

Workshop

Analog Carbonate Patterns

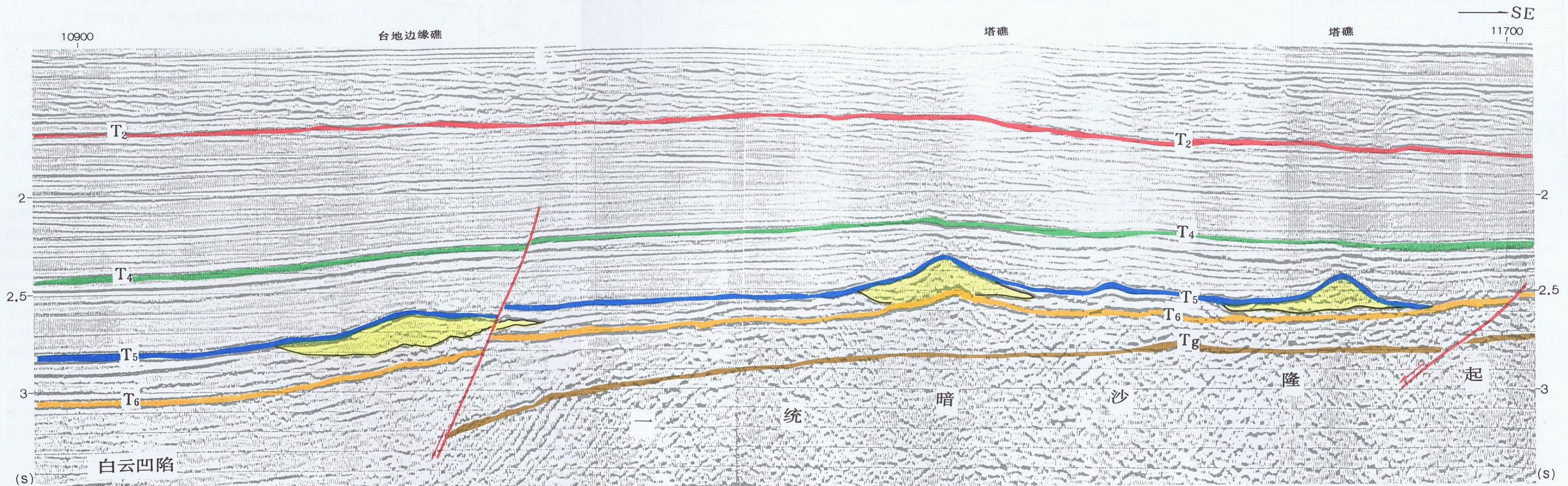
H. Roice Nelson, Jr.

What Causes These Patterns?

Typical Seismic Section Atlas of China,
Chief of Board: Lu Bang Gan, page 157.



图10 台地边缘礁、塔礁地震解释剖面



T₂ 上第三系上新统粤海组底界反射
T₄ 上第三系中新统韩江组底界反射
T₅ 上第三系下中新统珠江组下部反射

T₆ 下第三系渐新统珠海组上部反射
T_g 前第三系基底反射

The Following Pages Are Analogs to Provide Interpretation Context

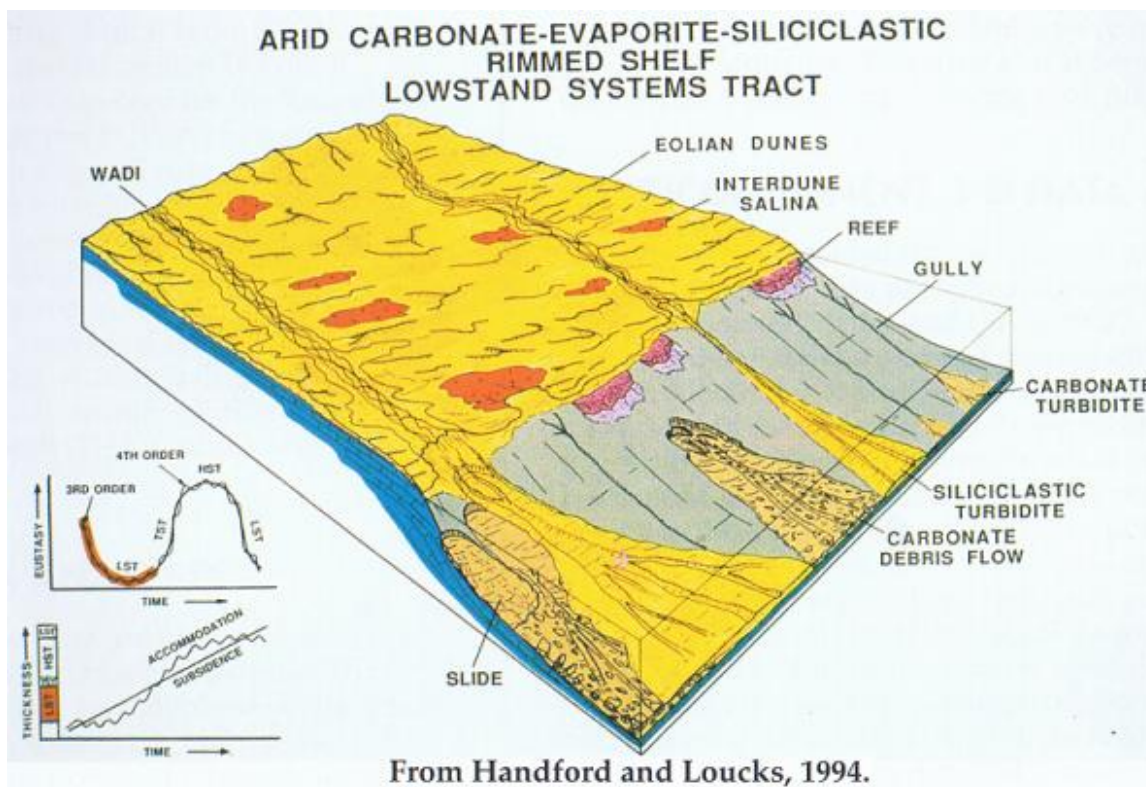
The stratigraphic and structural processes creating the rock record are repeated worldwide, across geologic time, and at various scales. Access to known analog examples of outcrop, seismic, and well log cross-sections guides geoscientists, enabling understanding of complex geology across disciplines as well as communication to management, partners, and investors.

The Abbott On-Line Atlas is a work in progress and includes:

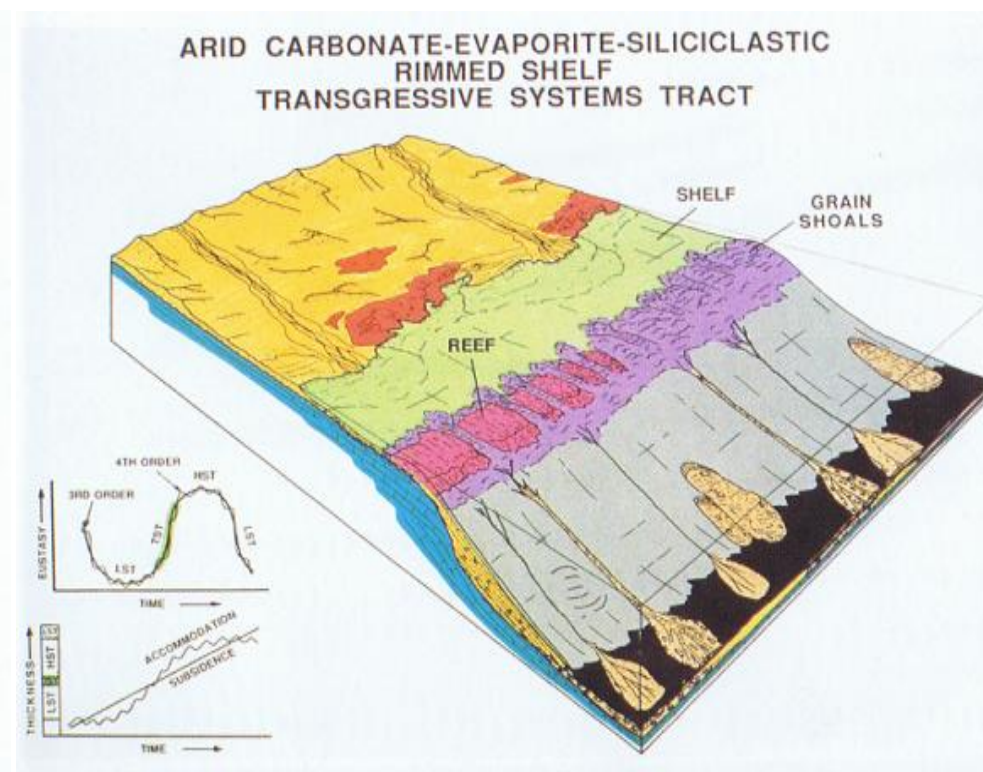
- Stratigraphic Examples from
 - outcrop,
 - log, and
 - seismic
- Seismic scale analogs, which can
 - guide stratigraphic interpretation on logs and seismic,
 - transfer years of field experience to interpreters,
 - provide examples which can help guide management thinking about new play fairways, leads, prospects, fields, and/or reservoirs
- Capture of Ward Abbott's experience and knowledge:
 - retired chief stratigrapher at Shell, 20+ years
 - retired chief stratigrapher at Occidental Petroleum, 20+ years
 - one of the world's foremost stratigraphers
- Demonstration of knowledge capture for the oil industry,
 - an industry where new hires do not experience field geology
 - an industry rapidly losing experience to old age and retirement
 - an industry critical to maintaining modern lifestyles

These pages are derived from work of Ward O. Abbot and H. Roice Nelson, Jr. on the Atlas as well as other examples, as noted, especially The Seismic Atlas of Australia and New Zealand.

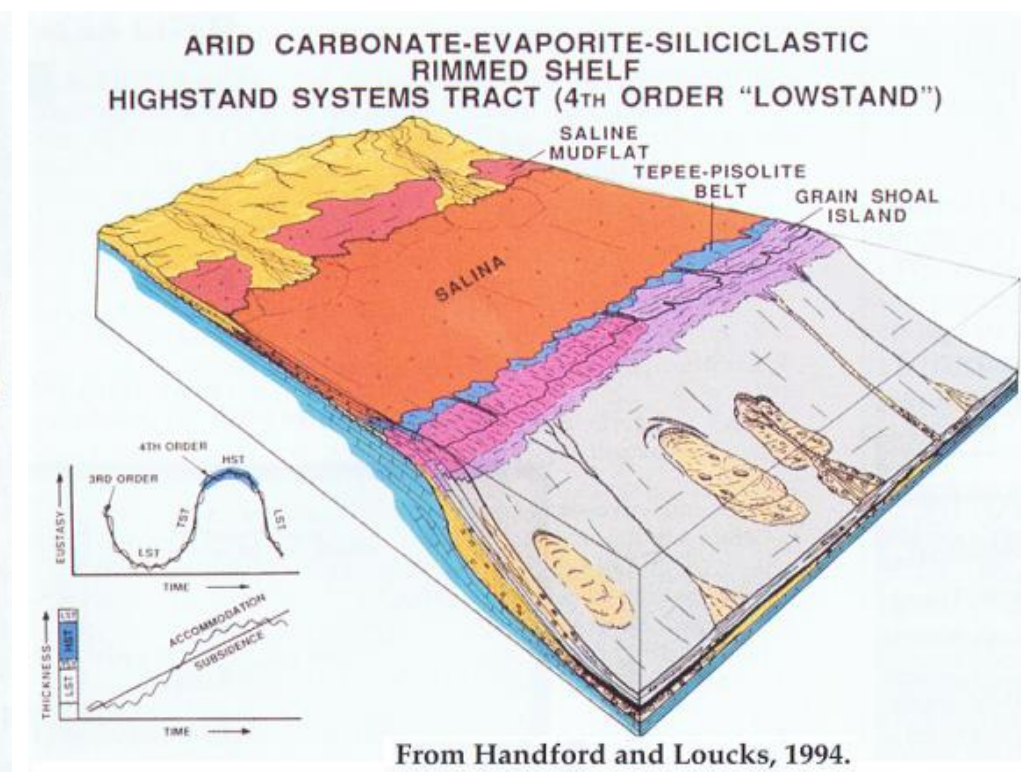
Dr. Peter Vail's Definitions of Systems Tracts



Lowstand Systems Tract.



Transgressive Systems Tract.



Highstand Systems Tract.

Jory A. Pacht, et. al., in **Application of 3-D Seismic Data to Exploration and Production**, pages 165-169, drawings from Handford and Loucks, 1994.

Carbonates, Devonian Sequence, Canning Basin, Australia



Personal Communication W.O. Abbott.

Carbonates, Devonian Sequence, Truncations



Personal Communication W.O. Abbott.

Carbonates, Devonian Sequence, Onlaps



Personal Communication W.O. Abbott.

25-27 September 2011

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Carbonate Patterns Workshop- Page 7

Carbonates, Devonian Sequence, Sequence Boundary



Personal Communication W.O. Abbott.

Carbonates, Devonian Sequence, Highstand Systems Tract



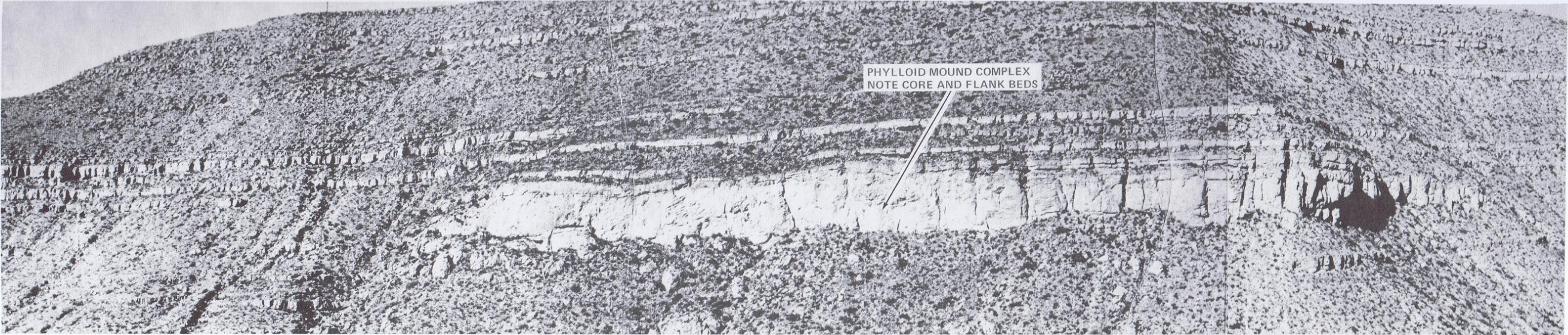
Personal Communication W.O. Abbott.

Carbonates, Devonian Sequence, Lowstand Systems Tract

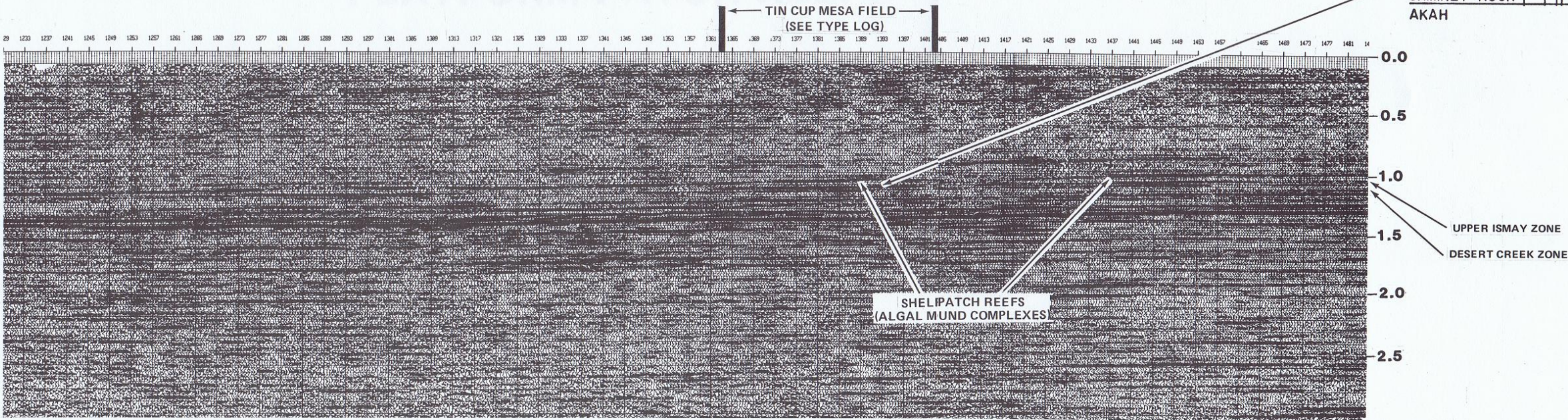
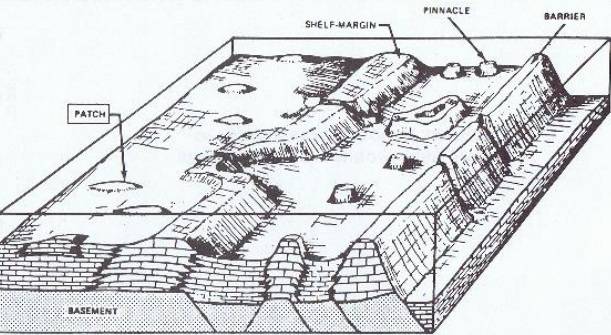
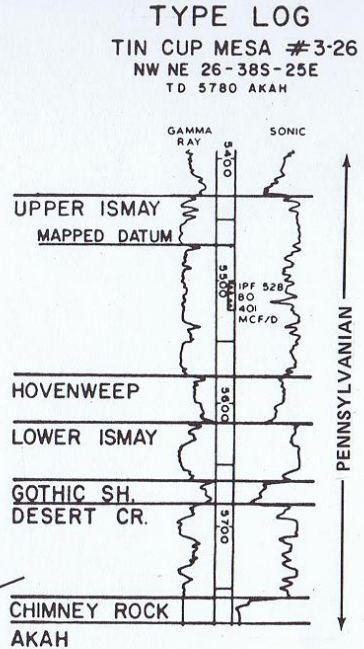


Personal Communication W.O. Abbott.

