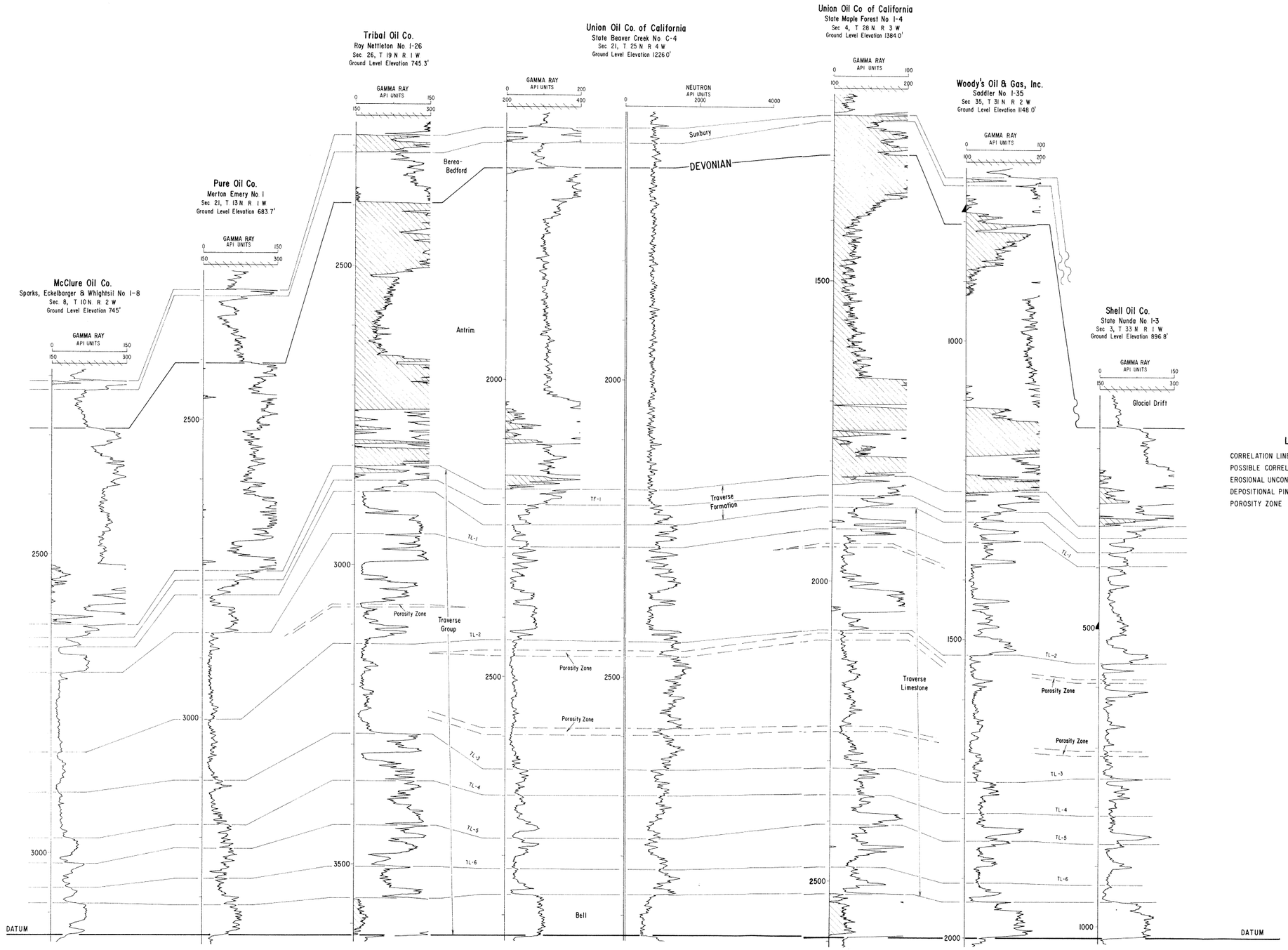
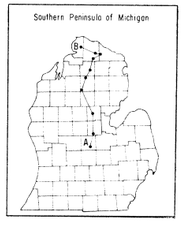



STRATIGRAPHIC
CROSS SECTION A-B
GRATIOT COUNTY
TO
EMMET COUNTY
LOWER MISSISSIPPIAN &
UPPER & MIDDLE DEVONIAN
OF THE
MICHIGAN BASIN

