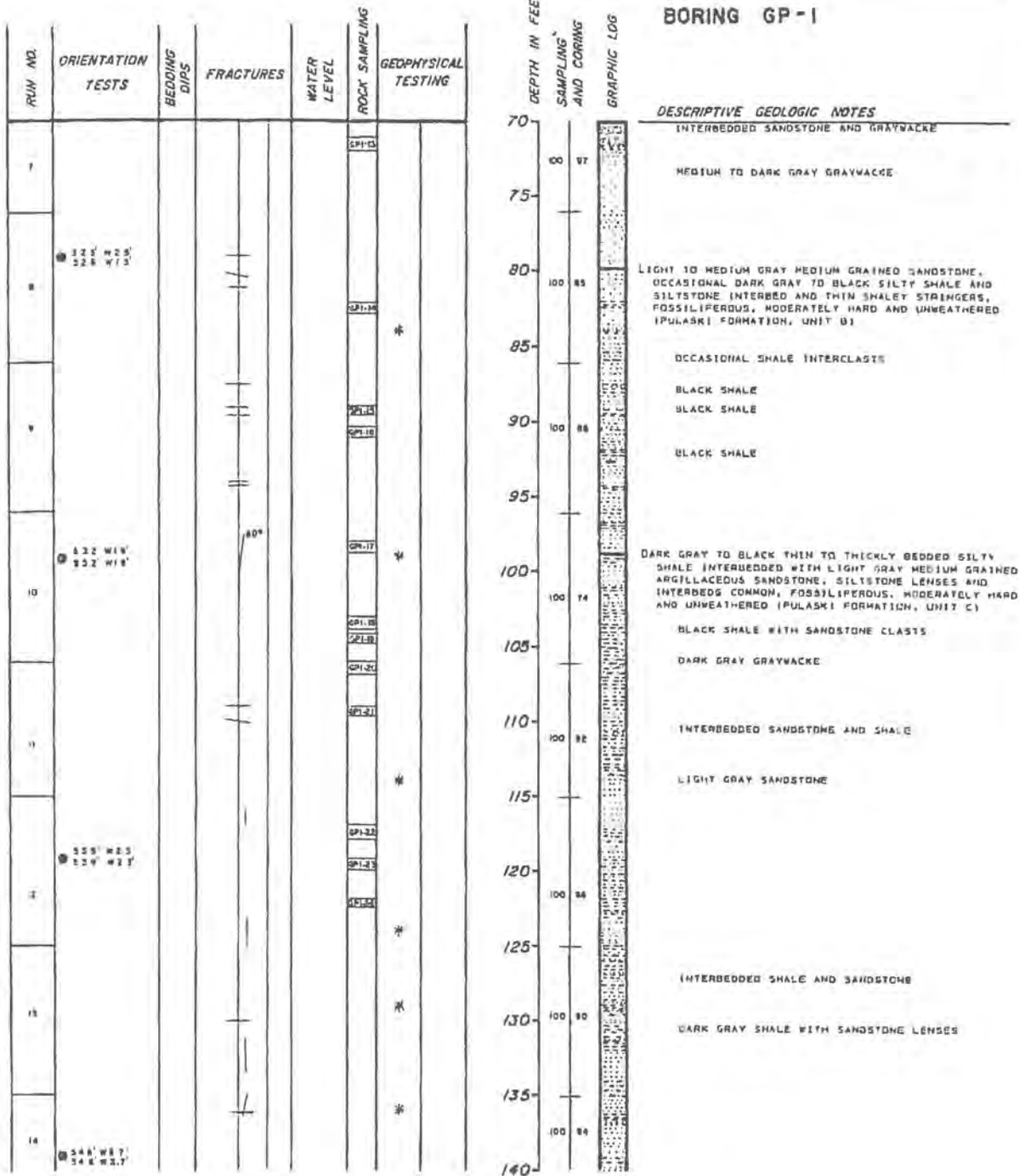
DEPTH IN FEET SAMPLING AND CORING	FRACTURES	BEDDING DIPS	RUN NO
180			1
175.5		10°	1
175		20°	1
170			11
165			11
160			11
155		10°	10
150			5
145			5
140			5
135		20°	8
130		20°	8
125		20°	8
120			8
115			8
110			8
105			8
100			8
95			8
90			8
85			8
80			8
75			8
70			8
65			8
60			8
55			8
50			8
45			8
40			8
35			8
30			8
25			8
20			8
15			8
10			8
5			8
0			8

BORING L-8

DESCRIPTIVE GEOLOGIC NOTES



# BORING GP-1



### ORIENTATION TESTS

- △ Unsuccessful orientation tests
- ▲ 460°W Successful orientation test with strike and dip of bedding
- 30°S Location of Eastern Whipstock Borehole Subsurface Orientation Survey
- 384°W44° Station. Results show drift amount in plan view from a zero reference point (center of row 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.

### 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

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

### GEOPHYSICAL TESTING

\* Location of cross hole geophysical survey

Scale: 1" = 10'

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

FIGURE 20-178

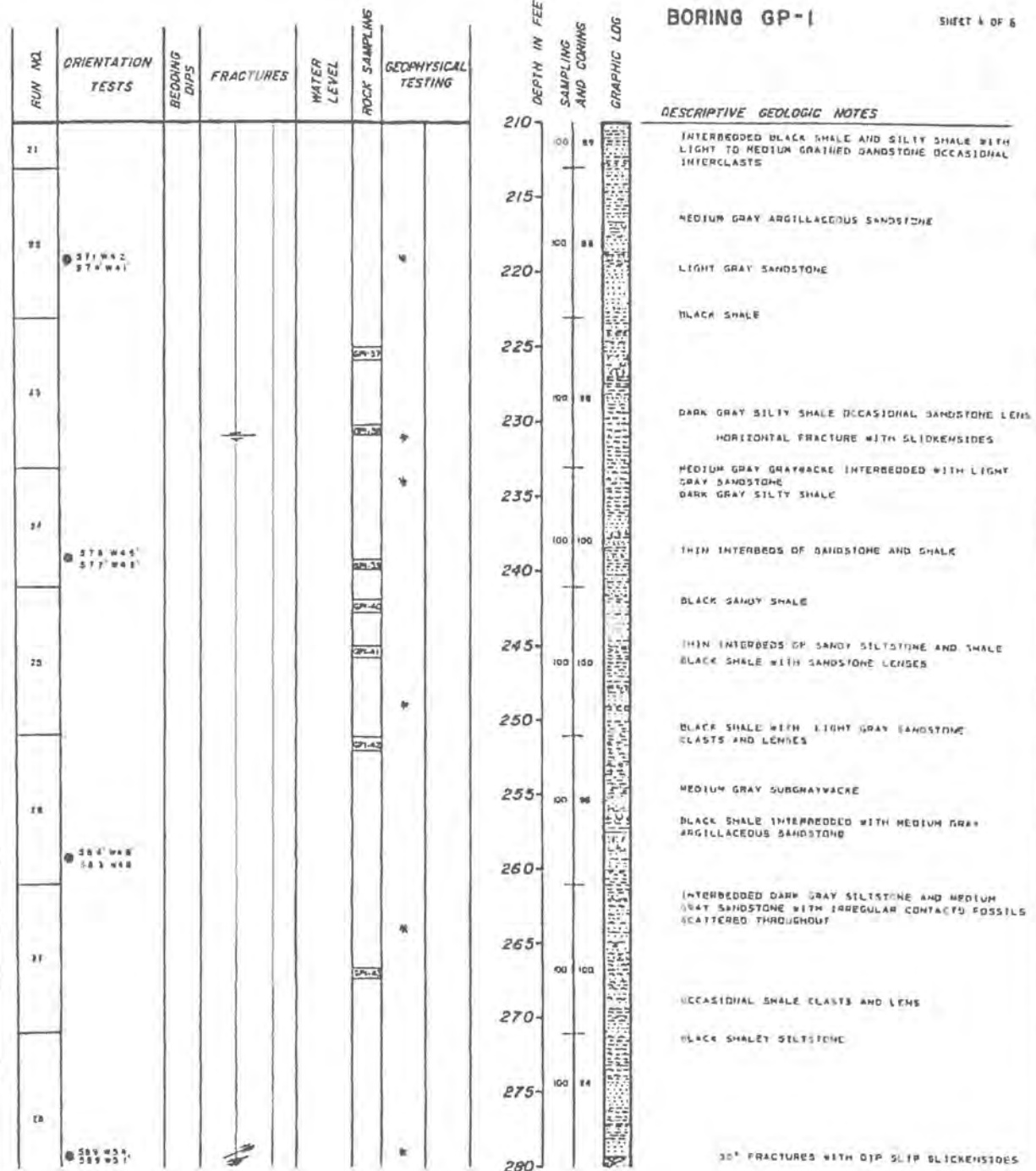
LOG OF BORING GP-1

HIABARA MOHAWK POWER CORPORATION  
NINE HOLE POINT - UNIT 2  
FINAL SAFETY ANALYSIS REPORT



**BORING GP-1**

SHEET 4 OF 6



**ORIENTATION TESTS**

- △ Unsuccessful orientation tests
- ▲ Successful orientation test with strike and dip of bedding
- 30' Location of Instron ultrastress borehole subsurface orientation survey station. Results show drift amount in plan view from a 300' 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 features.

**FRACTURES**

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

**ROCK SAMPLE INFORMATION**

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

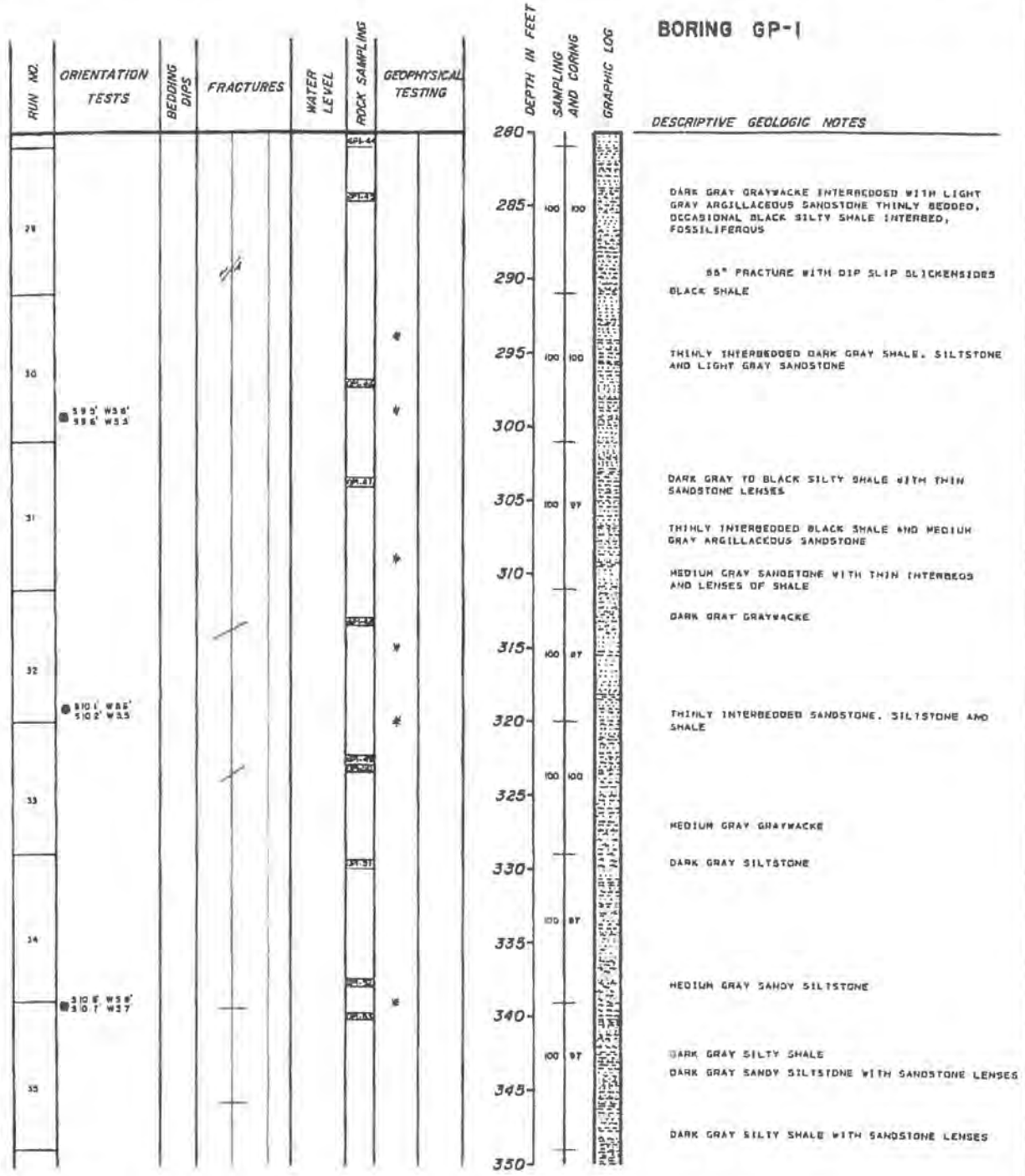
**GEOPHYSICAL TESTING**

\* Location of cross hole geophysical survey

- Location of standard penetration test using a split spoon sampler driven with a 140 lb. hammer falling 30 in.
- Core run at 2" (50.8 mm) diameter core.
- 100 R.O.D.
- Percent recovery

FIGURE 24-120
LOG OF BORING GP-1
NIGARA MOHAWK POWER CORPORATION FINE MILLS POINT - UNIT 2 FINAL SAFETY ANALYSIS REPORT

# BORING GP-1



**ORIENTATION TESTS**

- ▲ Unsuccessful orientation tests
- ▲ Successful orientation test with strike and dip of bedding
- 30° S Location of Eastern Whitlock Borehole Subsurface Orientation Survey
- 30° S Station. Results show drift amount in plan view from a zero
- 30° S reference point (center of top of casing) based on a rectangular
- 30° S coordinate system oriented to Plant North. Upper coordinates
- 30° S represent Run #1 results, lower coordinates represent Run #2 results.
- 03° Bedding dips measured on selective bedding planes. An attempt
- 03° was made to avoid all obvious cross bedding or other primary
- 03° structures.

**FRACTURES**

- Zone of core loss
- Brucite zone
- Dip-slip slickensides
- Fractures shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fracture zone
- void

**ROCK SAMPLE INFORMATION**

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

**GEOPHYSICAL TESTING**

\* Location of cross hole geophysical survey

**SAMPLING AND CORING INFORMATION**

- Location of standard penetration test using a split spoon sampler driven with a 140 lb. hammer falling 30 in.
- Core run at 2" (11X) diameter core,
- 100 93 R.O.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

RUN NO.	ORIENTATION TESTS	BEDDING DIPS	FRACTURES	WATER LEVEL	ROCK SAMPLING	GEOPHYSICAL TESTING
30						*
31						



## DESCRIPTIVE GEOLOGIC NOTES

DARK GRAY SILTY SHALE WITH SANDSTONE LENSES

DARK GRAY SANDY SHALE

2 INCH DIAMETER (1X) BORING TERMINATED AT A DEPTH OF 350.8 FEET ON JAN. 25, 1978. STATIC WATER LEVEL AT 7.8 FEET ON JAN. 23, 1978. BORING LEFT OPEN FOR GEOPHYSICAL LOGGING. BORING REANED TO A DEPTH OF 360.8 FEET IN JAN. 1978 USING A 3/4 INCH DIAMETER ROLLER BIT.

### ORIENTATION TESTS

- △ Unsuccessful orientation tests
- ▲ 460°W Successful orientation test with strike and dip of bedding
- 30°S Location of Eastman whipstock (kara-hole 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.
- DS\* Bedding dips measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary fr. x1

### ROCK SAMPLE INFORMATION

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

### GEOPHYSICAL TESTING

\* Location of cross hole geophysical survey

### 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

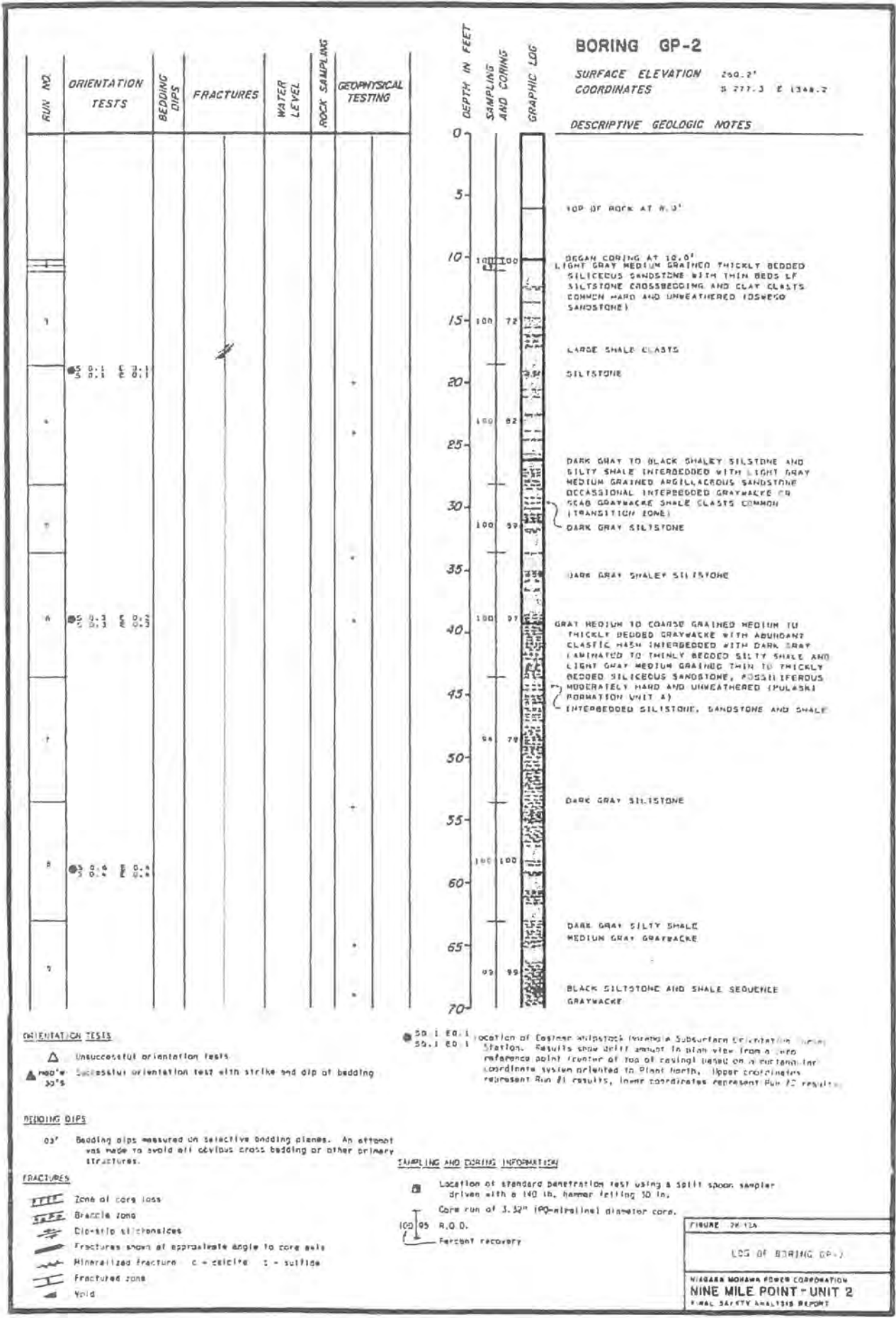
### SAMPLING AND CORING INFORMATION

- Location of standard penetration test using a split spoon sampler driven with a 140 lb. hammer falling 30 in.
- Core run of 2" (1X) diameter core.
- 100% R.Q.D.
- Percent recovery

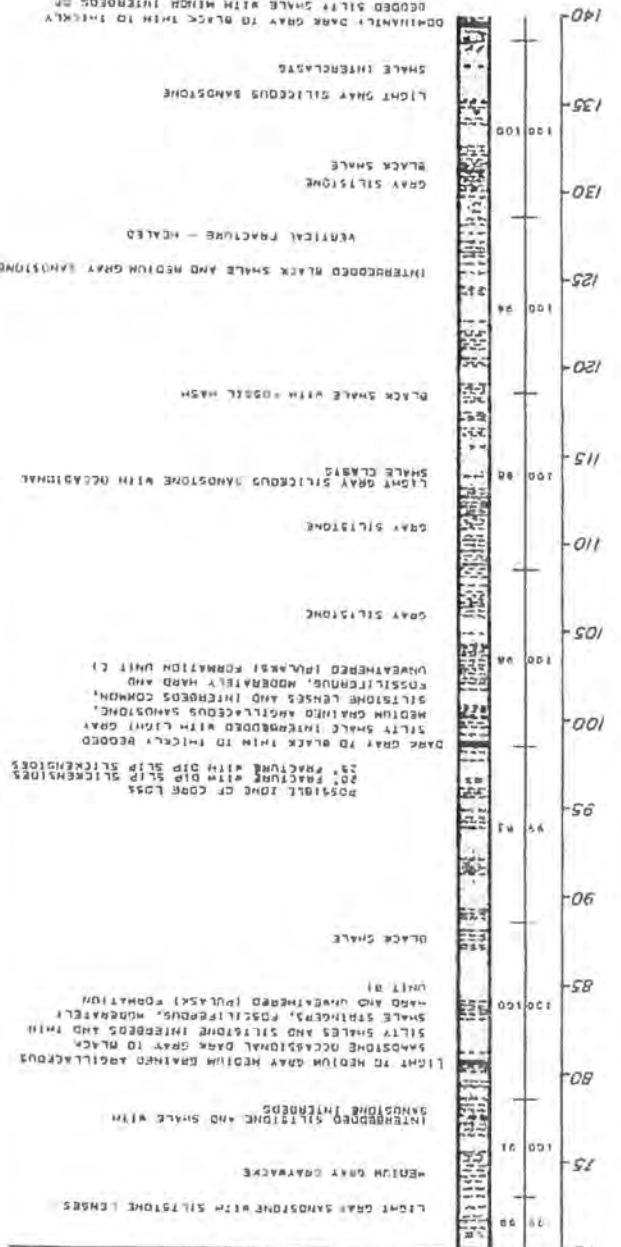
FIGURE 26-12F

LOG OF BORING GP-1

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



Location of standard penetration test using a split spoon sampler  
 driven with a 140 lb. hammer falling 30 in.  
 Core run of 3.27' (100-cm) diameter core.  
 R.O.D. 100  
 Percent recovery



DEPTH IN FEET	ORIENTATION	TESTS	BEDDING DIPS	FRACTURES	WATER LEVEL	ROCK SAMPLING	GEOPHYSICAL TESTS
70-75							
75-80							
80-85							
85-90							
90-95							
95-100							
100-105							
105-110							
110-115							
115-120							
120-125							
125-130							
130-135							
135-140							

**SCIENTIFIC TESTS**

30'S Unsuccessful orientation test with strike and dip of bedding

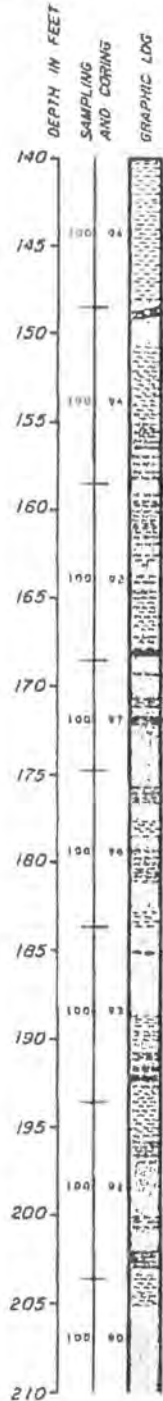
30'S Bedding dip measured on selective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary fracturing.

**FACTURES**

Zone of core loss  
 Disclip siltstones  
 Breccia zone  
 Mineralized fracture c - calcite s - sulfide  
 Fractures shown at approximate angle to core axis  
 Fractured zone  
 4-10

# BORING GP-2

RUN NO.	ORIENTATION TESTS	BEDDING DIPS	FRACTURES	WATER LEVEL	ROCK SAMPLING	GEOPHYSICAL TESTING
17						*
18						
19	S 1.7 E 1.9 S 1.3 R 1.1					*
20						*
21	S 4.0 E 1.9 S 1.3 R 1.2					*
22						
23	S 2.2 E 2.1 S 1.7 R 1.4					*
24						



**DESCRIPTIVE GEOLOGIC NOTES**

BLACK SHALE

LIGHT GRAY SANDSTONE

DARK GRAY SHALEY SILTSTONE

THINLY INTERBEDDED SANDSTONE AND SHALE

DARK GRAY SHALEY SILTSTONE

DARK GRAY SILTSTONE

ALTERNATING THICKLY BEDDED LIGHT GRAY SANDSTONE AND DARK GRAY THIN TO THICKLY BEDDED SILTY SHALE AND OCCASIONAL SILTSTONE LENSES AND INTERBED, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED (WHETSTONE GULLY FORMATION UNIT B)

BLACK SHALE

LIGHT GRAY SANDSTONE

BLACK SHALE AND SILTSTONE

BLACK SHALE

LIGHT GRAY SANDSTONE

LIGHT GRAY SANDSTONE WITH SHALE CLASTS

BLACK SILTY SHALE

INTERBEDDED SANDSTONE, SILTSTONE AND SHALE

VERTICAL FRACTURE WITH SLICKENSIDES BEDDING DIPPING UP TO 90°

DARK GRAY SHALE

FRACTURES 15° TO 45° WITH DIP SLIP SLICKENSIDES

40° FRACTURE WITH SLICKENSIDES

SHALE INTERCLASTS

FRACTURE ON CURVED PLANE WITH SLICKENSIDES

DARK GRAY SHALEY SILTSTONE

LOW ANGLE FRACTURE WITH SLICKENSIDES

LIGHT GRAY SANDSTONE

**ORIENTATION TESTS**

- △ Unsuccessful orientation tests
- ▲ 40° 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 all obvious cross bedding or other primary structures.