Shelf Patch Reefs



A PANORAMIC PHOTOGRAPH OF A PENNSYLVANIAN PATCH REEF IN THE NORTH WALL OF DRY CANYON, EAST OF ALAMOGORDO, NEW MEXICO.



SEISMIC LINE FROM THE PARADOX BASIN, SOUTHEASTERN UTAH.

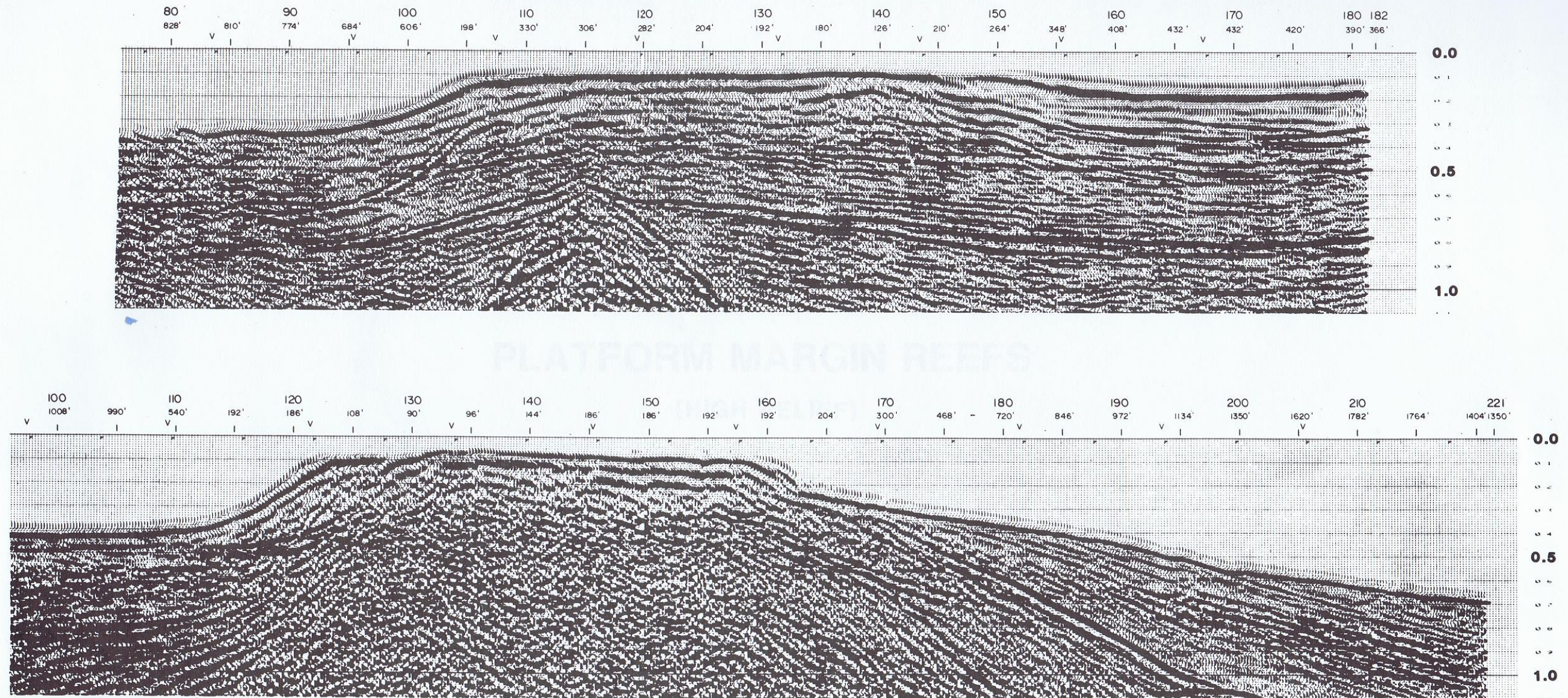
NOTE THE STRONG PEAK-TRough-PEAK REFLECTION PATTERNS OF ALGAL MOUND COMPLEXES

SHELF PATCH REEFS

3.3-3

Outcrop, Subsurface and Seismic Exploration Stratigraphy, Volume III Carbonates, by: W.O. Abbott, graphics: H.L. Scott, data from Occidental International Exploration and Production Company, pages 3.3-2-3.

Low Relief Platform Margin Reefs



SEISMIC LINES FROM OFFSHORE ARUBA, SOUTH AMERICA
NOTE THE CLASSIC UP AND OUT BUILDING CARBONATE SEISMIC FACIES PATTERNS.

PLATFORM MARGIN REEFS (LOW RELIEF)

Outcrop, Subsurface and Seismic Exploration Stratigraphy, Volume III Carbonates, by: W.O. Abbott, graphics by: H.L. Scott, data from Occidental International Exploration and Production Company, page 3.5-1.

Cobden Limestone

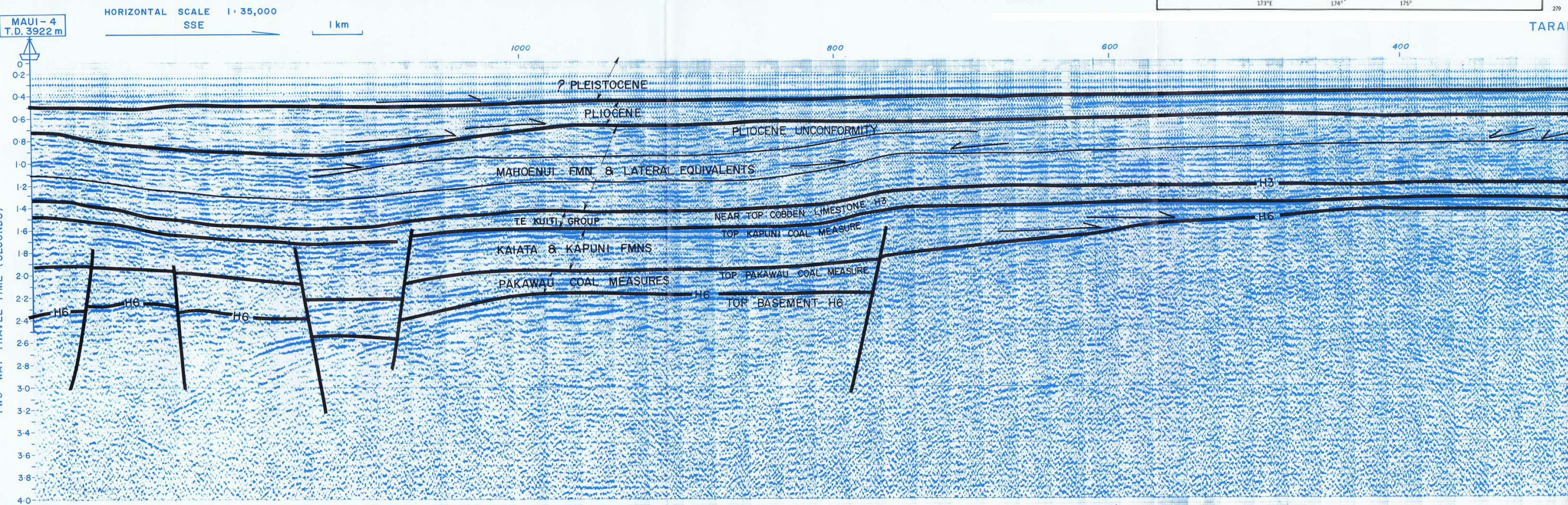
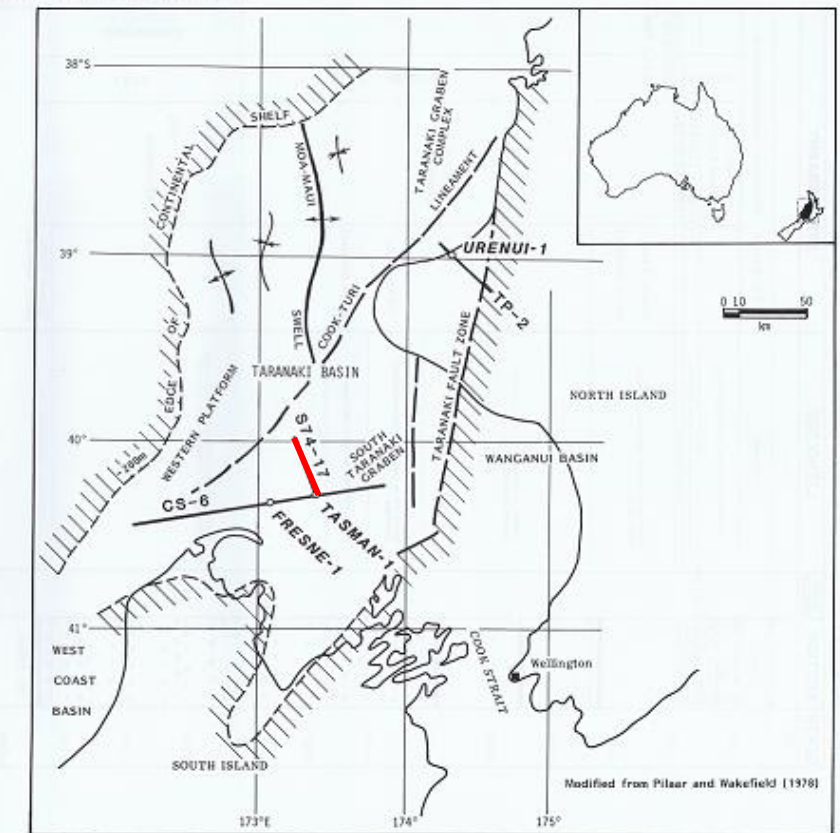
The Seismic Atlas of Australian and New Zealand Sedimentary Basins, Edited by: C. Gregory Skilbeck and Malcom J. Lennox, pages 279 & 289.

TARANAKI BASIN

LOCATION: Onshore, North Island of New Zealand, and offshore Cook Strait.
ESTIMATED AREA: 41,000 square kilometres, which approximately 80 percent lies offshore.
MAXIMUM THICKNESS OF SEDIMENT: 6,000 m.
AGE OF SEDIMENTS: Late Cretaceous to Holocene.
BASEMENT TYPE: Igneous, metamorphic, and sedimentary rocks of the Rangitata Orogen.
PRESENT BOUNDARIES: West: Shelf break. South (offshore): Continuation with the West Coast Basin. South (onshore): outcrop contact of the New Zealand Geosyncline. North: arbitrarily taken as a latitudinal line drawn approximately through Auckland. East: Taranaki Boundary Fault System (Taranaki Fault Zone).
WATER DEPTHS: Onshore to 200 m.
TYPE OF BASIN: Passive continental margin.
AGE OF RESERVOIRS: Late Eocene.
TYPE OF HYDROCARBONS: Gas, condensate. Minor oil seepage also recorded.
GENERAL REFERENCE: Pilaar and Wakefield (1978).

BIBLIOGRAPHY

Balke, L.R. Jr., 1973. Taranaki Basin. In Balke, L.R. Jr., ed., *Oil and Gas Fields of Australia, Papua New Guinea and New Zealand*. Tracer Petroleum and Mining Publications, Sydney, 339-367.
 Katz, H.R., 1968. Potential oil formation in New Zealand and their stratigraphic position as related to basin evaluation. *New Zealand Journal of Geology and Geophysics* 11, 1077-1133.
 Katz, H.R., 1976. Sedimentary basin and petroleum prospects, onshore and offshore New Zealand. In Hahoury, M.T., Maher, J.C., and Linn, H.M., eds., *Circum-Pacific Energy and Mineral Resources*. American Association of Petroleum Geologists Memoir 25, 217-228.
 Knox, G.J., 1982. Taranaki Basin, structural style and tectonic setting. *New Zealand Journal of Geology and Geophysics* 25, 125-140.
 Pilaar, W.F.H. and Wakefield, L.L., 1978. Structural and stratigraphic evolution of the Taranaki Basin, offshore North Island, New Zealand. *APGA Journal* 18, 91-101.
 Spragg, R.C., Bradshaw, J.C., Yakusik, A., and Wilson, R.B., 1969. Oil and gas prospects of southern Taranaki Bight, New Zealand. *American Association of Petroleum Geologists Bulletin* 53, 1956-1977.



Cobden Limestone

The Seismic Atlas of Australian and New Zealand Sedimentary Basins, Edited by: C. Gregory Skilbeck and Malcom J. Lennox, pages 279 & 285.

TARANAKI BASIN

LOCATION: Onshore, North Island of New Zealand, and offshore Cook Strait.

ESTIMATED AREA: 41,000 square kilometres, which approximately 80 percent lies offshore.

MAXIMUM THICKNESS OF SEDIMENT: 6,000 + m.

AGE OF SEDIMENTS: Late Cretaceous to Holocene.

BASEMENT TYPE: Igneous, metamorphic, and sedimentary rocks of the Rangitata Orogen.

PRESENT BOUNDARIES: West: Shelf break. South (offshore): Continuous with the West Coast Basin. South (onshore): contact of the New Zealand Geosyncline. North: arbitrarily taken as a latitudinal line drawn approximately through Auckland. East: Taranaki Boundary Fault System (Taranaki Fault Zone).

WATER DEPTHS: Onshore to 200 m.

TYPE OF BASIN: Passive continental margin.

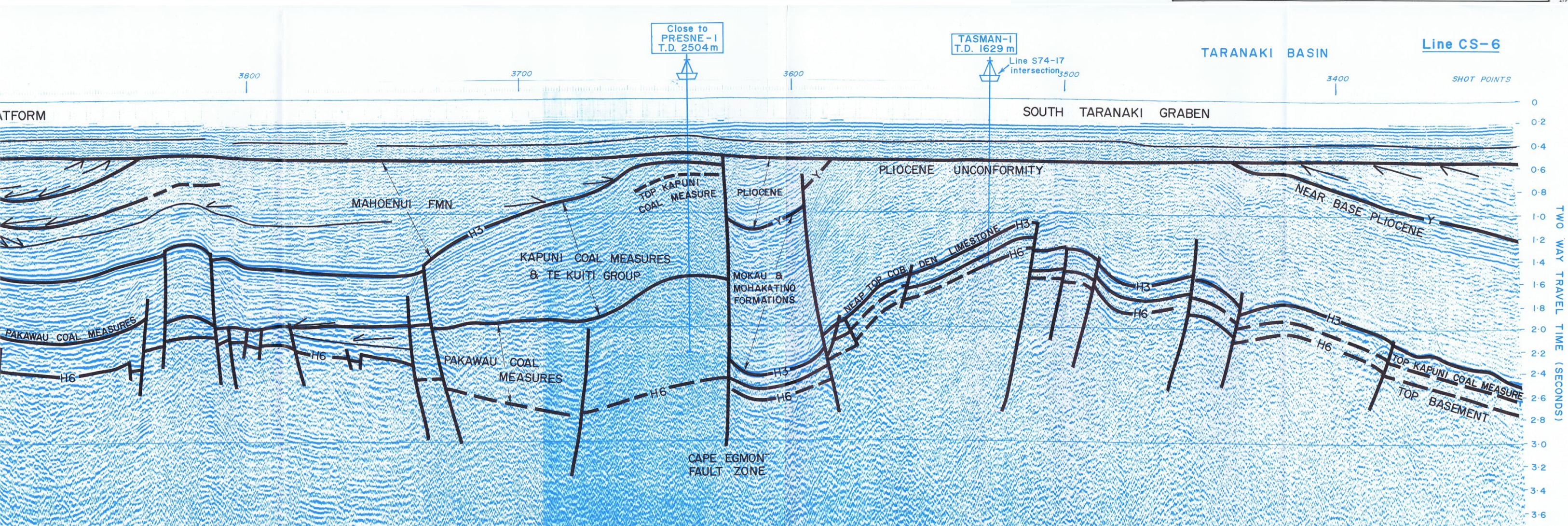
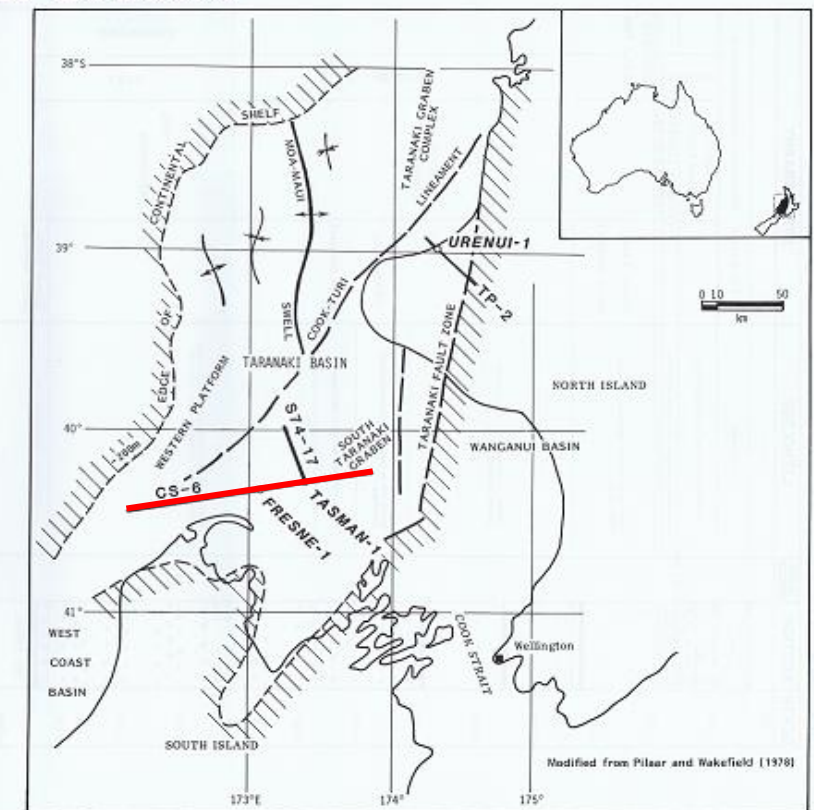
AGE OF RESERVOIRS: Late Eocene.

