A

M

**McClure Oil Co.**
Sparks, Eckelbargar & Whightsil No. 1-8
Sec 8, T 10 N R 2 W
Ground Level Elevation 745'

GAMMA RAY API UNITS 0 150 300

**McClure Oil Co.**
Fox No. 1
Sec 6, T 7 N R 1 W
Ground Level Elevation 759.5'

GAMMA RAY API UNITS 0 200 400

**Mobil Oil Corp.**
Jelinek-Ferris Unit No. 1
Sec 5, T 5 N R 2 E
Ground Level Elevation 831.25'

GAMMA RAY API UNITS 0 200 400

JURASSIC
Kimeridgian
PENNSYLVANIAN
Glacial Drift
Saginaw
MISSISSIPPIAN
Bayport
Michigan
"Triple Gyp"
"Brown Lime"
Michigan "Stray"
Marshall
DELETED AREA SHOWN ON PLATE 2
DELETED AREA SHOWN ON PLATE 61
Coldwater "Red Rock"
Coldwater
DATUM

500
1000
1300
1700
2000
1100
1450
1500

**Reef Petroleum Corp.**
Investment Administrators, Inc No. 1-26
Sec 26, T 5 N R 10 E
Ground Level Elevation 1044'

GAMMA RAY API UNITS 0 150 300

**Mobil Oil Corp.**
Howard J. Messmore No. 1
Sec 11, T 3 N R 5 E
Ground Level Elevation 968.2'

GAMMA RAY API UNITS 0 200 400

**Cedco Drilling Co.**
Richard Noonan et al No. 1-14
Sec 14, T 4 N R 11 E
Ground Level Elevation 936.9'

GAMMA RAY API UNITS 0 150
COMPENSATED NEUTRON POROSITY 45 30 15 0 -15

Glacial Drift
Sunbury

**Consumers Power Co.**
Joseph Halmich No. 3-1
Sec 1, T 4 N R 13 E
Ground Level Elevation 690'

GAMMA RAY API UNITS 0 150

DATUM

500
1000
1500
2000

# STRATIGRAPHIC CROSS SECTION A-M

GRATIOT COUNTY
TO
ST CLAIR COUNTY
PENNSYLVANIAN &
MISSISSIPPIAN
OF THE
MICHIGAN BASIN

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

SCALE
Horizontal Scale None
Vertical Scale
0
100
200

Southern Peninsula of Michigan

LEGEND
CORRELATION LINE
POSSIBLE CORRELATION
EROSIONAL UNCONFORMITY
DEPOSITIONAL PINCHOUT
POROSITY ZONE

M

**McClure Oil Co.**
Sparks, Eckelbarger & Whightsil No. 1-8
Sec. 8, T 10 N R 2 W
Ground Level Elevation 745'

A

**McClure Oil Co.**
Fox No. 1
Sec. 6, T 7 N R 1 W
Ground Level Elevation 759.5'

**Mobil Oil Corp.**
Jelinek - Ferris Unit No. 1
Sec. 5, T 5 N R 2 E.
Ground Level Elevation 831.25'

**Mobil Oil Corp.**
Howard J. Messmore No. 1
Sec. 11, T 3 N. R 5 E.
Ground Level Elevation 968.2'

**Reef Petroleum Corp.**
Investment Administrators, Inc. No. 1-26
Sec. 26, T. 5 N R 10 E.
Ground Level Elevation 1044'

**Cedco Drilling Co.**
Richard Noonan et al No. 1-14
Sec. 14, T 4 N. R. 11 E.
Ground Level Elevation 936.9'

**Consumers Power Co.**
Joseph Helmich No. 3-1
Sec. 1, T 4 N. R 13 E.
Ground Level Elevation 690'

**Michigan Consolidated Gas Co.**
Osterland et al No. 1-14
Sec 14, T 3 N R 15 E.
Ground Level Elevation 590.7'

**Bernhard Oil & Gas Co.**
Paul & Arelane Puzzuoli No. 1
Sec. 17, T 2 N R 16 E.
Ground Level Elevation 579'

GAMMA RAY API UNITS

COMPENSATED NEUTRON POROSITY

Berea-Bedford
Bedford
Berea
Antrim
DEVONIAN
Glacial Drift
DATUM
Traverse Formation
Traverse Limestone
Traverse Group
TL-1
TL-2
TL-3
TL-4
TL-5
TL-6
Dundee
Porosity Zone
Bell
DR-1
DR-2
Detroit River Group
Lucas
Amherstburg

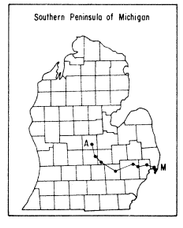
# STRATIGRAPHIC CROSS SECTION A-M

GRATIOT COUNTY
TO
ST. CLAIR COUNTY
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