R T LILIENTHAL, 1978
DRAWN BY G A WILSON

SCALE
Horizontal Scale
None
Vertical Scale
0
100
200

LEGEND
CORRELATION LINE
POSSIBLE CORRELATION
EROSIONAL UNCONFORMITY
DEPOSITIONAL PINCHOUT
POROSITY ZONE



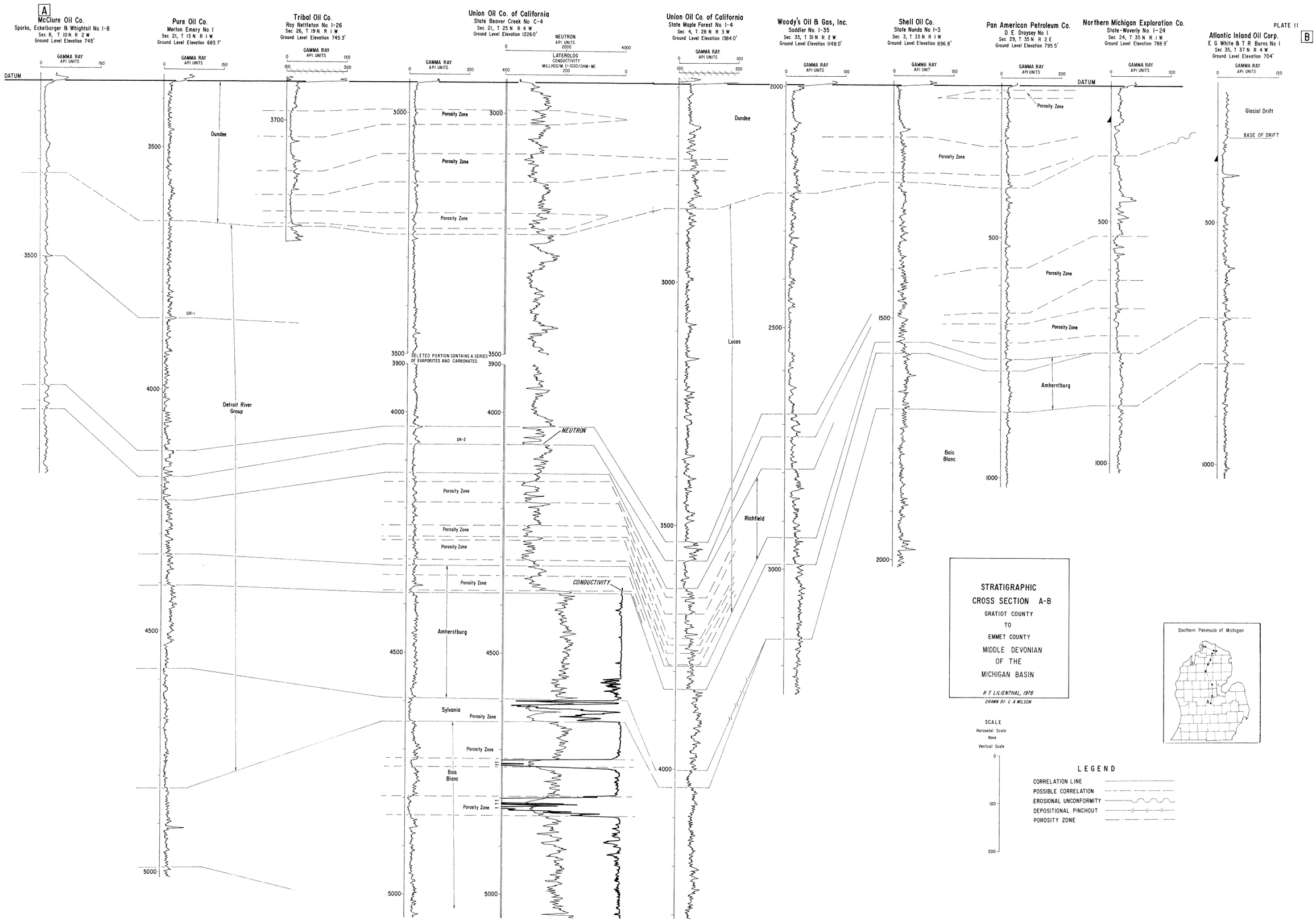
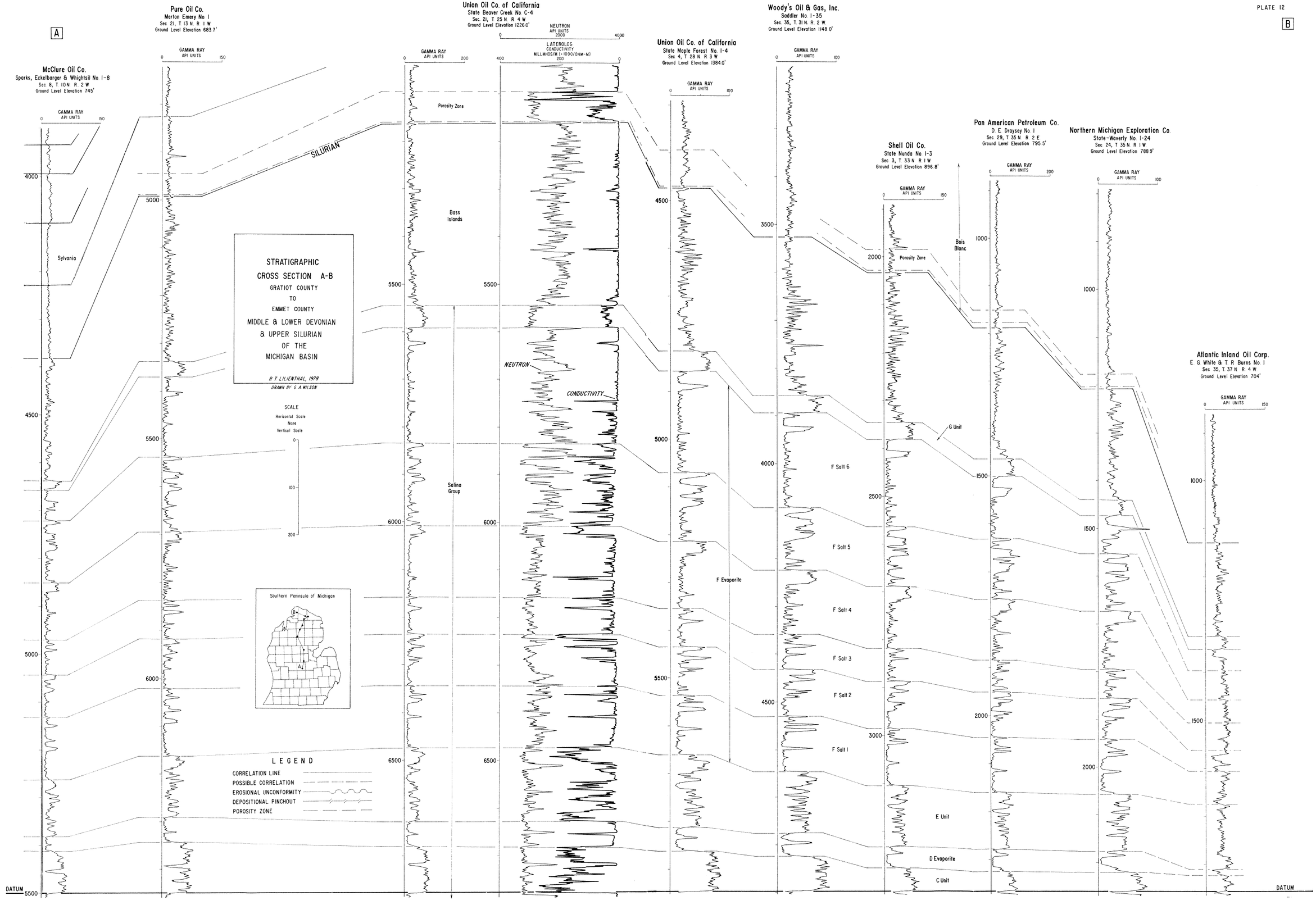
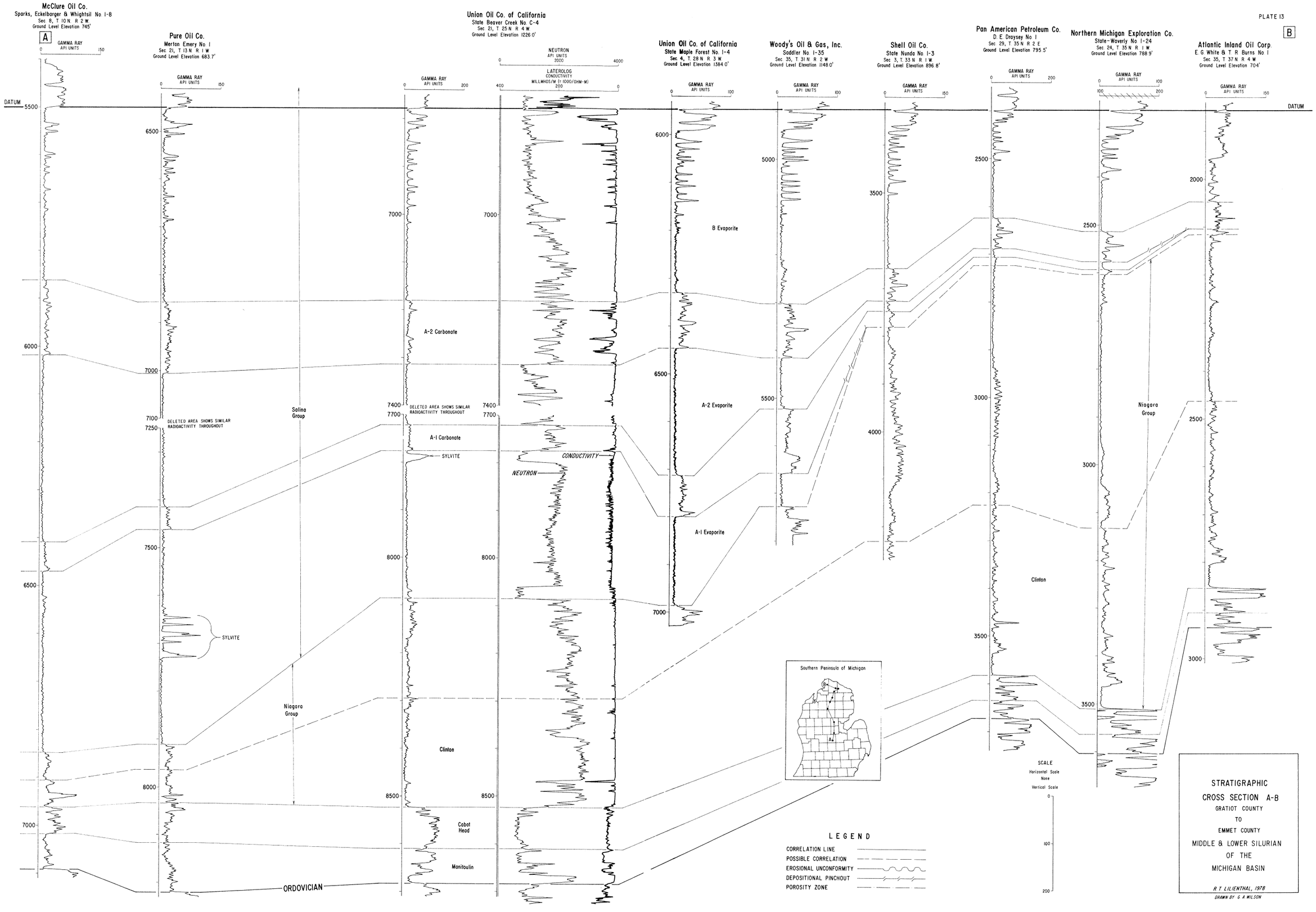
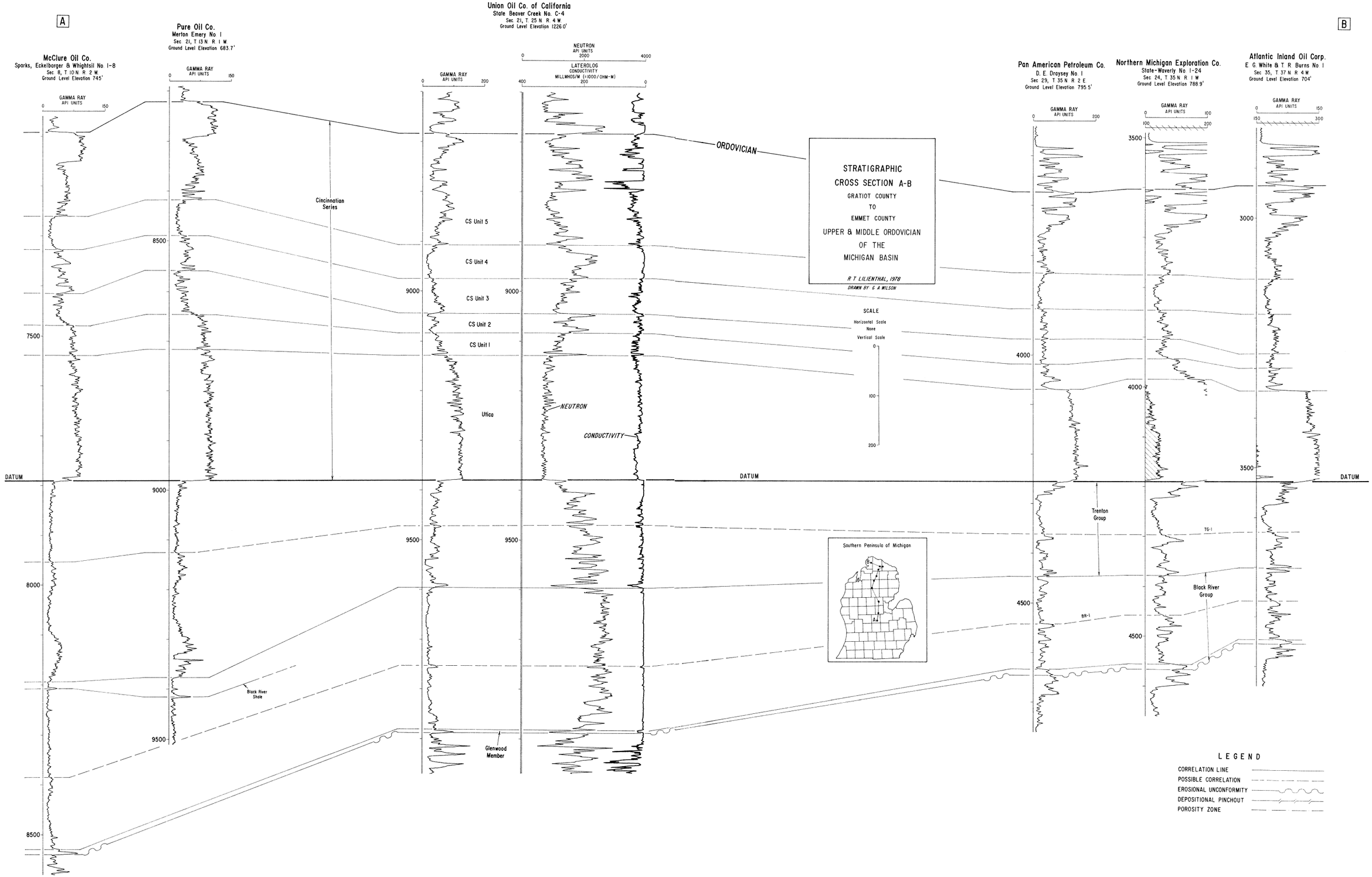