TYPE OF HYDROCARBONS: Gas, condensate. Minor oil seepage also recorded.

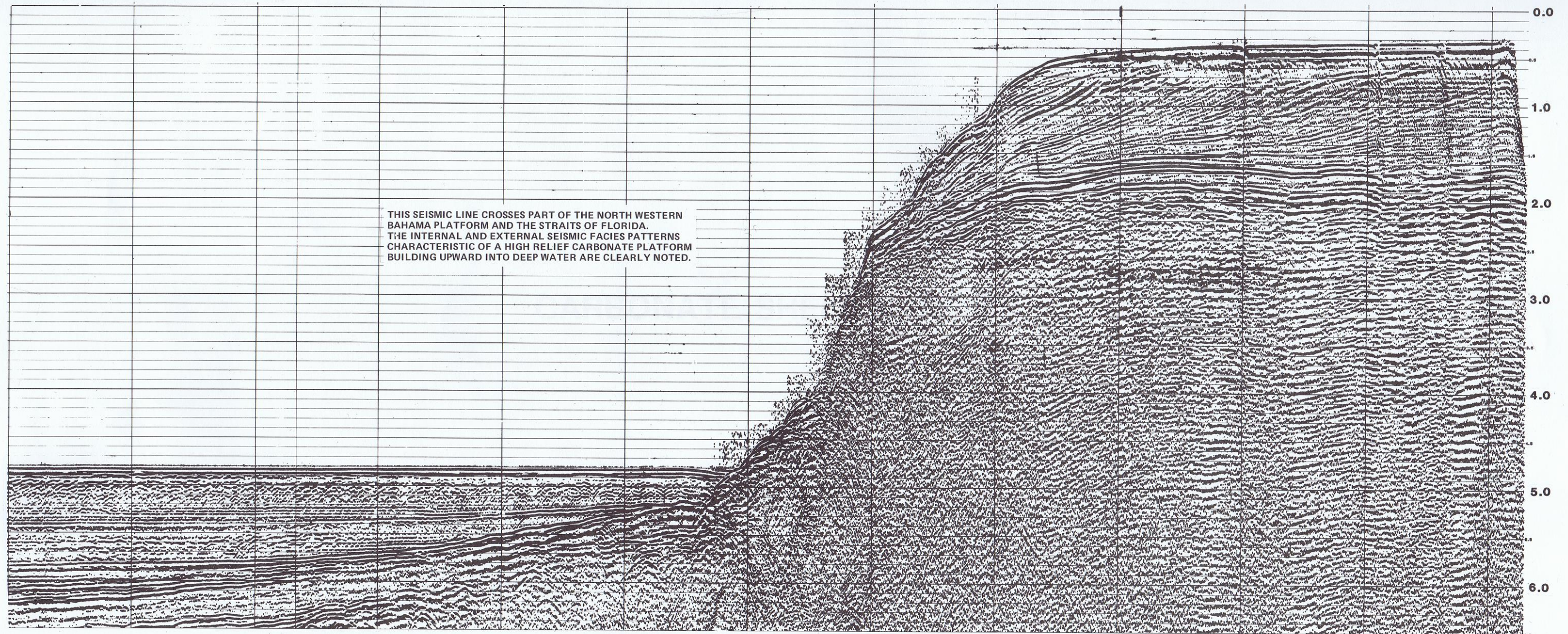
GENERAL REFERENCE: Pilaar and Wakefield (1978).

BIBLIOGRAPHY

Boldoos, L.R. Jr., 1973, Taranaki Basin. In Boldoos, L.R. Jr., ed., *Oil and Gas Fields of Australia, Papua New Guinea and New Zealand*. Tracer Petroleum and Mining Publications, Sydney, 339-347.
 Katz, H.R., 1968, Potential oil formation in New Zealand and their stratigraphic position as related to basin evaluation. *New Zealand Journal of Geology and Geophysics* 11, 1077-1133.
 Katz, H.R., 1976, Sedimentary basins and petroleum prospects, onshore and offshore New Zealand. In Hildrey, M.T., Maher, J.C., and Lamm, H.M., eds., *Circum-Pacific Energy and Mineral Resources*. American Association of Petroleum Geologists Memoir 25, 217-228.
 Knox, G.J., 1982, Taranaki Basin, structural style and tectonic setting. *New Zealand Journal of Geology and Geophysics* 25, 123-140.
 Pilaar, W.F.H. and Wakefield, L.L., 1978, Structural and stratigraphic evolution of the Taranaki Basin, offshore North Island, New Zealand. *APEA Journal* 18, 93-101.
 Sprigg, R.C., Brathwaite, J.C., Yakuzin, A., and Wilson, R.B., 1969, Oil and gas prospects of southern Taranaki Basin, New Zealand. *American Association of Petroleum Geologists Bulletin* 53, 1956-1977.



High Relief Platform Margin Reefs



PLATFORM MARGIN REEFS (HIGH RELIEF)

3.5-2

Outcrop, Subsurface and Seismic Exploration Stratigraphy, Volume III Carbonates, by: W.O. Abbott, graphics by: H.L. Scott, data from Occidental International Exploration and Production Company, page 3.5-2.

Scott Reef

The Seismic Atlas of Australian and New Zealand Sedimentary Basins, Edited by: C. Gregory Skilbeck and Malcom J. Lennox, pages 25 & 29.

BROWSE BASIN

LOCATION: Off shore, northern Western Australia.

ESTIMATED AREA: 100,000-155,000 square kilometres.

MAXIMUM THICKNESS OF SEDIMENT: 12,000+ m.

AGE OF SEDIMENTS: Late Carboniferous or Early Permian to Holocene, with numerous local unconformities.

BASEMENT TYPE: Continental crust consisting of Proterozoic metamorphics and intrusives.

PRESENT BOUNDARIES: Southwest: basement high (Leveque Platform), and an arbitrary line extend westwards to the shelf margin. East: outcrop of the Kimberley Block. Northeast: basement highs (Ashmore-Sahul Block and the Londonderry Arch). West: western margin of the Scott Plateau.

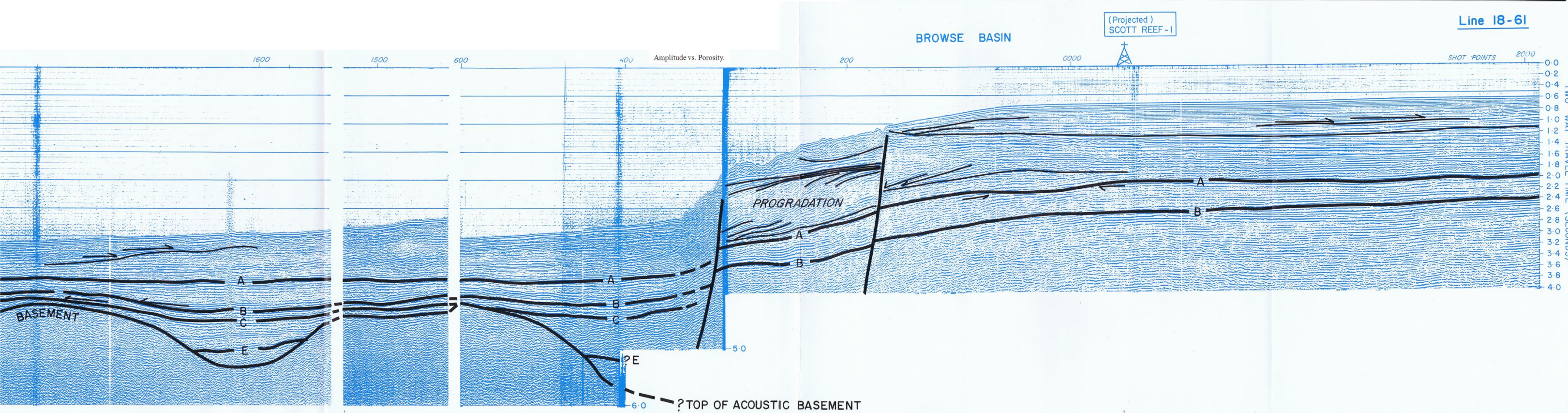
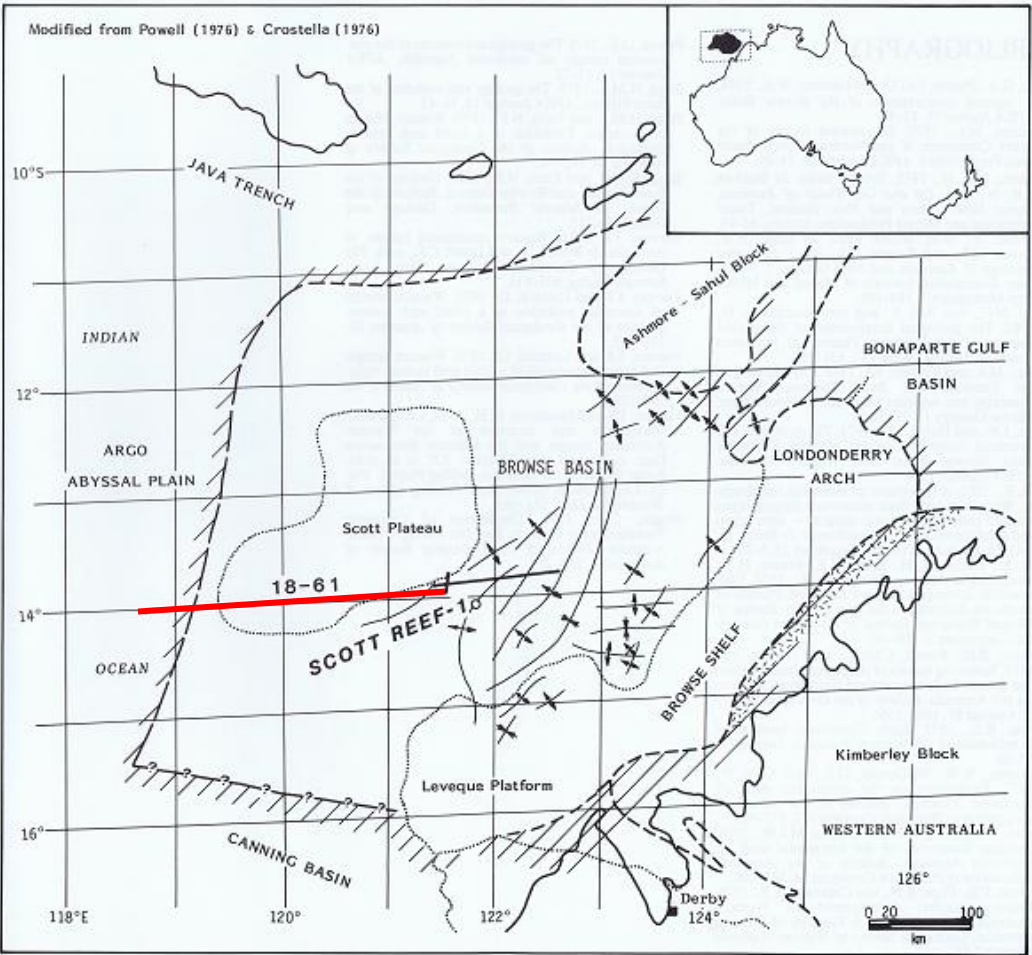
WATER DEPTHS: 3000 m along western margin. Most of the basin, except for the eastern margin, lies in water depths greater than 200 m.

TYPE OF BASIN: Passive continental margin.

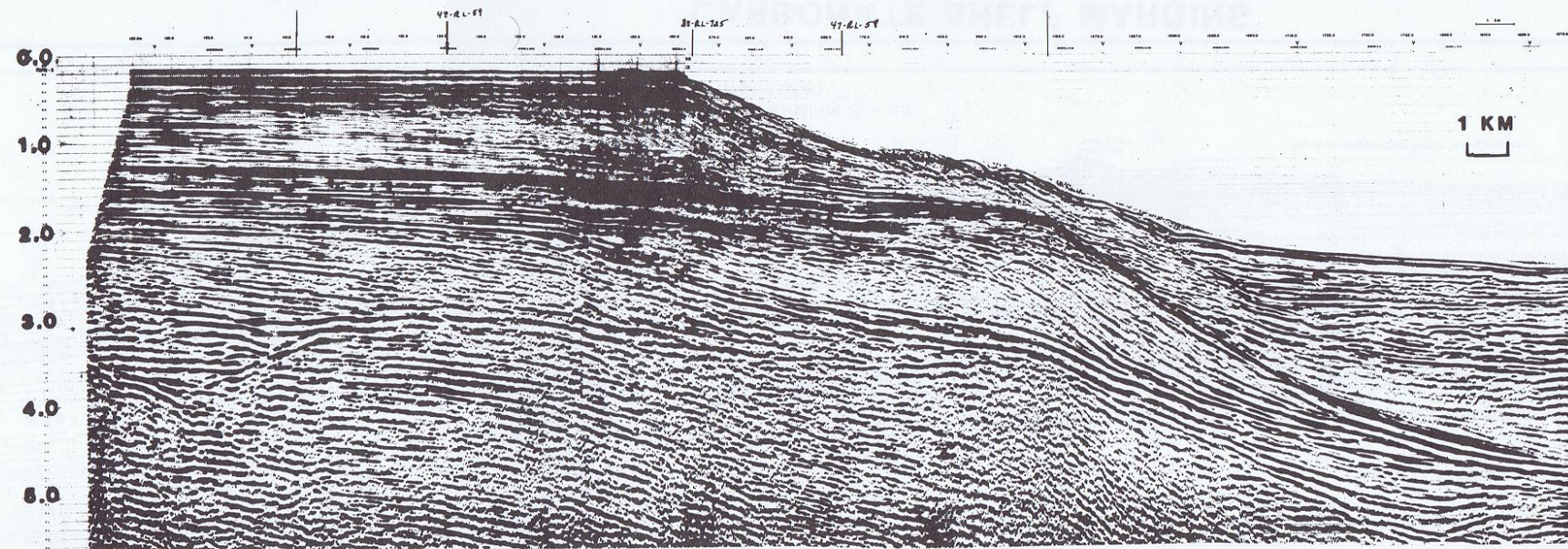
AGE OF RESERVOIRS: Late Triassic and Jurassic.

TYPE OF HYDROCARBONS: Gas, condensate and oil.