Southern Peninsula of Michigan




LEGEND

CORRELATION LINE
POSSIBLE CORRELATION
EROSIONAL UNCONFORMITY
DEPOSITIONAL PINCHOUT
POROSITY ZONE

A

M

**McClure Oil Co.**
Sparks, Eckelbarger & Whightsil No. 1-8
Sec. 8, T.10N. R.2W
Ground Level Elevation 745'

**McClure Oil Co.**
Fox No. 1
Sec. 6, T.7N. R.1W
Ground Level Elevation 759.5'

**Mobil Oil Corp.**
Jelinek-Ferris Unit No. 1
Sec. 5, T.5N. R.2E
Ground Level Elevation 831.25'

**Mobil Oil Corp.**
Howard J. Messmore No. 1
Sec. 11, T.3N. R.5E
Ground Level Elevation 968.2'

**Reef Petroleum Corp.**
Investment Administrators, Inc. No. 1-26
Sec. 26, T.5N. R.10E.
Ground Level Elevation 1044'

**Cedco Drilling Co.**
Richard Noonan et al No. 1-14
Sec. 14, T.4N. R.11E.
Ground Level Elevation 936.9'

**Consumers Power Co.**
Joseph Halmich No. 3-1
Sec. 1, T.4N. R.13E.
Ground Level Elevation 690'

**Michigan Consolidated Gas Co.**
Osterland et al No. 1-14
Sec. 14, T.3N. R.15E.
Ground Level Elevation 590.7'

**Bernhard Oil & Gas Co.**
Paul & Arelane Puzzuoli No. 1
Sec. 17, T.2N. R.16E.
Ground Level Elevation 579'

GAMMA RAY API UNITS

COMPENSATED NEUTRON POROSITY

BULK DENSITY GRAMS/CC

SIDEWALL NEUTRON POROSITY

Detroit River Group

Sylvania

Bois Blanc

Bass Islands

F Salt 6

F Salt 5

F Salt 4

F Salt 3

F Salt 2

F Salt 1

Salina Group

G Unit

F Evaporite

SILURIAN

Amherstburg

E Unit

D Evaporite

C Unit

DATUM

Southern Peninsula of Michigan

A

M

# STRATIGRAPHIC CROSS SECTION A-M

GRATIOT COUNTY
TO
ST. CLAIR 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
0
100
200