**FRACTURES**

- Zone of core loss
- Brachiola zone
- Dip-slip slickensides
- Fractures shown at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fracture zone
- Fail

20.1 Eo.1 location of Eastern Shalestack Overhead Substation orientation survey station. Results show drift amount is near zero from a zero reference point (center of top of casing) based on a rectangular coordinate system oriented to Point 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" (19-wireline) diameter core.
- 100% R.O.D.
- Percent recovery

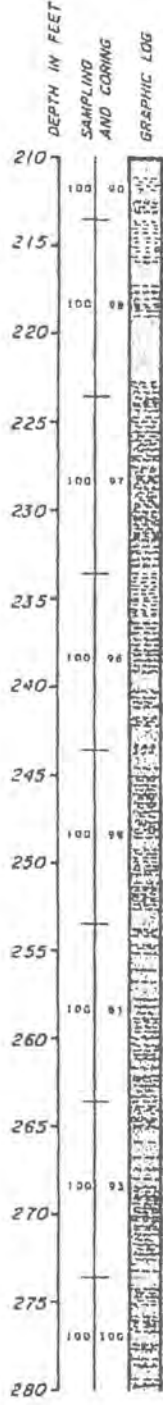
FIGURE 2K-15C

LOG OF BORING GP-2

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

# BORING GP-2

RUN NO.	ORIENTATION TESTS	BEDDING DIPS	FRACTURES	WATER LEVEL	ROCK SAMPLING	GEOPHYSICAL TESTING
24						
25	NS 2.1 E 2.1 S 2.1 E 2.1					
26						
27	NS 2.4 E 2.4 S 2.2 E 1.8					
28						
29	NS 2.4 E 2.4 S 2.4 E 2.2					
30						
31	NS 2.6 E 2.0 S 2.7 E 2.2					



**DESCRIPTIVE GEOLOGIC NOTES**

210-215: DARK GRAY SILTY SHALE WITH OCCASIONAL SANDSTONE INTERBED

215-220: LIGHT GRAY SANDSTONE

220-225: LIGHT GRAY SANDSTONE

225-230: 1.5' FRACTURE WITH DIP SLIP SLICKENSIDES INTERBEDDED SANDSTONE AND SHALE WITH OCCASIONAL

230-235: 2.0' SANDSTONE INTERBEDDED WITH OCCASIONAL SHALE

235-240: INTERBEDDED SILTSTONE, SHALE AND SANDSTONE

240-245: FOSSIL WASH AND PYRITE CLASTS MEDIUM GRAY GRAYSHALE

245-250: BLACK SHALE

250-255: DARK GRAY SILTSTONE OCCASIONAL INTERBED

255-260: GRADING WITH SANDSTONE INTERBEDS

260-265: BLACK SHALE TO DARK GRAY SILTSTONE GRAY SANDSTONE

265-270: DARK GRAY SILTSTONE WITH SHALE INTERBEDS

270-275: GRAY SANDSTONE

275-280: BLACK SHALE

280: BLACK SHALE AND SILTSTONE WITH OCCASIONAL SANDSTONE LENSES

**ORIENTATION TESTS**

- △ Unsuccessful orientation tests
- ▲ Successful orientation test with strike and dip of bedding

**BEDDING DIPS**

0.5° Bedding dips measured on selective bedding planes. An attempt was made to locate all vertical cross bedding or other minor structures.

**FRACTURES**

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

30.1 E.O.1  
30.1 E.O.2  
Location of Eastern Whitehurst (Borehole Turbulence Orientation Survey) Station. Results show drill amount in plan view from a zero reference point (center of top of casing) laser in a rectangular coordinate system oriented to Plant North. Upper coordinates represent Run 21 results, lower coordinates represent Run 27 results.

- Location of standard penetration test using a split spoon sampler drive with a 140 lb. hammer falling 30 in.
- Core run at 1.32" (PG-vent) ultrasonic core.
- 100% R.G.D.
- Percent recovery

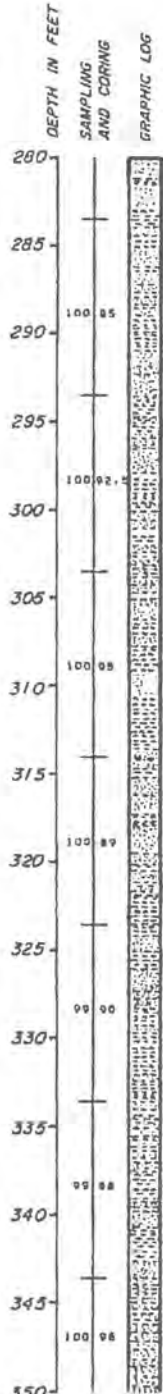
FIGURE 24-1173

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
31						
32						
33	05 2.3 05 2.2 05 2.4 05 2.3					*
34						*
35	05 3.8 05 3.1 05 3.8 05 2.8					*
36						
37	05 1.6 05 1.3 05 2.0 05 2.0					*
38	05 1.7 05 1.4 05 2.0 05 2.0					



DESCRIPTIVE GEOLOGIC NOTES

280 FOSSIL MASH  
CROSS BEDDED GRAY SANDSTONE  
BLACK SHALE AND SILTSTONE

285 GRAY SANDSTONE

290 INTERBEDDED SANDSTONE, SILTSTONE AND SHALE  
BLACK SHALE AND SILTSTONE  
GRAY SANDSTONE OCCASIONAL SHALE LENS

295 BLACK SHALE WITH OCCASIONAL SILTSTONE  
AND SANDSTONE INTERBEDS

300 BLACK SHALE AND SILTSTONE  
FOSSIL MASH

305 INTERBEDDED SILTSTONE, SANDSTONE AND SHALE

310 BLACK SHALE  
BLACK SILTSTONE  
GRAY CROSSBEDDED SANDSTONE

315 DARK GRAY SILTSTONE INTERBEDDED WITH SHALE

320 GRAY SANDSTONE WITH SHALE CLASTS  
GRAY SANDSTONE WITH SHALE INTERBEDS  
DARK GRAY SILTSTONE AND SHALE  
GRAY SANDSTONE WITH SHALE INTERBEDS

325 DARK GRAY SILTSTONE AND SHALE

330 INTERBEDS OF SANDSTONE  
CROSSBEDDED GRAY SANDSTONE  
FOSSIL SHELLS  
DARK GRAY TO BLACK INTERBEDDED SHALE  
AND SILTSTONE  
WORM BURROWS  
OCCASIONAL SANDSTONE LENSES

335 INTERBEDDED GRAY SILTSTONE, SANDSTONE AND SHALE

340 BLACK SHALE

345 BLACK SHALE

350 DARK GRAY SHALE  
INTERBEDDED SHALE, SILTSTONE AND SANDSTONE

**ORIENTATION TESTS**

- △ Unsuccessful orientation tests
- ▲ 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 all obvious cross bedding or other primary structures.

**FRACTURES**

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

50.1 EO.1  
50.1 EO.1 Location of Eastman Whipstock Barohole Caspursurface Orientation Survey Station. Results are drill amount in plan view from 1.000 reference point (center of top of casing) based on rectangular coordinate system oriented to Plane 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" (PG-Wireline) diameter core.
- 100/95 R.O.D.
- Percent recovery

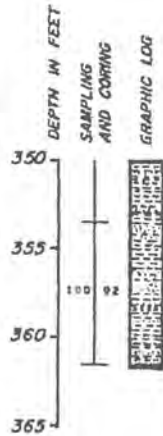
FIGURE 26-132

LOG OF BORING GP-2

WISCONSIN POWER CORPORATION  
FIVE MILE POINT UNIT 2  
FINAL SAFETY ANALYSIS REPORT

# BORING GP-2

RUN NO	ORIENTATION TESTS	BEDDING DIPS	FRACTURES	WATER LEVEL	ROCK SAMPLING	GEOPHYSICAL TESTING
33						



### DESCRIPTIVE GEOLOGIC NOTES

INTERBEDDED SILTSTONE AND SHALE WITH OCCASIONAL SANDSTONE INTERBED

FOSSIL MASH

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
- ▲ 140°W Successful orientation test with strike and dip of bedding 30°S

#### BEDDING DIPS

- 33° Bedding dip measured on collective 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 a - sulfide
- Fractured zone
- void

- 30.1 E.O.1 Location of Eastman whipstock Marathon subsurface Orientation Survey Station. Results show drift arcuate in plan view from a core reference point (center of top of casing) based on a rectangular coordinate system oriented to light north. Upper coordinates represent Run #1 results, lower coordinates represent Run #2 results.

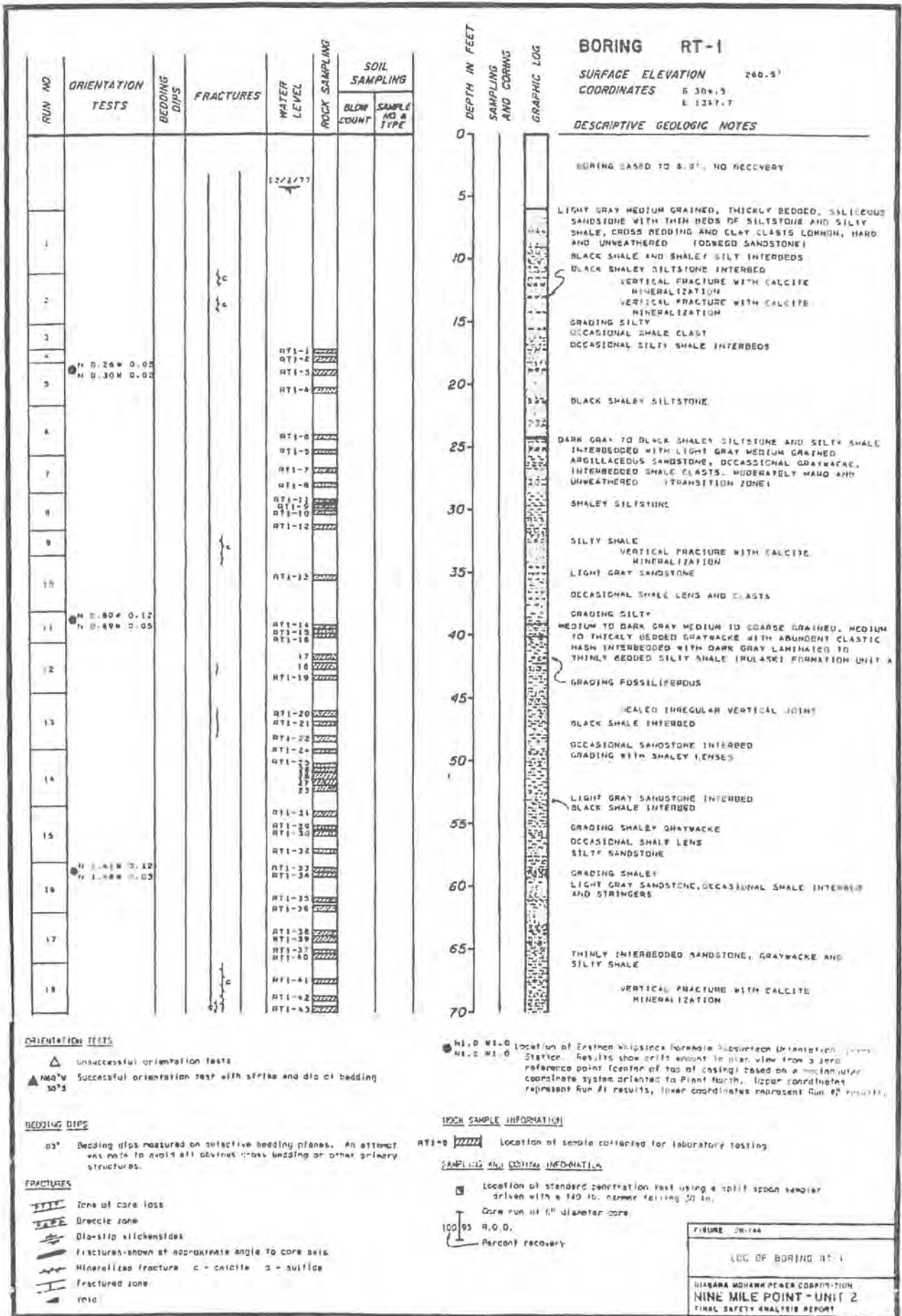
#### STANDARD PENETRATION TEST (SPT) RESULTS

- Location of standard penetration test using a split spoon sampler driven with a 140 lb. hammer falling 30 in.
- Core run of 3.32" IPQ-Nominal diameter core.
- 100/95 R.O.D.
- Percent recovery

FIGURE 2K-13F

LOG OF BORING GP-2

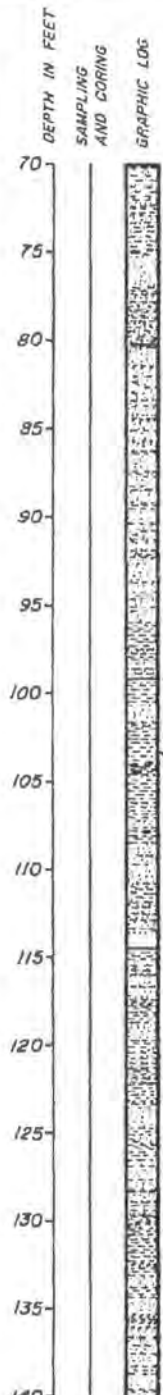
MISSOURI POWER CORPORATION  
NINE MILL POINT - UNIT 2  
FINAL SAFETY ANALYSIS REPORT





# BORING RT-1

RUN NO.	ORIENTATION TESTS	BEDDING DIPS	FRACTURES	WATER LEVEL	ROCK SAMPLING	SOIL SAMPLING	
						BLOW COUNT	SAMPLE NO. & TYPE
19				RT1-44			
20				RT1-45 RT1-46 RT1-47			
21	N 2.08 W 0.09 N 2.13 E 0.05			RT1-48 RT1-49 RT1-50			
22				RT1-51			
23				RT1-52 RT1-53			
24				RT1-54			
25							
26				RT1-55 RT1-56 RT1-57			
27	N 2.77 E 0.02 N 2.84 E 0.15			RT1-58 RT1-59			
28							
29				RT1-60 RT1-61 RT1-62			
30							
31							
32	N 3.98 E 0.15 N 3.58 E 0.33			RT1-63			
33							
34							
35	N 4.31 E 0.24 N 4.29 E 0.55						



**DESCRIPTIVE GEOLOGIC NOTES**

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

LIGHT GRAY MEDIUM GRAINED SANDSTONE

MEDIUM GRAY SANDSTONE WITH SHALE STRINGERS GRADING DARK GRAY TO BLACK GRAYWACKE WITH THIN SANDSTONE LENSES

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

SANDY SILTSTONE  
BLACK SHALE INTERBED

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

BLACK SHALE WITH THIN SANDSTONE LENSES

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

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

GRADING SILTY SANDSTONE CLASTS  
BLACK SILTY SHALE

INTERCLASTS OF SANDSTONE  
ARGILLACEOUS SANDSTONE  
OCCASIONAL SHALE INTERCLAST

ARGILLACEOUS SANDSTONE

ZONE OF MECHANICAL CORE LOSS

LIGHT TO MEDIUM GRAY GRAYWACKE

LOW ANGLE CROSS BEDDING

THINLY INTERBEDDED SANDSTONE AND SILTY SHALE

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

IRREGULAR VERTICAL JOINT, HEALED

BLACK SHALE AND SILTY SHALE

FOSSIL WASH IN A SANDSTONE MATRIX  
OCCASIONAL SILTSTONE INTERCLAST AND LAMINA

**ORIENTATION TESTS**

- △ Unsuccessful orientation tests
- ▲ 180° Successful orientation test with strike and dip of bedding

**BEDDING DIPS**

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

**FRACTURES**

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

N1.0 W1.0 Location of Eastman Whitstock Niagara 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. In-car coordinates represent Run #1 results, lower coordinates represent Run #2 results.

**ROCK SAMPLE INFORMATION**

RT1-5 Location of sample collected for laboratory testing

**AMPLING 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.
- R.O.D.
- Percent recovery

FIGURE 20-118

LOG OF BORING RT-1

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



- ORIENTATION TESTS**
- ▲ Successful orientation tests
  - Successful orientation test with strike and dip of bedding
  - Bedding inclination test
- BEDDING DIPS**
- Bedding dip measured on selected bedding planes. An attempt was made to avoid all obvious cross bedding or other structural irregularities.
- FRACTURES**
- Zone of core loss
  - Braccia zone
  - Dip-slip slickensides
  - Fractures shown at approximate angle to core axis
  - Horizontal fracture E - S direction
  - Fractured zone
  - Void

**SOIL SAMPLE INFORMATION**

Location of sample collected for laboratory testing

**APPLYING AND CORING INFORMATION**

Location of standard penetration test using a split spoon sampler or other means with a 100 lb. hammer falling 30 in.

Core run  
 10195 ft O.D.  
 Percent recovery

**DESCRIPTIVE GEOLOGIC NOTES**

CASING OCT TO 2.5', NO RECOVERY

1 LIGHT GRAY MEDIUM GRAINED, THICK BEDDED, SILTCEOUS SANDSTONE WITH THIN BEDS OF SILTSTONE AND SILTY SHALE, CROSSBEDDING AND CLAY CLASTS COMMON, HARD AND UNWEATHERED. BEDDING SANDSTONE, OCCASIONAL GRAYWACKE INTERBEDDED WITH LIGHT GRAY MEDIUM GRAINED AGGREGATE SANDSTONE, MODERATELY HARD AND UNWEATHERED. TRANSITION ZONE

2 DARK GRAY TO BLACK SHALEY SILTSTONE AND SILTY SHALE INTERBEDDED WITH LIGHT GRAY MEDIUM GRAINED AGGREGATE SANDSTONE, OCCASIONAL GRAYWACKE INTERBEDDED WITH LIGHT GRAY MEDIUM GRAINED UNWEATHERED. TRANSITION ZONE

3 DARK GRAY SHALEY SILTSTONE

4 SHALE INTERCLASTS

5 DARK GRAY SHALEY SILTSTONE

6 SHALE INTERCLASTS

7 AGGREGATE SANDSTONE WITH THIN SHALE INTERBEDS

8 SHALE INTERCLASTS

9 BLACK SILTY SHALE

10 BLACK SHALE INTERCLASTS

11 THINLY INTERBEDDED SILTSTONE AND SANDSTONE

12 DARK GRAY SILTSTONE INTERBEDDED

13 OCCASIONAL SHALE CLAST

14 THINLY INTERBEDDED SILTSTONE AND SANDSTONE

15 DARK GRAY SILTSTONE INTERBEDDED

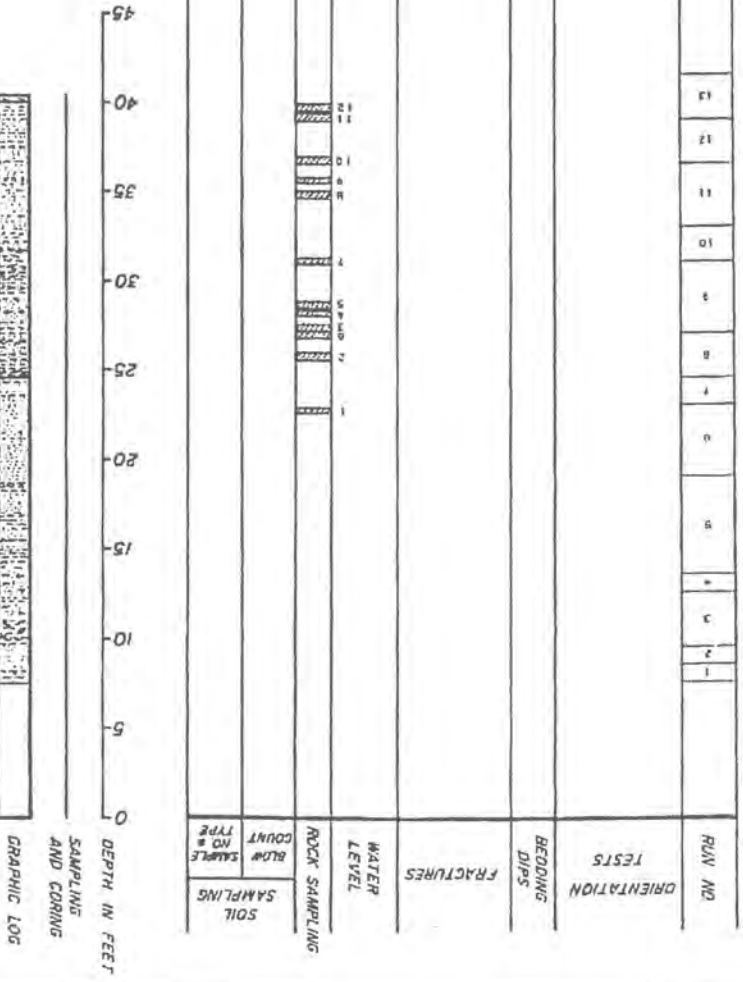
16 THINLY INTERBEDDED SILTSTONE AND SANDSTONE

17 AGGREGATE SANDSTONE WITH THIN SHALE INTERBEDS

18 SHALE INTERCLASTS

19 BLACK SILTY SHALE

20 BOREING TERMINATED AT DEPTH OF 40.5' ON DEC. 13, 1977



**BORING RT-2**

SURFACE ELEVATION 5298.7  
 COORDINATES E 158.7

GRAPHIC LOG

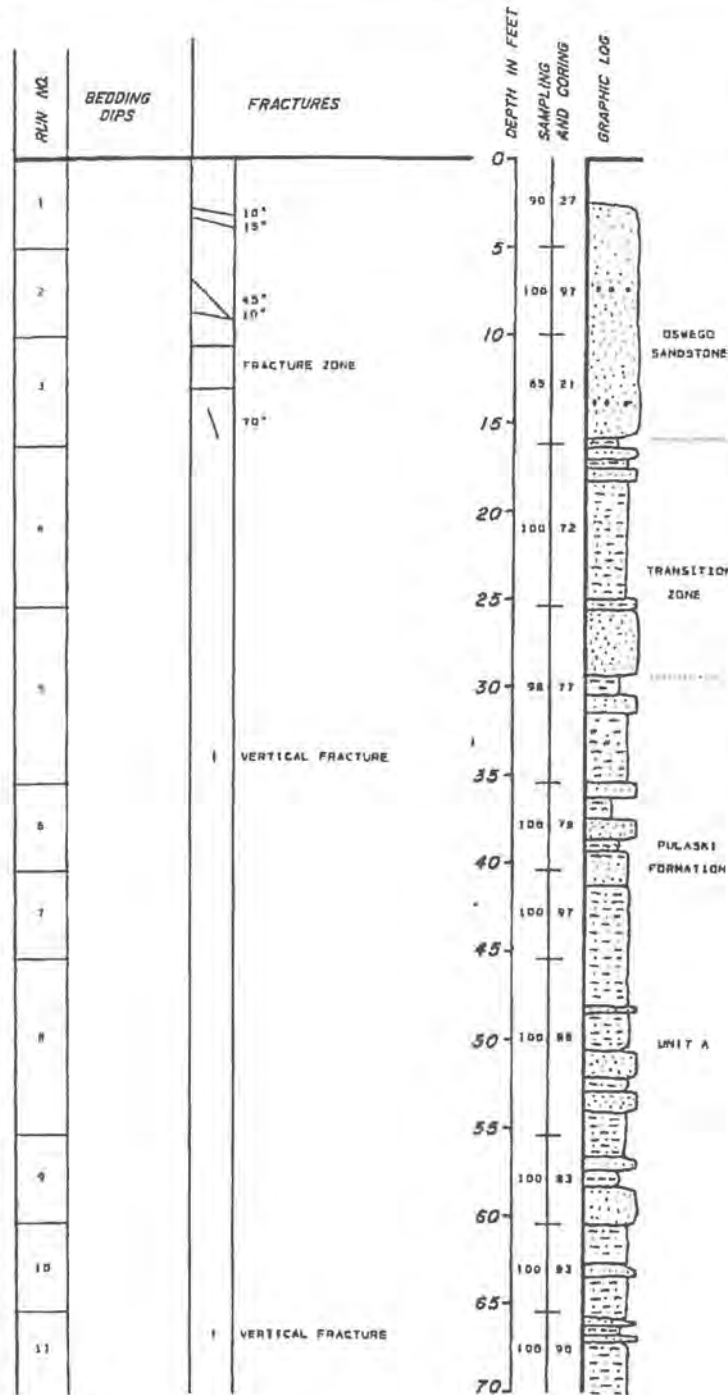
# BORING TB-101

SURFACE ELEVATION 247.1'  
 COORDINATES N 337.0 W 208.5

## DESCRIPTIVE GEOLOGIC NOTES

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



### SAMPLING AND CORING INFORMATION

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

### BEDDING DIPS

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

### 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

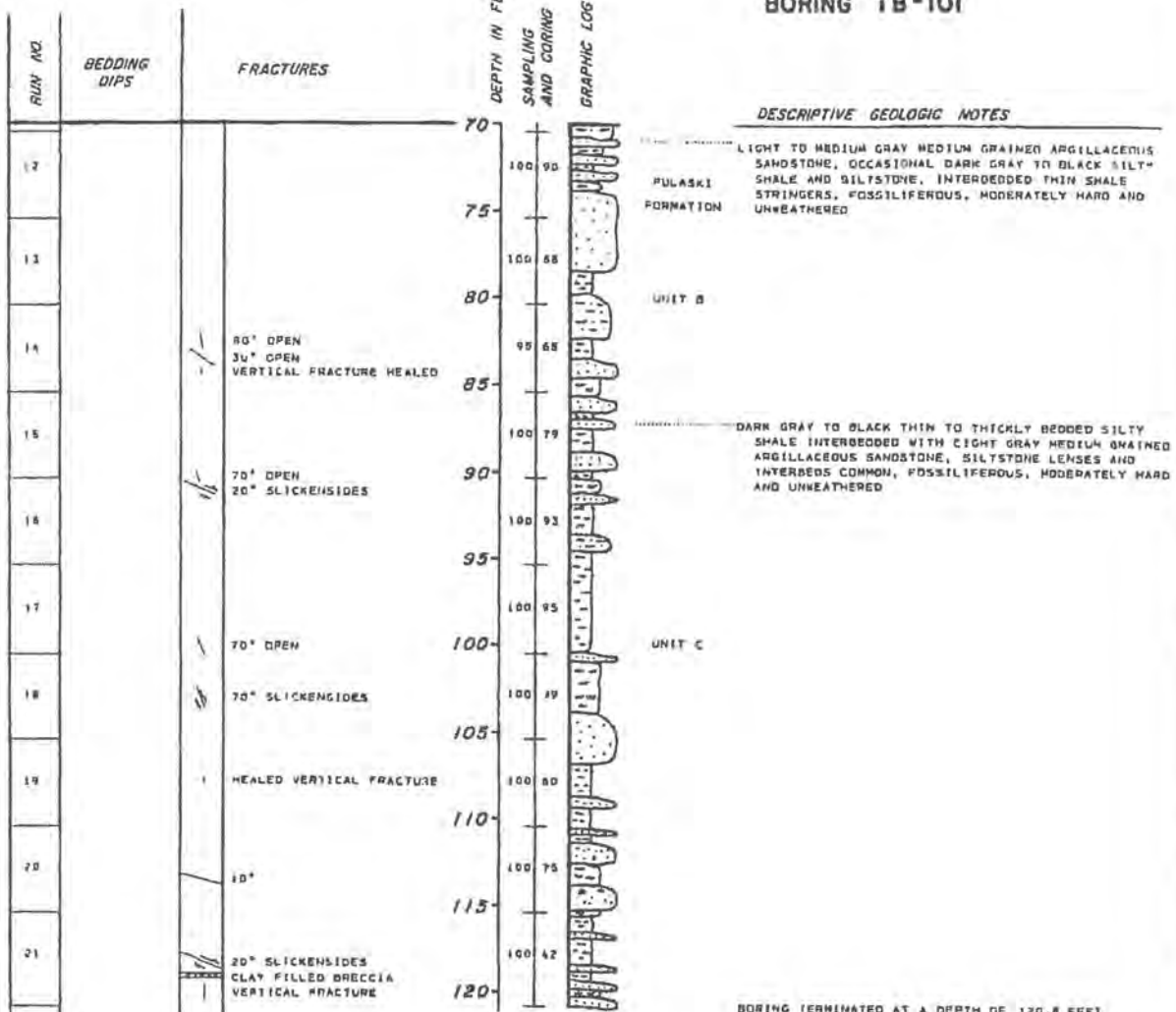
- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