PLATE 11
A
B
McClure Oil Co.
Sparks, Eckelbarger & Whightsil No. 1-8
Sec 8, T 10 N R 2 W
Ground Level Elevation 745'
Pure Oil Co.
Merton Emery No. 1
Sec 21, T 13 N R 1 W
Ground Level Elevation 683.7'
Tribal Oil Co.
Roy Nettleton No. 1-26
Sec 26, T 19 N R 1 W
Ground Level Elevation 745.3'
Union Oil Co. of California
State Beaver Creek No. C-4
Sec 21, T 25 N R 4 W
Ground Level Elevation 1226.0'
Union Oil Co. of California
State Maple Forest No. 1-4
Sec 4, T 28 N R 3 W
Ground Level Elevation 1364.0'
Woody's Oil & Gas, Inc.
Saddler No. 1-35
Sec 35, T 31 N R 2 W
Ground Level Elevation 1148.0'
Shell Oil Co.
State Nunda No. 1-3
Sec 3, T 33 N R 1 W
Ground Level Elevation 896.8'
Pan American Petroleum Co.
D E Draysey No. 1
Sec 29, T 35 N R 2 E
Ground Level Elevation 795.5'
Northern Michigan Exploration Co.
State-Waverly No. 1-24
Sec 24, T 35 N R 1 W
Ground Level Elevation 788.9'
Atlantic Inland Oil Corp.
E G White & T R Burns No. 1
Sec 35, T 37 N R 4 W
Ground Level Elevation 704'
GAMMA RAY
API UNITS
NEUTRON
API UNITS
LATEROLOG
CONDUCTIVITY
MILLHOS/M (=1000/OHM-M)
DATUM
Dundee
Detroit River Group
DR-1
DR-2
Porosity Zone
Amherstburg
Sylvania
Bois Blanc
Lucas
Richfield
DELETED PORTION CONTAINS A SERIES OF EVAPORITES AND CARBONATES
NEUTRON
CONDUCTIVITY
Glacial Drift
BASE OF DRIFT
STRATIGRAPHIC
CROSS SECTION A-B
GRATIOT COUNTY
TO
EMMET COUNTY
MIDDLE DEVONIAN
OF THE
MICHIGAN BASIN
R T LILIENTHAL, 1978
DRAWN BY G A WILSON
SCALE
Horizontal Scale
None
Vertical Scale
LEGEND
CORRELATION LINE
POSSIBLE CORRELATION
EROSIONAL UNCONFORMITY
DEPOSITIONAL PINCHOUT
POROSITY ZONE
Southern Peninsula of Michigan