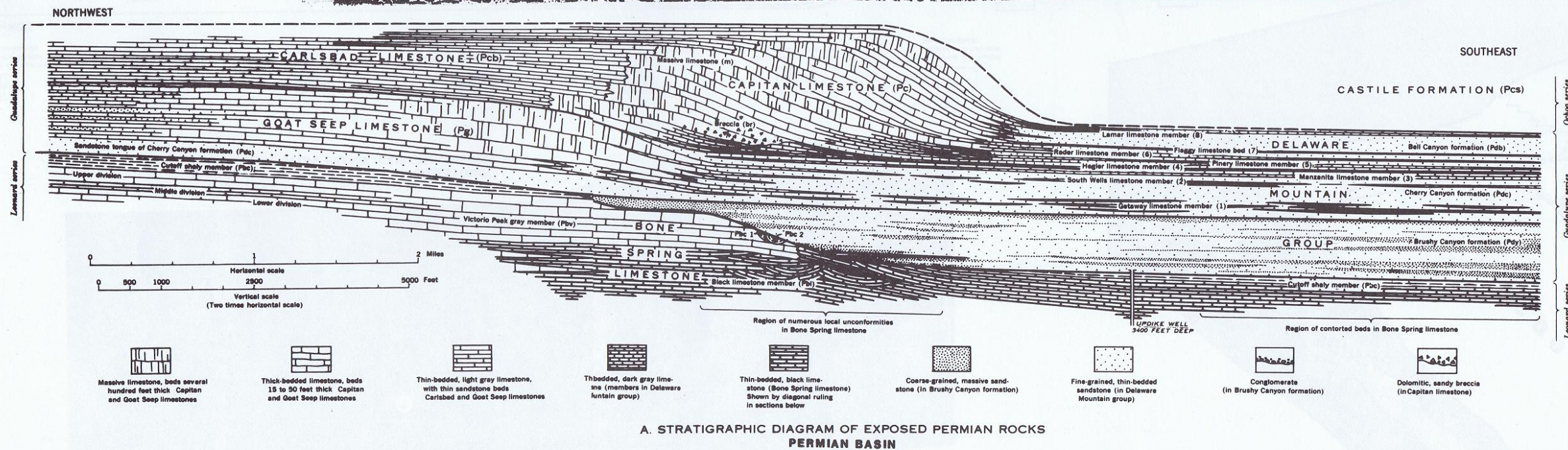
GENERAL REFERENCE: Allen *et al.* (1978).



Carbonate Shelf Margins Interpretation



SEISMIC LINE OFF NORTHEAST COAST BRAZIL ILLUSTRATING DIFFERENT SEISMIC FACIES PATTERNS OF A CARBONATE SHELF MARGIN.



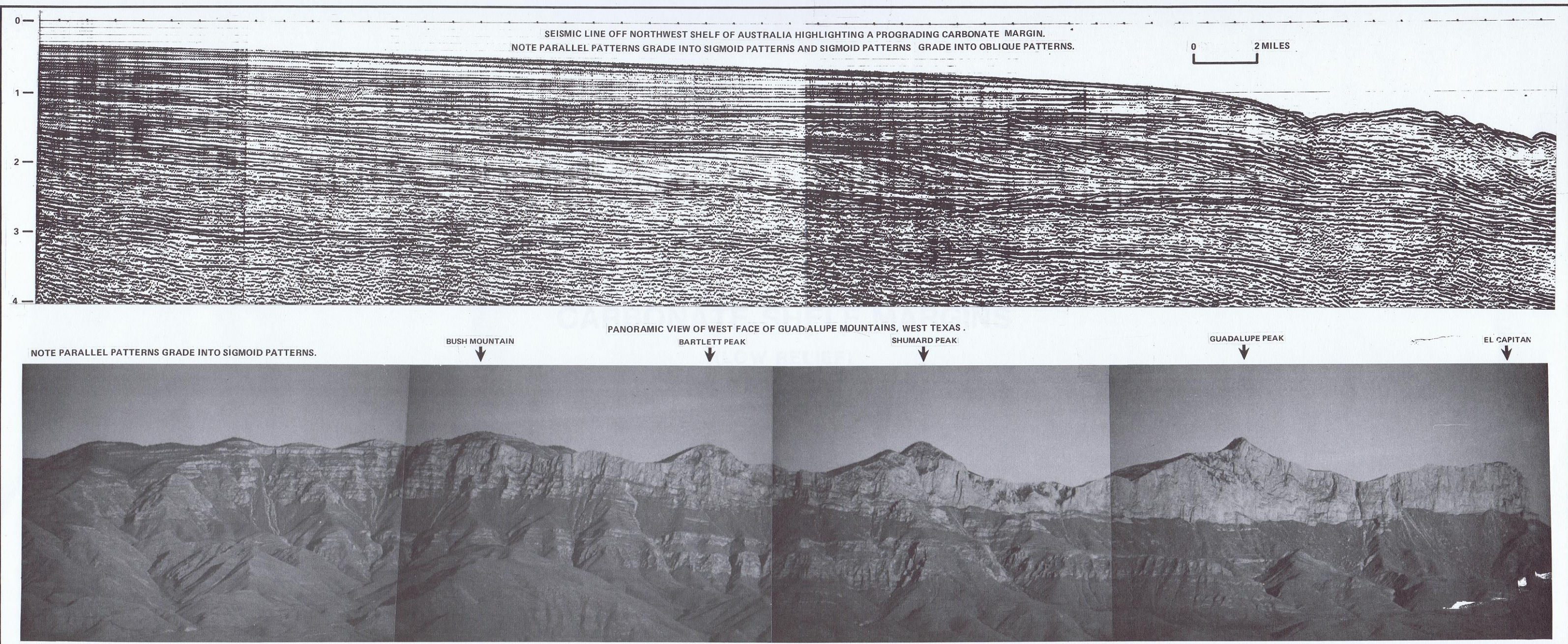
STRATIGRAPHIC DIAGRAM OF EXPOSED OUTCROP FACIES PATTERNS OF A CARBONATE SHELF MARGIN.

CARBONATE SHELF MARGINS

3.6-2

Outcrop, Subsurface and Seismic Exploration Stratigraphy, Volume III Carbonates, by: W.O. Abbott, graphics by: H.L. Scott, data from Occidental International Exploration and Production Company, page 3.6-2.

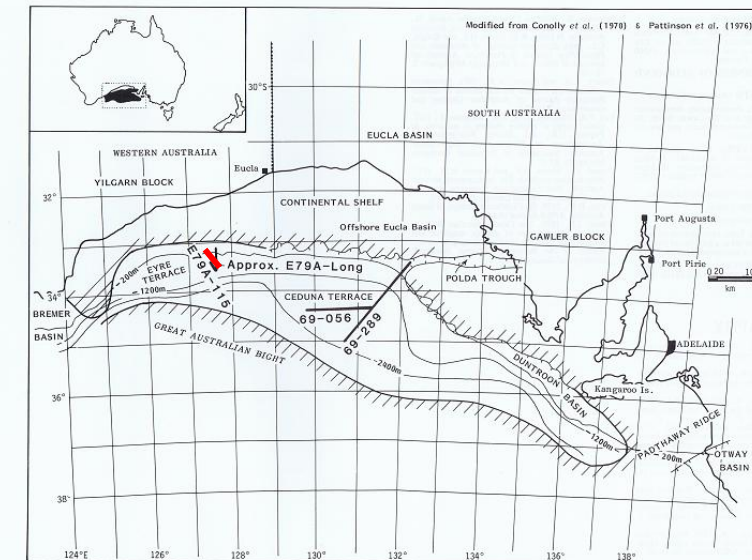
Carbonate Shelf Margins Outcrop



CARBONATE SHELF MARGINS

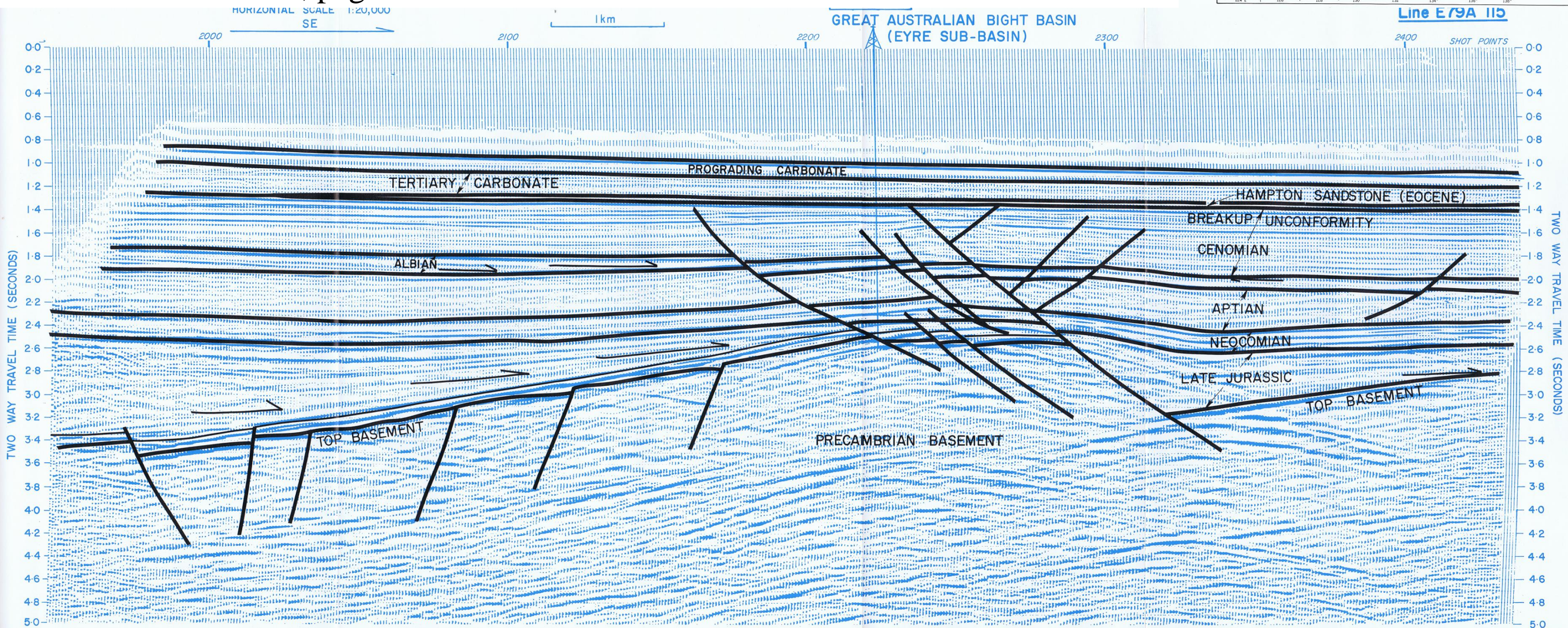
3.6-3

Outcrop, Subsurface and Seismic Exploration Stratigraphy, Volume III Carbonates, by: W.O. Abbott,
graphics by: H.L. Scott, data from Occidental International Exploration and Production Company, page 3.6-3.



Tertiary & Prograding Carbonate

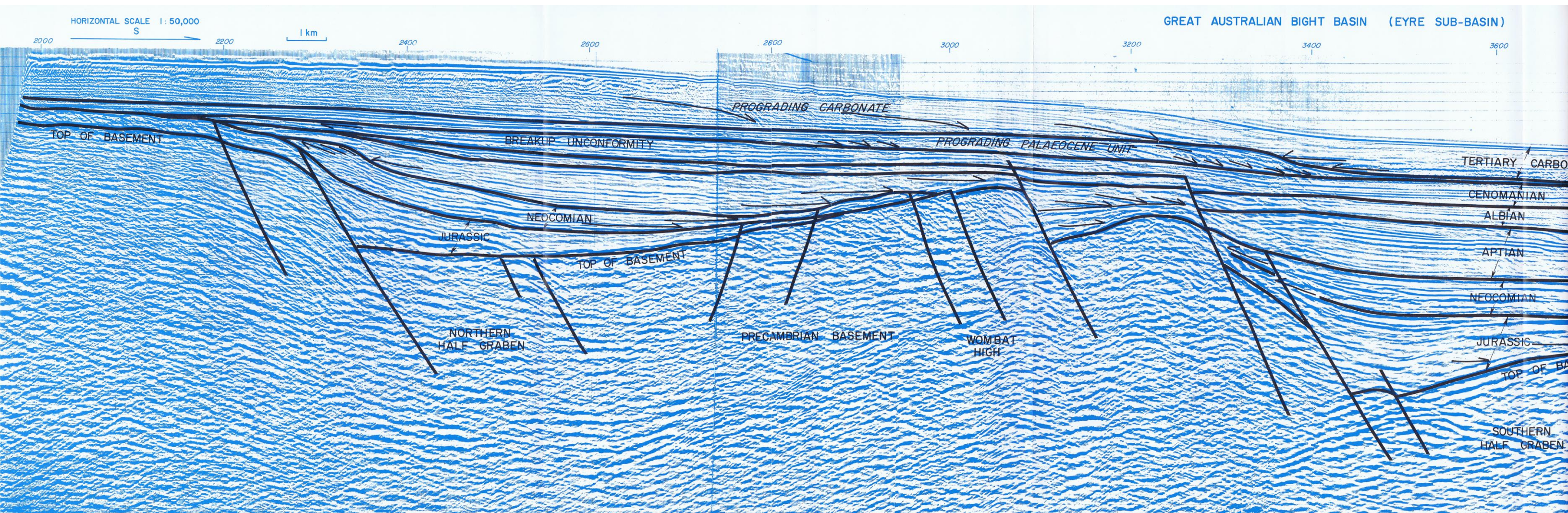
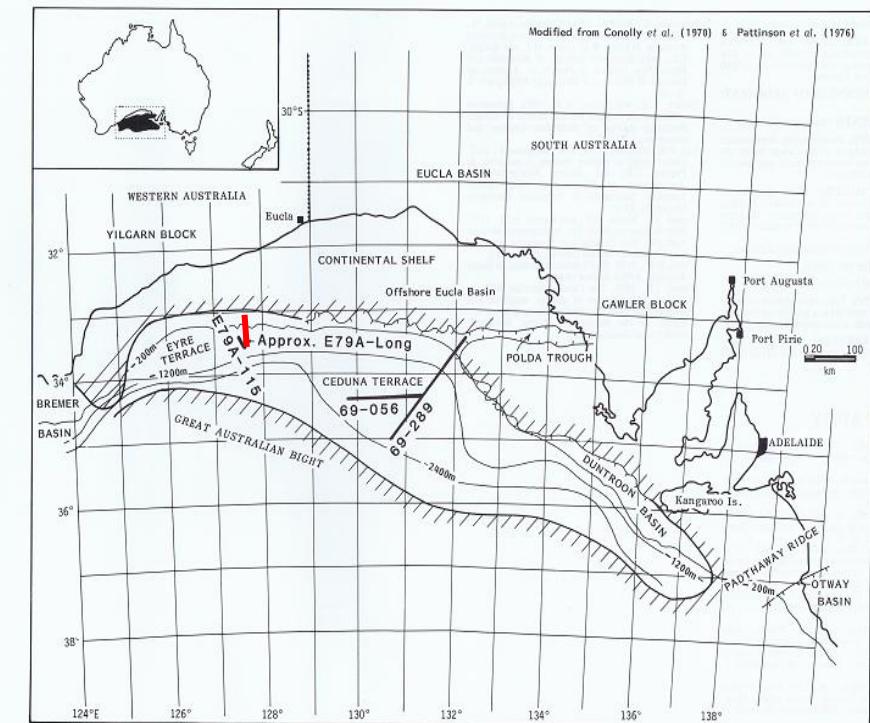
The Seismic Atlas of Australian and New Zealand Sedimentary Basins, Edited by: C. Gregory Skilbeck and Malcom J. Lennox, pages 61 & 73.



Prograding Carbonate

The Seismic Atlas of Australian and New Zealand Sedimentary Basins, Edited by: C. Gregory Skilbeck and Malcom J. Lennox, pages 61 & 77.

GREAT AUSTRALIAN BIGHT BASIN



Prograding Carbonate

The Seismic Atlas of Australian and New Zealand Sedimentary Basins, Edited by: C. Gregory Skilbeck and Malcom J. Lennox, pages 45 & 57.

CARNARVON BASIN

LOCATION: Onshore and offshore, Western Australia.

ESTIMATED AREA: 300,000 square kilometres (total) including: 52,000 square kilometres (Dampier Sub-basin), 26,000 square kilometres (Barrow Sub-basin), and 8,000 square kilometres (Exmouth Sub-basin).

MAXIMUM THICKNESS OF SEDIMENT: 20,000 m (estimated from gravity and magnetic data).

AGE OF SEDIMENTS: Silurian to Holocene, but may also contain older Palaeozoic strata.

BASEMENT TYPE: Continental crust composed of Precambrian continental shield (Pilbara Block).

PRESENT BOUNDARIES: East: predominantly sedimentary onlap against the adjacent shield, but at the northeastern and southeastern boundaries Basin sediments are downfaulted against the shield. South: basement horst (Lower Palaeozoic Northampton Block). North: De Grey Nose (basement high) and an arbitrary line joining this feature and the Kangaroo Syncline. West: taken at the continental margin, except where adjacent to the Exmouth Plateau (Kangaroo Syncline).