FIGURE 24-10A

LOG OF BORING TB-101

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

# BORING TB-101



BORING TERMINATED AT A DEPTH OF 120.8 FEET ON 11/19/77

### SAMPLING AND CORING INFORMATION

Core run  
100.85 R.O.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
- Greywacke
- Siltstone
- Shale
- Fossils
- Shale interbeds
- Cross-bedding
- Shale laminae

FIGURE 20-100

LOG OF BORING TB-101

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

# BORING SI-1

SURFACE ELEVATION 219.7'  
 COORDINATES N 332.42 W 254.79

## DESCRIPTIVE GEOLOGIC NOTES

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

TRANSITION ZONE GRAY MEDIUM TO COARSE GRAINED, MEDIUM TO THICKLY BEDDED GRAYWACKE WITH ABUNDANT CLASTIC MASS, 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

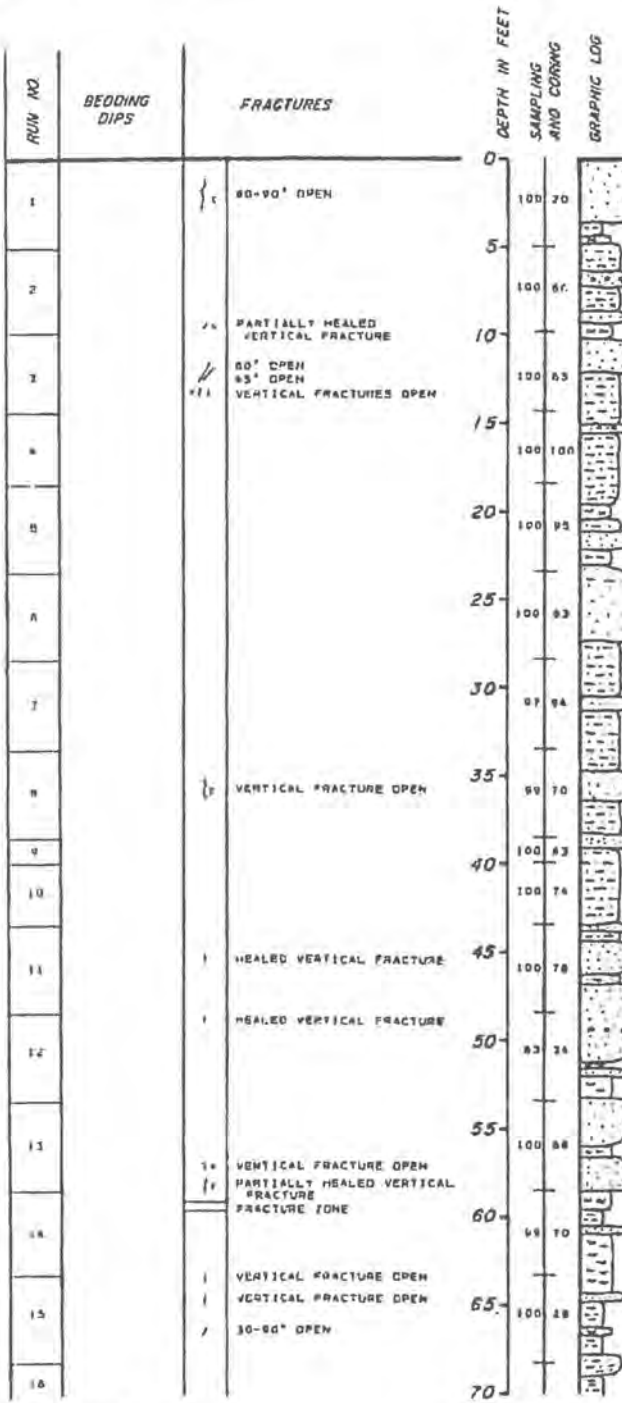
UNIT A

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

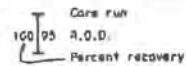
UNIT B

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



### 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

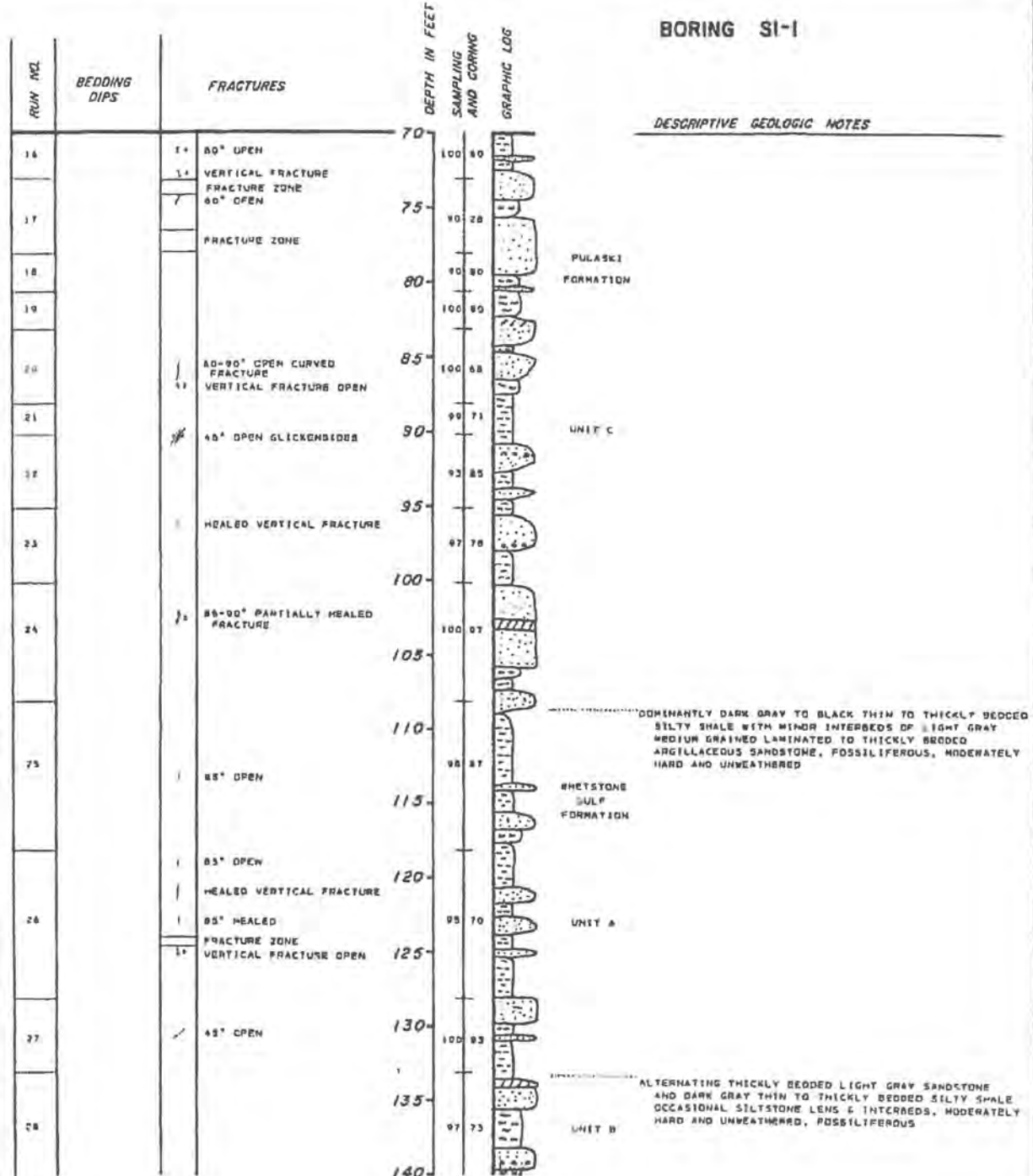
- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clastic
- Cross-bedding
- Shale laminae

FIGURE 2X-17A

LOG OF BORING SI-1

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

# BORING SI-1



### SAMPLING AND CORING INFORMATION

Core run  
100/95 R.O.D.  
Percent recovery

### BEDDING DIPS

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

### FRACTURES

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

### KEY TO SYMBOLS

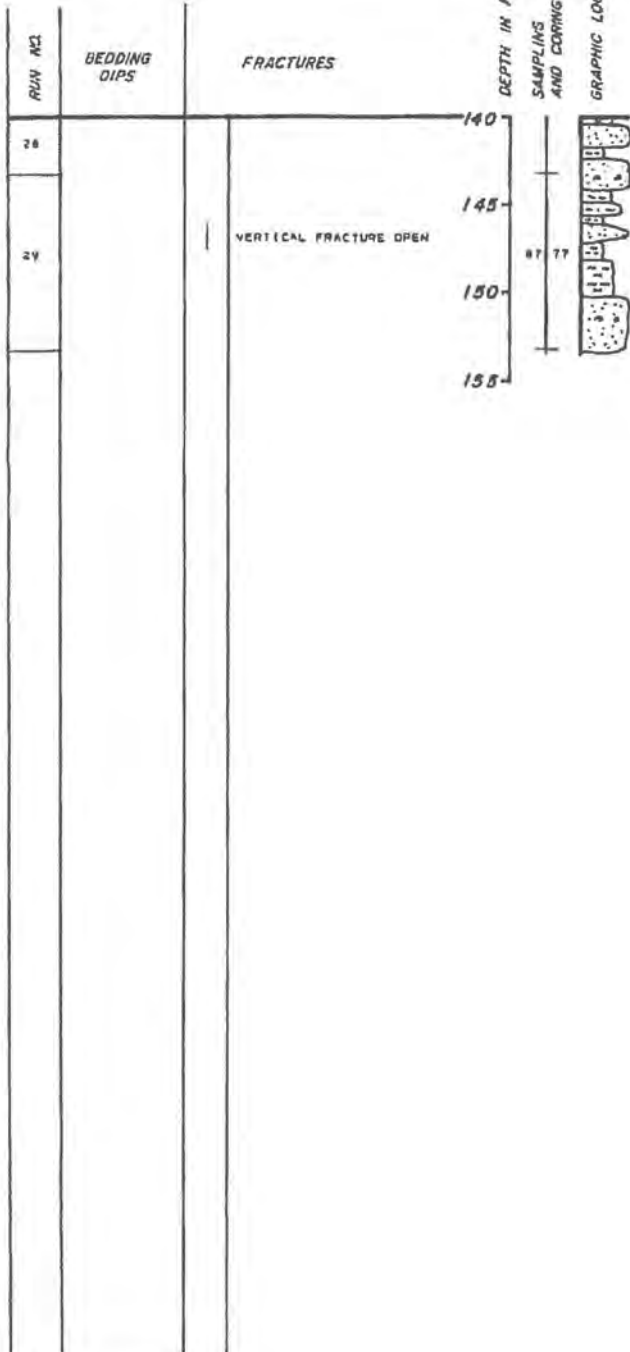
- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

FIGURE 26-170

LOG OF BORING SI-1

NIAGARA MOHAWK POWER CORPORATION  
NIPEA LAKE POINT UNIT 2  
FINAL SAFETY ANALYSIS REPORT

# BORING SI-1



## DESCRIPTIVE GEOLOGIC NOTES

BORING TERMINATED AT A DEPTH OF 153.25 FEET ON 10/18/79

### SAMPLING AND CORING INFORMATION

Core run  
100% R.O.D.  
Percent recovery

### BEDDING DIPS

55° 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-clastic
- Cross-bedding
- Shale laminae

FIGURE 26-17C

LOG OF BORING SI-1

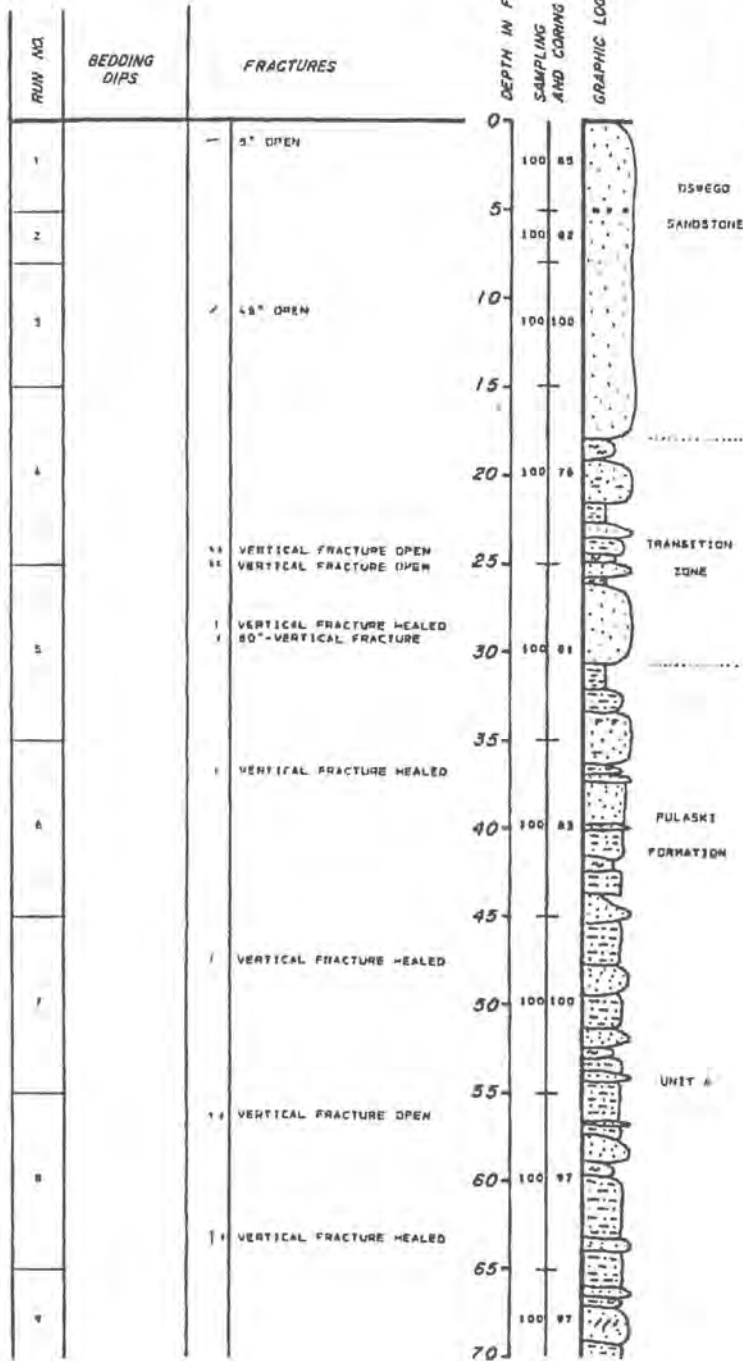
NIAGARA MOHAWK POWER CORPORATION  
NINE MILE POINT - UNIT 2  
FINAL SAFETY ANALYSIS REPORT



# BORING SI-2

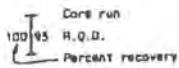
SURFACE ELEVATION 248.9'  
 COORDINATES N 338.67 W 304.63

**DESCRIPTIVE GEOLOGIC NOTES**  
 LIGHT GRAY MEDIUM GRAINED THICKLY BEDDED SILICEOUS SANDSTONE WITH THIN BEDS OF SILTSTONE. HARD AND UNWEATHERED



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

**SAMPLING AND CORING INFORMATION**



**BEDDING DIPS**

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

**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**

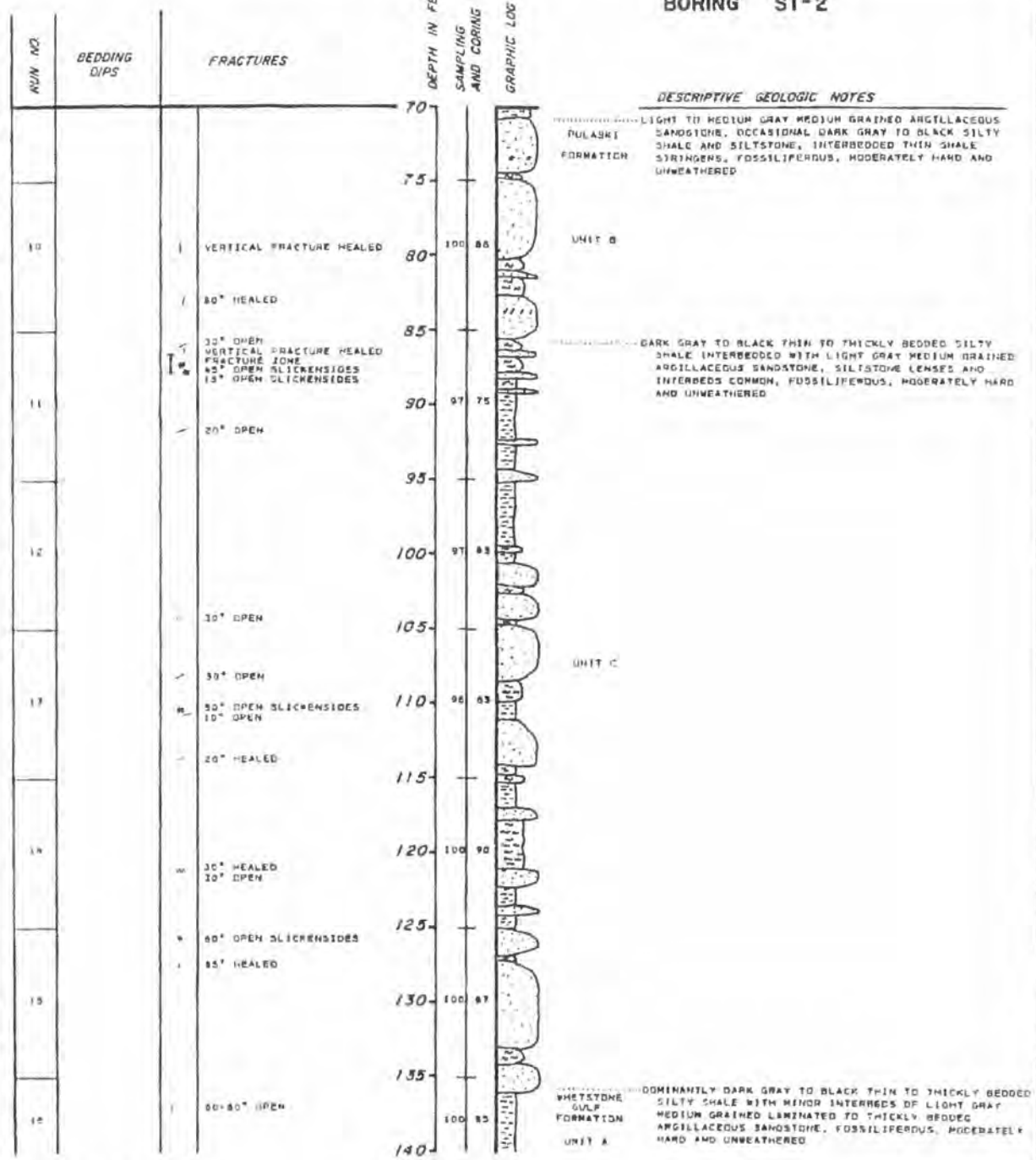
- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

FIGURE 2K-15A

LOG OF BORING SI-2

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

# BORING SI-2



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

**KEY TO SYMBOLS**

- Sandstone
- Greenchale
- Siltstone
- Shale
- Fossils
- Sand intra-dipole
- Cross-bedding
- Shale lense

FIGURE 26-10  
 LOG OF BORING SI-2  
 NIAGARA MOHAWK POWER CORPORATION  
 NINE MILE POINT - UNIT 2  
 FINAL SAFETY ANALYSIS REPORT

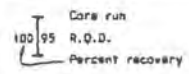
**BORING SI-2**

RUN NO.	BEDDING DIPS	FRACTURES	DEPTH IN FEET	SAMPLING AND CORING	GRAPHIC LOG
		80° OPEN VERTICAL FRACTURE OPEN 30° SLICKENSIDES	140		
		VERTICAL FRACTURE OPEN	145		
17		VERTICAL FRACTURE OPEN	150	100 78	
18		30° OPEN SLICKENSIDES	155	100 80	
			160		

DESCRIPTIVE GEOLOGIC NOTES

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

SAMPLING AND CORING INFORMATION



BEDDING DIPS

01° Bedding dips measured on collective 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

LOG SYMBOLS

- Sandstone
- Graywacke
- Limestone
- Shale
- Fossiliferous
- Shale inter-laminated
- Cross-bedding
- Shale laminar

FIGURE 2K-18C

LOG OF BORING SI-2

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

# BORING SI-3

SURFACE ELEVATION 232.0'  
 COORDINATES N 334.17 W 310.83

## DESCRIPTIVE GEOLOGIC NOTES

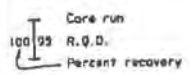
RUN NO.	BEDDING DIPS	FRACTURES	DEPTH IN FEET	SAMPLING AND CORING	GRAPHIC LOG
1			0	100	
2		10 VERTICAL FRACTURE OPEN	5	100 81	OSVEGO SANDSTONE
3		1 85° OPEN	10	100 40	
4			15	100 71	TRANSITION ZONE
5		1 80°-VERTICAL FRACTURE HEALED	20	100 90	PULASKI FORMATION
		1 VERTICAL FRACTURE OPEN	25		
6		1 15° OPEN	30	100 97	UNIT A
		1 VERTICAL FRACTURE HEALED 1 VERTICAL FRACTURE	35		
7			40	100 89	UNIT B
8		2 VERTICAL FRACTURE OPEN	45	100 93	
9		1 45° OPEN 1 75° HEALED	50	100 88	UNIT B
10		2 80°-VERTICAL FRACTURE OPEN	55	100 87	
11			60	100 88	UNIT B
12		1 35° OPEN	65	100 86	
13			70	100 73	

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 ELASTIC MASS, 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



### 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

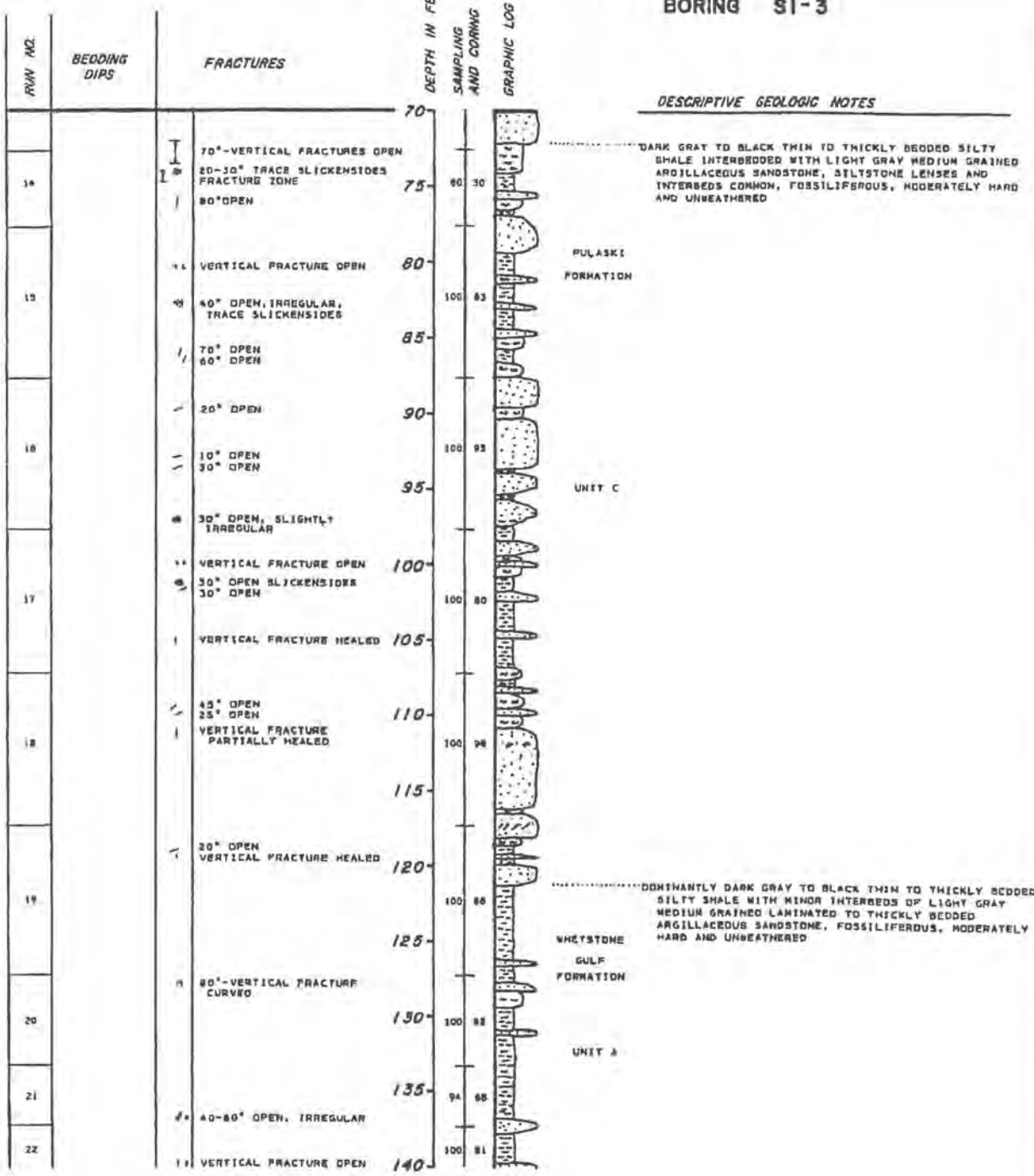
- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Intra laminae