A
B
McClure Oil Co.
Sparks, Eckelbarger & Whightsil No. 1-8
Sec. 8, T. 10 N. R. 2 W.
Ground Level Elevation 745'
Pure Oil Co.
Merton Emery No. 1
Sec. 21, T. 13 N. R. 1 W.
Ground Level Elevation 683.7'
Union Oil Co. of California
State Beaver Creek No. C-4
Sec. 21, T. 25 N. R. 4 W.
Ground Level Elevation 1226.0'
Union Oil Co. of California
State Maple Forest No. 1-4
Sec. 4, T. 28 N. R. 3 W.
Ground Level Elevation 1384.0'
Woody's Oil & Gas, Inc.
Saddler No. 1-35
Sec. 35, T. 31 N. R. 2 W.
Ground Level Elevation 1148.0'
Shell Oil Co.
State Nunda No. 1-3
Sec. 3, T. 33 N. R. 1 W.
Ground Level Elevation 896.8'
Pan American Petroleum Co.
D. E. Draysey No. 1
Sec. 29, T. 35 N. R. 2 E.
Ground Level Elevation 795.5'
Northern Michigan Exploration Co.
State-Waverly No. 1-24
Sec. 24, T. 35 N. R. 1 W.
Ground Level Elevation 788.9'
Atlantic Inland Oil Corp.
E. G. White & T. R. Burns No. 1
Sec. 35, T. 37 N. R. 4 W.
Ground Level Elevation 704'
GAMMA RAY
API UNITS
NEUTRON
API UNITS
LATEROLOG
CONDUCTIVITY
MILLIMHOS/M (1000/OHM-M)
SILURIAN
Porosity Zone
Bass Islands
Salina Group
Sylvania
NEUTRON
CONDUCTIVITY
F Salt 6
F Salt 5
F Salt 4
F Salt 3
F Salt 2
F Salt 1
F Evaporite
Bois Blanc
G Unit
E Unit
D Evaporite
C Unit
DATUM
STRATIGRAPHIC
CROSS SECTION A-B
GRATIOT COUNTY
TO
EMMET COUNTY
MIDDLE & LOWER DEVONIAN
& UPPER SILURIAN
OF THE
MICHIGAN BASIN
R. T. LILIENTHAL, 1978
DRAWN BY G. A. WILSON
SCALE
Horizontal Scale
None
Vertical Scale
Southern Peninsula of Michigan
LEGEND
CORRELATION LINE
POSSIBLE CORRELATION
EROSIONAL UNCONFORMITY
DEPOSITIONAL PINCHOUT
POROSITY ZONE


A
B
McClure Oil Co.
Sparks, Eckelborger & Whightsil No 1-8
Sec 8, T 10 N R 2 W
Ground Level Elevation 745'
Pure Oil Co.
Merton Emery No 1
Sec 21, T 13 N R 1 W
Ground Level Elevation 683.7'
Union Oil Co. of California
State Beaver Creek No. C-4
Sec 21, T 25 N R 4 W
Ground Level Elevation 1226.0'
Union Oil Co. of California
State Maple Forest No. 1-4
Sec 4, T 28 N R 3 W
Ground Level Elevation 1384.0'
Woody's Oil & Gas, Inc.
Saddler No 1-35
Sec 35, T 31 N R 2 W
Ground Level Elevation 1148.0'
Shell Oil Co.
State Nunda No 1-3
Sec 3, T 33 N R 1 W
Ground Level Elevation 896.8'
Pan American Petroleum Co.
D. E. Draysey No 1
Sec 29, T 35 N R 2 E
Ground Level Elevation 795.5'
Northern Michigan Exploration Co.
State-Waverly No 1-24
Sec 24, T 35 N R 1 W
Ground Level Elevation 788.9'
Atlantic Inland Oil Corp
E. G. White & T R Burns No 1
Sec 35, T 37 N R 4 W
Ground Level Elevation 704'
GAMMA RAY
API UNITS
NEUTRON
API UNITS
LATEROLOG
CONDUCTIVITY
MILLIMHOS/M (= 1000/OHM-M)
DATUM
B Evaporite
A-2 Evaporite
A-1 Evaporite
A-2 Carbonate
A-1 Carbonate
DELETED AREA SHOWS SIMILAR RADIOACTIVITY THROUGHOUT
SYLVITE
CONDUCTIVITY
NEUTRON
Salina Group
Niagara Group
Clinton
Cabot Head
Manitoulin
ORDOVICIAN
Southern Peninsula of Michigan
LEGEND
CORRELATION LINE
POSSIBLE CORRELATION
EROSIONAL UNCONFORMITY
DEPOSITIONAL PINCHOUT
POROSITY ZONE
SCALE
Horizontal Scale
None
Vertical Scale
STRATIGRAPHIC
CROSS SECTION A-B
GRATIOT COUNTY
TO
EMMET COUNTY
MIDDLE & LOWER SILURIAN
OF THE
MICHIGAN BASIN
R T LILIENTHAL, 1978
DRAWN BY G A WILSON


A
B
McClure Oil Co.
Sparks, Eckelbarger & Whightsil No. 1-8
Sec. 8, T 10 N R 2 W
Ground Level Elevation 745'
Pure Oil Co.
Merton Emery No. 1
Sec. 21, T 13 N R 1 W
Ground Level Elevation 683.7'
Union Oil Co. of California
State Beaver Creek No. C-4
Sec. 21, T. 25 N R 4 W
Ground Level Elevation 1226.0'
Pan American Petroleum Co.
D. E. Draysey No. 1
Sec 29, T 35 N R 2 E
Ground Level Elevation 795.5'
Northern Michigan Exploration Co.
State-Waverly No. 1-24
Sec 24, T 35 N R 1 W
Ground Level Elevation 788.9'
Atlantic Inland Oil Corp.
E. G. White & T R Burns No. 1
Sec. 35, T 37 N R 4 W
Ground Level Elevation 704'
GAMMA RAY
API UNITS
NEUTRON
API UNITS
LATEROLOG
CONDUCTIVITY
MILLMHOS/M (=1000/OHM-M)
ORDOVICIAN
STRATIGRAPHIC
CROSS SECTION A-B
GRATIOT COUNTY
TO
EMMET COUNTY
UPPER & MIDDLE ORDOVICIAN
OF THE
MICHIGAN BASIN
R T LILIENTHAL, 1978
DRAWN BY G A WILSON
SCALE
Horizontal Scale
None
Vertical Scale
Cincinnatian Series
CS Unit 5
CS Unit 4
CS Unit 3
CS Unit 2
CS Unit 1
Utica
NEUTRON
CONDUCTIVITY
DATUM
Trenton Group
TG-1
Black River Group
BR-1
Black River Shale
Glenwood Member
Southern Peninsula of Michigan
LEGEND
CORRELATION LINE
POSSIBLE CORRELATION
EROSIONAL UNCONFORMITY
DEPOSITIONAL PINCHOUT
POROSITY ZONE