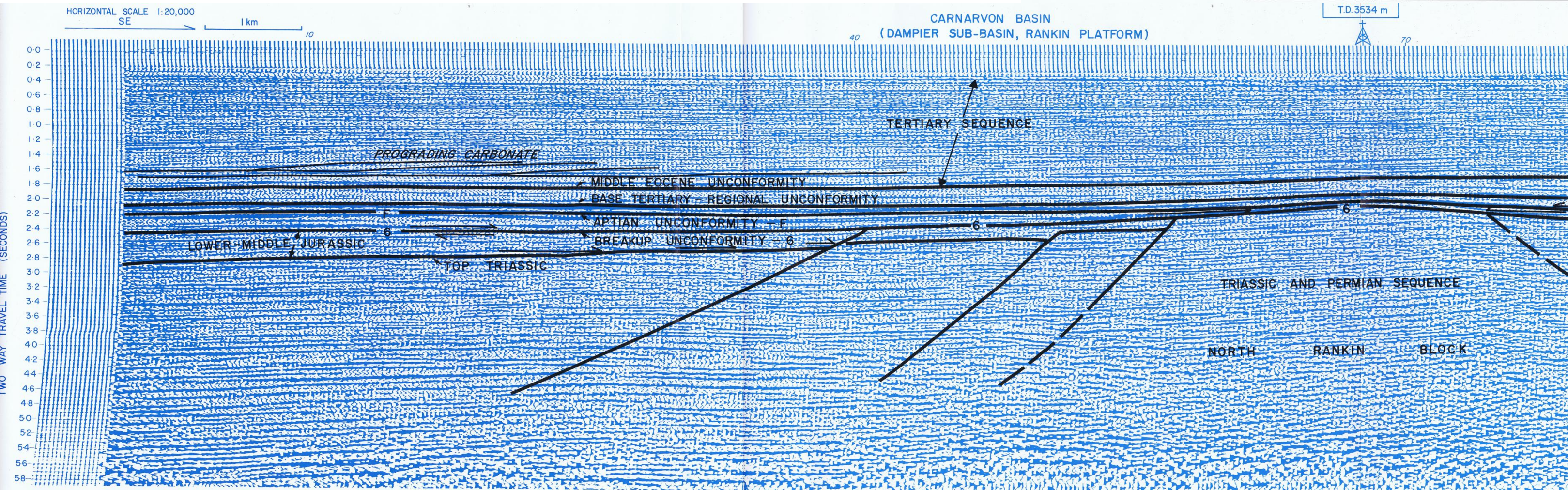
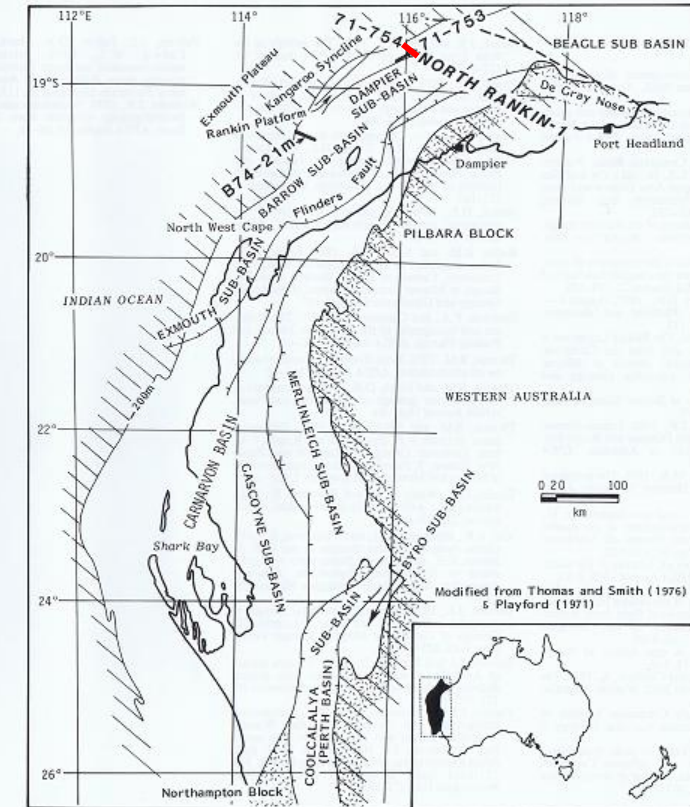
WATER DEPTHS: Onshore to 1500 m.

TYPE OF BASIN: Multicyclic intracratonic basin. Continental rift evolving into passive continental margin since Jurassic.

AGE OF RESERVOIR(S): Late Triassic, Jurassic, Cretaceous.

TYPE OF HYDROCARBONS: Predominantly gas and condensate, minor oil.

GENERAL REFERENCE: Thomas and Smith (1976).



Carbonate Progradation

The Seismic Atlas of Australian and New Zealand Sedimentary Basins, Edited by: C. Gregory Skilbeck and Malcom J. Lennox, pages 35 & 39.

EXMOUTH PLATEAU

LOCATION: Marginal plateau, offshore, Western Australia.

ESTIMATED AREA: 150,000 square kilometres, (300,000 square kilometres including adjacent continental slopes).

MAXIMUM THICKNESS OF SEDIMENT: 10,000+ m.

AGE OF SEDIMENTS: Silurian to Holocene, with major unconformities spanning the Early Jurassic, Late Cretaceous-Paleocene (2), and Oligocene.

BASEMENT TYPE: Continental crust consisting of Precambrian granite, gneiss, and schist (Pilbara Block).

PRESENT BOUNDARIES: Northwest, southwest and northeast boundaries all taken at the continental margin.

South: separated from the Rankin Platform by the Kangaroo Syncline, but this is only a non-structural distinction as the major stratigraphic units are continuous across this structure.

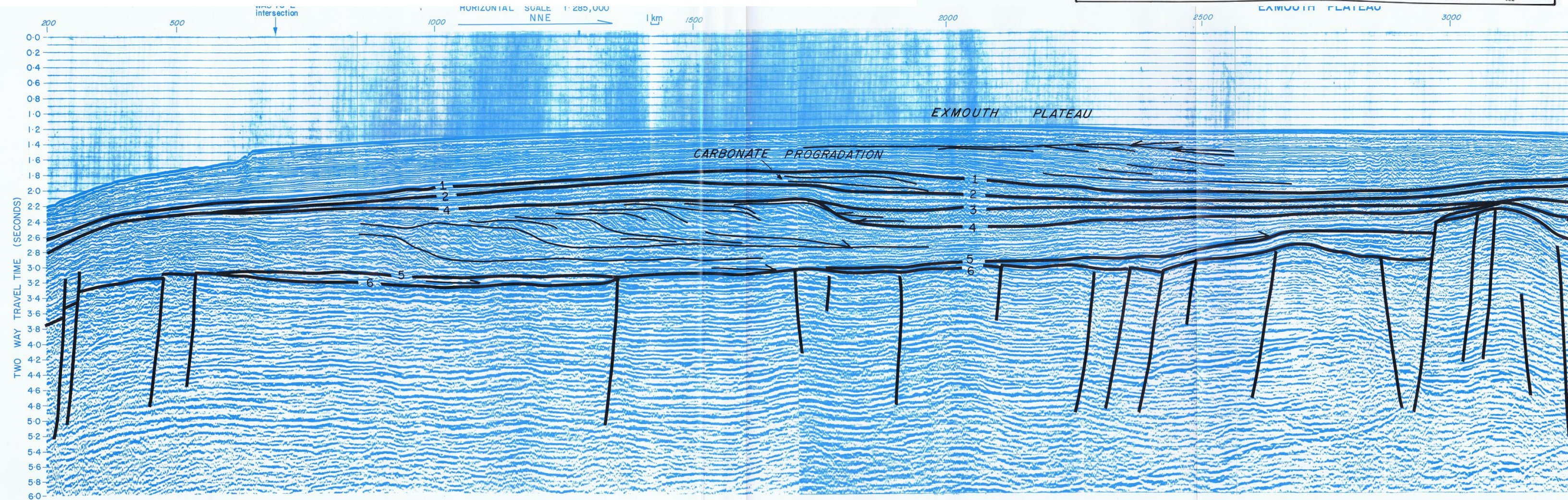
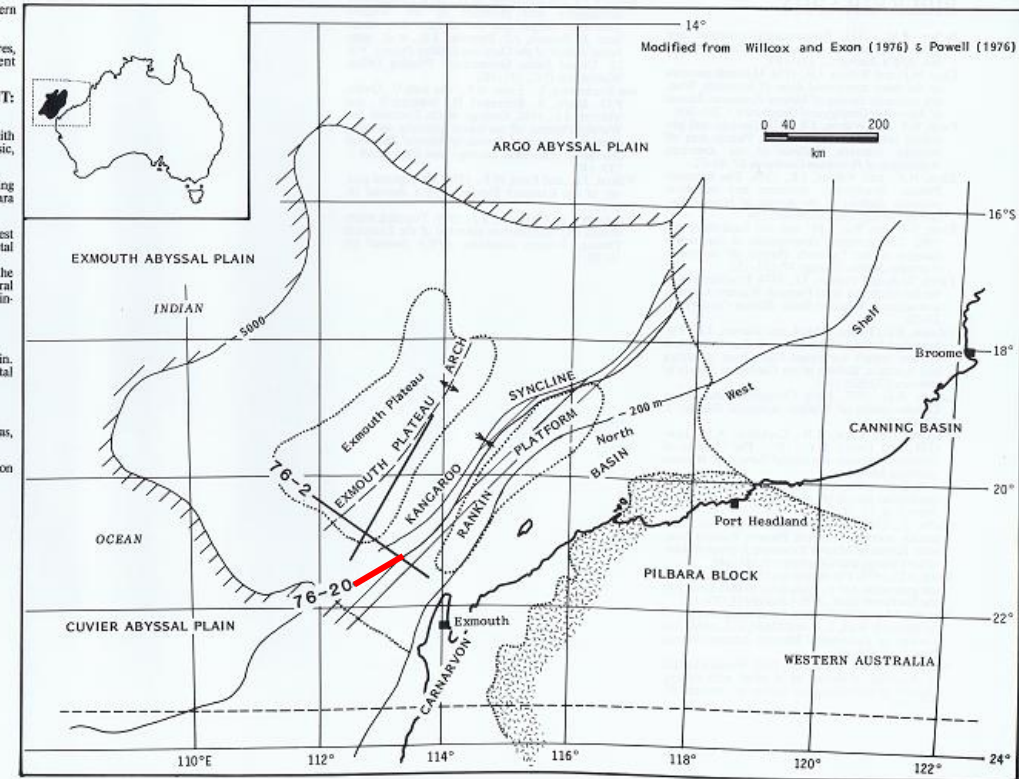
WATER DEPTHS: 800-5000m.

TYPE OF BASIN: Multicycle intracratonic basin. Continental rift evolving into passive continental margin since the Late Devonian.

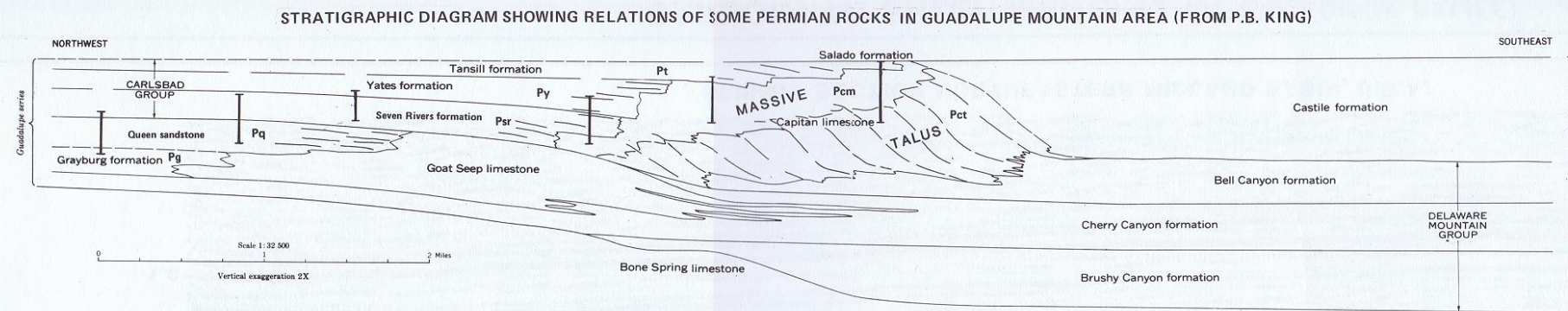
AGE OF RESERVOIR(S): Pre-Cretaceous.

TYPE OF HYDROCARBONS: Mainly gas, minor oil.

GENERAL REFERENCE: Willcox and Exon (1976).

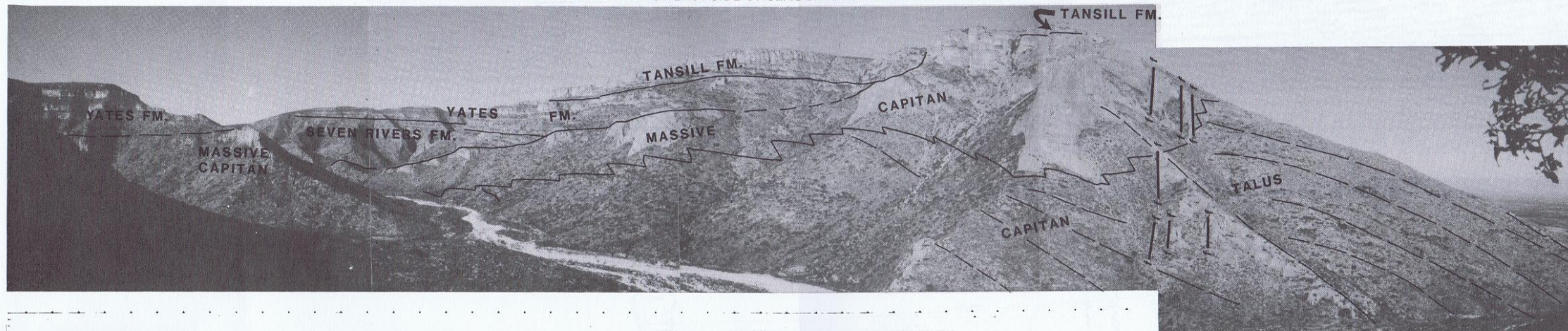


Carbonate Shelf Margin Intermediate Relief

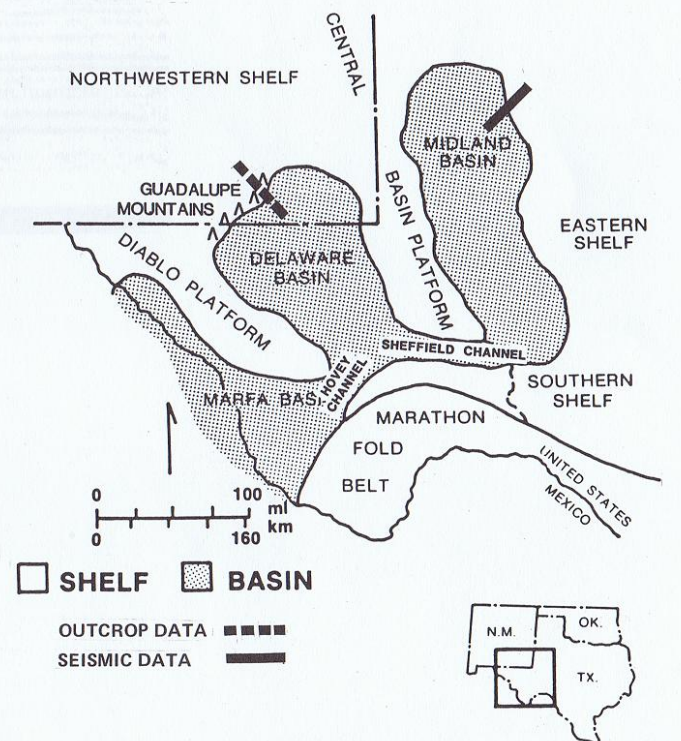
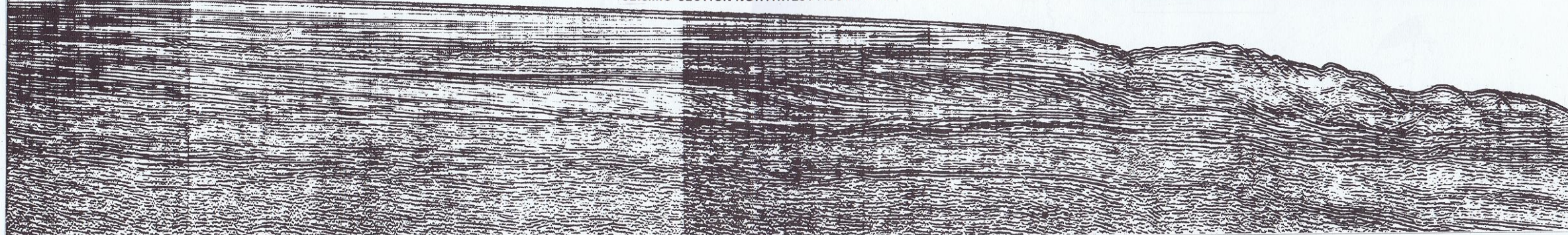


DATA ON THIS PAGE AND PAGE 3.8-2 ILLUSTRATE A CARBONATE SHELF MARGIN. THESE PAGES CORRELATE OUTCROP, SUBSURFACE AND SEISMIC DATA FROM THE DELAWARE AND MIDLAND BASINS OF NEW MEXICO-WEST TEXAS.