FIGURE 2K-10A

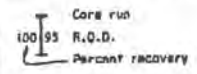
LOG OF BORING SI-3

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

# BORING 51-3



**SAMPLING AND CORING INFORMATION**



**BEDDING DIPS**

05° Bedding dips measured on selective bedding planes. An attempt was made to measure bedding dips on all bedding 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**

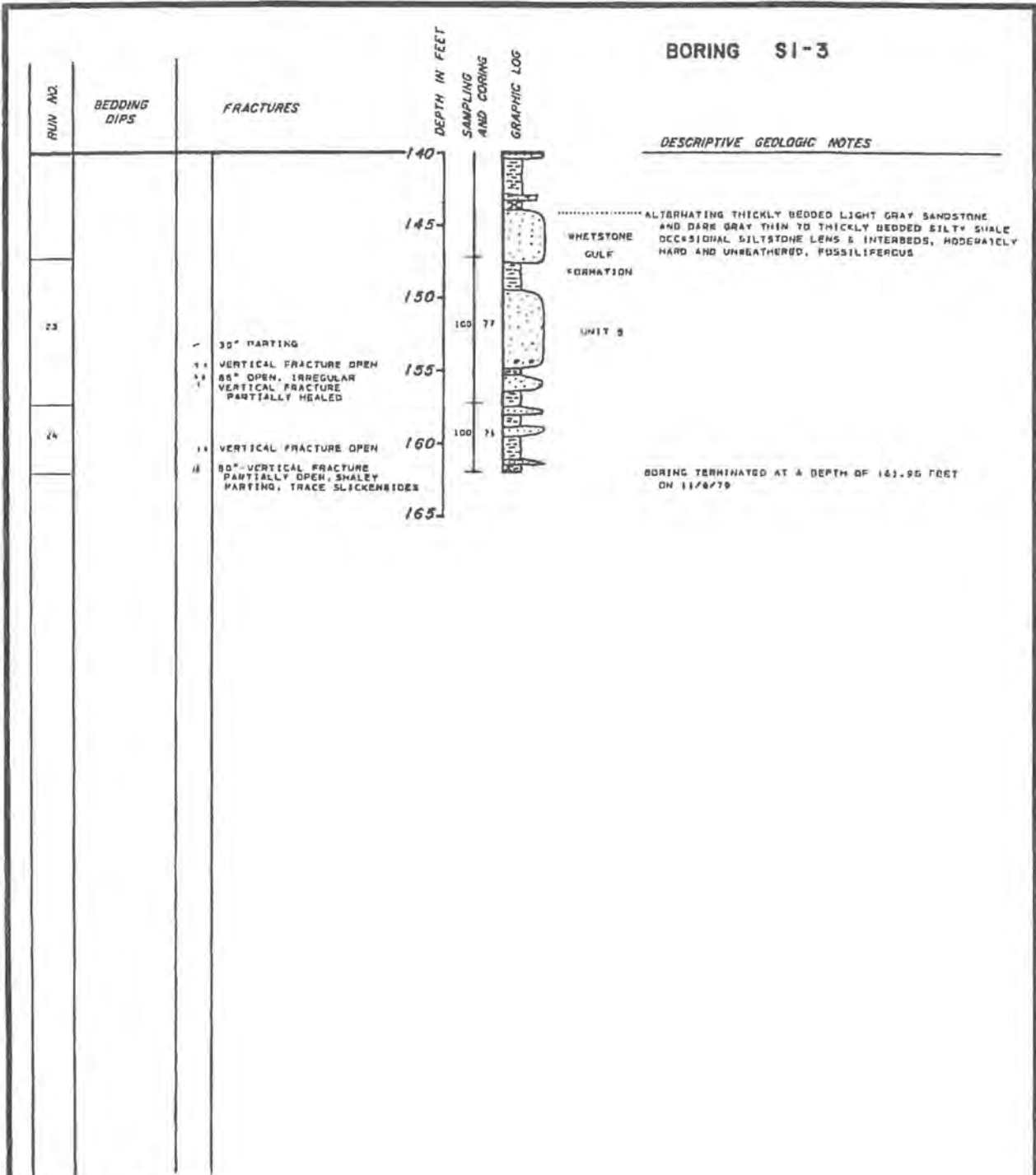
- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clests
- Cross-bedding
- Shale laminae

FIGURE 2X-10B

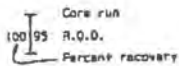
LOG OF BORING 51-3

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

# BORING SI-3



**SAMPLING AND CORING INFORMATION**



**RECORDING DIPS**

85° Bedding dips measured on selective bedding planes. An attempt was made to avoid all possible 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
- Slate laminae

FIGURE 26.10C

LOG OF BORING SI-3

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

# BORING SI-4

SURFACE ELEVATION 222.0'  
 COORDINATES N 334.00 W 300.00

## DESCRIPTIVE GEOLOGIC NOTES

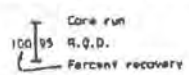
RUN NO.	BEDDING DIPS	FRACTURES	DEPTH IN FEET	SAMPLING AND CORING	GRAPHIC LOG
1			0	100 N/A	CONCRETE
2			5	100 N/A	
3			10	100 0	OSWEGO SANDSTONE
4			10	100 0	
5		80°-VERTICAL FRACTURES HEALED	10	100 30	
6		NEAR VERTICAL FRACTURE PARTIALLY HEALED	10	100 30	
7		VERTICAL FRACTURE OPEN, IRREGULAR	10	100 70	
8		VERTICAL FRACTURE HEALED	10	100 70	
9			15	100 42	TRANSITION ZONE
10			20	100 45	
11		80° HEALED	20	100 45	MULASKI FORMATION
12			25	100 81	
13			30	100 93	
14			33	100 100	UNIT A
15		VERTICAL FRACTURE OPEN	33	100 93	
16		VERTICAL FRACTURE HEALED	33	100 93	
17		85° HEALED	40	100 100	
18		85° HEALED	40	100 100	
19		85° HEALED	45	100 100	
20		85° OPEN	45	100 70	
21		85° HEALED	45	100 70	
22			50	100 88	
23			55	91 01	
24		VERTICAL FRACTURE HEALED	55	100 80	
25			60	100 80	
26		80° HEALED	60	93 82	UNIT B
27		FRACTURE ZONE	65	93 82	
28			65	93 82	
29		85° PARTIALLY HEALED FRACTURE ZONE	68	98 77	
30		VERTICAL FRACTURE OPEN	70	98 77	

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

### SAMPLING AND CORING INFORMATION



### BEDDING DIPS

85° Bedding dips measured on selective bedding planes. An attempt was made to find the full thickness cross bedding or other primary structures.

### FRACTURES

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

### KEY TO SYMBOLS

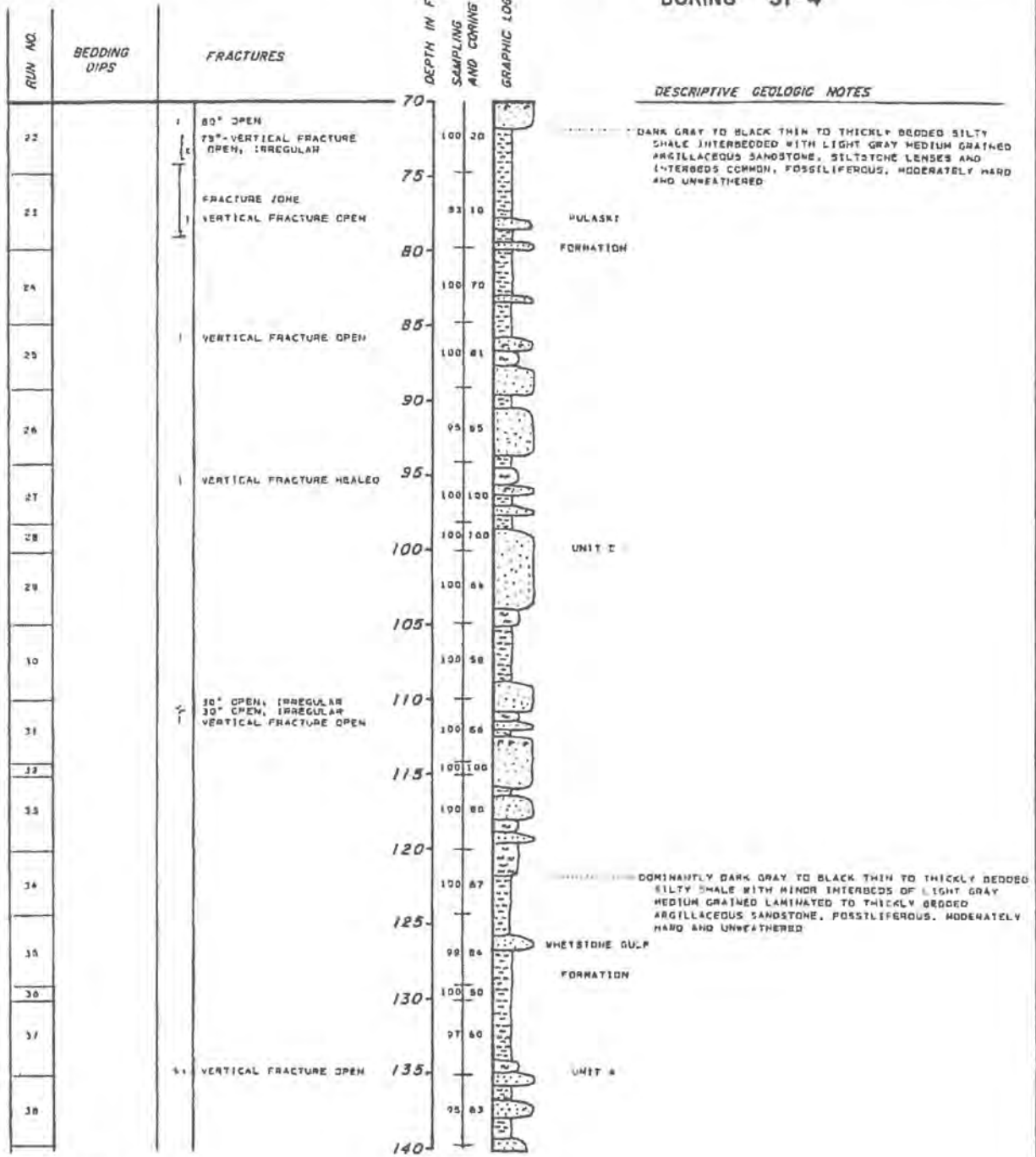
- Graywacke
- Siltstone
- Shale
- Fossiliferous
- Shale inter-clastic
- Cross-bedding
- Shale laminae

FIGURE 2K-20A

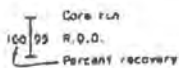
LOG OF BORING SI-4

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

# BORING SI-4



### SAMPLING AND CORING INFORMATION



### 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

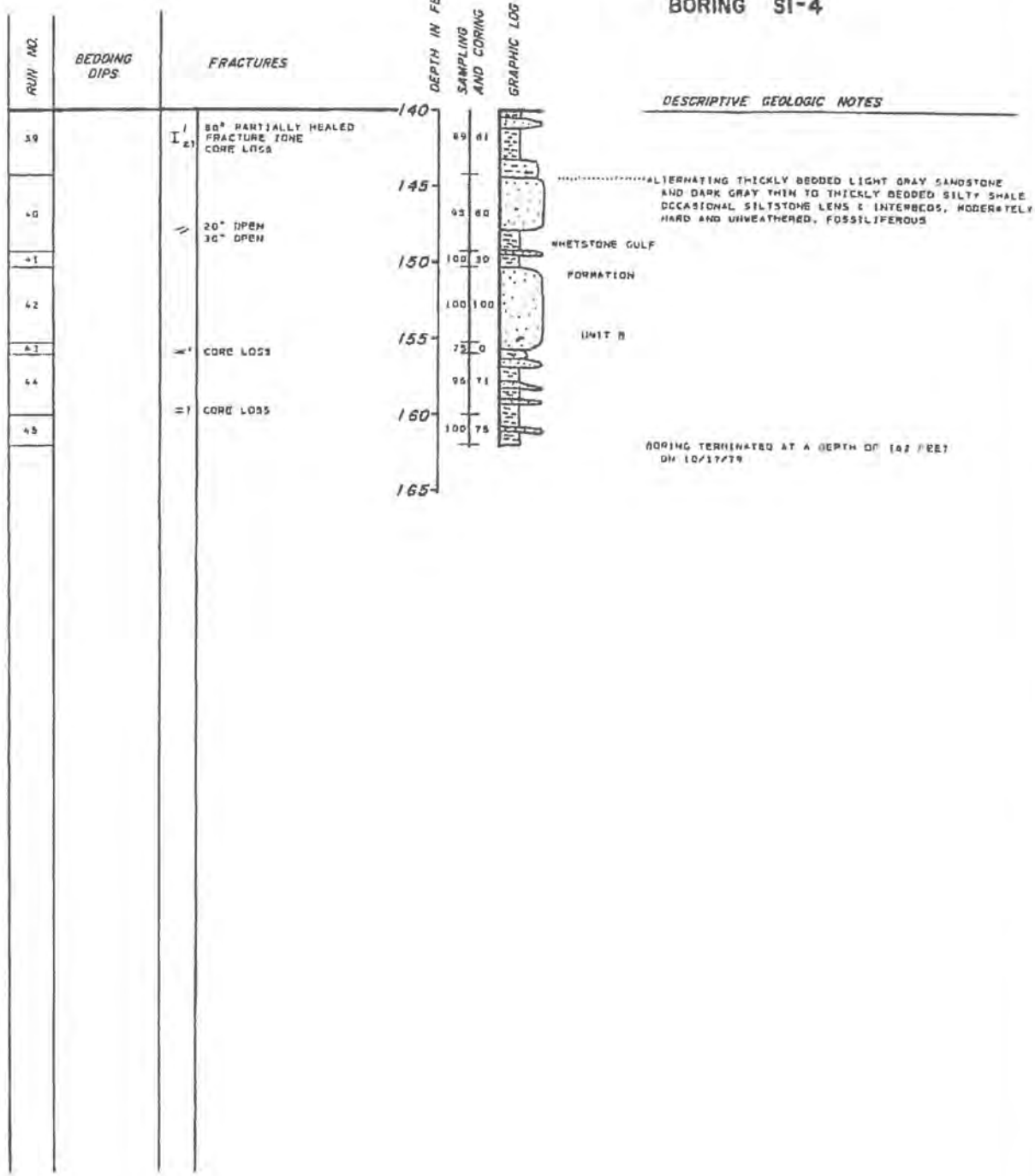
FIGURE 24-000

LOG OF BORING SI-4

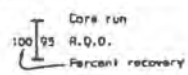
NIAGARA MOHAWK POWER CORPORATION  
NINE MILE POINT - UNIT 2  
FINAL SAFETY ANALYSIS REPORT



# BORING SI-4



**SAMPLING AND CORING INFORMATION**



**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 laminar

FIGURE 26-29C  
 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 305.00

## DESCRIPTIVE GEOLOGIC NOTES

CONCRETE

..... LIGHT GRAY MEDIUM GRAINED THICKLY BEDDED SILICEOUS SANDSTONE WITH THIN BEDS OF SILTSTONE, CROSSBEDDING AND CLAY CLASTS COMMON, HARD AND UNWEATHERED

ORWEGO SANDSTONE

TRANSITION ZONE

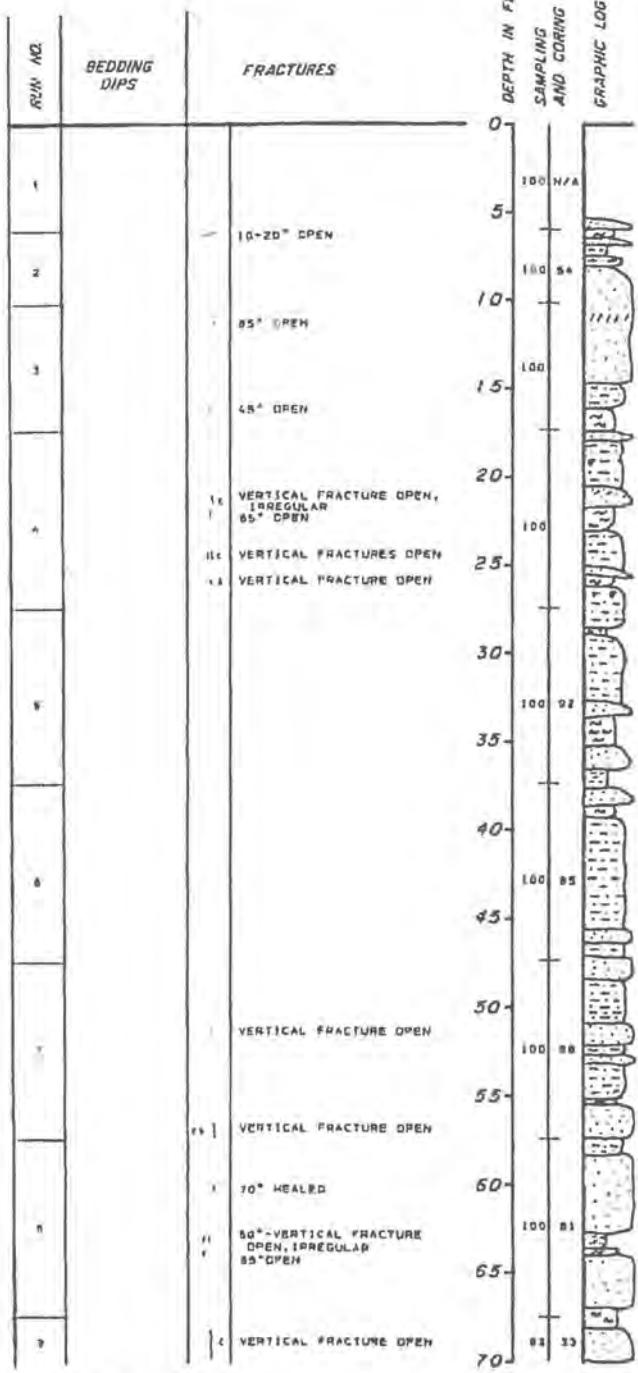
..... GRAY MEDIUM TO COARSE GRAINED, MEDIUM TO THICKLY BEDDED GRAYWACKE WITH ABUNDANT CLASTIC MASH, INTERBEDDED WITH DARK GRAY LAMINATED TO THINLY BEDDED SILTY SHALE AND LIGHT GRAY MEDIUM GRAINED THIN TO THICKLY BEDDED SILICEOUS SANDSTONE, FOSSILIFEROUS, MODERATELY HARD AND UNWEATHERED

PULASKI FORMATION

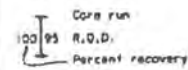
UNIT V

..... 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



### BEDDING DIPS

85° 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

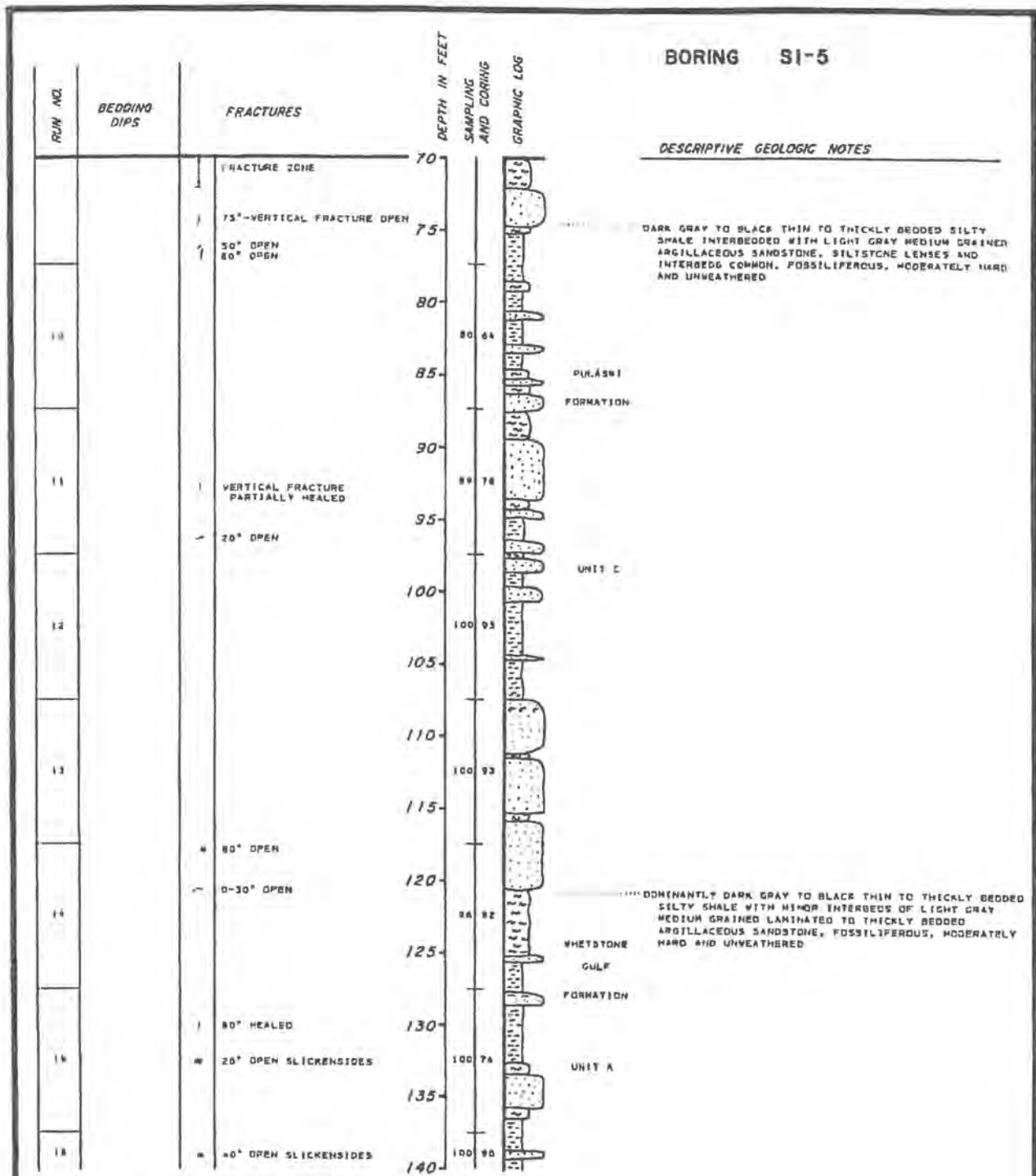
- Sandstone
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale inter-casts
- Cross-bedding
- Shale junction

FIGURE 2K-214

LOG OF BORING S1-5

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

# BORING SI-5



**SAMPLING AND CORING INFORMATION**

Core run  
 100% 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
- Small intra-cleasts
- Cross-bedding
- Shale laminae

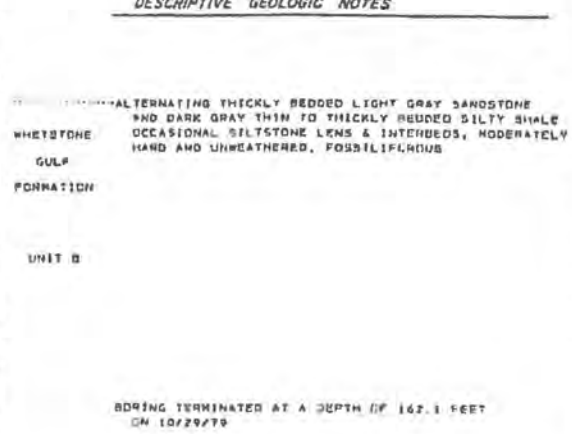
FIGURE 24-218

LOG OF BORING SI-5

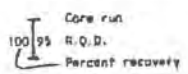
NIAGARA MOHAWK POWER CORPORATION  
 NINE MILE POINT - UNIT 2  
 FINAL SAFETY ANALYSIS REPORT

# BORING SI-5

RUN NO	BEDDING DIPS	FRACTURES	DEPTH IN FEET
		60° OPEN SLICKENSIDES	140
17		VERTICAL FRACTURE OPEN	145
18			150
19		VERTICAL FRACTURE OPEN	160
			165