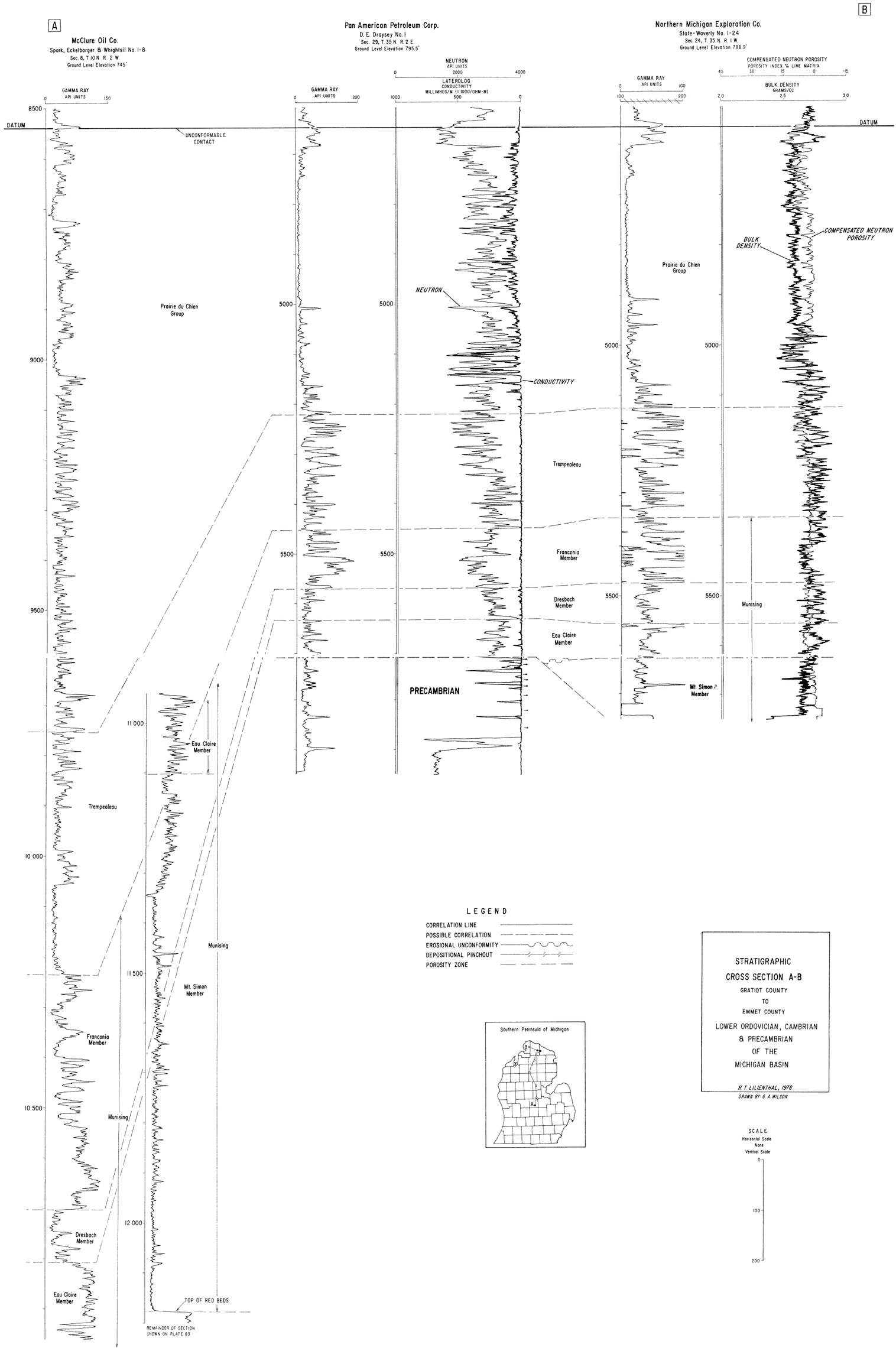
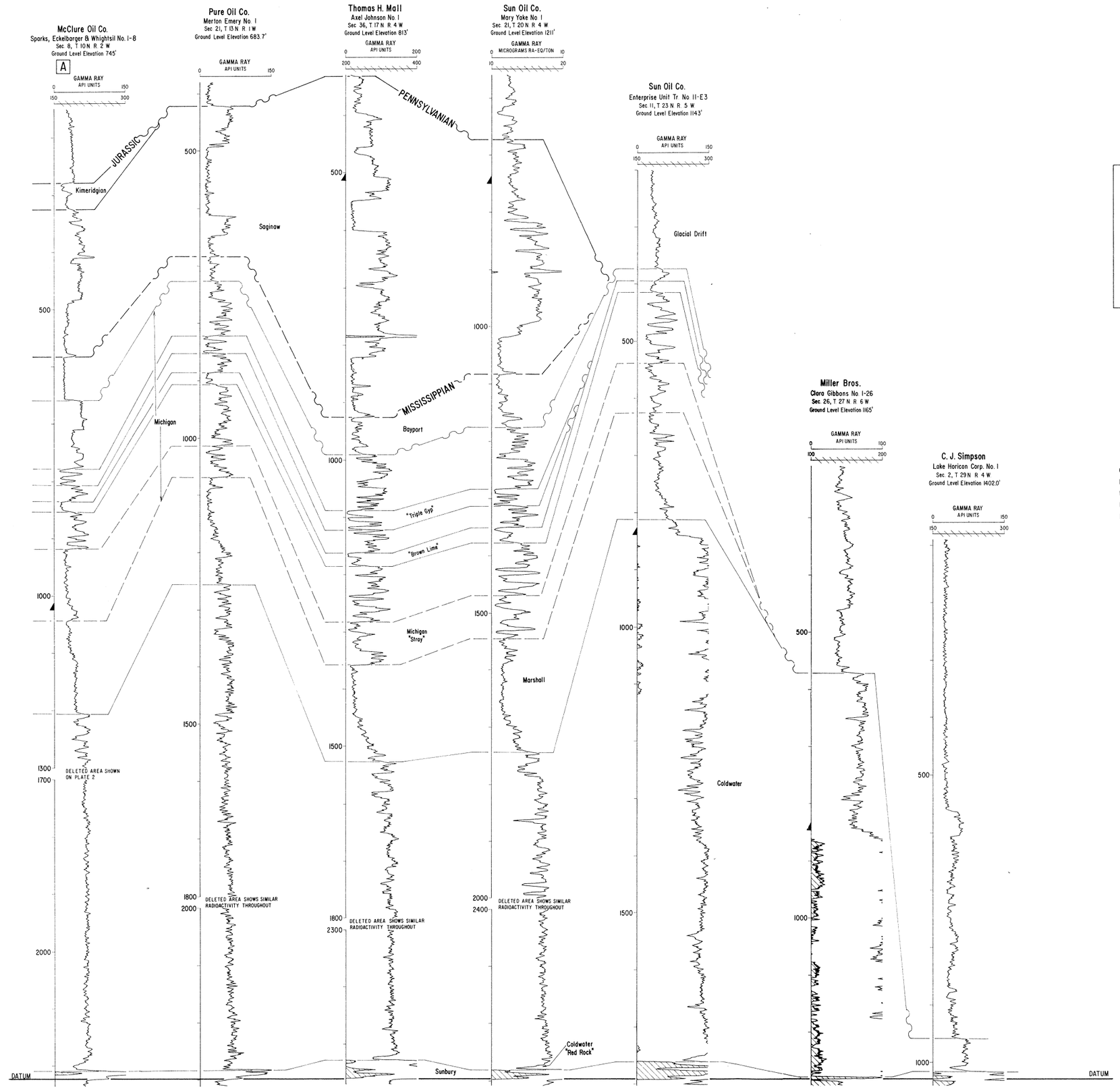