## LEGEND

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

**McClure Oil Co.**
Sparks, Eckelbarger & Whightsil No 1-8
Sec 8, T 10N R 2W
Ground Level Elevation 745'

A

**McClure Oil Co.**
Fox No. 1
Sec 6, T 7N R 1W
Ground Level Elevation 759.5'

**Mobil Oil Corp.**
Jelinek - Ferris Unit No. 1
Sec 5, T 5N R 2E
Ground Level Elevation 831.25'

**Mobil Oil Corp.**
Howard J. Messmore No. 1
Sec 11, T 3N R 5E
Ground Level Elevation 968.2'

**Reef Petroleum Corp.**
Investment Administrators, Inc. No. 1-26
Sec 26, T 5N R 10E
Ground Level Elevation 1044'

**Cedco Drilling Co.**
Richard Noonan et al No. 1-14
Sec 14, T 4N R 11E
Ground Level Elevation 936.9'

**Consumers Power Co.**
Joseph Halmich No. 3-1
Sec 1, T 4N R 13E
Ground Level Elevation 690'

**Michigan Consolidated Gas Co.**
Osterland et al No. 1-14
Sec 14, T 3N R 15E
Ground Level Elevation 590.7'

**Bernhard Oil & Gas Co.**
Paul & Arelane Puzzuoli No. 1
Sec 17, T 2N R 16E
Ground Level Elevation 579'

M

GAMMA RAY API UNITS

COMPENSATED NEUTRON POROSITY

BULK DENSITY GRAMS/CC

SIDEWALL NEUTRON POROSITY

DATUM

C Unit

B Evaporite

A-2 Carbonate

A-2 Evaporite

A-1 Carbonate

A-1 Evaporite

Clinton

ORDOVICIAN

Salina Group

Reef Section

Niagara Group

Clinton

Cabot Head

Manitoulin

A-1 Evaporite

BULK DENSITY

COMPENSATED NEUTRON POROSITY

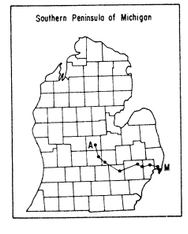
## STRATIGRAPHIC CROSS SECTION A-M

GRATIOT COUNTY
TO
ST. CLAIR COUNTY
MIDDLE & LOWER SILURIAN
OF THE
MICHIGAN BASIN

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

SCALE
Horizontal Scale
None
Vertical Scale
0
100
200

Southern Peninsula of Michigan




LEGEND
CORRELATION LINE
POSSIBLE CORRELATION
EROSIONAL UNCONFORMITY
DEPOSITIONAL PINCHOUT
POROSITY ZONE

# STRATIGRAPHIC CROSS SECTION A-M

GRATIOT COUNTY TO ST. CLAIR COUNTY

UPPER & MIDDLE ORDOVICIAN OF THE MICHIGAN BASIN

R. T. LILIENTHAL, 1978

DRAWN BY G. A. WILSON

SCALE

Horizontal Scale None

Vertical Scale 0 — 100 — 200

**McClure Oil Co.**
Sparks, Eckelbarger & Whightsil No. 1-8
Sec. 8, T.10N. R.2 W.
Ground Level Elevation 745'

**McClure Oil Co.**
Fox No. 1
Sec. 6, T.7N. R.1 W.
Ground Level Elevation 759.5'

**Mobil Oil Corp.**
Jelinek - Ferris Unit No. 1
Sec. 5, T.5N. R.2 E.
Ground Level Elevation 831.25'

**Mobil Oil Corp.**
Howard J. Messmore No. 1
Sec. 11, T.3N. R.5 E.
Ground Level Elevation 968.2'