**SAMPLING AND CORING INFORMATION**



**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-clastic
- Cross-bedding
- Shale laminae

FIGURE 26-21C

LOG OF BORING SI-5

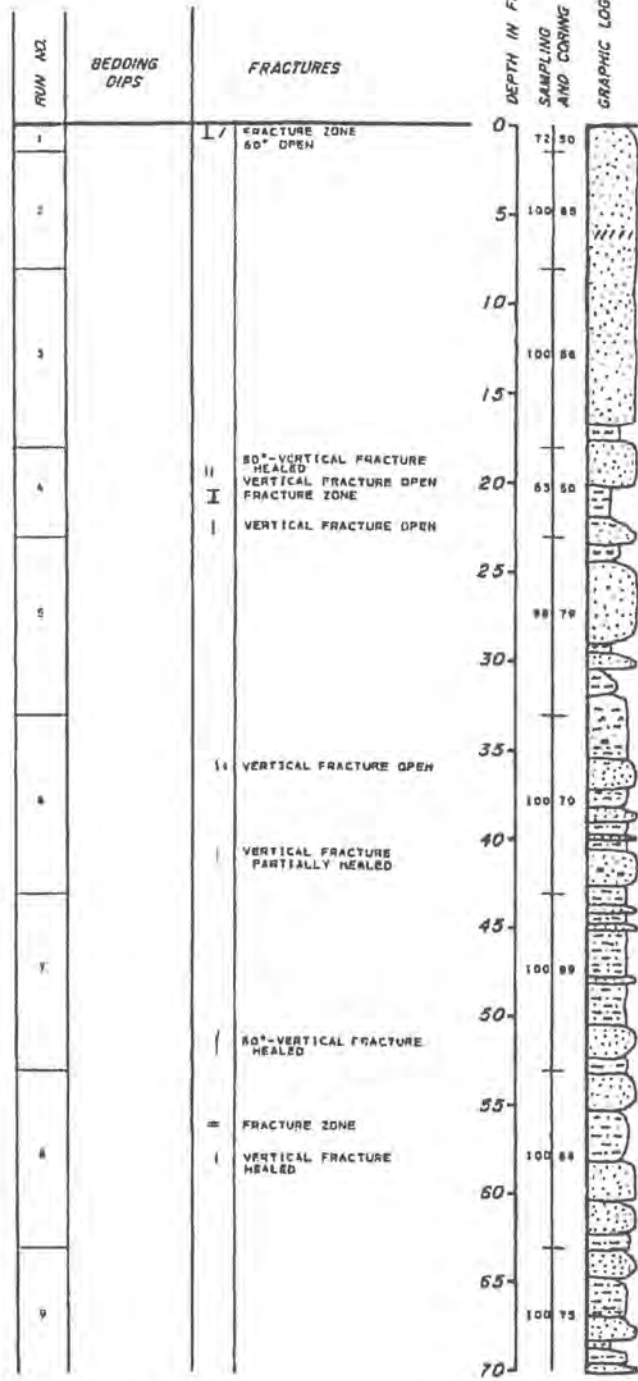
NIAGARA MOHAWA POWER CORPORATION  
NINE MILE POINT - UNIT 2  
FINAL SAFETY ANALYSIS REPORT

# BORING SI-6

SURFACE ELEVATION 245.0'  
 COORDINATES N 395.00 W 329.82

## DESCRIPTIVE GEOLOGIC NOTES

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



OSVEGO SANDSTONE

TRANSITION ZONE

PULASKI FORMATION

UNIT 4

### SAMPLING AND CORING INFORMATION

Core run  
 100% R.O.D.  
 Percent recovery

### BEDDING DIPS

60° 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 approx 45° angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone

### KEY TO SYMBOLS

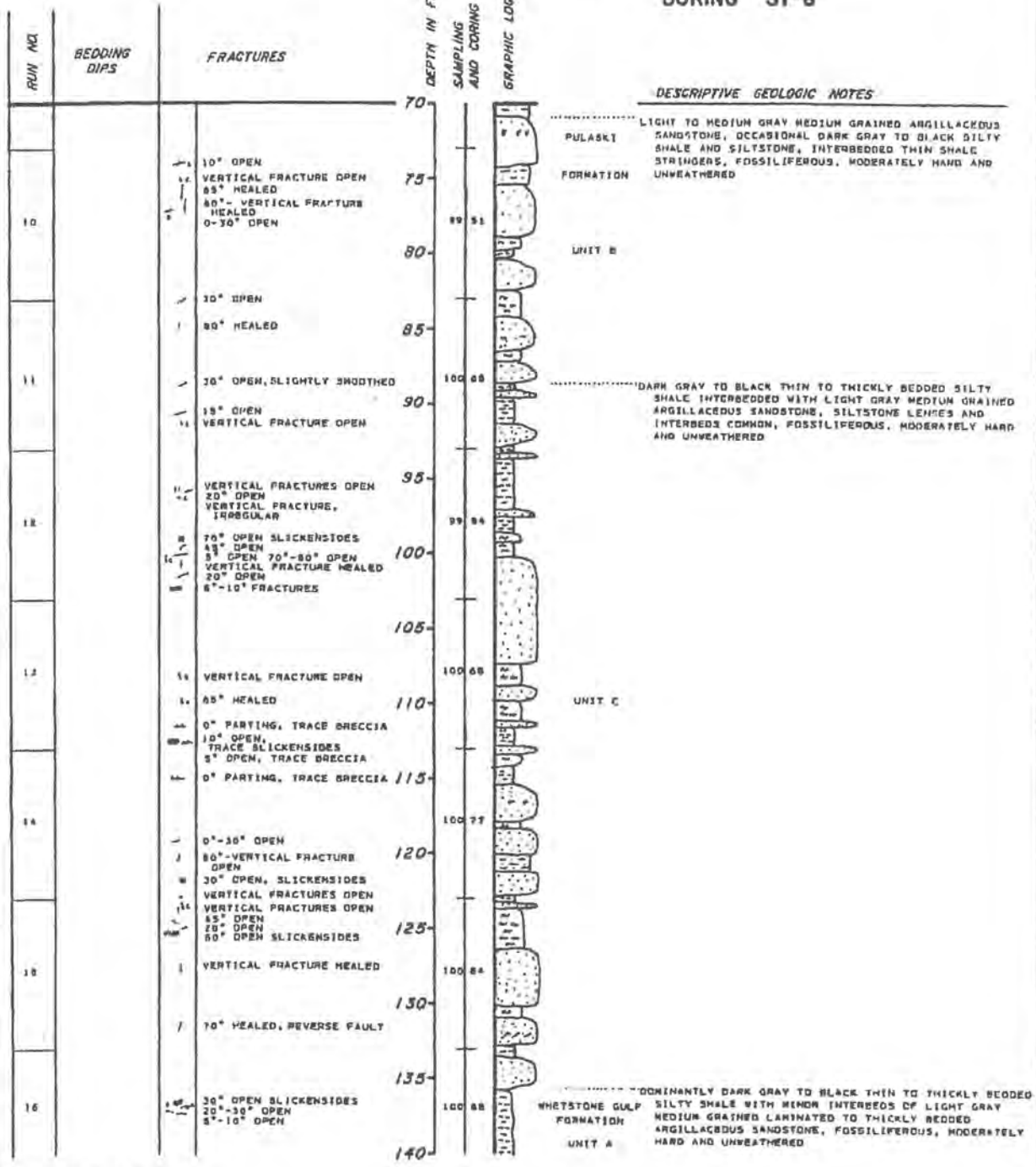
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intra-clastic
- Cross-bedding
- Shale laminae

FIGURE 7K-22A

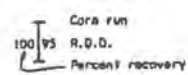
LOG OF BORING SI-6

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

# BORING SI-6



**SAMPLING AND CORING INFORMATION**



**BEDDING DIPS**

05° 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**

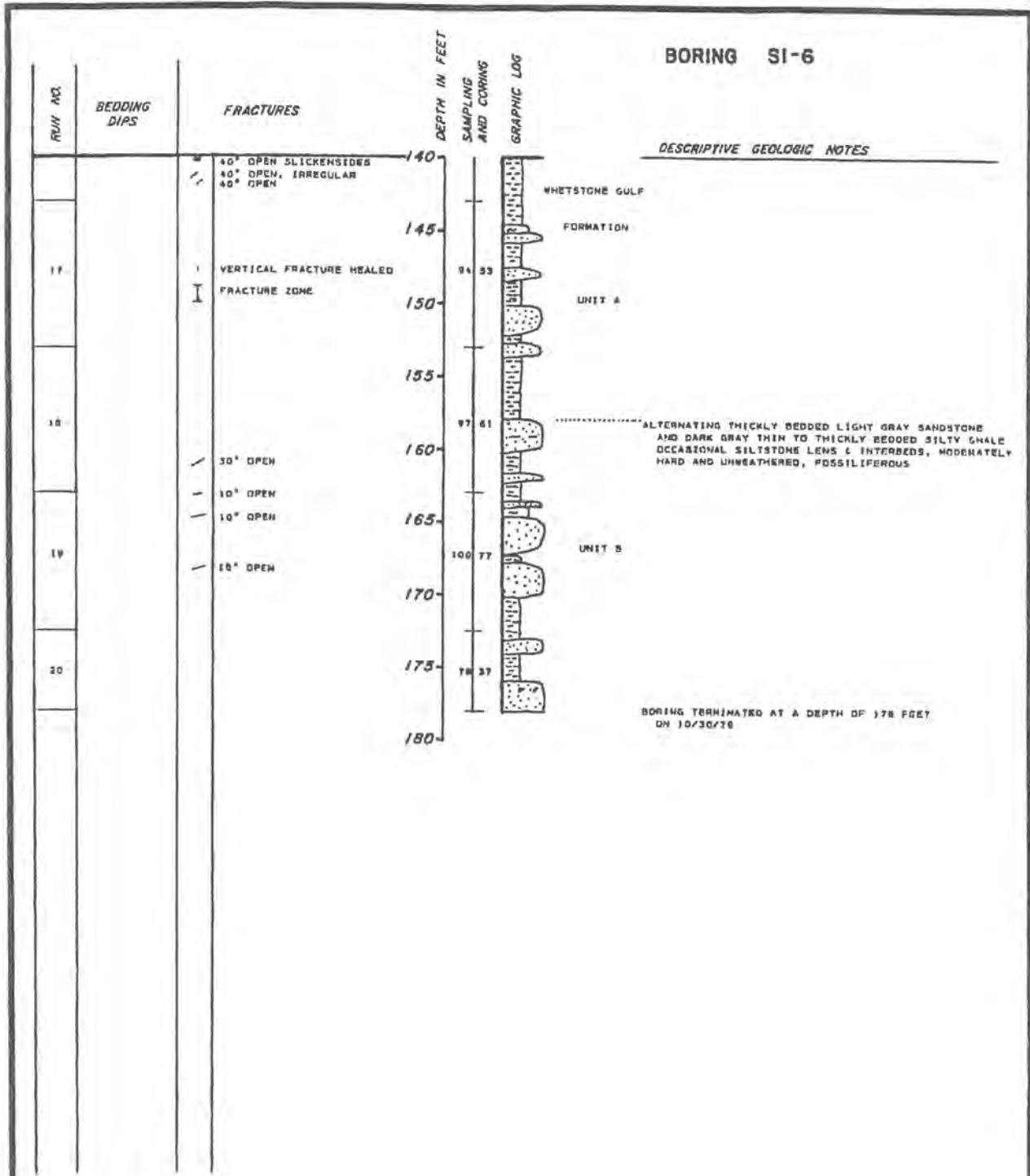
- Siltstone
- Graywacke
- Sandstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale laminae

FIGURE 2K-22B

LOG OF BORING SI-6

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

# BORING SI-6



**SAMPLING AND CORING INFORMATION**

Core run  
100/95 R.O.D.  
Percent recovery

**BEDDING DIPS**

33° Bedding dips measured on selective bedding planes. An attempt was made to determine all bedding 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
- Grayvech
- Siltstone
- Slate
- Fossils
- Shale intra-clasts
- Cross-bedding
- Siltstone

FIGURE 28-22C

LOG OF BORING SI-6

HEBARD LITHIUM POWER CORPORATION  
NINE MILE POINT - UNIT 2  
FINAL SAFETY ANALYSIS REPORT

# BORING SI-7

SURFACE ELEVATION 219.8'  
 COORDINATES N 342.50  
 E 265.50

## DESCRIPTIVE GEOLOGIC NOTES

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

TRANSITION ZONE GRAY MEDIUM TO COARSE GRAINED, MEDIUM TO THICKLY BEDDED GRAYWACKE WITH ABUNDANT CLASTIC MASS, 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

MULARKI 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

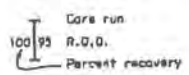
UNIT B

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

RUN NO.	BEDDING DIPS	FRACTURES	DEPTH IN FEET	SAMPLING AND CORING	GRAPHIC LOG
1		10° OPEN 80° OPEN, IRREGULAR FRACTURE ZONE 45° OPEN 20° OPEN 80° OPEN 45° OPEN	0	100 40	
2			5	100 92	
3		10° SLIGHTLY IRREGULAR VERTICAL FRACTURE PARTIALLY HEALED	10	100 88	
4			15	100 83	
5		VERTICAL FRACTURE OPEN, IRREGULAR	20	100 92.5	
6		VERTICAL FRACTURE OPEN	25		
7		VERTICAL FRACTURE OPEN	30	100 92	
8		70° OPEN VERTICAL FRACTURE HEALED VERTICAL FRACTURE OPEN	35		
9		VERTICAL FRACTURE OPEN	40		
10		VERTICAL FRACTURE PARTIALLY HEALED	45	99.5 83	
11		VERTICAL FRACTURES OPEN	50		
12		85° SLIGHTLY IRREGULAR OPEN	55	92 85.5	
13		VERTICAL FRACTURE OPEN	60	90 42	
14		75° VERTICAL FRACTURE PARTIALLY HEALED	65	85 34	
15		70° PARTIALLY HEALED	70	100 46	
16		BRECCIA	75	80 11	
17		80° OPEN 80° OPEN 75° IRREGULAR, SLICKENSIDES 85° OPEN 40-80° OPEN, IRREGULAR VERTICAL FRACTURE OPEN	80		
18		80° OPEN, IRREGULAR	85		
19		80° OPEN 55° OPEN, SLICKENSIDES FRACTURE ZONE 80° OPEN	90		
20			95		
21			100		

### SAMPLING AND CORING INFORMATION



### BEDDING DIPS

85° Bedding dips measured on objective 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 - sulfur
- Fractured zone

### KEY TO SYMBOLS

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

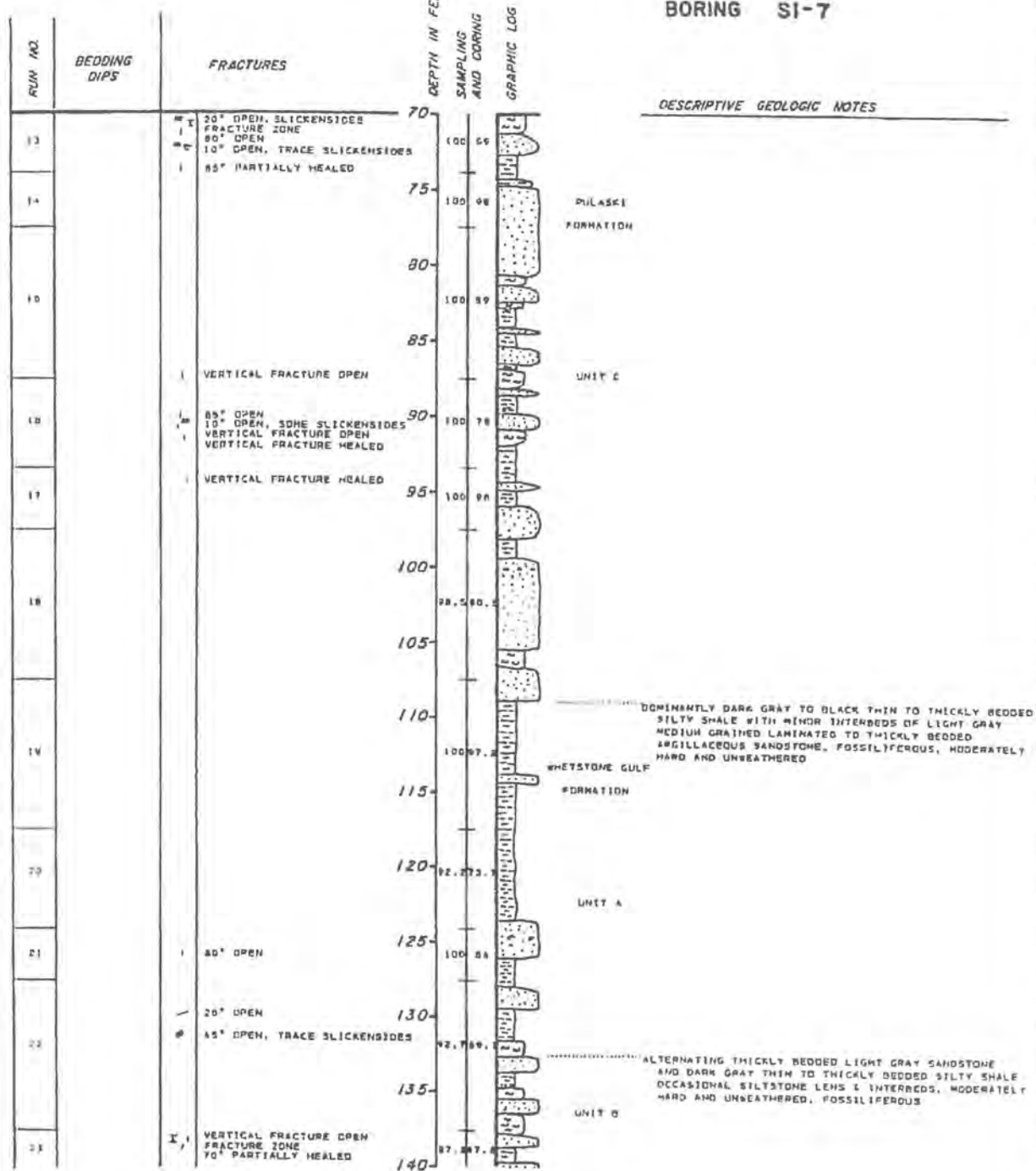
FIGURE 16-21A

LOG OF BORING SI-7

MURRAY McHANEY POWER CORPORATION  
 NINE MILE POINT - UNIT 2  
 FINAL SAFETY ANALYSIS REPORT



# BORING SI-7



### SAMPLING AND CORING INFORMATION

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

### BEDDING DIPS

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

### FRACTURES

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

### KEY TO SYMBOLS

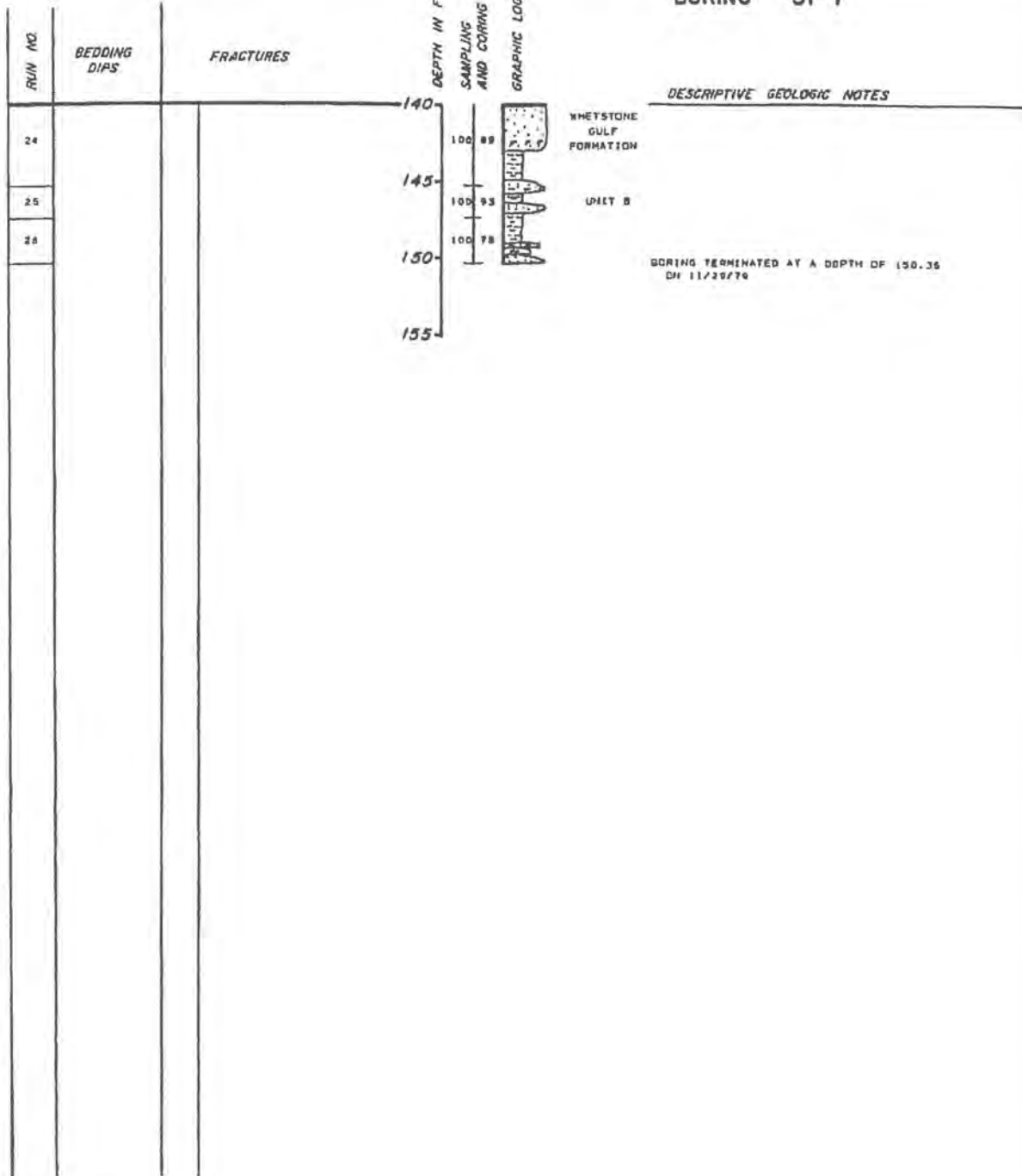
- Graywacke
- Siltstone
- Shale
- Fossils
- Shale intraclastic
- Cross-bedding
- Siltstone laminae

FIGURE 2K-21B

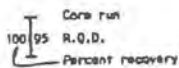
LOG OF BORING SI-7

TABARA MURAWA POWER CORPORATION  
NINE MILE POINT - UNIT 2  
FINAL SAFETY ANALYSIS REPORT

# BORING SI-7



**SAMPLING AND CORING INFORMATION**



**BEDDING DIPS**

33° Bedding dips measured on selective bedding planes. An attempt was made to show 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-clastic
- Cross-bedding
- Shale laminae

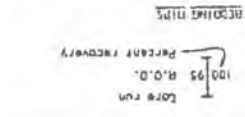
FIGURE 7K-230

LOG OF BORING SI-7

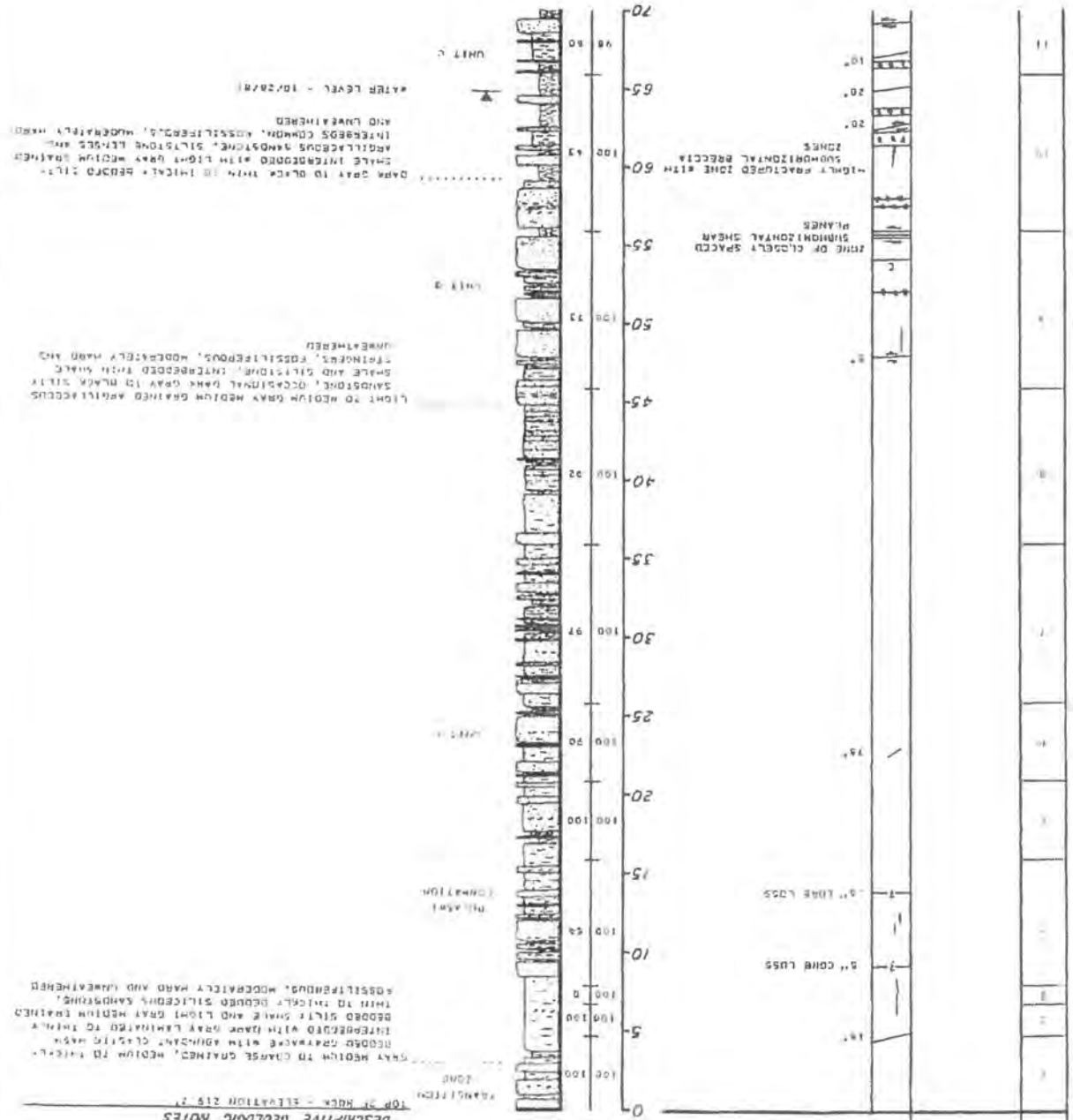
MISSOURI POWER CORPORATION  
NINE MILE POINT - UNIT 2  
FINAL SAFETY ANALYSIS REPORT



Bedding dips measured on selective bedding planes. An attempt was made to measure bedding dips on all beds of Unit 2. Bedding dips measured on selective bedding planes. An attempt was made to measure bedding dips on all beds of Unit 2.