A
McClure Oil Co.
Spark, Eckelberger & Whightsil No. 1-8
Sec. 8, T. 10 N. R. 2 W.
Ground Level Elevation 745'
Pan American Petroleum Corp.
D. E. Draysey No. 1
Sec. 29, T. 35 N. R. 2 E.
Ground Level Elevation 795.5'
Northern Michigan Exploration Co.
State-Waverly No. 1-24
Sec. 24, T. 35 N. R. 1 W.
Ground Level Elevation 788.9'
B
GAMMA RAY
API UNITS
0
150
200
100
NEUTRON
API UNITS
2000
4000
LATEROLOG
CONDUCTIVITY
MILLIMHOS/M (= 1000/OHM-M)
1000
500
COMPENSATED NEUTRON POROSITY
POROSITY INDEX % LIME MATRIX
45
30
15
-15
BULK DENSITY
GRAMS/CC
2.0
2.5
3.0
DATUM
8500
9000
9500
10 000
10 500
11 000
11 500
12 000
5000
5500
UNCONFORMABLE CONTACT
NEUTRON
CONDUCTIVITY
BULK DENSITY
COMPENSATED NEUTRON POROSITY
Prairie du Chien Group
Trempealeau
Franconia Member
Dresbach Member
Eau Claire Member
Mt. Simon Member
Munising
PRECAMBRIAN
TOP OF RED BEDS
REMAINDER OF SECTION SHOWN ON PLATE 83
LEGEND
CORRELATION LINE
POSSIBLE CORRELATION
EROSIONAL UNCONFORMITY
DEPOSITIONAL PINCHOUT
POROSITY ZONE
Southern Peninsula of Michigan
B
A
STRATIGRAPHIC
CROSS SECTION A-B
GRATIOT COUNTY
TO
EMMET COUNTY
LOWER ORDOVICIAN, CAMBRIAN
& PRECAMBRIAN
OF THE
MICHIGAN BASIN
R. T. LILIENTHAL, 1978
DRAWN BY: G. A. WILSON
SCALE
Horizontal Scale
None
Vertical Scale
0
100
200

PLATE 15



# STRATIGRAPHIC CROSS SECTION A-C

GRATIOT COUNTY
TO
CHARLEVOIX COUNTY

PENNSYLVANIAN &
MISSISSIPPIAN
OF THE
MICHIGAN BASIN

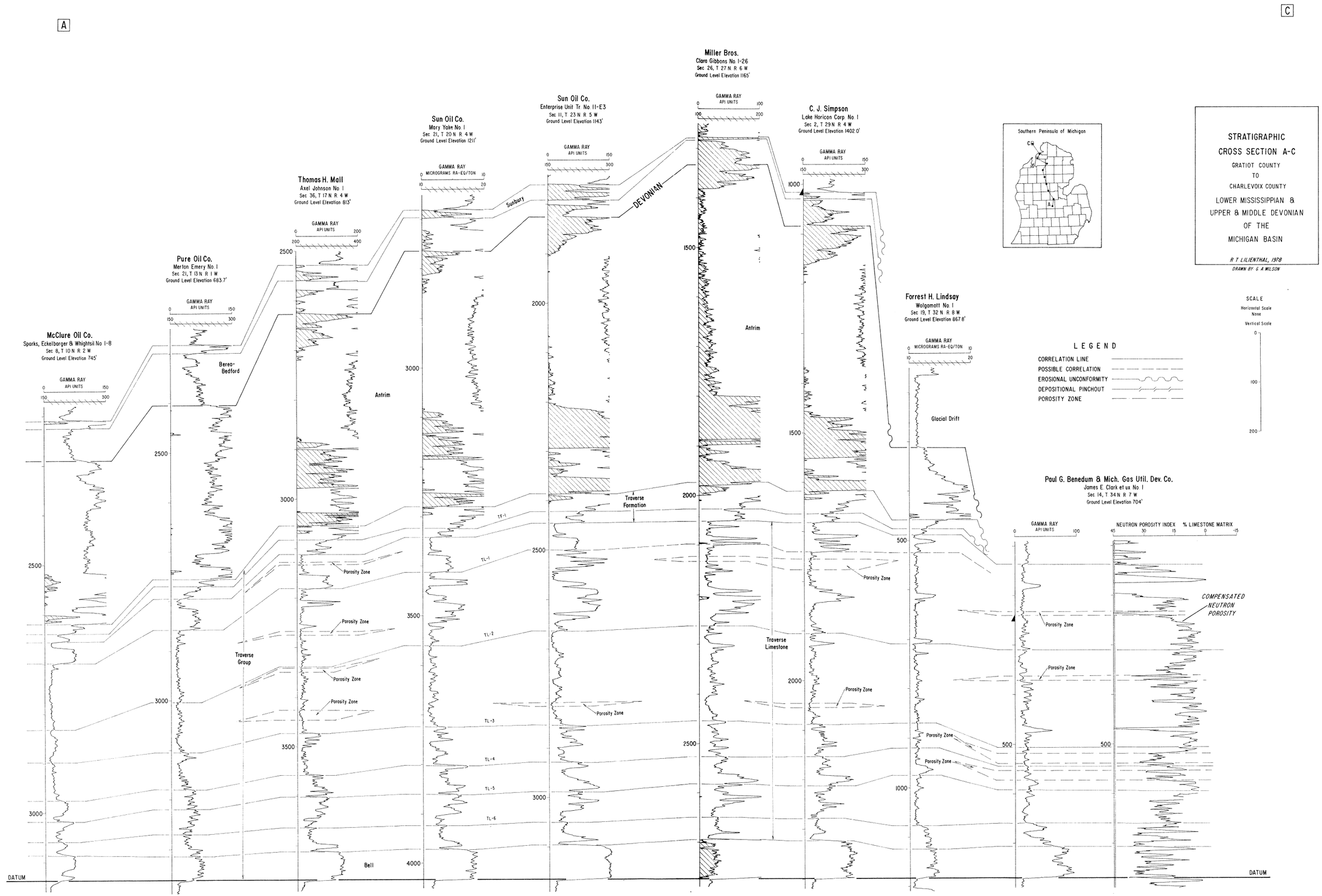
*R. T. LILIENTHAL, 1978*
*DRAWN BY G. A. WILSON*