**Consumers Power Co.**
Joseph Halmich No. 3-1
Sec. 1, T.4N R.13E
Ground Level Elevation 690'

**Michigan Consolidated Gas Co.**
Osterland et al No. 1-14
Sec. 14, T.3N R.15E
Ground Level Elevation 590.7'

**Bernhard Oil & Gas Co.**
Paul & Arelane Puzzuoli No. 1
Sec. 17, T.2N. R.16E.
Ground Level Elevation 579'

GAMMA RAY API UNITS 0 — 150 / 0 — 200

SIDEWALL NEUTRON POROSITY 45 — 30 — 15 — 0 — -15

ORDOVICIAN

Cincinnatian Series

CS Unit 5

CS Unit 4

CS Unit 3

CS Unit 2

CS Unit 1

Utica

Trenton Group

Black River Shale

Black River Group

TG-1

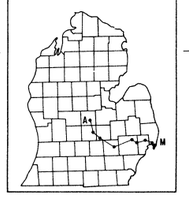
BR-1

BR-2

Glenwood Member

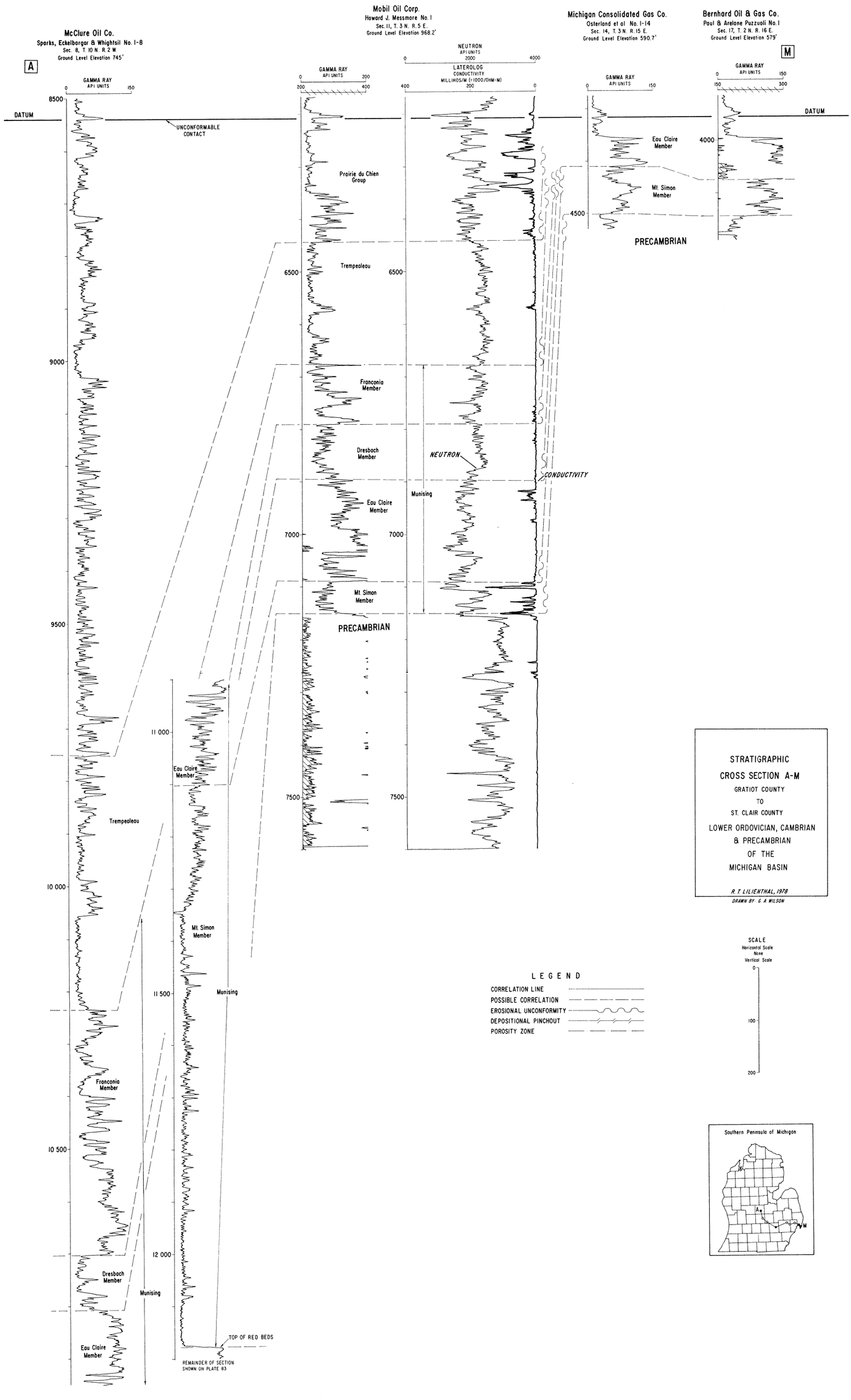
DATUM

Southern Peninsula of Michigan




## LEGEND

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




STRATIGRAPHIC
CROSS SECTION A-M
GRATIOT COUNTY
TO
ST. CLAIR COUNTY
LOWER ORDOVICIAN, CAMBRIAN
& PRECAMBRIAN
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




PLATE 75

A

**McClure Oil Co.**
Sparks, Eckelbarger & Whightsil No. 1-8
Sec. 8, T.10N. R.2W.
Ground Level Elevation 745'

GAMMA RAY
API UNITS
0 — 150
150 — 300

SONIC
INTERVAL TRANSIT TIME
MICROSECONDS PER FOOT
140 — 90 — 40
240 — 190 — 140

**Arch E. Turrentine dba Turrentine Assoc.**
Robert Gage Coal Co. No. 1
Sec 33, T.11N. R.3E.
Ground Level Elevation 587'

GAMMA RAY
API UNITS
0 — 100
100 — 200

**Dugger - Herring & Wells**
Hutchison No. 1
Sec 4, T.9N. R.8E
Ground Level Elevation 827'

GAMMA RAY
API UNITS
0 — 200
200 — 400

**Sunray Mid-Continent Oil Company**
H.G. Richardson No. 1
Sec 18, T.6N. R.12E.
Ground Level Elevation 895'

GAMMA RAY
MICROGRAMS RA-EQ/TON
0 — 10
10 — 20

**Humble Oil & Refining Company**
No. 1 Hoppinthal
Sec 16, T. 9N. R 15E
Ground Level Elevation 759.6'

GAMMA RAY
API UNITS
0 — 150

**McClure Oil Company and Michigan Natural Resources**
Richard Hewett et ux & Albert Shedd Unit No. 1-20
Sec 20, T.12 N. R.15 E
Ground Level Elevation 771'

CALIPER
HOLE DIAM IN INCHES
7 (6) — (16) 17

GAMMA RAY
API UNITS
0 — 150

BULK DENSITY
GRAMS/CC
2.0 — 2.5 — 3.0

COMPENSATED NEUTRON POROSITY
45 — 30 — 15 — 0 — -15

JURASSIC
Kimeridgian
PENNSYLVANIAN
Saginaw
MISSISSIPPIAN
Bayport
Michigan
"Triple Gyp"
"Brown Lime"
Michigan "Stray"
Glacial Drift
Marshall
Coldwater
Sunbury
SCALE CHANGE
DELETED AREA SHOWN ON PLATE 2
DELETED AREA SHOWN ON PLATE 84
GAMMA RAY
CALIPER
COMPENSATED NEUTRON POROSITY
BULK DENSITY
DATUM