PANORAMIC VIEW OF EAST SIDE OF SLAUGHTER CANYON FROM NEW CAVE



SEISMIC SECTION NORTHWEST AUSTRALIA



CARBONATE SHELF MARGINS (INTERMEDIATE RELIEF)

3.8-1

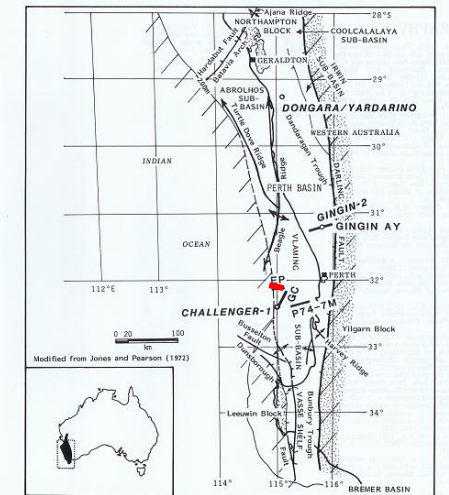
Outcrop, Subsurface and Seismic Exploration Stratigraphy, Volume III Carbonates, by: W.O. Abbott, graphics by: H.L. Scott, data from Occidental International Exploration and Production Company, page 3.8-1.

Carbonate Sequence

The Seismic Atlas of Australian and New Zealand Sedimentary Basins, Edited by: C. Gregory Skilbeck and Malcom J. Lennox, pages 111 & 129.

PERTH BASIN

LOCATION: Onshore and offshore Western Australia.
ESTIMATED AREA: 103,000 square Kilometres.
MAXIMUM THICKNESS OF SEDIMENT: 15,000 m.
AGE OF SEDIMENTS: Ordovician to Holocene, with several unconformities; strata of Devonian and Carboniferous age not present.
BASEMENT TYPE: Continental crust composed of Proterozoic chert and quartzite overlying granitoid (Yalgoo Block).
PRESENT BOUNDARIES: East: Dealing Fault, faulted against the Yalgoo Block. North: Northern Block (interdigitated Early Palaeozoic basement blocks) and subcrop outcroppings of the Yalgoo Block. South: the Albany Ridge. South: Although stratigraphic units are probably continuous with those in the adjacent Bremer Basin, the boundary is arbitrarily taken as a line joining the south edge of the Levein Block to the Yalgoo Block. West: taken at continental margin, but with shallow subcrop or outcrop of continental shield (Levein Block) along this boundary.
WATER DEPTHS: Onshore to 300 m.
TYPE OF BASIN: Multicyclic, intrastratigraphic filled rift graben (subaqueous).
AGE OF RESERVOIRS: Basal Triassic, Permian, Middle and Lower Devonian – principal target in the south of the basin. Early Jurassic.
TYPE OF HYDROCARBONS: Gas, condensate and oil.
GENERAL REFERENCE: Playford et al. (1976).

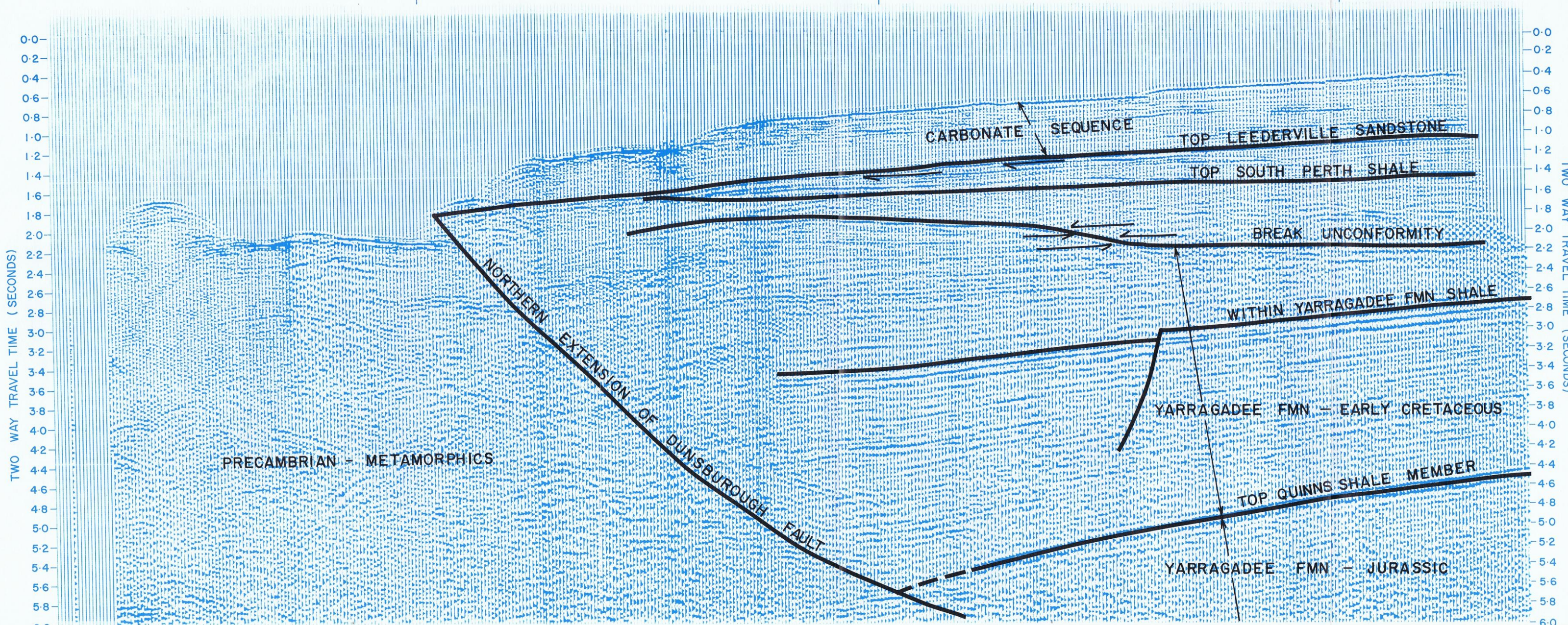


HORIZONTAL SCALE 1:35,000
 E

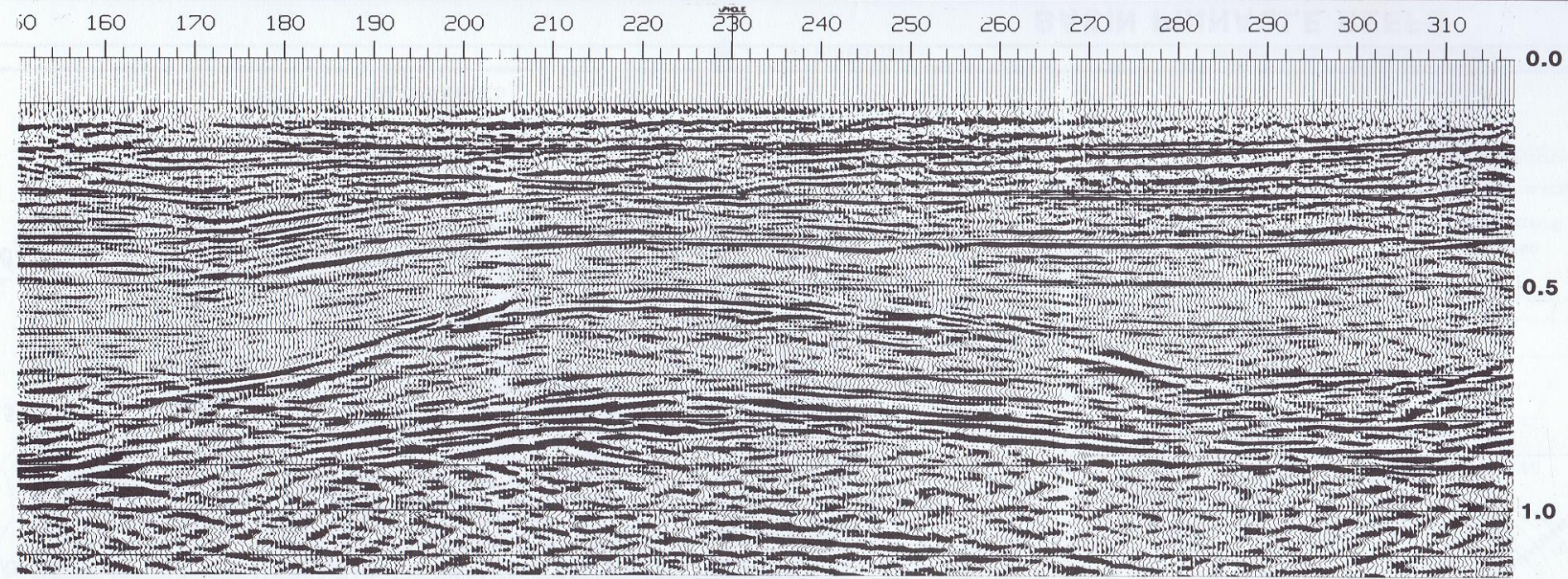
1 km

PERTH BASIN

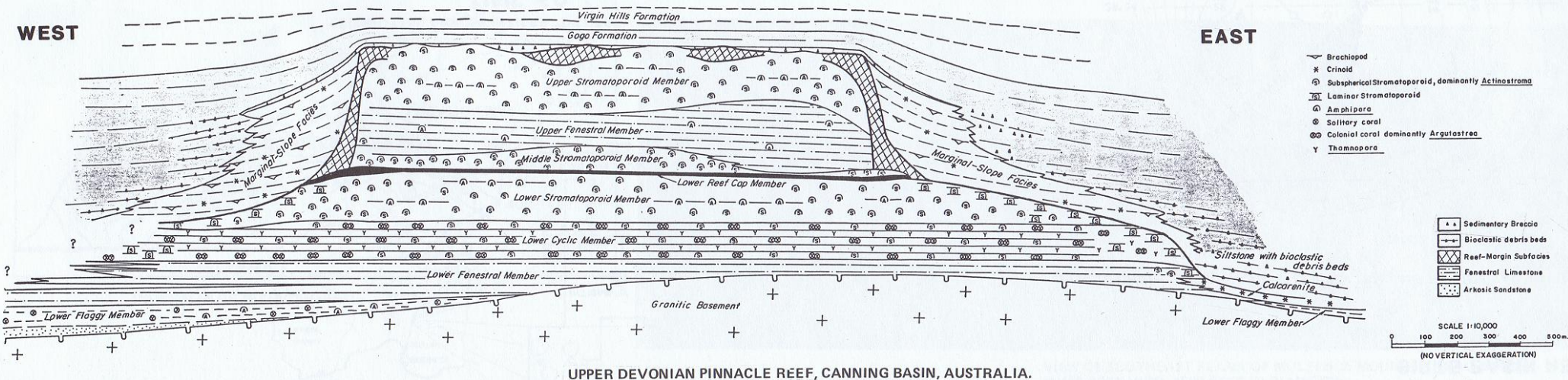
Line EP
 SHOT POINTS



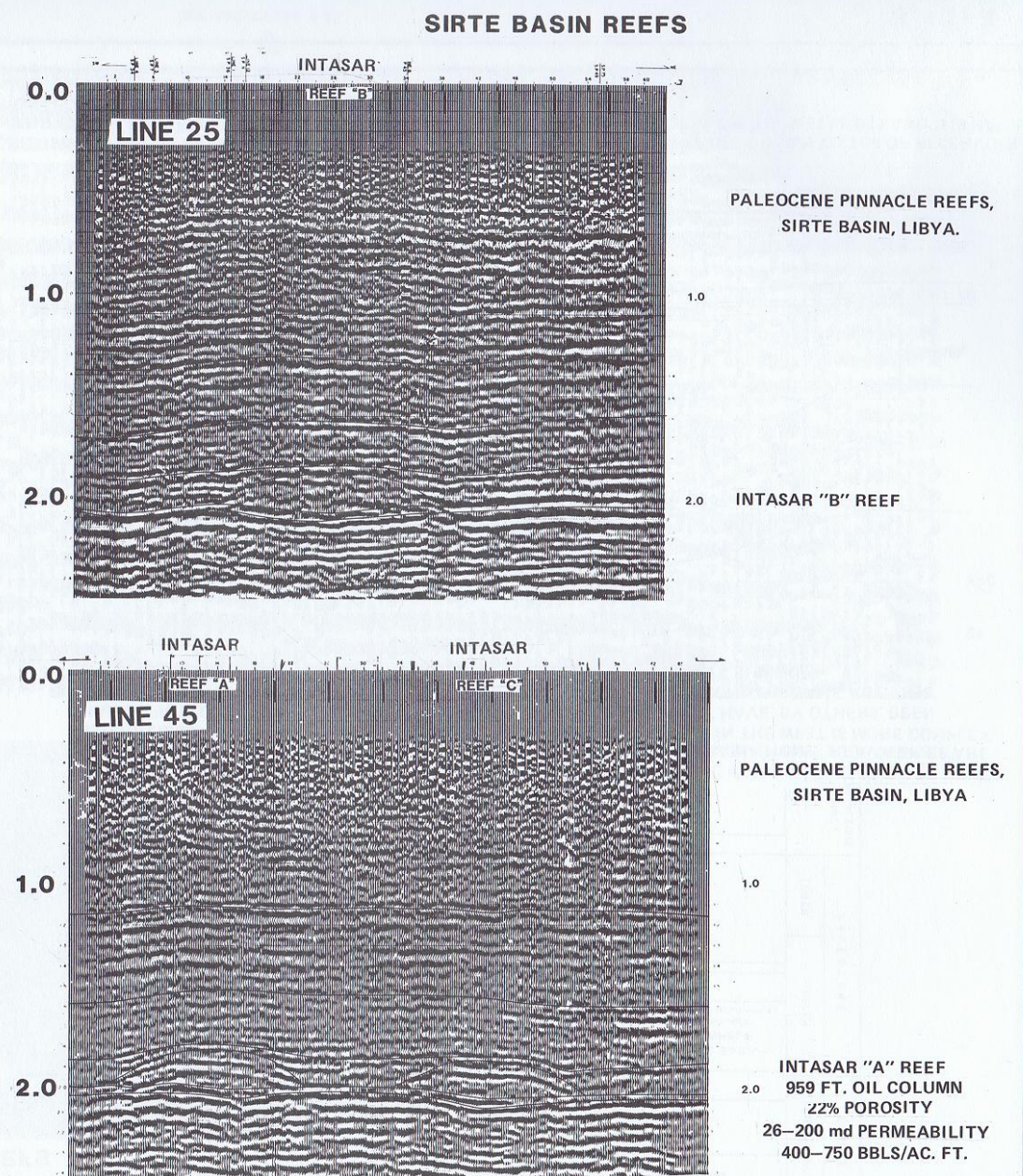
Basin Pinnacle Reefs Interpretation



SEISMIC SECTION OF AN UPPER DEVONIAN PINNACLE REEF, CANNING BASIN, AUSTRALIA.



UPPER DEVONIAN PINNACLE REEF, CANNING BASIN, AUSTRALIA.



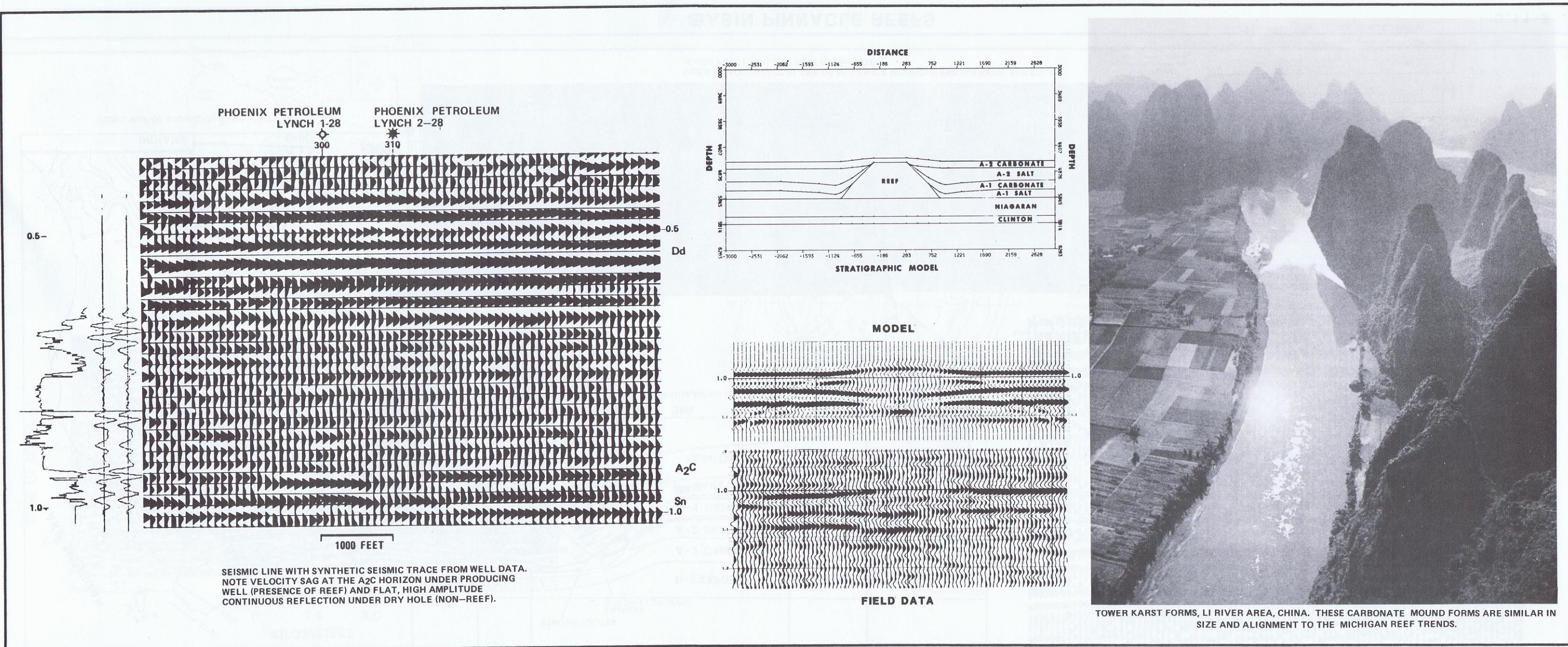
INTASAR "A" REEF
959 FT. OIL COLUMN
22% POROSITY
26-200 md PERMEABILITY
400-750 BBLs/AC. FT.