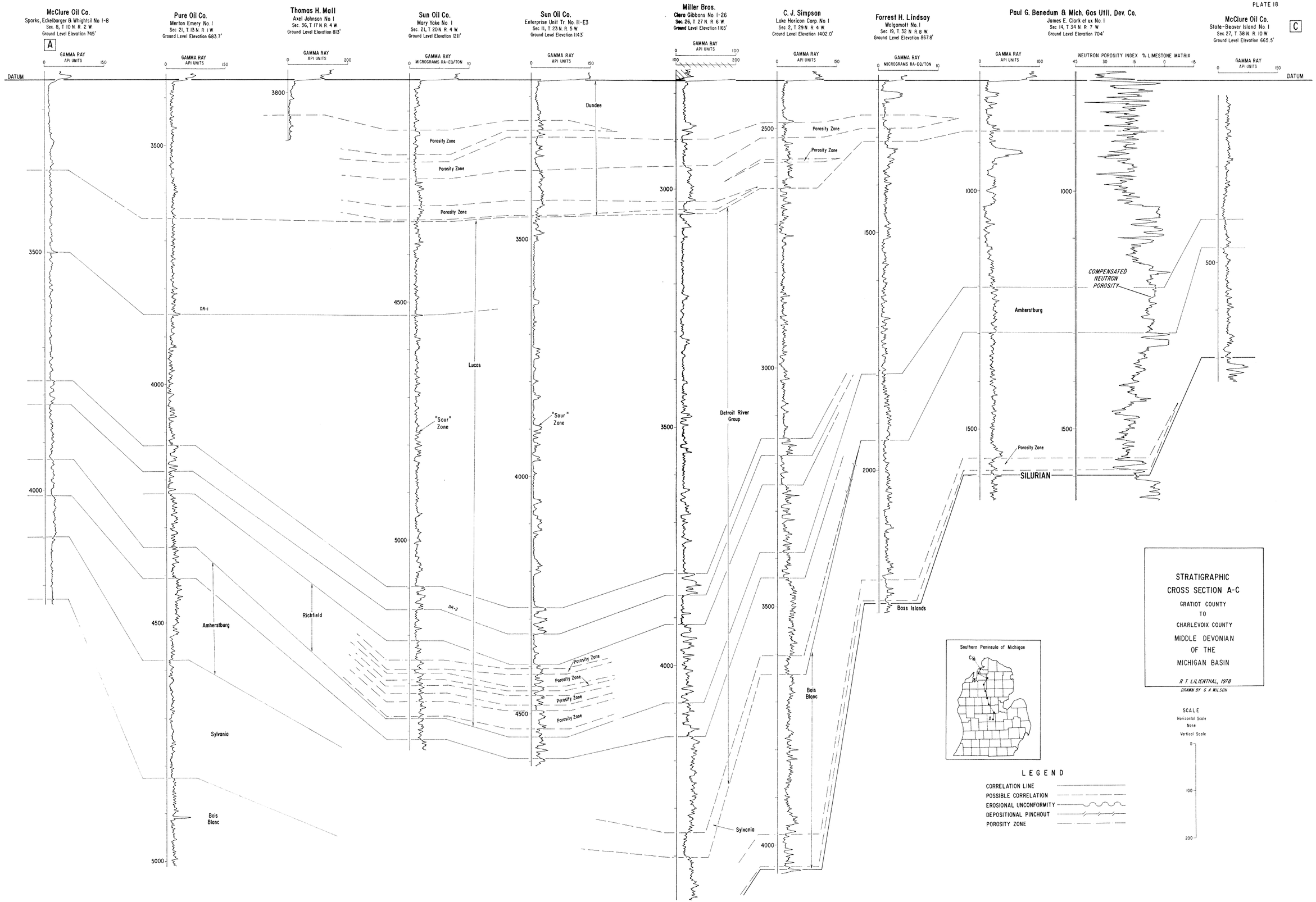
## LEGEND

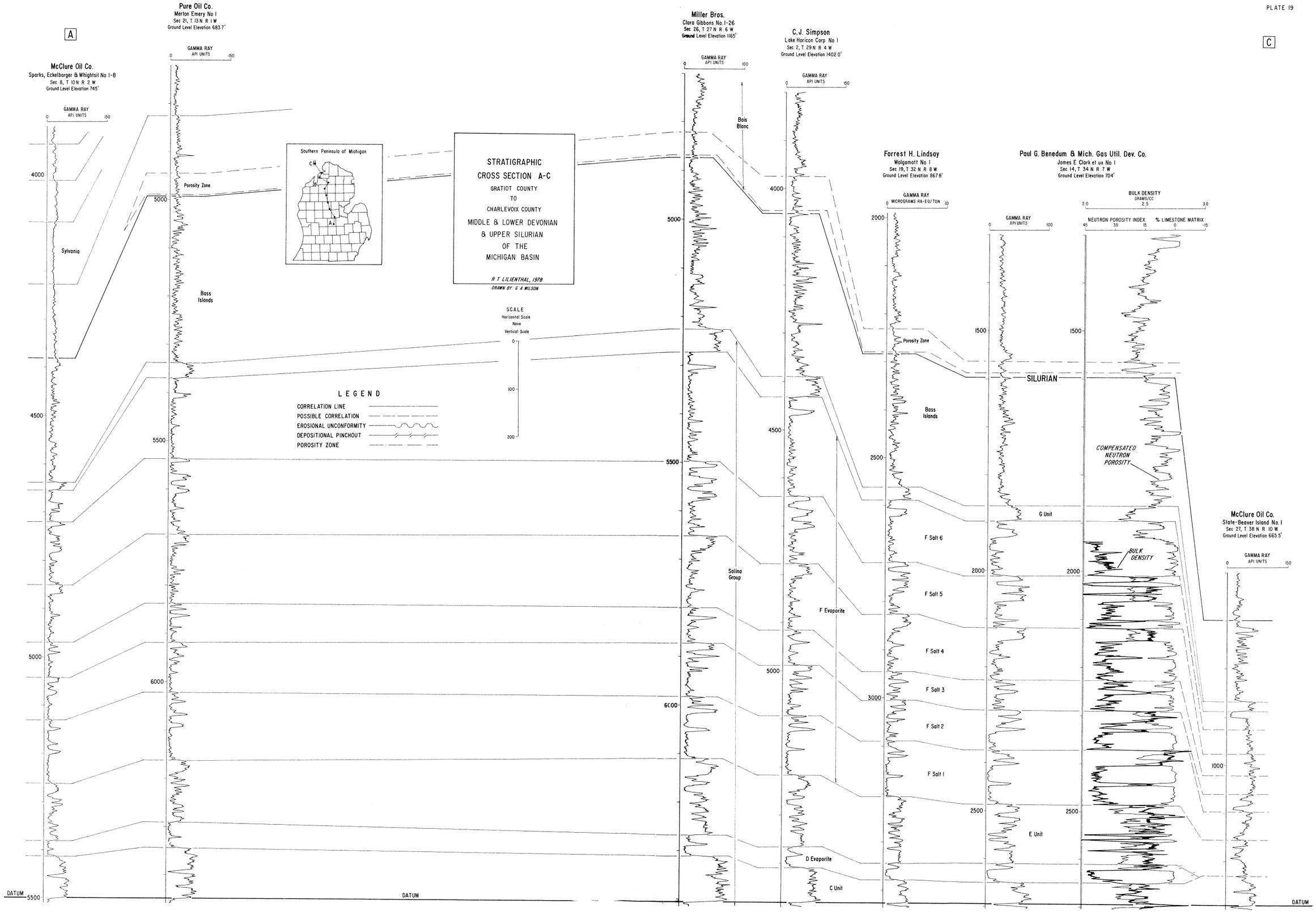
- CORRELATION LINE
- POSSIBLE CORRELATION
- EROSIONAL UNCONFORMITY
- DEPOSITIONAL PINCHOUT
- POROSITY ZONE