500
1000
1300
1500
1600
1700
2000

N

Southern Peninsula of Michigan

SCALE
Horizontal Scale
None
Vertical Scale
0
100
200

# STRATIGRAPHIC CROSS SECTION A-N

GRATIOT COUNTY
TO
SANILAC COUNTY
PENNSYLVANIAN & MISSISSIPPIAN
OF THE
MICHIGAN BASIN

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

## LEGEND

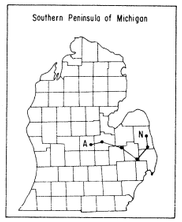
CORRELATION LINE
POSSIBLE CORRELATION
EROSIONAL UNCONFORMITY
DEPOSITIONAL PINCHOUT
POROSITY ZONE

# STRATIGRAPHIC CROSS SECTION A-N

GRATIOT COUNTY
TO
SANILAC COUNTY

LOWER MISSISSIPPIAN AND
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

A

**McClure Oil Co.**
Sparks, Eckelbarger & Whightsil No. 1-8
Sec 8, T.10N R.2W
Ground Level Elevation 745'

GAMMA RAY
API UNITS
0 — 150
150 — 300

SONIC
INTERVAL TRANSIT TIME
MICROSECONDS PER FOOT
100 — 70 — 40
160 — 130 — 100

**Arch E. Turrentine dba Turrentine Assoc.**
Robert Gage Coal Co. No. 1
Sec 33, T.11N R.3E.
Ground Level Elevation 587'

GAMMA RAY
API UNITS
0 — 100
100 — 200

**Dugger – Herring & Wells**
Hutchison No. 1
Sec 4, T.9N. R.8E.
Ground Level Elevation 827'

GAMMA RAY
API UNITS
0 — 200
200 — 400

**Sunray Mid-Continent Oil Company**
H.G. Richardson No. 1
Sec. 18, T.6N R.12E
Ground Level Elevation 895'

GAMMA RAY
MICROGRAMS RA-EQ/TON
0 — 10
10 — 20

N

**McClure Oil Company and Michigan Natural Resources**
Richard Hewett et ux & Albert Shedd Unit No. 1-20
Sec 20, T.12N R.15E
Ground Level Elevation 771'