SAMPLING AND CORING INFORMATION



DESCRIPTIVE GEOLOGIC NOTES  
 SURFACE ELEVATION 219.7'  
 N 35.19  
 W 261.87  
 BORING S1-B

BORING SI-8

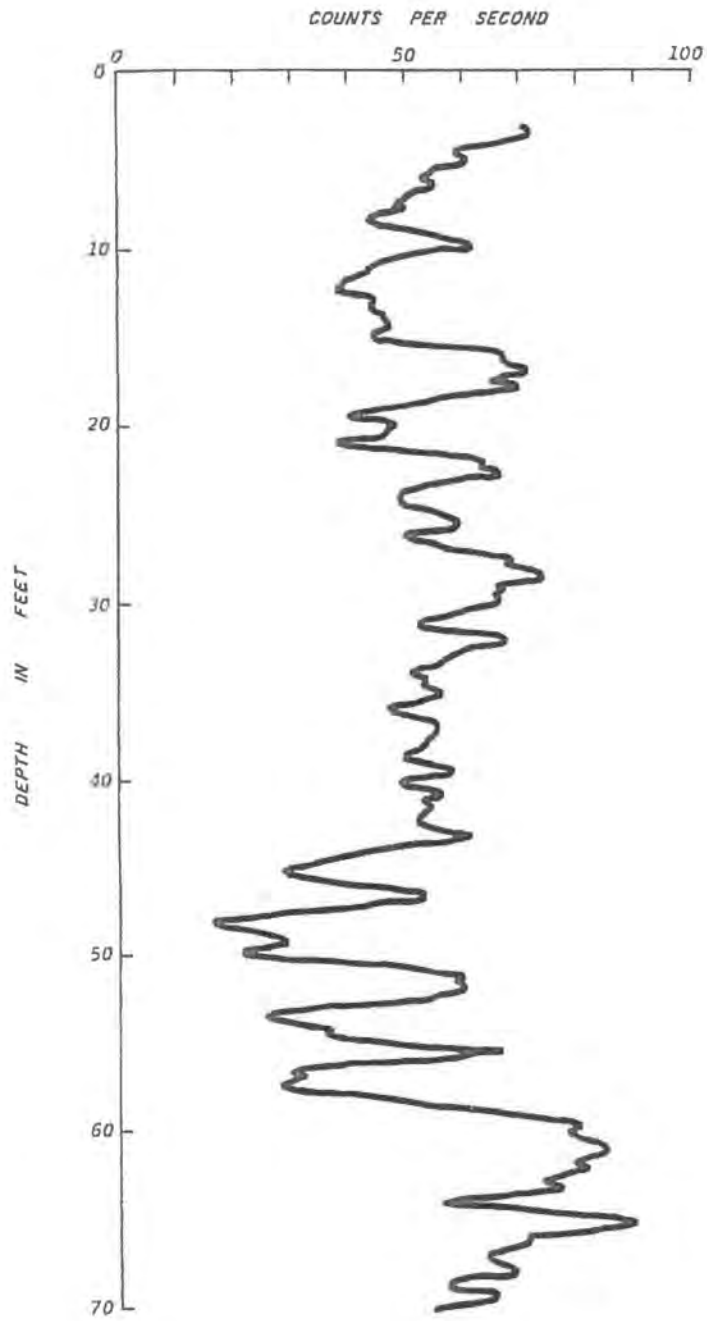


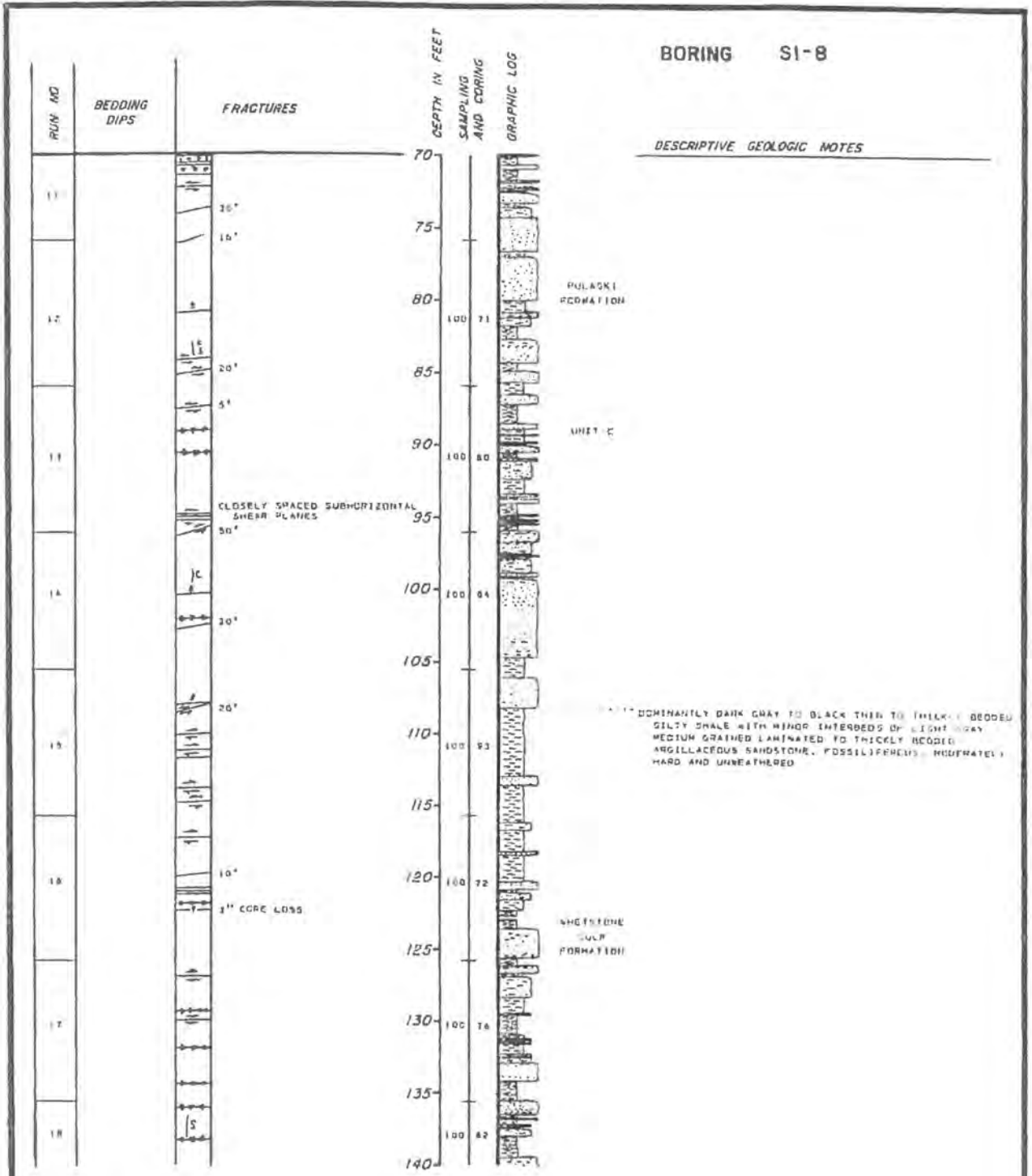
FIGURE 2K-2+8

GAMMA RAY LOG OF BORING SI-8

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

# BORING SI-8

## DESCRIPTIVE GEOLOGIC NOTES



### SAMPLING AND CORING INFORMATION

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

### BEDDING DIPS

103° Bedding dips measured on selective bedding planes. An attempt was made to show any unusual crest bending 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
- Siltstone
- Shale
- Fossils
- Shale intra-clasts
- Cross-bedding
- Shale lamination

FIGURE 00-242

LOG OF BORING SI-8

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

**BORING SI-8**

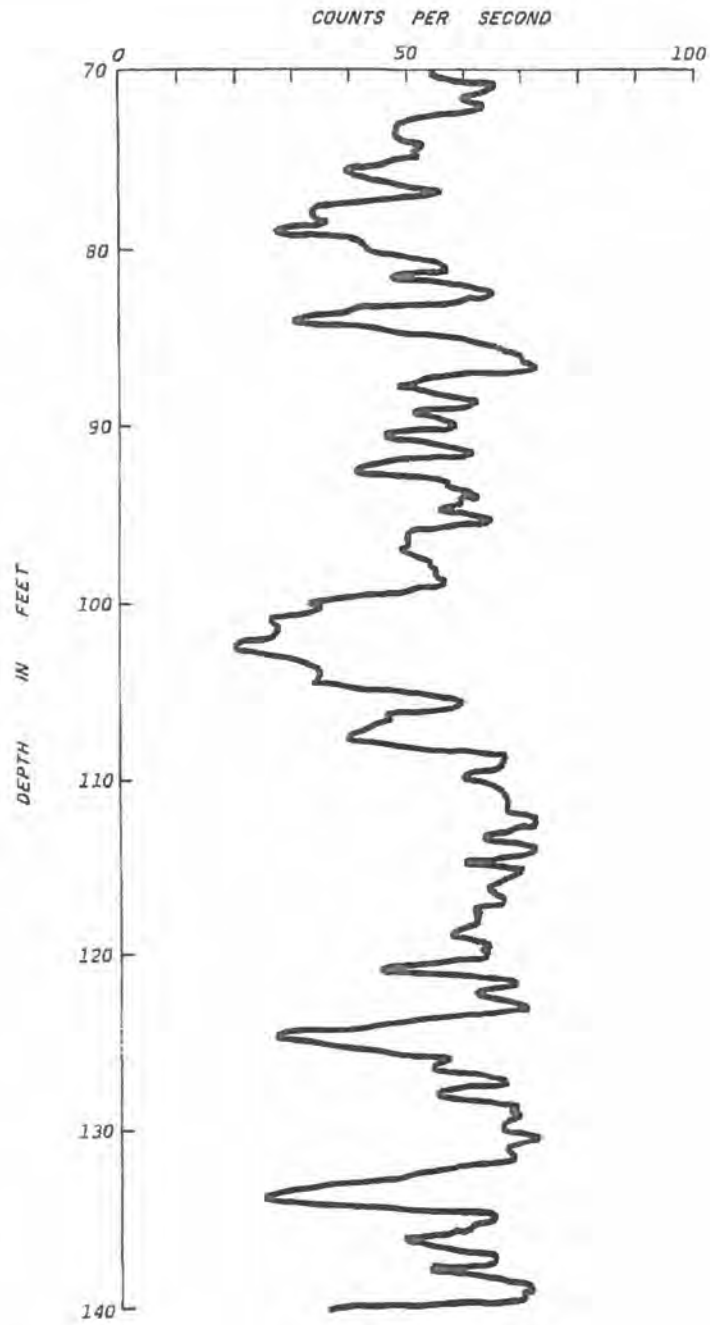






FIGURE 23-24D

GAMMA RAY LOG OF BORING SI-8

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

# BORING SI-8

RUN NO	BEDDING DIPS	FRACTURES	DEPTH IN FEET SAMPLING AND CORING GRAPHIC LOG
18			
19			

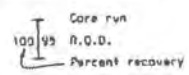
WHEATSTONE  
GULF  
FORMATION

## DESCRIPTIVE GEOLOGIC NOTES

BORING TERMINATED AT A DEPTH OF 150.5 FEET  
ON 9/14/81 AND GEOPHYSICALLY LOGGED  
ON 9/18/81

NOTE: NUMEROUS FRACTURES PARALLEL TO SLIDING 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



### BEDDING DIPS

03' Bedding dips measured on selective bedding planes. An attempt was made to record 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 - silica
-  Fractured zone

### KEY TO SYMBOLS

-  Unmycelite
-  Siltstone
-  Shale
-  Tuffite
-  Shale intra-bedding
-  Cross-bedding
-  Unia test log

FIGURE 14-201

LOG OF BORING SI-8  
NUGUNA GO-ART POWER CORPORATION  
NINE MILE POINT - UNIT 2  
FINAL SAFETY ANALYSIS REPORT

**BORING SI-8**

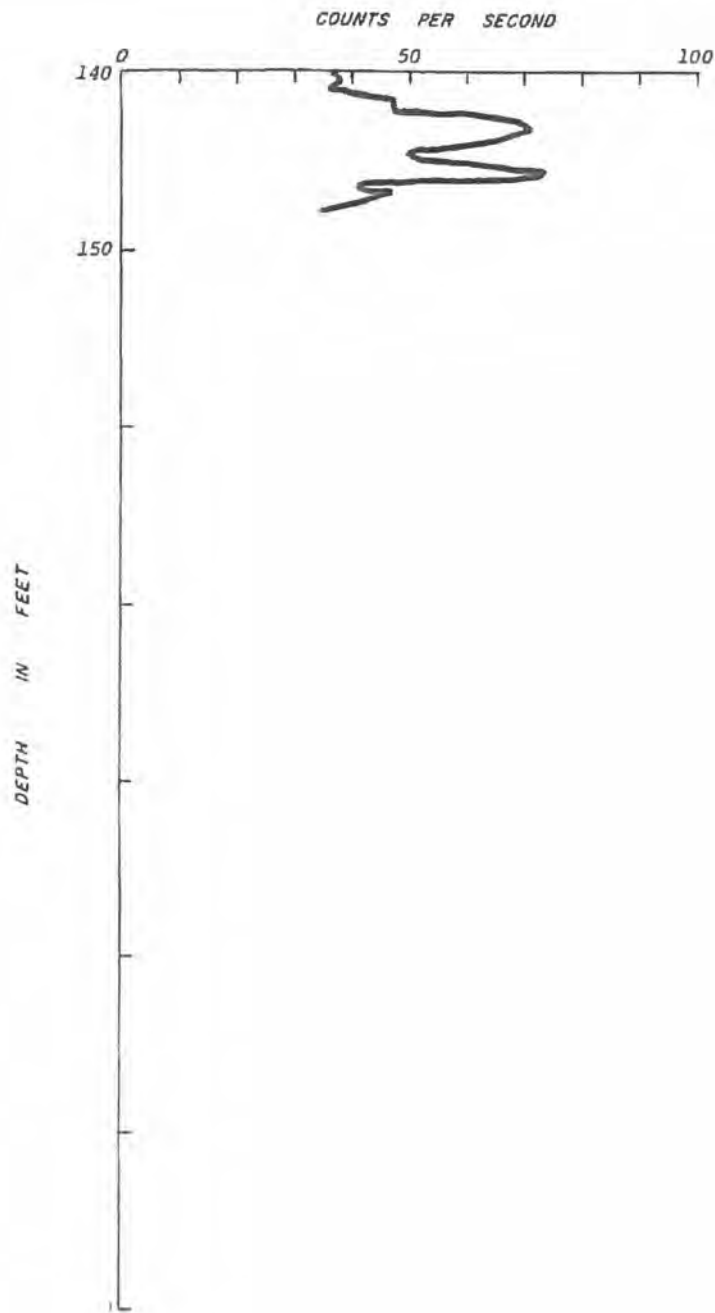


FIGURE 211-215

GAMMA RAY LOG OF BORING SI-8

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



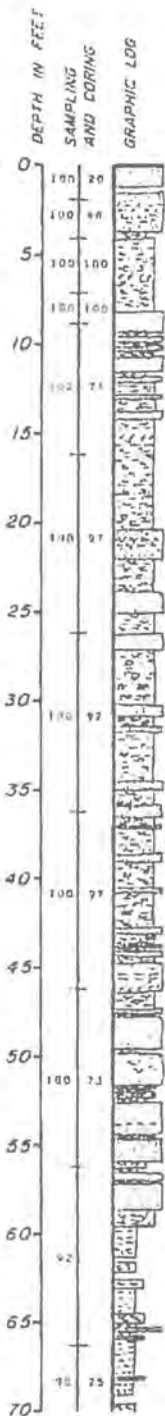
# BORING SI-9

SURFACE ELEVATION 219.7'  
 COORDINATES N 355.34  
 W 152.0

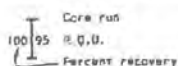
## DESCRIPTIVE GEOLOGIC NOTES

TOP OF UNCL. - ELEVATION 219.7'

RUN NO	BEDDING DIPS	FRACTURES
1		3.5" CORE LOSS
2		
3		10' IRREGULAR FRACTURE
4		
5		30'
6		
7		
8		
9		
10		2.5" CORE LOSS
11		8" CORE LOSS



### SAMPLING AND CORING INFORMATION



### BEDDING DIPS

10' Bedding dips measured on objective bedding planes. An attempt was made to measure all dips in cross boring or other reference structures.

### FRACTURES

- Brucite zone
- Dip-slip slickensides
- Fractures shown of approximate angle to core axis
- Mineralized fracture c - calcite, s - sulfide
- Fracture zone

### UNIT C SYMBOLS

- Claystone
- Siltstone
- Sand
- Fossils
- Shale interbedded
- Cross-bedding
- Feely zone

### FIGURE 2-12A

LOG OF BORING SI-9

MINERS AND ENVIRONMENTAL ENGINEERS  
 NINE MILE POINT - UNIT 2  
 FINAL SAFETY ANALYSIS REPORT

**BORING SI-9**

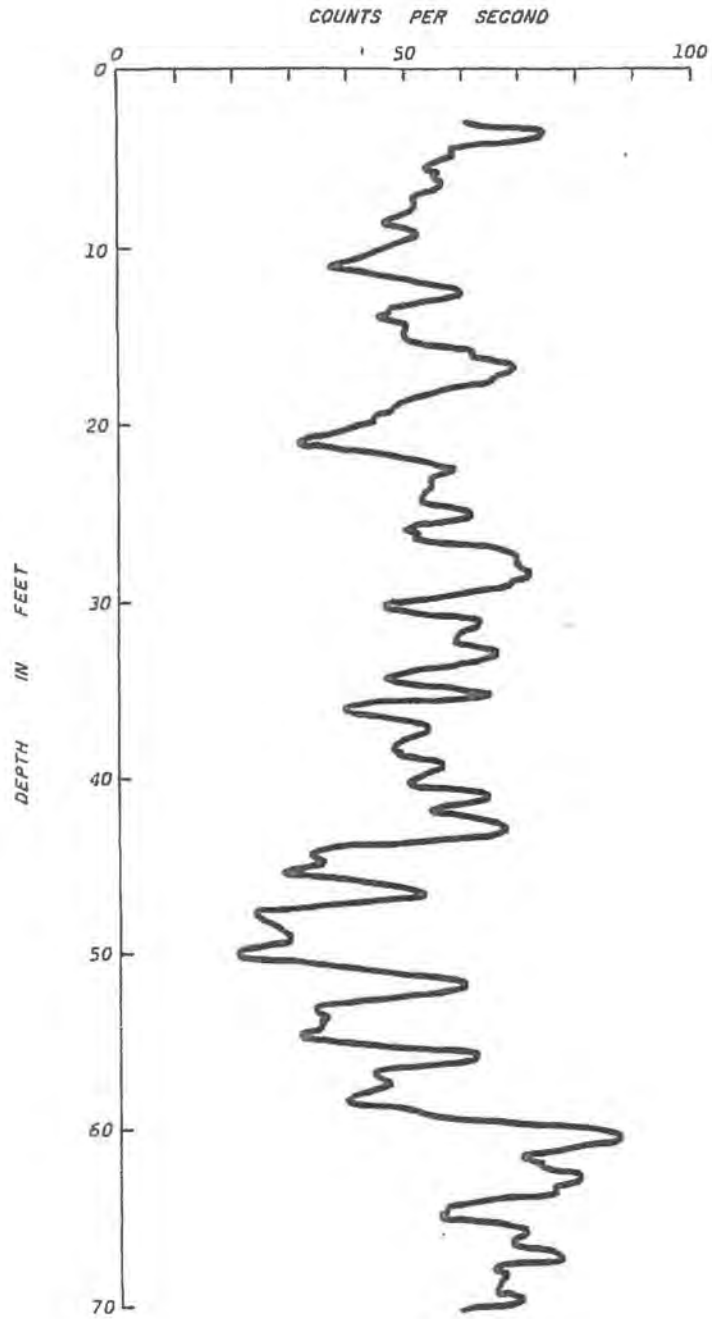
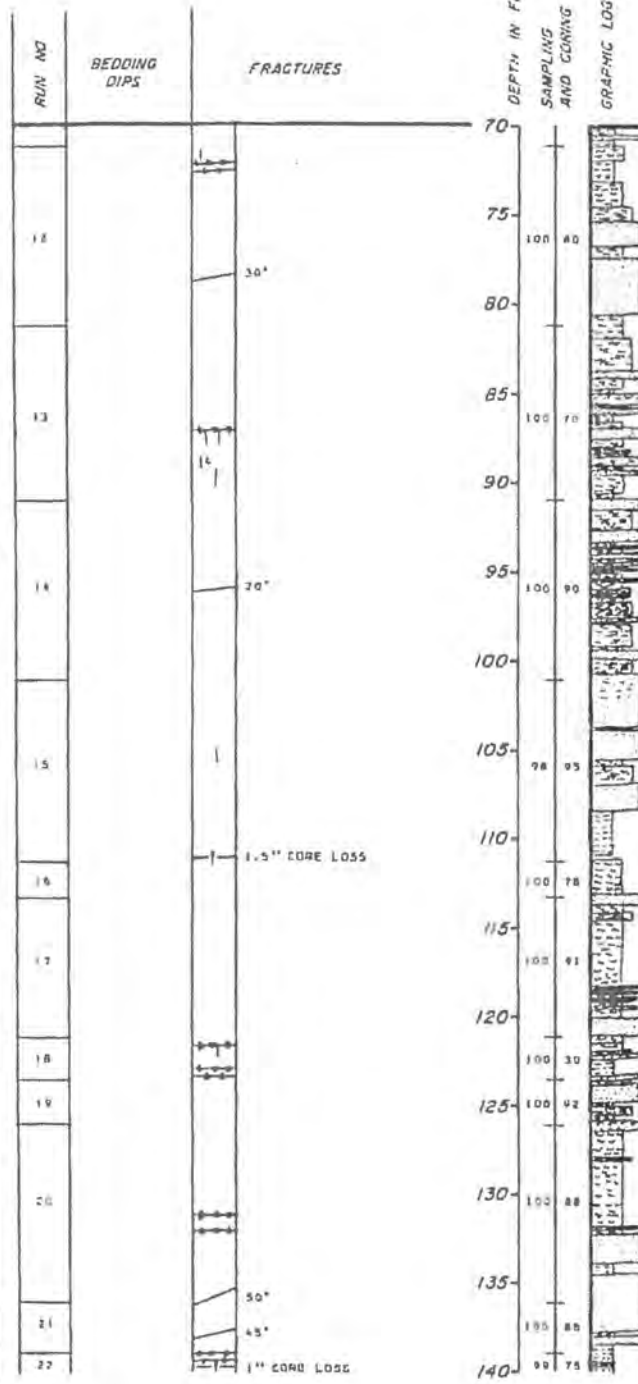


FIGURE 2K-25B

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

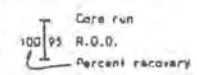
PULASKI FORMATION

UNIT C

WHEATSTONE GULF FORMATION

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

### SAMPLING AND CORING INFORMATION



### BEDDING DIPS

30° Bedding dips measured on selective bedding planes. An attempt was made to measure dips on all bedding planes.