SCALE

Horizontal Scale
None
Vertical Scale
0
100
200


A
C
STRATIGRAPHIC
CROSS SECTION A-C
GRATIOT COUNTY
TO
CHARLEVOIX COUNTY
LOWER MISSISSIPPIAN &
UPPER & MIDDLE DEVONIAN
OF THE
MICHIGAN BASIN
R T LILIENTHAL, 1978
DRAWN BY G A WILSON
Southern Peninsula of Michigan
SCALE
Horizontal Scale
None
Vertical Scale
LEGEND
CORRELATION LINE
POSSIBLE CORRELATION
EROSIONAL UNCONFORMITY
DEPOSITIONAL PINCHOUT
POROSITY ZONE
McClure Oil Co.
Sparks, Eckelberger & Whightsil No 1-8
Sec 8, T 10 N R 2 W
Ground Level Elevation 745'
Pure Oil Co.
Merton Emery No 1
Sec 21, T 13 N R 1 W
Ground Level Elevation 683.7'
Thomas H. Mall
Axel Johnson No 1
Sec 36, T 17 N R 4 W
Ground Level Elevation 813'
Sun Oil Co.
Mary Yake No 1
Sec 21, T 20 N R 4 W
Ground Level Elevation 1211'
Sun Oil Co.
Enterprise Unit Tr. No. 11-E3
Sec 11, T 23 N R 5 W
Ground Level Elevation 1143'
Miller Bros.
Clara Gibbons No 1-26
Sec 26, T 27 N R 6 W
Ground Level Elevation 1165'
C. J. Simpson
Lake Horicon Corp. No 1
Sec 2, T 29 N R 4 W
Ground Level Elevation 1402.0'
Forrest H. Lindsay
Wolgamott No 1
Sec 19, T 32 N R 8 W
Ground Level Elevation 867.8'
Paul G. Benedum & Mich. Gas Util. Dev. Co.
James E. Clark et ux No 1
Sec 14, T 34 N R 7 W
Ground Level Elevation 704'
GAMMA RAY
API UNITS
MICROGRAMS RA-EQ/TON
NEUTRON POROSITY INDEX
% LIMESTONE MATRIX
COMPENSATED
NEUTRON
POROSITY
Berea-
Bedford
Antrim
Sunbury
DEVONIAN
Traverse
Group
Traverse
Formation
Traverse
Limestone
Glacial Drift
Bell
Porosity Zone
TF-1
TL-1
TL-2
TL-3
TL-4
TL-5
TL-6
DATUM


McClure Oil Co.
Sparks, Eckelbarger & Whightsil No 1-8
Sec. 8, T 10 N R 2 W
Ground Level Elevation 745'
A
Pure Oil Co.
Merton Emery No. 1
Sec 21, T 13 N R 1 W
Ground Level Elevation 683.7'
Thomas H. Mall
Axel Johnson No 1
Sec. 36, T 17 N R 4 W
Ground Level Elevation 813'
Sun Oil Co.
Mary Yake No 1
Sec 21, T 20 N R 4 W
Ground Level Elevation 1211'
Sun Oil Co.
Enterprise Unit Tr No. 11-E3
Sec 11, T 23 N R 5 W
Ground Level Elevation 1143'
Miller Bros.
Clara Gibbons No 1-26
Sec 26, T 27 N R 6 W
Ground Level Elevation 1165'
C. J. Simpson
Lake Horicon Corp No 1
Sec 2, T 29 N R 4 W
Ground Level Elevation 1402.0'
Forrest H. Lindsay
Wolgamott No. 1
Sec 19, T 32 N R 8 W
Ground Level Elevation 867.8'
Paul G. Benedum & Mich. Gas Util. Dev. Co.
James E. Clark et ux No. 1
Sec 14, T 34 N R 7 W
Ground Level Elevation 704'
McClure Oil Co.
State-Beaver Island No 1
Sec 27, T 38 N R 10 W
Ground Level Elevation 665.5'
C
GAMMA RAY
API UNITS
MICROGRAMS RA-EQ/TON
NEUTRON POROSITY INDEX % LIMESTONE MATRIX
DATUM
Dundee
Porosity Zone
Lucas
"Sour" Zone
DR-1
DR-2
Detroit River Group
Amherstburg
Richfield
Sylvania
Bois Blanc
Bass Islands
COMPENSATED NEUTRON POROSITY
SILURIAN
Southern Peninsula of Michigan
STRATIGRAPHIC CROSS SECTION A-C
GRATIOT COUNTY TO CHARLEVOIX COUNTY
MIDDLE DEVONIAN OF THE MICHIGAN BASIN
R T LILIENTHAL, 1978
DRAWN BY G A WILSON
SCALE
Horizontal Scale None
Vertical Scale
LEGEND
CORRELATION LINE
POSSIBLE CORRELATION
EROSIONAL UNCONFORMITY
DEPOSITIONAL PINCHOUT
POROSITY ZONE


A
C
McClure Oil Co.
Sparks, Eckelberger & Whightsil No 1-8
Sec 8, T 10 N R 2 W
Ground Level Elevation 745'
Pure Oil Co.
Merton Emery No 1
Sec 21, T 13 N R 1 W
Ground Level Elevation 683.7'
Miller Bros.
Clara Gibbons No. 1-26
Sec. 26, T 27 N R 6 W
Ground Level Elevation 1165'
C.J. Simpson
Lake Horicon Corp. No. 1
Sec 2, T 29 N R 4 W
Ground Level Elevation 1402.0'
Forrest H. Lindsay
Wolgamott No. 1
Sec 19, T 32 N R 8 W
Ground Level Elevation 867.8'
Paul G. Benedum & Mich. Gas Util. Dev. Co.
James E. Clark et ux No. 1
Sec 14, T 34 N R 7 W
Ground Level Elevation 704'
McClure Oil Co.
State-Beaver Island No. 1
Sec 27, T 38 N R 10 W
Ground Level Elevation 665.5'
GAMMA RAY
API UNITS
MICROGRAMS RA-EQ/TON
BULK DENSITY
GRAMS/CC
NEUTRON POROSITY INDEX
% LIMESTONE MATRIX
Southern Peninsula of Michigan
STRATIGRAPHIC
CROSS SECTION A-C
GRATIOT COUNTY
TO
CHARLEVOIX COUNTY
MIDDLE & LOWER DEVONIAN
& UPPER SILURIAN
OF THE
MICHIGAN BASIN
R T LILIENTHAL, 1978
DRAWN BY G A WILSON
SCALE
Horizontal Scale
None
Vertical Scale
LEGEND
CORRELATION LINE
POSSIBLE CORRELATION
EROSIONAL UNCONFORMITY
DEPOSITIONAL PINCHOUT
POROSITY ZONE
Sylvania
Porosity Zone
Bass Islands
Bois Blanc
Salina Group
F Evaporite
D Evaporite
C Unit
F Salt 6
F Salt 5
F Salt 4
F Salt 3
F Salt 2
F Salt 1
SILURIAN
G Unit
E Unit
COMPENSATED NEUTRON POROSITY
BULK DENSITY
DATUM