**Humble Oil & Refining Company**
No. 1 Hoppinthal
Sec. 16, T.9N. R.15E
Ground Level Elevation 759.6'

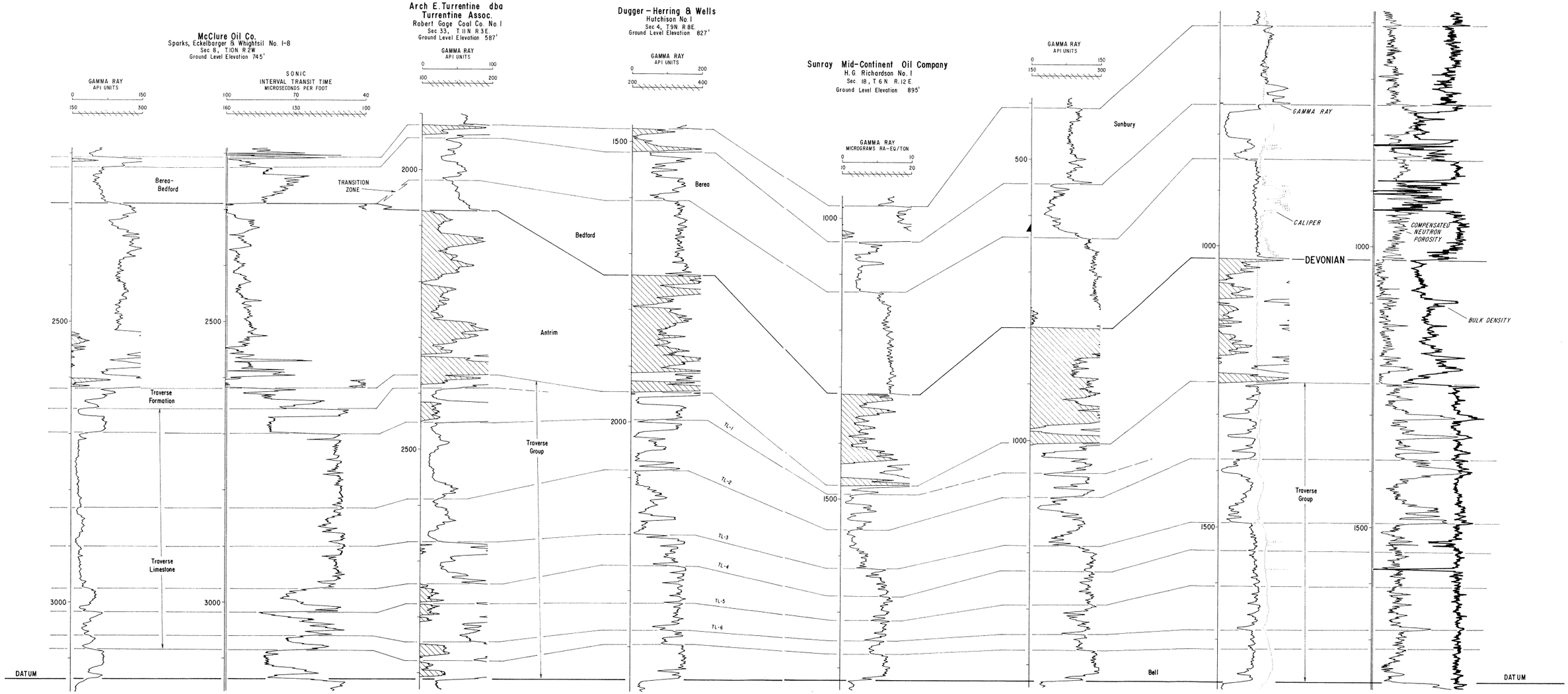
GAMMA RAY
API UNITS
0 — 150
150 — 300

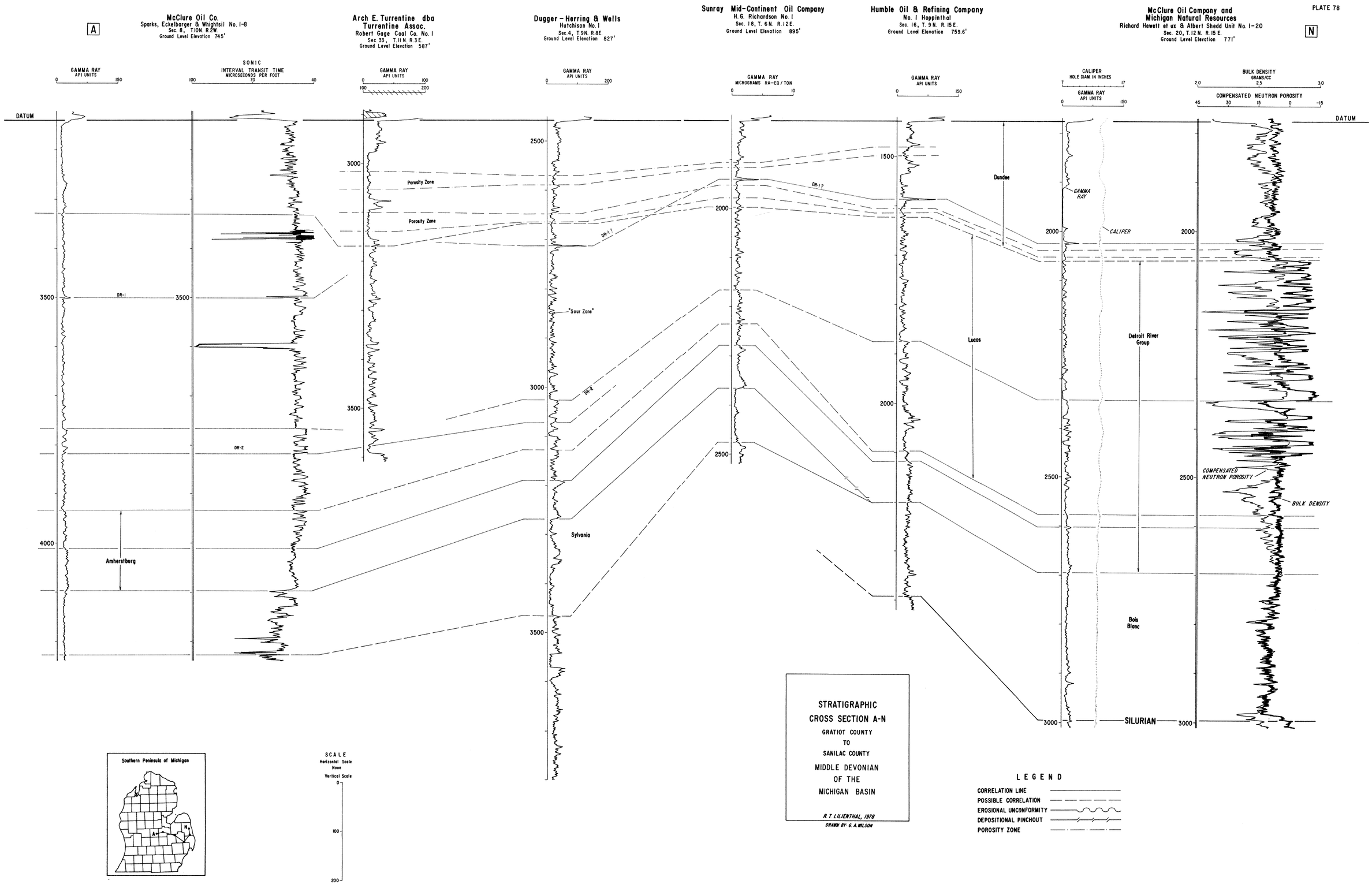
CALIPER
HOLE DIAM IN INCHES
7 — 17

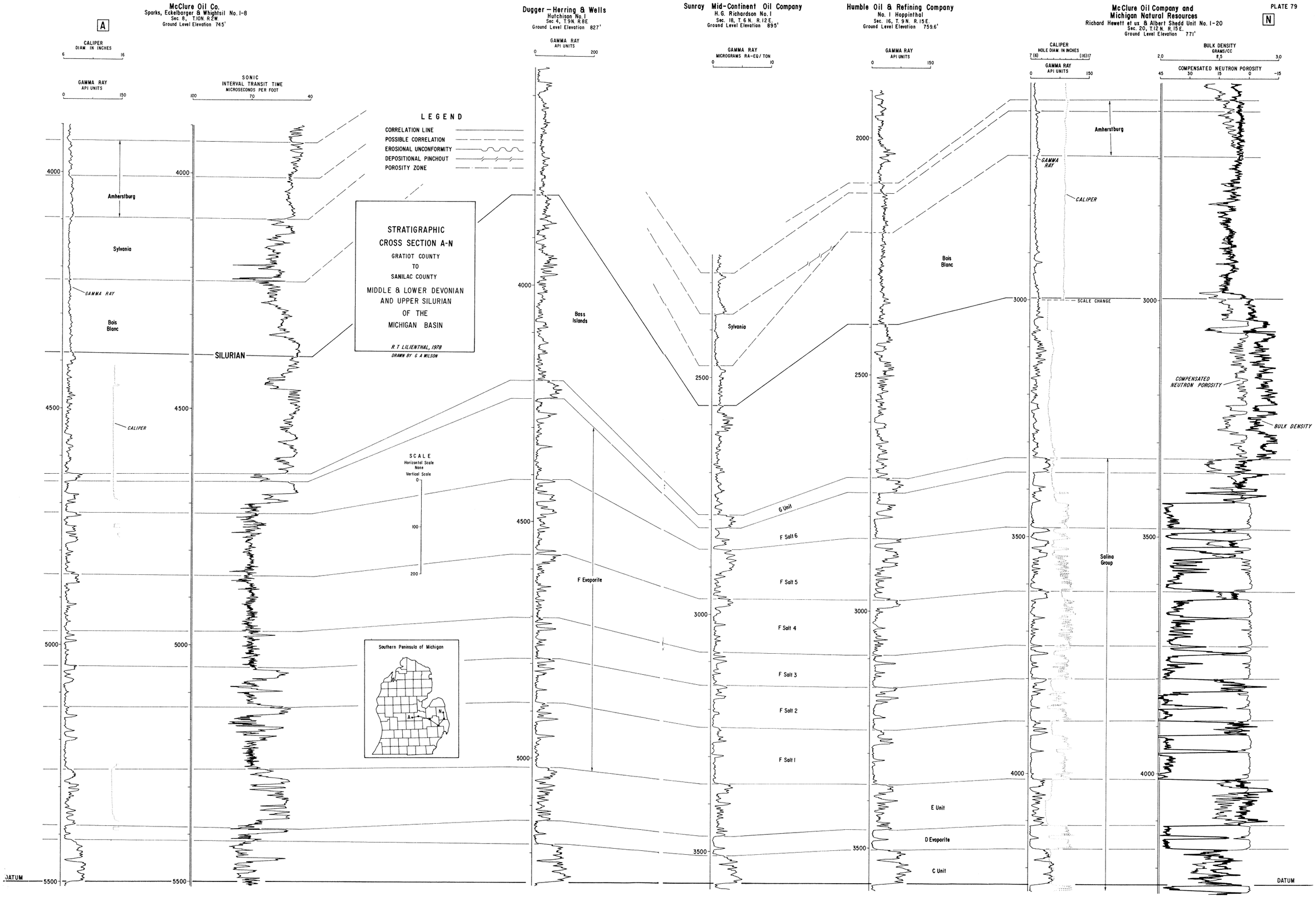
GAMMA RAY
API UNITS
0 — 150
150 — 300

BULK DENSITY
GRAMS/CC
2.0 — 2.5 — 3.0

COMPENSATED NEUTRON POROSITY
45 — 30 — 15 — 0 — -15




A
McClure Oil Co.
Sparks, Eckelbarger & Whightsil No. 1-8
Sec. 8, T.10N. R.2W.
Ground Level Elevation 745'
Arch E. Turrentine dba Turrentine Assoc.
Robert Gage Coal Co. No. 1
Sec. 33, T.11N. R.3E.
Ground Level Elevation 587'
Dugger - Herring & Wells
Hutchison No. 1
Sec. 4, T.9N. R.8E.
Ground Level Elevation 827'
Sunray Mid-Continent Oil Company
H.G. Richardson No. 1
Sec. 18, T. 6N. R.12E.
Ground Level Elevation 895'
Humble Oil & Refining Company
No. 1 Hoppinthal
Sec. 16, T. 9N. R.15E.
Ground Level Elevation 759.6'
McClure Oil Company and Michigan Natural Resources
Richard Hewett et ux & Albert Shedd Unit No. 1-20
Sec. 20, T.12N. R.15E.