### FRACTURES

- Breccia zone
- Dis-slip siltstone
- Fracture-shear at approximate angle to core axis
- Mineralized fracture c - calcite s - sulfide
- Fractured zone

### KEY TO SYMBOLS

- Sandstone
- Siltstone
- Shale
- Fossils
- Sand intra-clast
- Cross-bedding
- Sliver inclusion

FIGURE 24-230

LOG OF BORING SI-9

MISSISSIPPI STATE UNIVERSITY  
NINE MILE POINT - UNIT 2  
FINAL SAFETY ANALYSIS REPORT

**BORING SI-9**

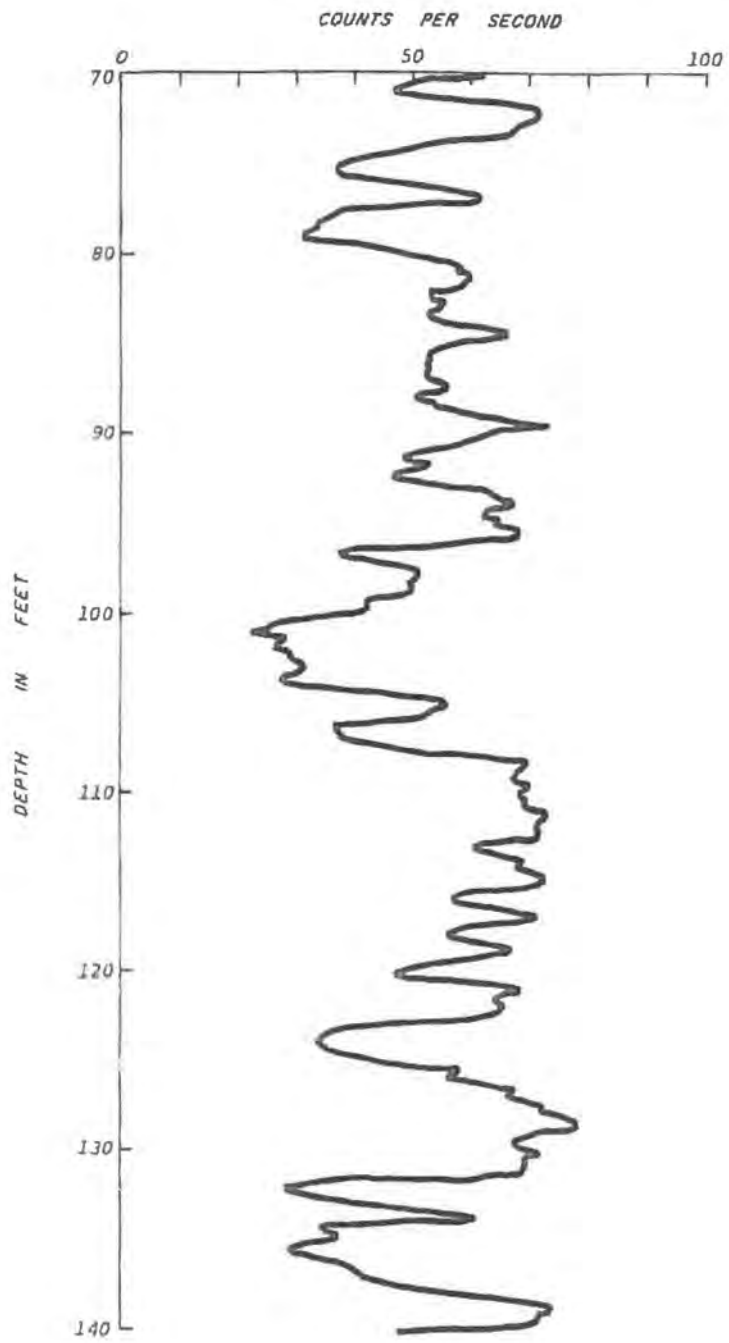
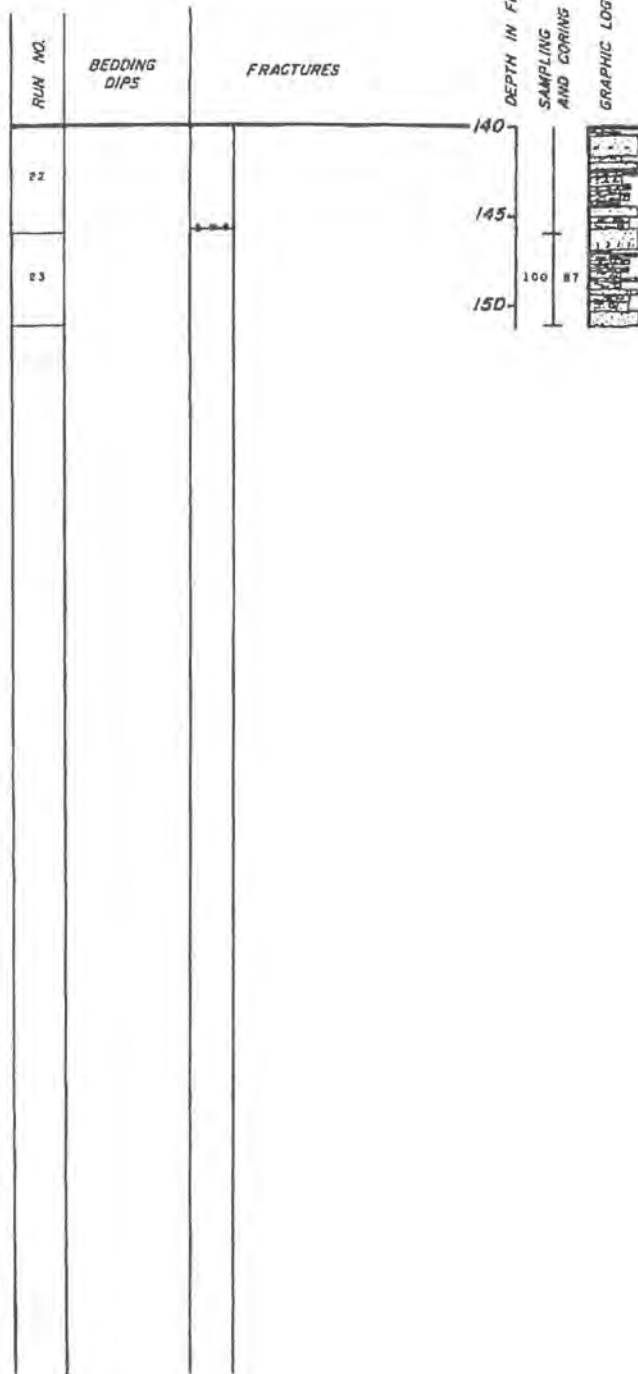


FIGURE 2K-25D

GAMMA RAY LOG OF BORING SI-9

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

**BORING S1-9**

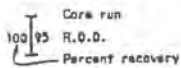


DESCRIPTIVE GEOLOGIC NOTES

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 RDD VALUES SHOWN.

SAMPLING AND CORING INFORMATION



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
- Fossil
- Shale intra-clasts
- Cross-bedding
- Shale (oiline)

FIGURE 2A-20E

LOG OF BORING S1-9

FIGURE 1.04 AND 1.05 FROM THE  
NINE MILE POINT - UNIT 2  
FINAL SAFETY ANALYSIS REPORT

**BORING SI-9**

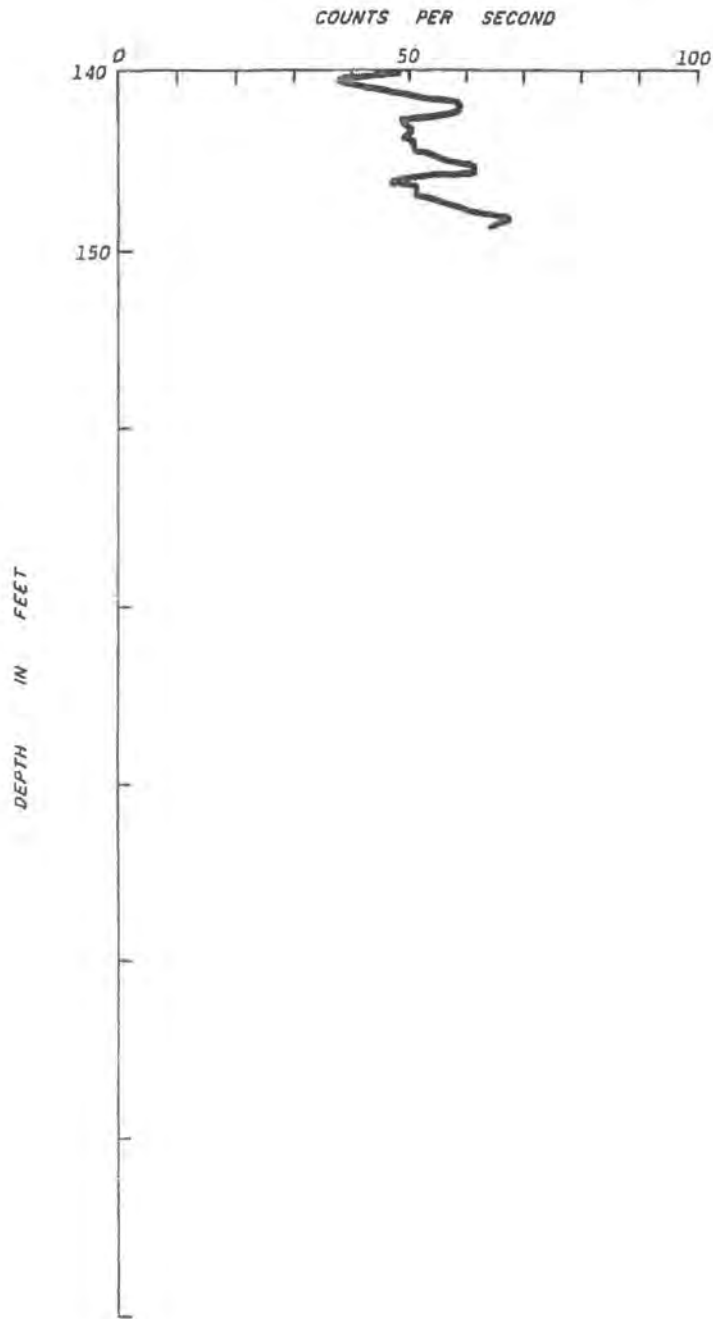


FIGURE 2K 25F

GAMMA RAY LOG OF BORING SI-9

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

# BORING SI-10

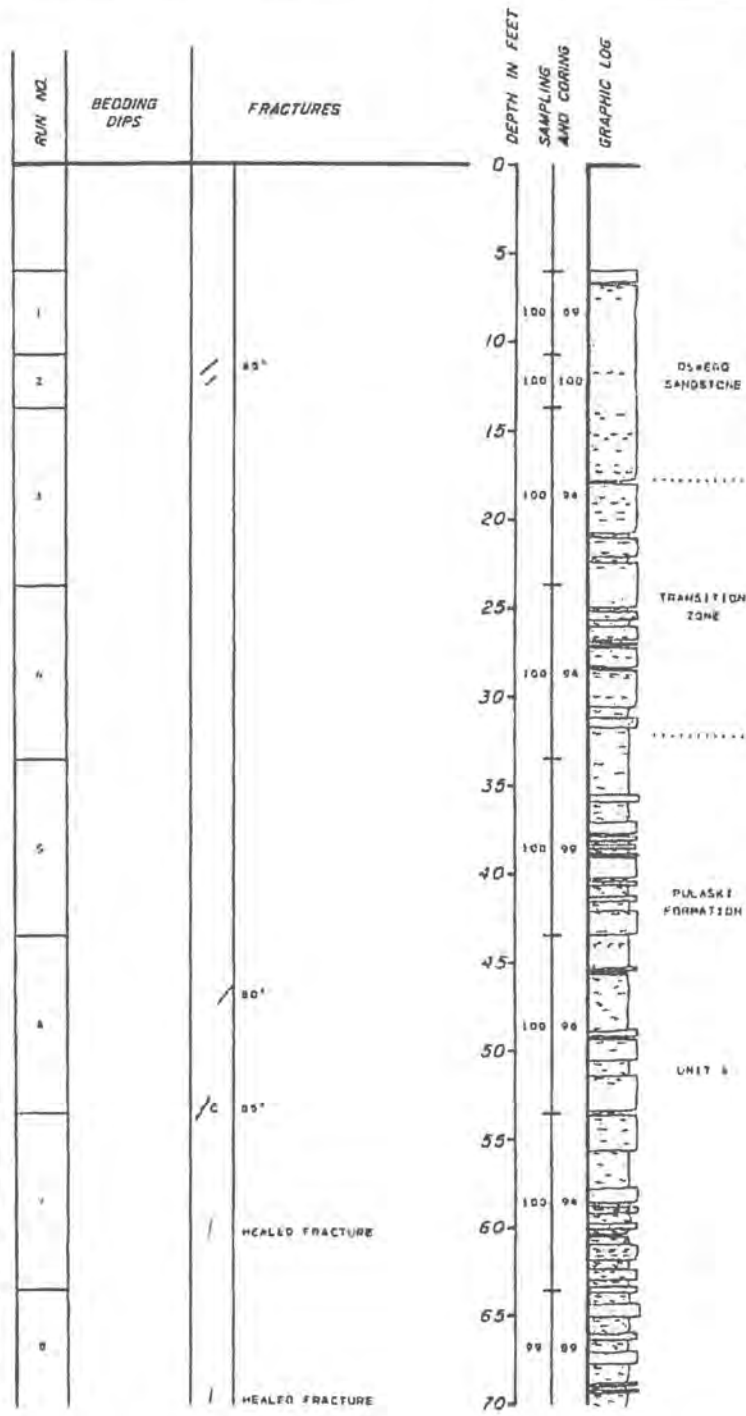
COORDINATES N 379 B  
V 252

DESCRIPTIVE GEOLOGIC NOTES  
0' DEPTH - 248.45' ELEVATION  
GROUND SURFACE ELEVATION - 247.57'

4.3' DEPTH - TOP OF ROCK

6' DEPTH - BEGIN CORING

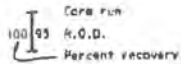
LIGHT GRAY MEDIUM GRAINED THICKLY BEDDED SILICEOUS SANDSTONE WITH THIN BEDS OF SILTSTONE, HARD AND UNWEATHERED



OSBERG SANDSTONE  
TRANSITION ZONE  
PULASKI FORMATION  
UNIT 4

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

**SAMPLING AND CORING INFORMATION**



**BEDDING DIPS**

85° Bedding dips measured on collective bedding planes. An attempt was made to measure dips on individual bedding planes.

**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 24-20A

LOG OF BORING SI-10  
NIPASS MSHA'S POWER CORPORATION  
NINE MILE POINT - UNIT 2  
FINAL SAFETY ANALYSIS REPORT

**BORING SI-10**

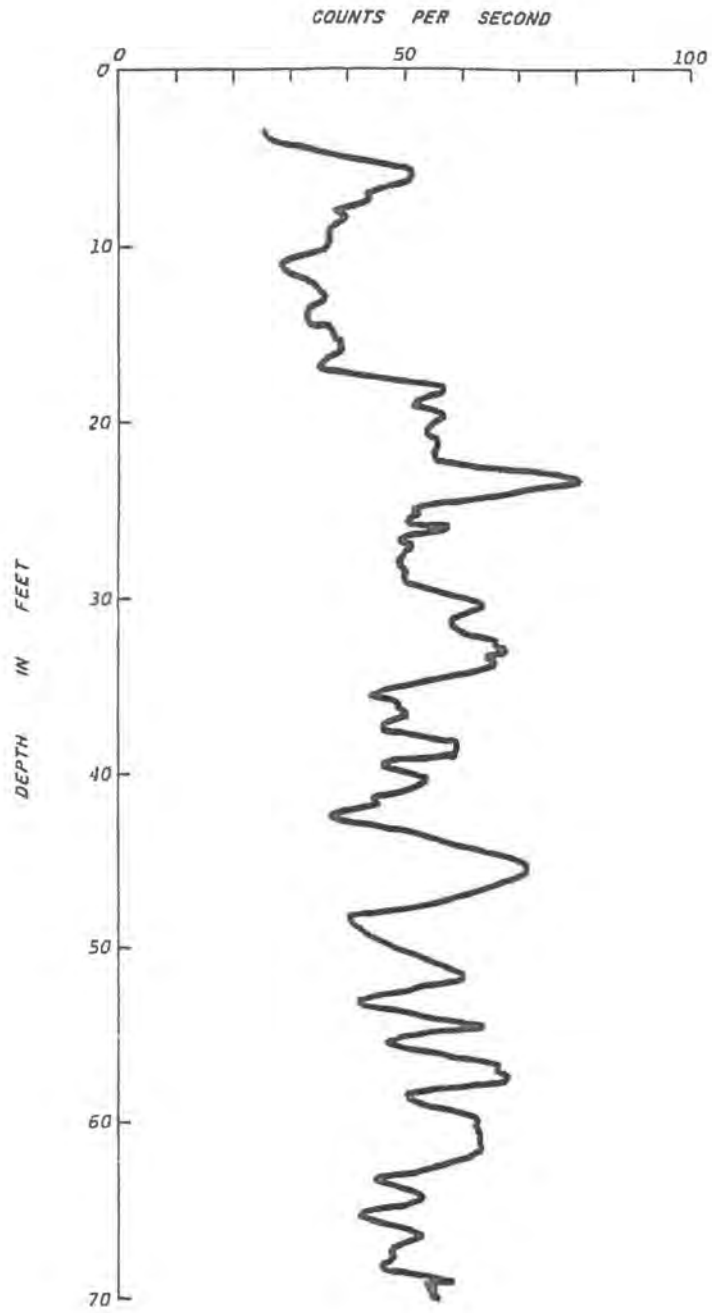


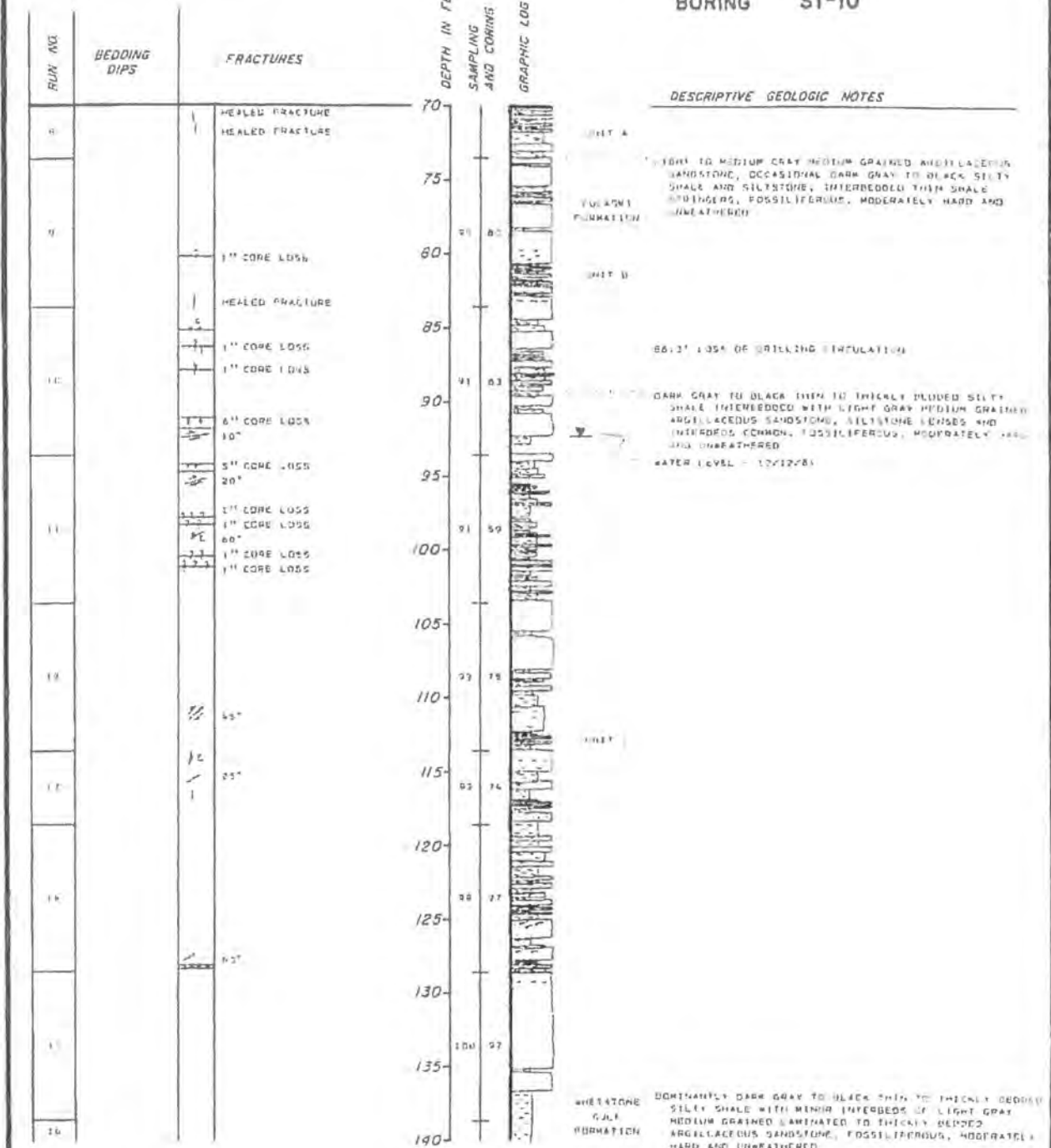
FIGURE 2K-26B

GAMMA RAY LOG OF BORING SI-10

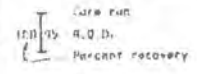
NIAGARA MOHAWK POWER CORPORATION  
**NINE MILE POINT - UNIT 2**  
FINAL SAFETY ANALYSIS REPORT



# BORING SI-10



**SAMPLING AND CORING INFORMATION**



**BEDDING DIPS**

30° Bedding dips measured on selective bedding planes. An attempt is made to show all bedding - other bedding structures.

**FRACTURES**

- Fracture zone
- Dip-slip slickensides
- Fractures shown at approximate angle to core sets.
- Mineralized fracture C - calcite S - sulfide
- Fractured zone

**LOG SYMBOLS**

- Unweathered
- Silty shale
- Clay
- Fossiliferous
- Sandstone interbedded
- Cross-bedding
- Stain zone

FIGURE 20-00C  
LOG OF BORING SI-10  
NAGARA MOHAWK POWER CORPORATION  
NINE MILE POINT - UNIT 2  
FINAL SAFETY ANALYSIS REPORT

**BORING SI-10**

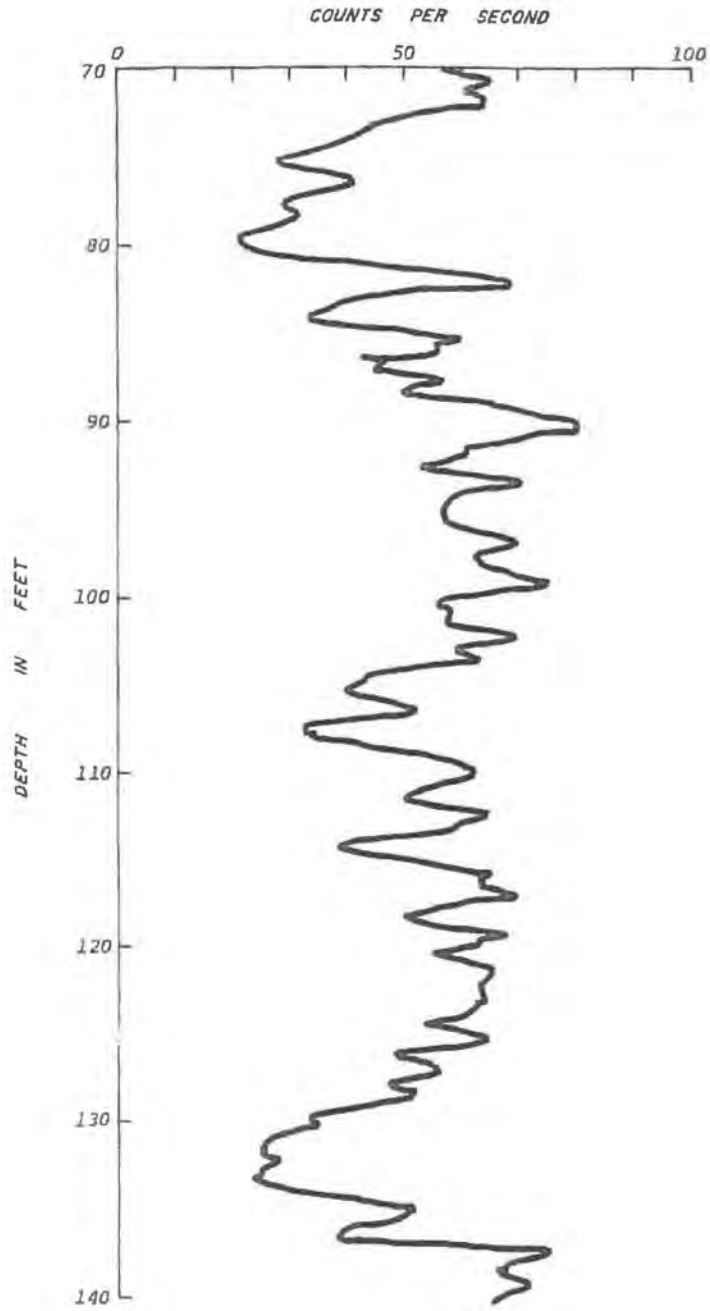
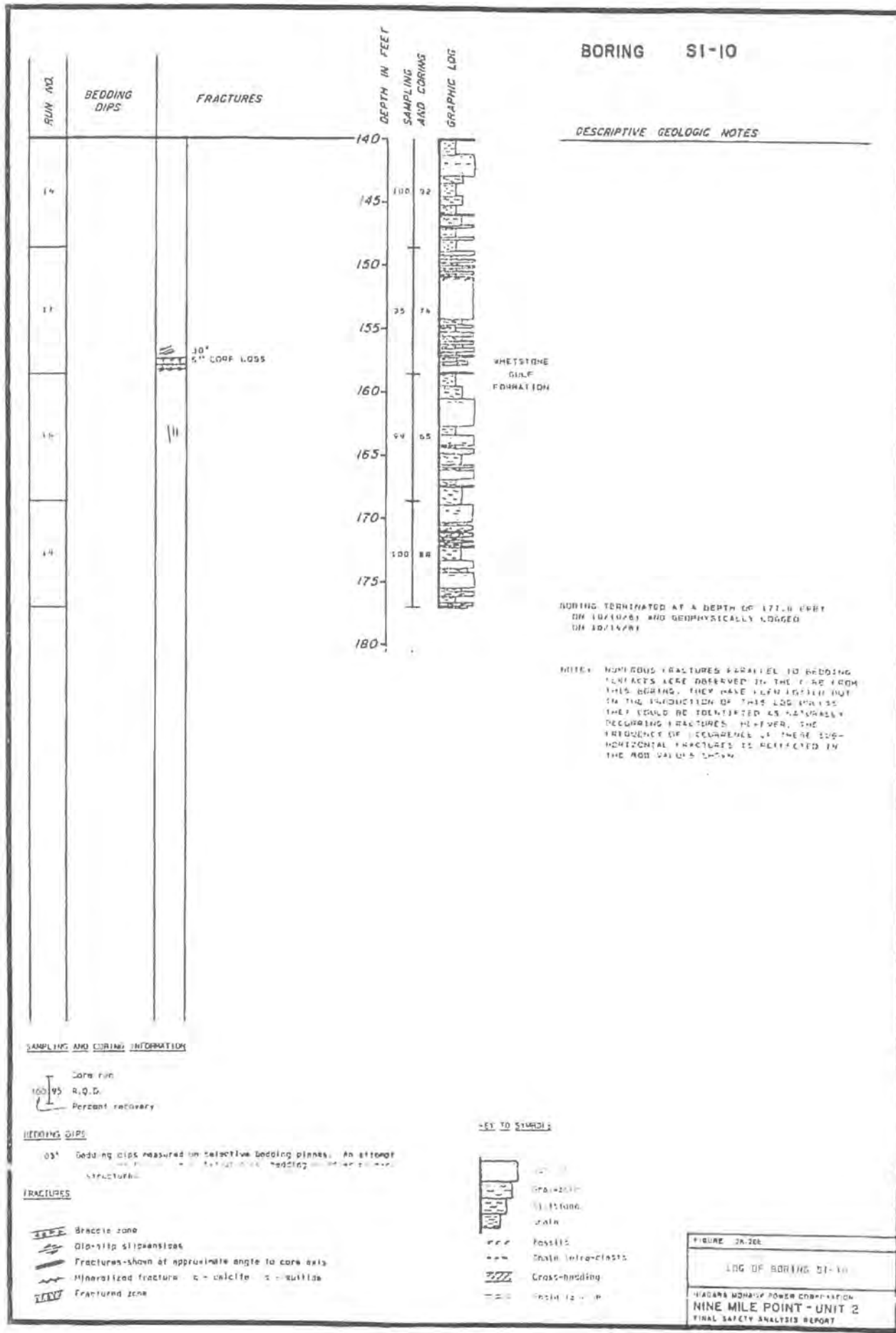


FIGURE 2/200

GAMMA RAY LOG OF BORING SI-10

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

BORING SI-10

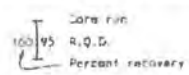


DESCRIPTIVE GEOLOGIC NOTES

BORING TERMINATED AT A DEPTH OF 177.0 FEET ON 10/14/76 AND GEOPHYSICALLY LOGGED ON 10/14/76

NOTE: NUMEROUS FRACTURES PARALLEL TO BEDDING CONTACTS WERE OBSERVED IN THE CORE FROM THIS BORING. THEY WERE IDENTIFIED BUT IN THE SECTION OF THIS LOG EXCESSIVE THEY COULD BE IDENTIFIED AS PARALLEL BEDDING FRACTURES. HOWEVER, THE FREQUENCY OF OCCURRENCE OF THESE SUB-HORIZONTAL FRACTURES IS REFLECTED BY THE RQD VALUES LISTED.