BASIN PINNACLE REEFS

3.11-3

Outcrop, Subsurface and Seismic Exploration Stratigraphy, Volume III Carbonates, by: W.O. Abbott, graphics: H.L. Scott, data from Occidental International Exploration and Production Company, page 3.11-3.

Basin Pinnacle Reefs Outcrop

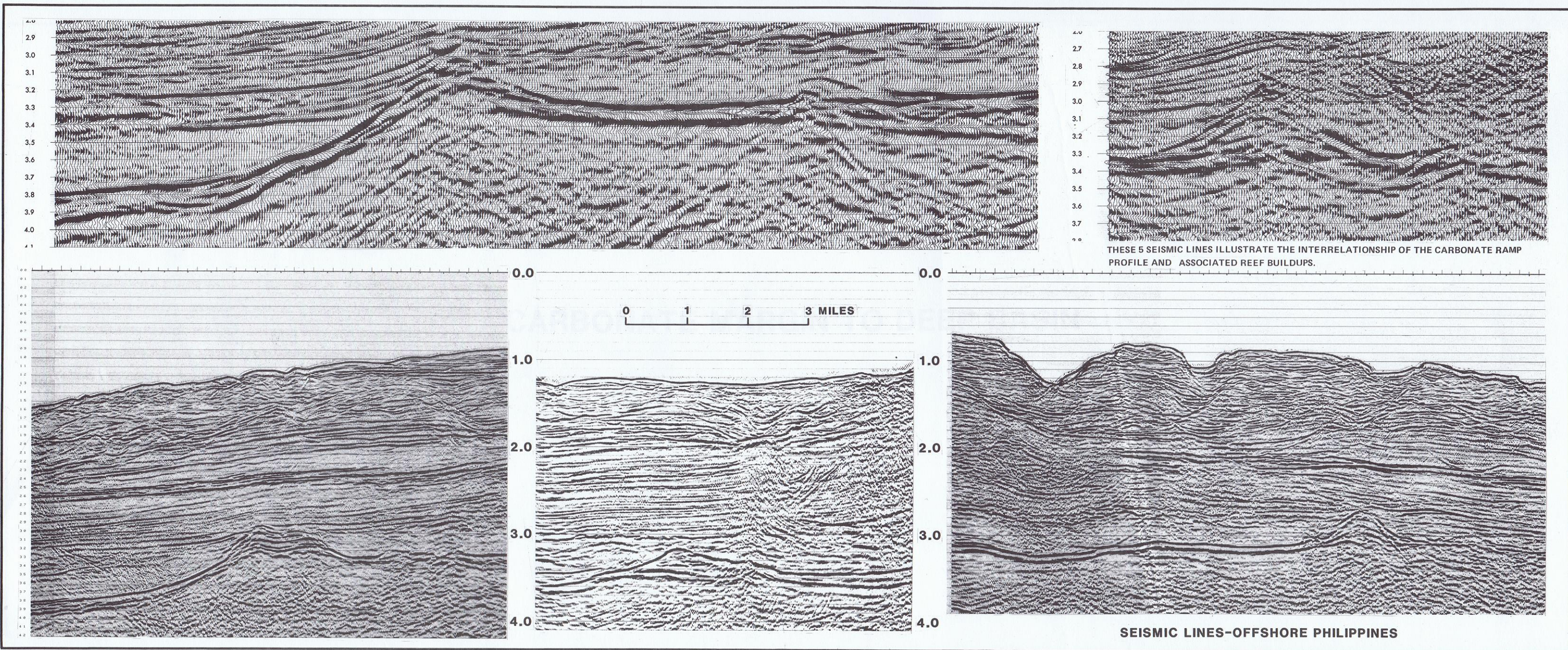


BASIN PINNACLE REEFS

3.11-6

Outcrop, Subsurface and Seismic Exploration Stratigraphy, Volume III Carbonates, by: W.O. Abbott, graphics: H.L. Scott, data from Occidental International Exploration and Production Company, page 3.11-6.

Basin Pinnacle Reefs Seismic

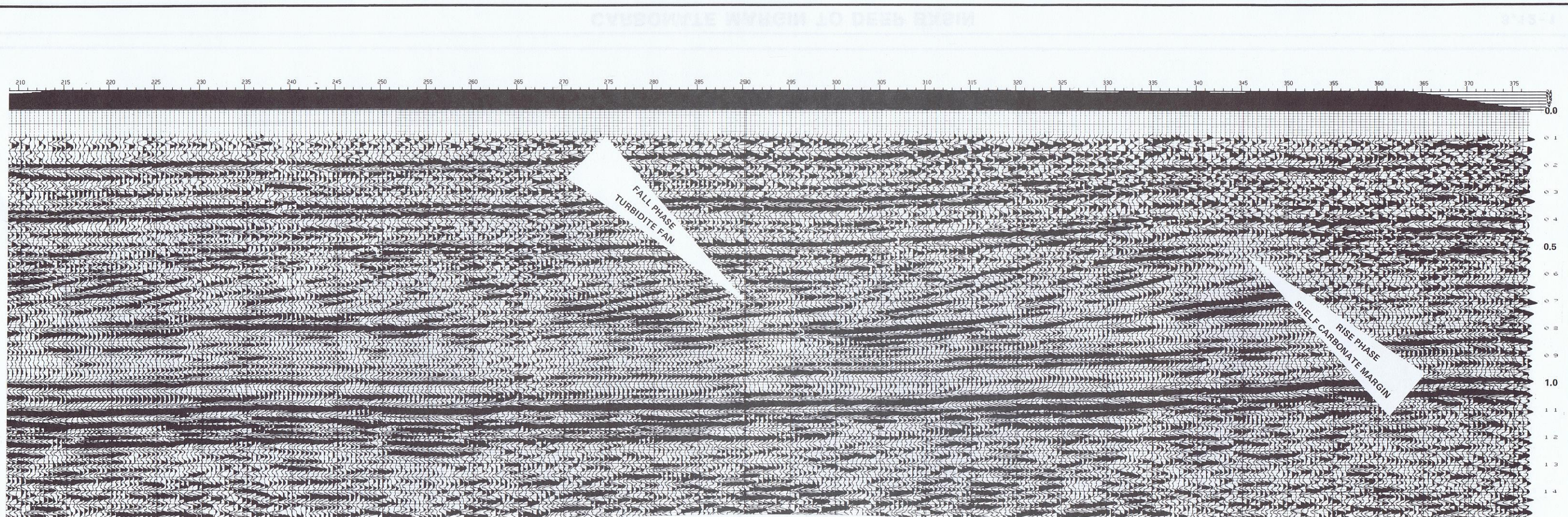


BASIN PINNACLE REEFS

3.11-7

Outcrop, Subsurface and Seismic Exploration Stratigraphy, Volume III Carbonates, by: A.O. Abbott, graphics: H.L. Scott, data from Occidental International Exploration and Production Company, page 3.11-7.

Carbonate Margin to Deep Basin



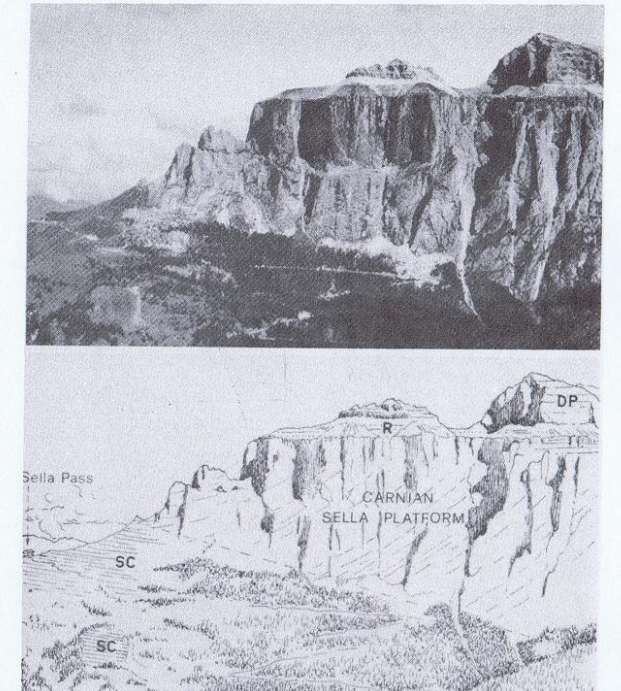
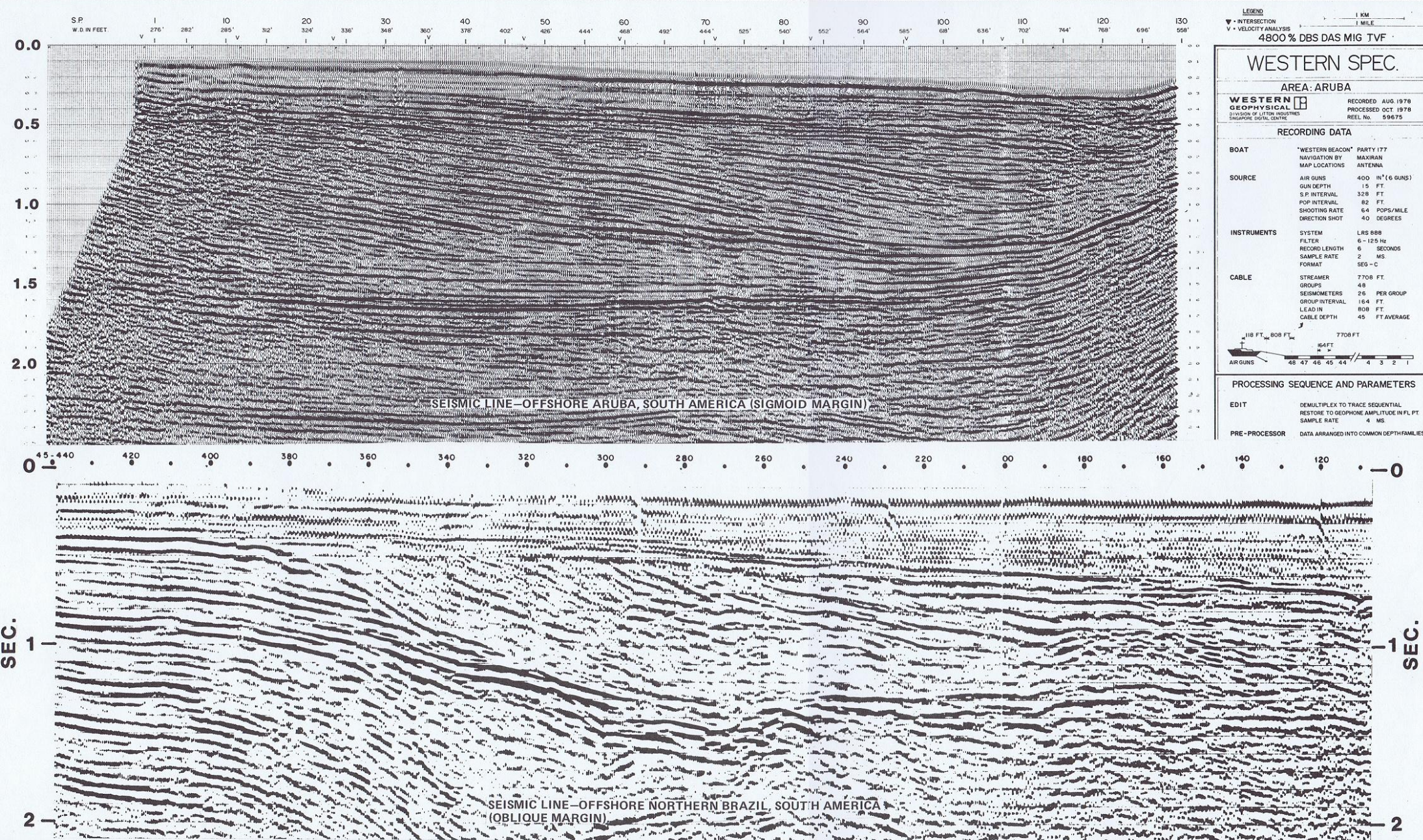
SEISMIC LINE FROM NORTHEASTERN MIDLAND BASIN, WEST TEXAS.
NOTE: (1) RELATIVE SEA LEVEL RISE PHASE (SHELF MARGIN PROFILE)
(2) RELATIVE SEA LEVEL FALL PHASE (TURBIDITE FAN PROFILE)

CARBONATE MARGIN TO DEEP BASIN

3.12-2

Outcrop, Subsurface and Seismic Exploration Stratigraphy, Volume III Carbonates, by: W.O. Abbott, graphics: H.L. Scott, data from Occidental International Exploration and Production Company, page 3.12-2.

Sigmoid and Oblique Carbonate Margins



CLIMBING PROGRADATION OF THE SELLA PLATFORM TOWARD SELLA PASS: (SC) SAN CASSIAN FORMATION. (R) RAIBL FORMATION AND (DP) DOLOMIA PRINCIPALE. DOLOMITE AREA. NORTHERN ITALY.



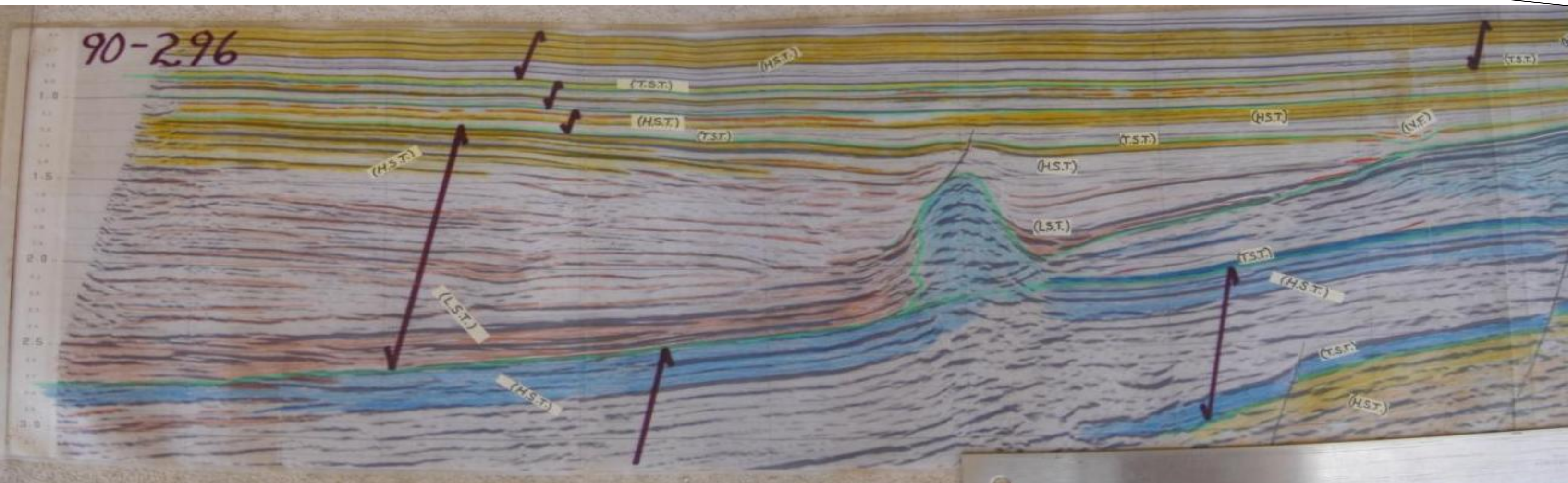
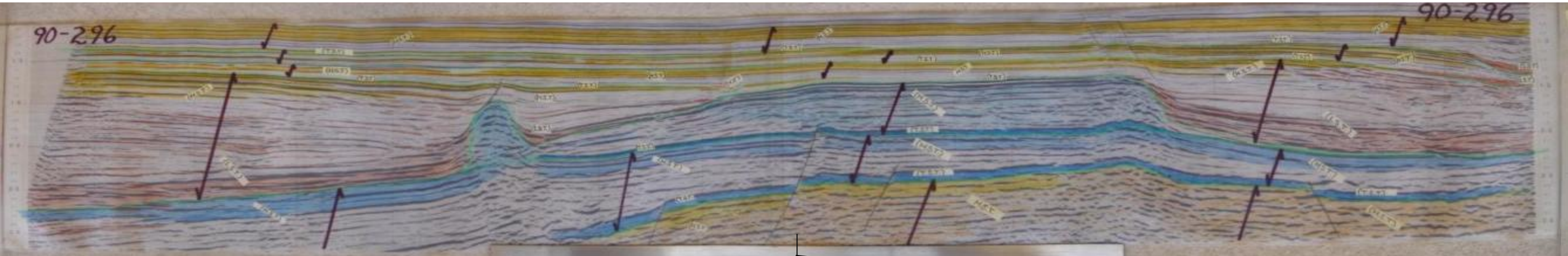
MARINE ONLAP RELATIONSHIPS OF THE DURRENSTEIN FORMATION (DF) AGAINST THE MASSIVE FLANK OF THE LADINIAN PLATFORM OF COLLI ALTI (CAP) DOLOMITE AREA, NORTHERN ITALY.