Ground Level Elevation 771'
N
GAMMA RAY API UNITS
SONIC INTERVAL TRANSIT TIME MICROSECONDS PER FOOT
GAMMA RAY MICROGRAMS RA-EQ/TON
CALIPER HOLE DIAM IN INCHES
BULK DENSITY GRAMS/CC
COMPENSATED NEUTRON POROSITY
DATUM
Porosity Zone
"Sour Zone"
DR-1
DR-2
DR-1?
Dundee
Lucas
Detroit River Group
Bois Blanc
Amherstburg
Sylvania
SILURIAN
GAMMA RAY
CALIPER
COMPENSATED NEUTRON POROSITY
BULK DENSITY
Southern Peninsula of Michigan
SCALE
Horizontal Scale None
Vertical Scale
STRATIGRAPHIC CROSS SECTION A-N
GRATIOT COUNTY TO SANILAC COUNTY
MIDDLE DEVONIAN OF THE MICHIGAN BASIN
R.T. LILIENTHAL, 1978
DRAWN BY: G. A. WILSON
LEGEND
CORRELATION LINE
POSSIBLE CORRELATION
EROSIONAL UNCONFORMITY
DEPOSITIONAL PINCHOUT
POROSITY ZONE


A
McClure Oil Co.
Sparks, Eckelbarger & Whightsil No. 1-8
Sec. 8, T.10N. R.2W.
Ground Level Elevation 745'
CALIPER
DIAM. IN INCHES
GAMMA RAY
API UNITS
SONIC
INTERVAL TRANSIT TIME
MICROSECONDS PER FOOT
Dugger – Herring & Wells
Hutchison No. 1
Sec. 4, T.9N. R.8E.
Ground Level Elevation 827'
GAMMA RAY
API UNITS
Sunray Mid-Continent Oil Company
H.G. Richardson No. 1
Sec. 18, T.6N. R.12E.