SAMPLING AND CORING INFORMATION



BEDDING DIPS

30° Bedding dips measured on selective bedding planes. An attempt was made to measure bedding dips on all bedding planes.

FRACTURES

- Breccia zone
- Clay-slip slipplanes
- Fractures shown at approximate angle to core axis
- Mineralized fracture    c - calcite    s - sulfur
- Fractured zone

KEY TO SYMBOLS

- Sandstone
- Siltstone
- Clay
- Fossils
- Shale intra-clasts
- Cross-bedding
- Thinly bedded

FIGURE 2A-208  
LOG OF BORING SI-10  
HEADQUARTERS POWER CORPORATION  
NINE MILE POINT - UNIT 2  
FINAL SAFETY ANALYSIS REPORT

**BORING SI-10**

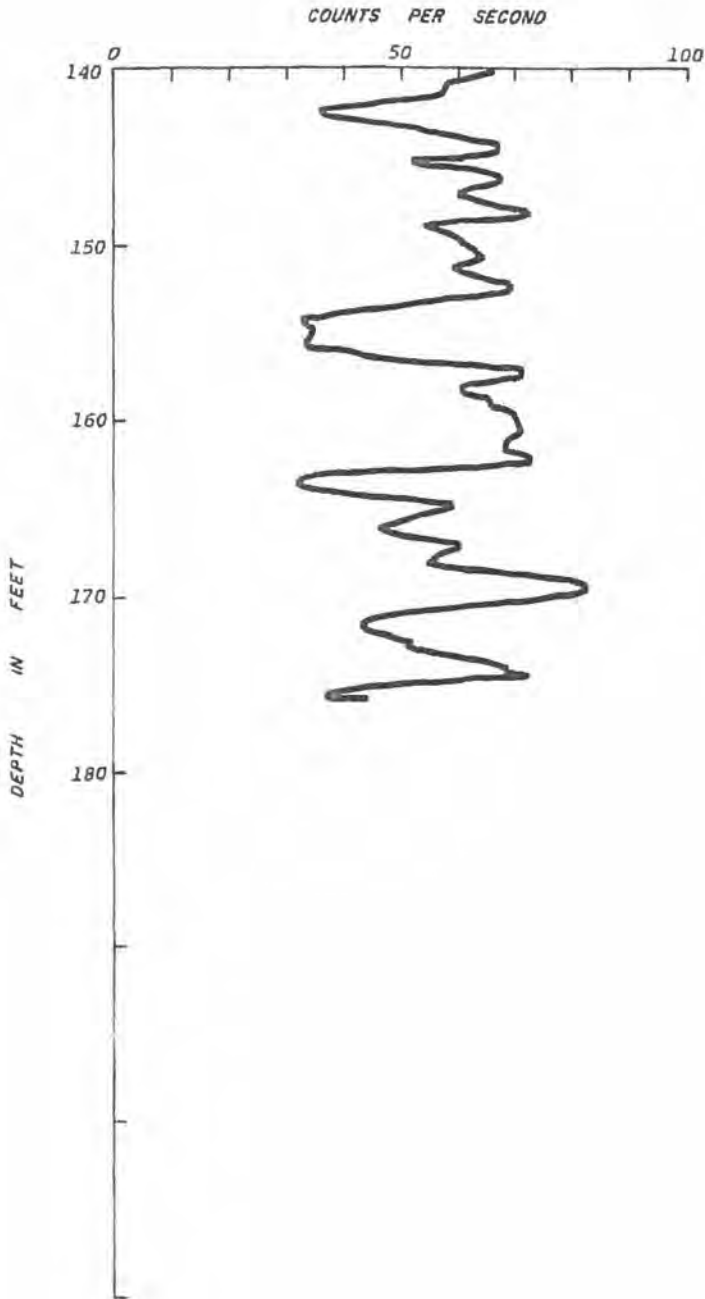


FIGURE 2K-26F

GAMMA RAY LOG OF BORING SI-10

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

# BORING SI-20

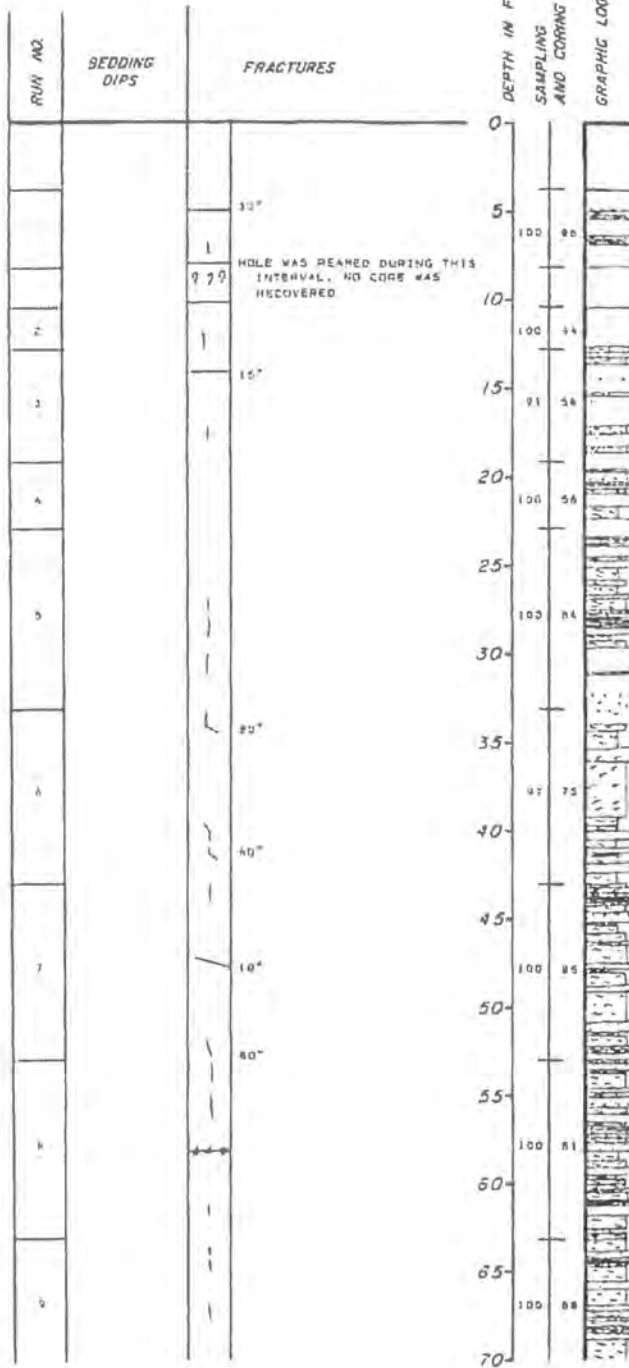
COORDINATES N 7.26  
E 111.82

DESCRIPTIVE GEOLOGIC NOTES  
0' DEPTH - ELEVATION 251.84'

3.4' DEPTH - 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 MASS, 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

WATER LEVEL - 10/26/81  
UNIT A



### SAMPLING AND CORING INFORMATION

Core run  
100% R.O.D.  
Percent recovery

### BEDDING DIPS

30° Bedding dip measured on collective bedding planes. An attempt was made to avoid all obvious cross bedding or other primary features.

### FRACTURES

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

### KEY TO SYMBOLS

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

FIGURE 26.21A

LOG OF BORING SI-20

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

**BORING SI-20**

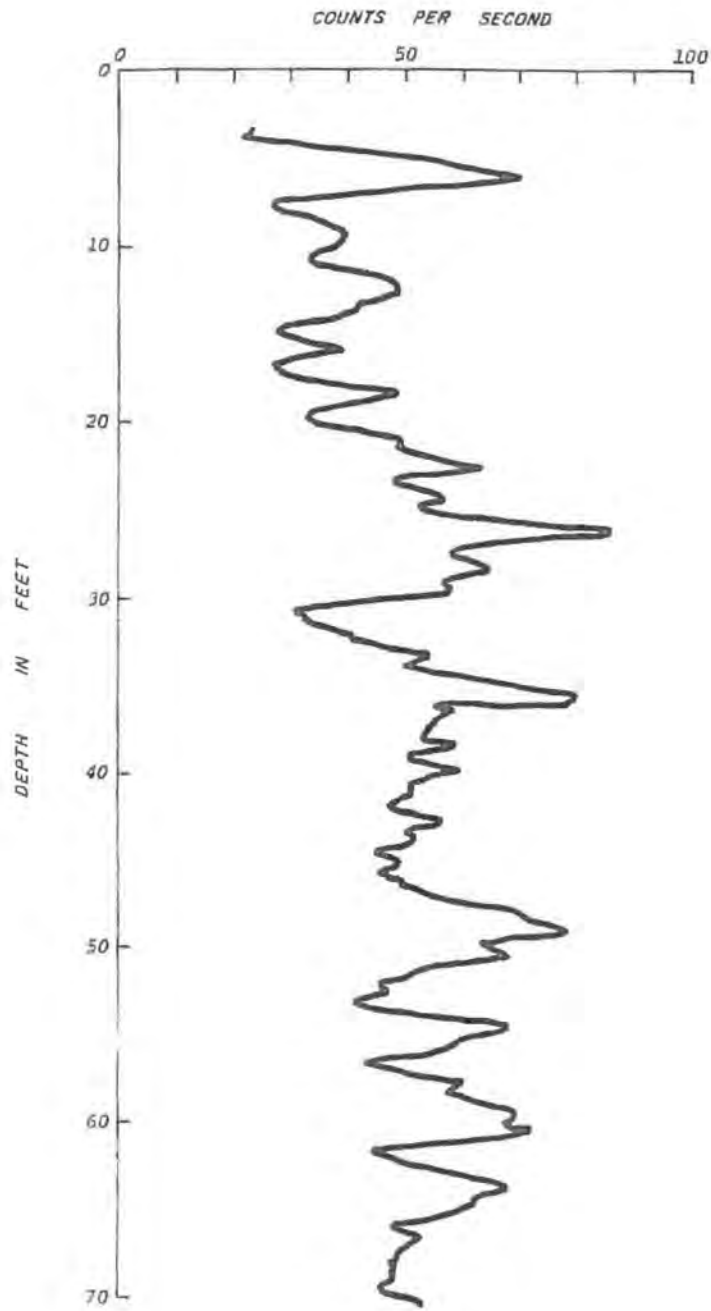
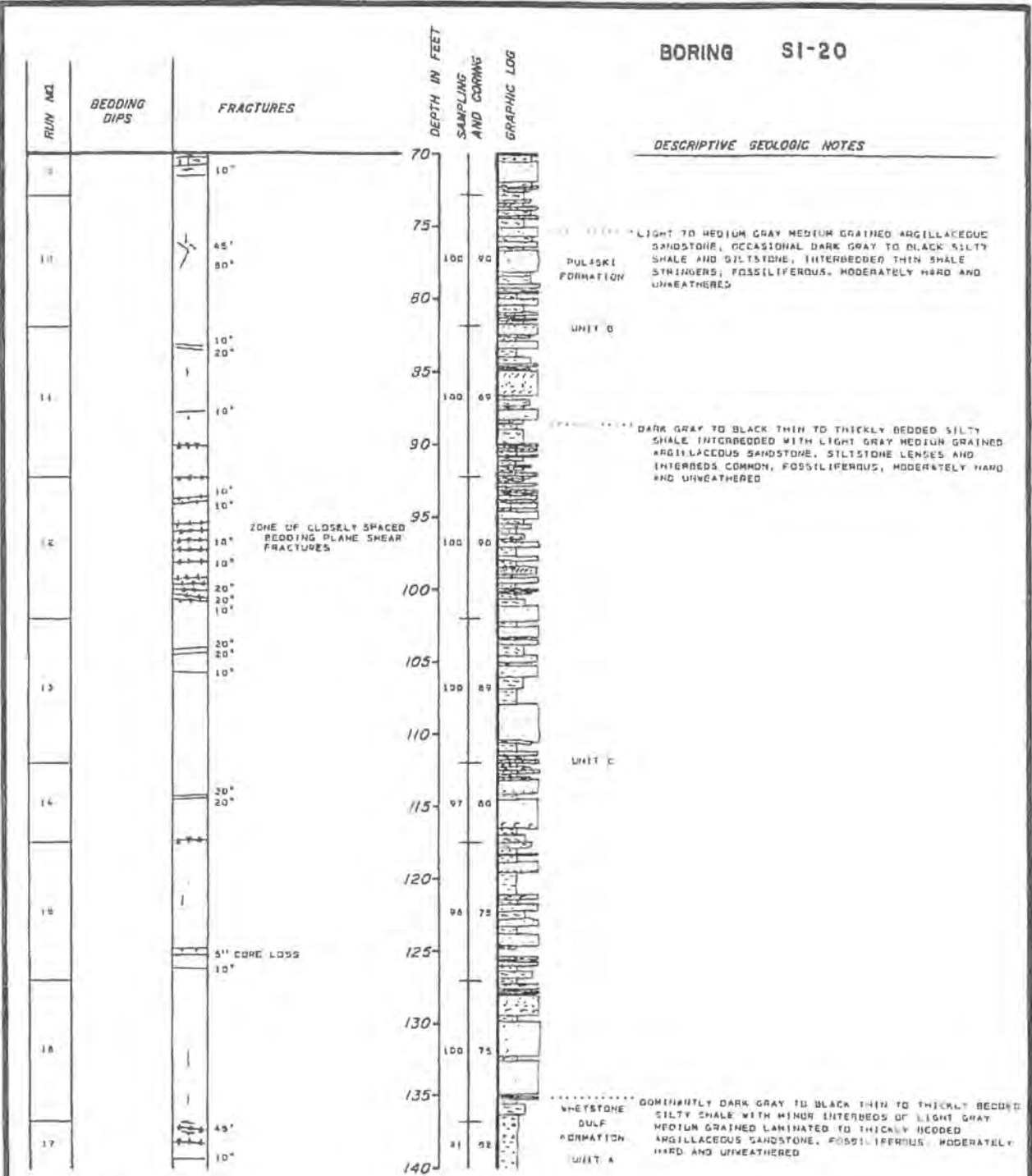


FIGURE PK-27B

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  
 PULASKI FORMATION  
 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  
 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  
 UNIT A

### SAMPLING AND CORING INFORMATION

Core run  
 R.O.U.  
 Percent recovery

### BEDDING DIPS

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

### FRACTURES

Bracéle 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  
 Intra-laminar  
 Cross-bedding  
 Thin laminae

FIGURE 28-210  
 LOG OF BORING SI-20  
 NIAGARA MOHAWK POWER CORPORATION  
 NINE MILE POINT - UNIT 2  
 FINAL SAFETY ANALYSIS REPORT

**BORING SI-20**

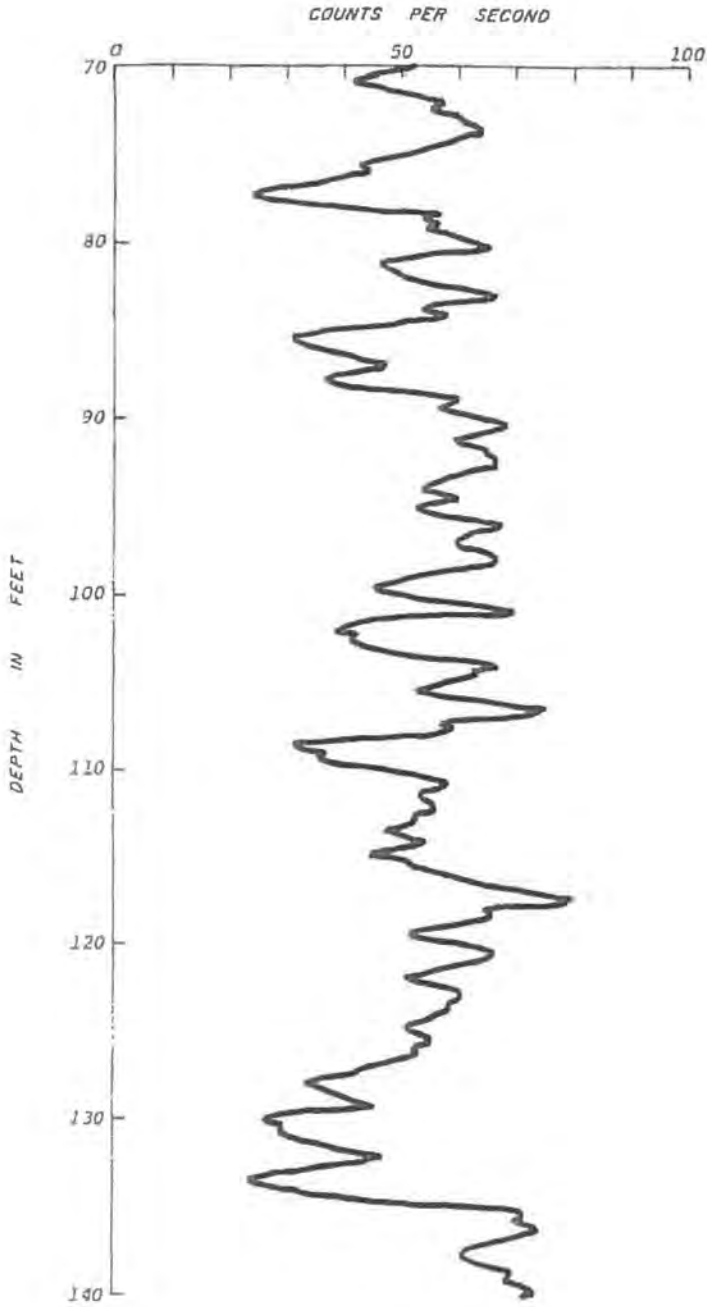
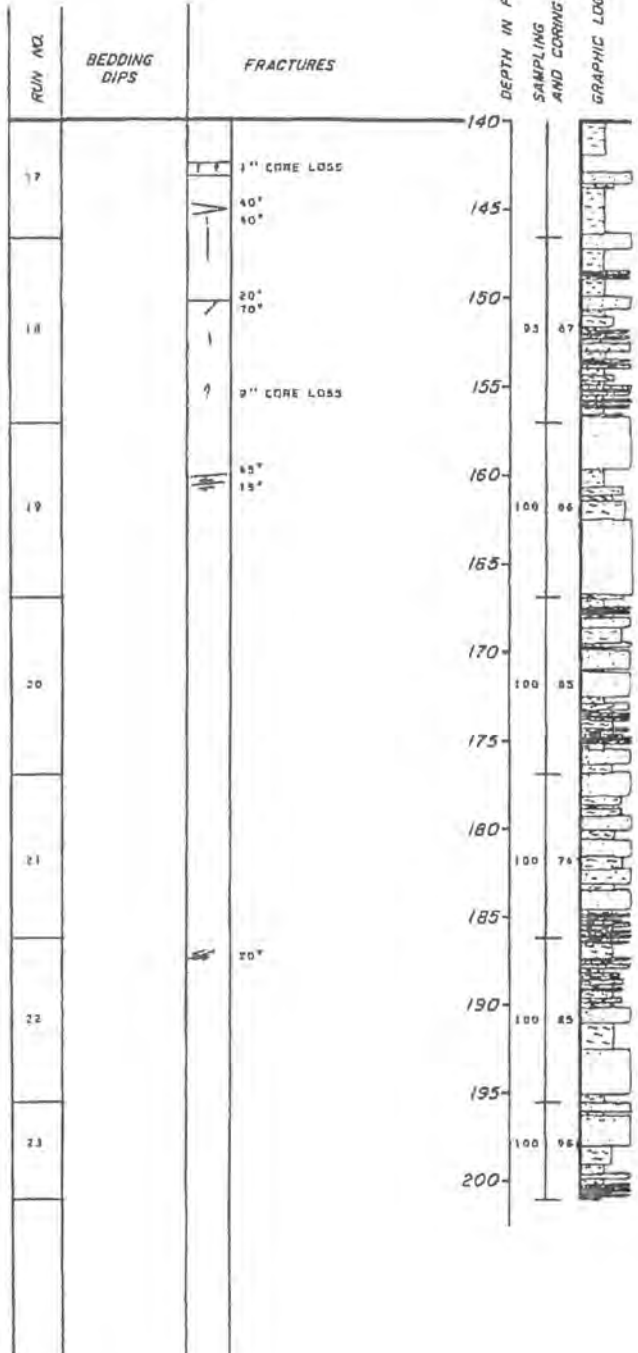


FIGURE SI-20
GAMMA RAY LOG OF BORING SI-20
NIAGARA MOHAWK POWER CORPORATION NINE MILE POINT - UNIT 2 FINAL SAFETY ANALYSIS REPORT



# BORING SI-20

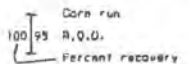


## DESCRIPTIVE GEOLOGIC NOTES

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 OR OCCURRENCE OF THESE SUB-HORIZONTAL FRACTURES IS REFLECTED IN THE ROD VALUES SHOWN.

### SAMPLING AND CORING INFORMATION



### 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 = sulfides
- Fractured zone

### KEY TO SYMBOLS

- Greywacke
- Siltstone
- Shale
- Fossils
- Sandstone interbedded
- Cross-bedding
- Shell fragments

FIGURE 2K-216
LOG OF BORING SI-20
NIHARA MORGAN PIPER CORPORATION NINE MILE POINT - UNIT 2 FINAL SAFETY ANALYSIS REPORT

**BORING SI-20**

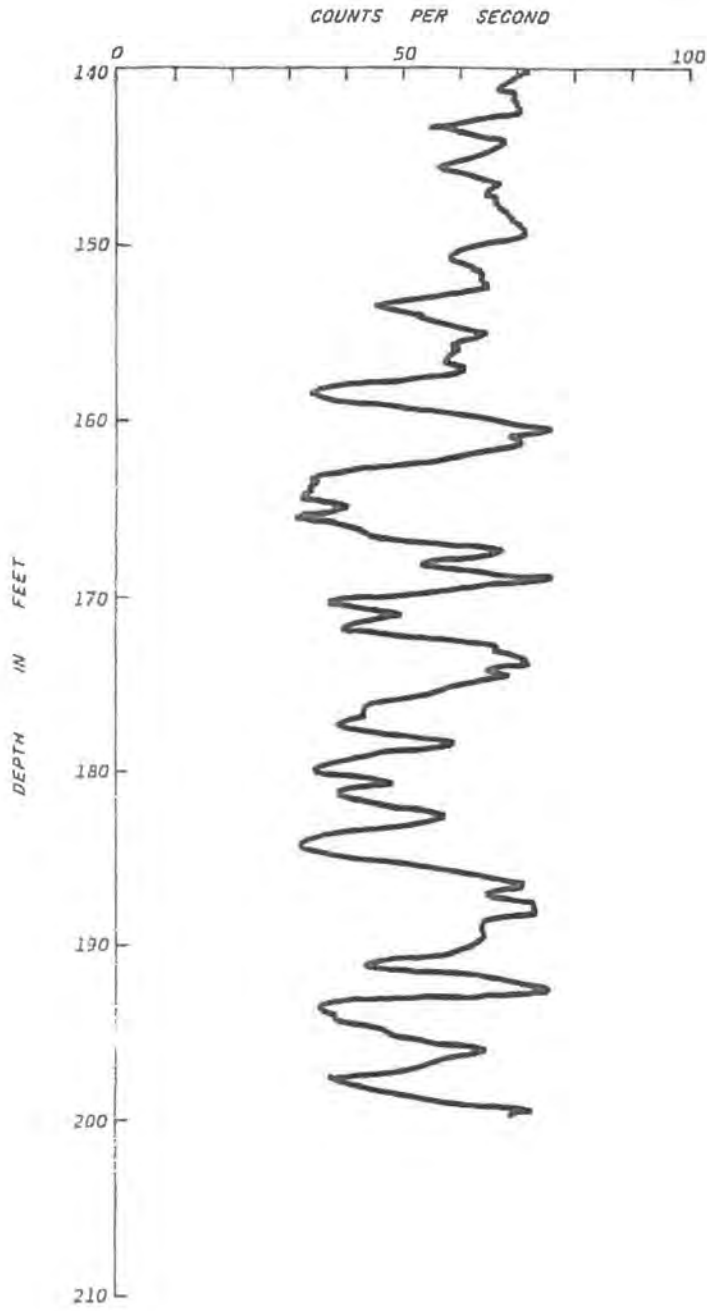


FIGURE 2b-27F  
GAMMA RAY LOG OF BORING SI-20  
NIAGARA MOHAWK POWER CORPORATION  
**NINE MILE POINT - UNIT 2**  
FINAL SAFETY ANALYSIS REPORT