SIGMOID AND OBLIQUE CARBONATE MARGINS

3.13-1

Outcrop, Subsurface and Seismic Exploration Stratigraphy, Volume III Carbonates, by: W.O. Abbott, graphics: H.L. Scott, data from Occidental International Exploration and Production Company, page 3.13-1.

Carbonate Examples Far East 1L



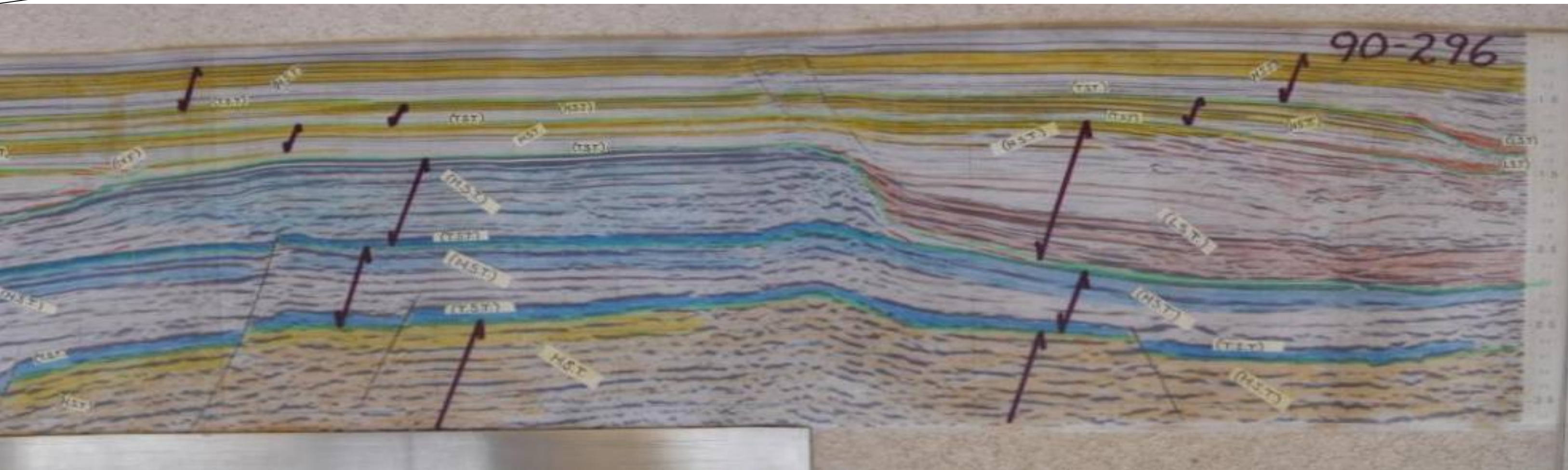
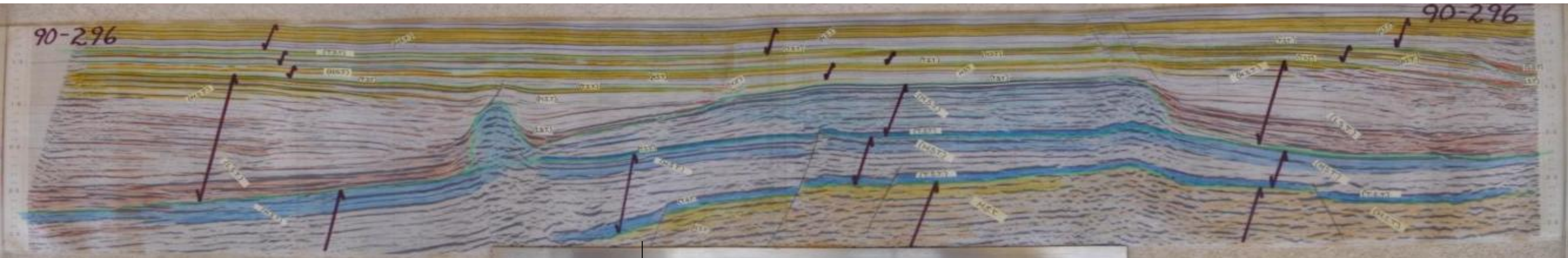
Personal Communication W.O. Abbott.

25-27 September 2011

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Carbonate Patterns Workshop- Page 30

Carbonate Examples Far East 1R



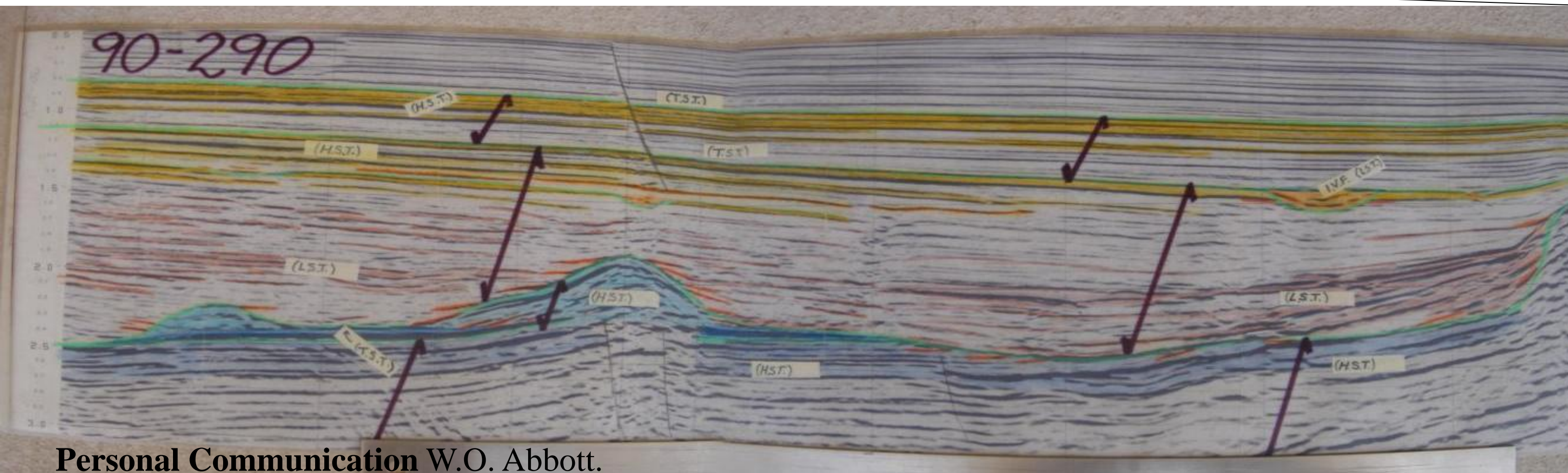
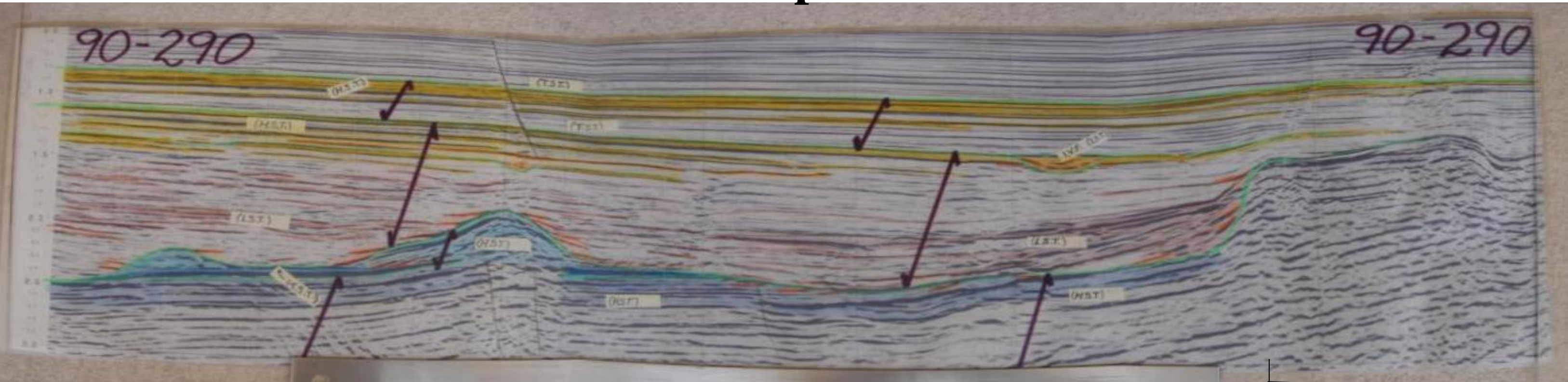
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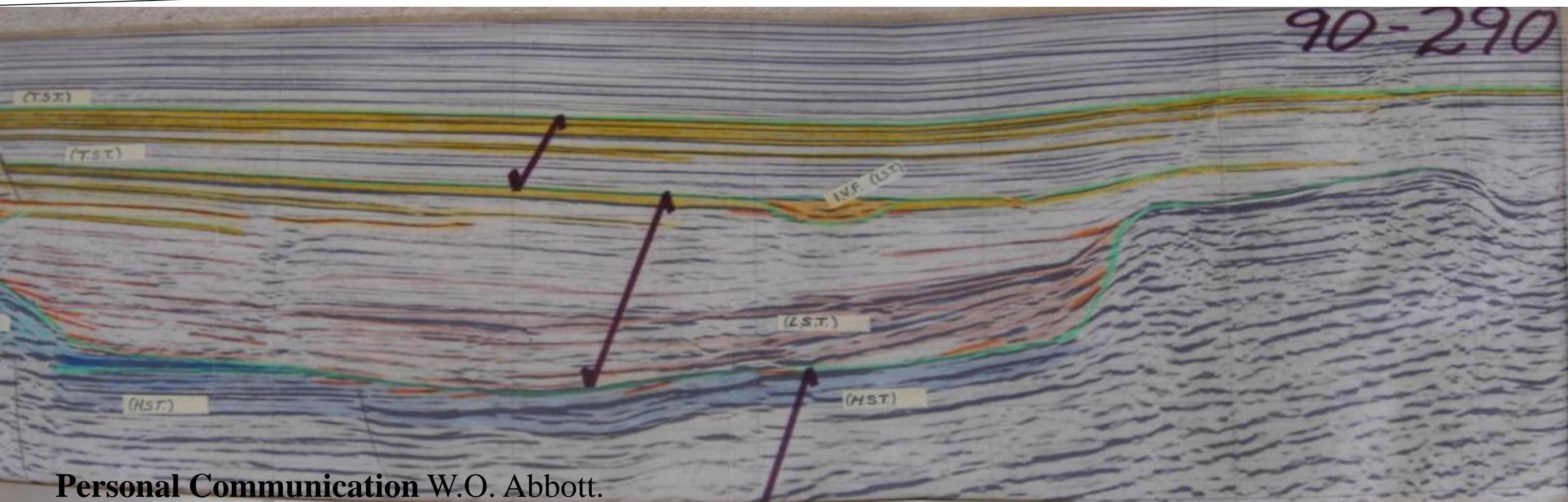
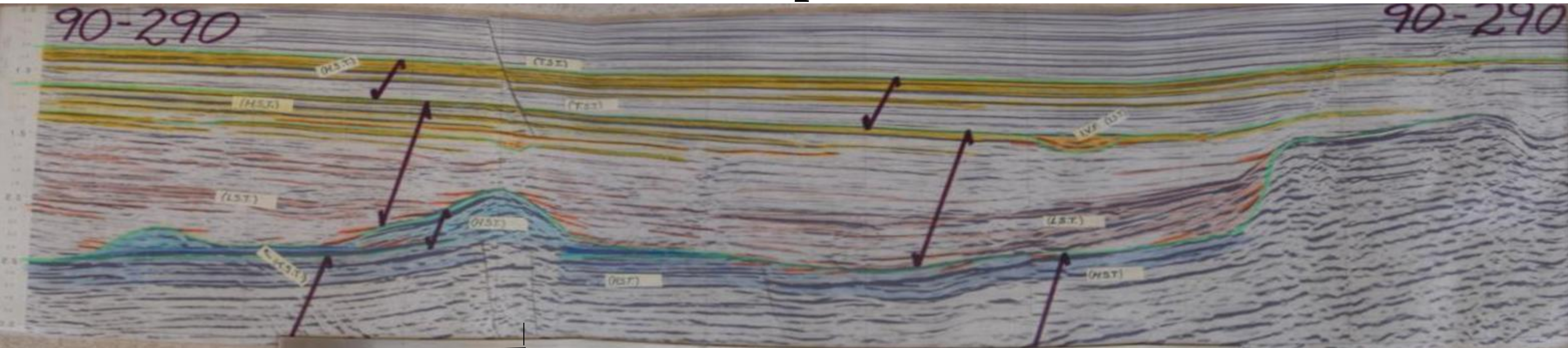
Carbonate Patterns Workshop- Page 31

Carbonate Examples Far East 2L



Personal Communication W.O. Abbott.

Carbonate Examples Far East 2R



Personal Communication W.O. Abbott.

Indices for the Ward Abbott's On-Line Atlas

Type of Display:

- Outcrop
 - Outcrop Synthetic Well Log Section
 - Outcrop Synthetic Seismic Section
 - Measured Section Correlation
 - Outcrop Chronostratigraphic Reconstruction
- Well Log Cross-Section
 - Well Data Synthetic Seismic Section
 - Well Data Chronostratigraphic Reconstruction
- Well Core Data
- Seismic Sections
 - Seismic Travel-Time Cross-Sections
 - Seismic Time-Slice
 - Seismic Depth Cross-Section
 - Seismic Depth-Slice
 - Seismic Chronostratigraphic Reconstruction
- Culture Map
- Topography Map
- Bathymetry Map
- Surface Geology Map
- Satellite Images
- Integrated 3-D Immersive Reality Model of Outcrop, Well Log, Seismic, and Other Data

Infinite GridSM Geographic Location

TimedexSM Location

Episodic Depositional Analysis Basin Tectonic Setting

Basin Tectonic Setting:

- Basin Tectonic Setting
- Flexure Loading Basins
- Wrenches

Identify Structural Style within Basin

Cycle/Sequence Duration

- 1st Order Cycles: 200 MY - 400 MY
- 2nd Order Cycles: 10 MY - 200 MY
- 3rd Order Cycles: 1 MY - 10 MY
- 4th Order Cycles: 1 KY - 1 MY
- 5th Order Cycles: Seasonal - 1 MY

Stratal Pattern Cycles (1-10 MY)

- Termination Description
- Eustatic Boundaries
- Tectonic Controlled Boundaries
- Boundary Description
 - Top of Unit
 - Base of Unit
- Intervals: Stratigraphy Cycles Associated with Depositional Systems (1-10 MY)
- Reflection Configurations or Stratal Patterns
- External Forms of a Sequence

Depositional Systems (Rocks Deposited in a Particular Environment):

- Permeability
- Porosity
- Petrography (range of values)
- Color
- Rock Systems
 - Siliciclastic Rocks
 - Carbonate Rocks
 - Carbonates Evaporate Rocks
 - Carbonate-Siliciclastic Rocks
- Lithofacies
- Grain Size
- Primary Sedimentary Structure Contemporaneous with Deposition
- Sedimentary Structure
- Paleo-Bathymetry and Paleo-Topography
- Facies (Sub-Environment)

Exploration Categories, Plays, and Prospects

- Source Rocks (Type of Organic Material)
- Seal Rocks (Pore Pressure, Type of Seal, Thickness of Seal)
- Reservoir Rocks (Porosity, Permeability)
- Structural Traps
- Stratigraphic Traps Not Adjacent to Unconformities
- Diagenetic
- Traps Adjacent to Unconformities (Below Unconformity)
- Traps Adjacent to Unconformities (Above Unconformity)
- Combination Traps (Undifferentiated)

Thank You