Ground Level Elevation 895'
GAMMA RAY
MICROGRAMS RA-EQ/TON
Humble Oil & Refining Company
No. 1 Hoppinthal
Sec. 16, T.9N. R.15E.
Ground Level Elevation 759.6'
GAMMA RAY
API UNITS
McClure Oil Company and
Michigan Natural Resources
Richard Hewett et ux & Albert Shedd Unit No. 1-20
Sec. 20, T.12N. R.15E.
Ground Level Elevation 771'
N
CALIPER
HOLE DIAM. IN INCHES
GAMMA RAY
API UNITS
BULK DENSITY
GRAMS/CC
COMPENSATED NEUTRON POROSITY
LEGEND
CORRELATION LINE
POSSIBLE CORRELATION
EROSIONAL UNCONFORMITY
DEPOSITIONAL PINCHOUT
POROSITY ZONE
STRATIGRAPHIC
CROSS SECTION A-N
GRATIOT COUNTY
TO
SANILAC COUNTY
MIDDLE & LOWER DEVONIAN
AND UPPER SILURIAN
OF THE
MICHIGAN BASIN
R.T. LILIENTHAL, 1978
DRAWN BY G. A. WILSON
Amherstburg
Sylvania
GAMMA RAY
Bois Blanc
SILURIAN
CALIPER
Bass Islands
F Evaporite
Sylvania
G Unit
F Salt 6
F Salt 5
F Salt 4
F Salt 3
F Salt 2
F Salt 1
Bois Blanc
E Unit
D Evaporite
C Unit
Amherstburg
GAMMA RAY
CALIPER
SCALE CHANGE
COMPENSATED NEUTRON POROSITY
BULK DENSITY
Salina Group
SCALE
Horizontal Scale
None
Vertical Scale
Southern Peninsula of Michigan
DATUM
DATUM