

**Outcrop models and seismic reflection images of the
Devonian Reefs of the Canning Basin, Western Australia**

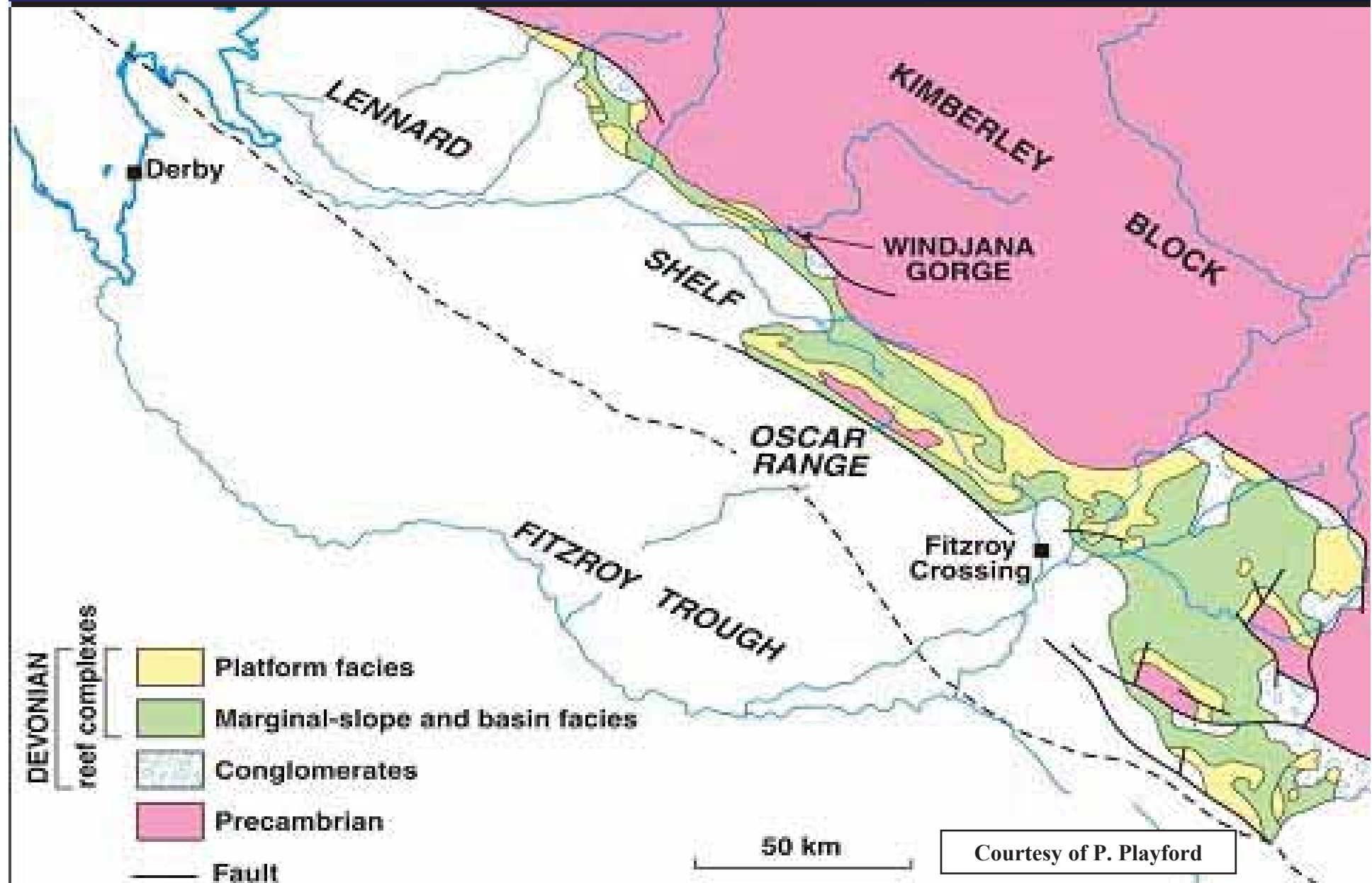
Evolution and Inter-action

Peter Purcell



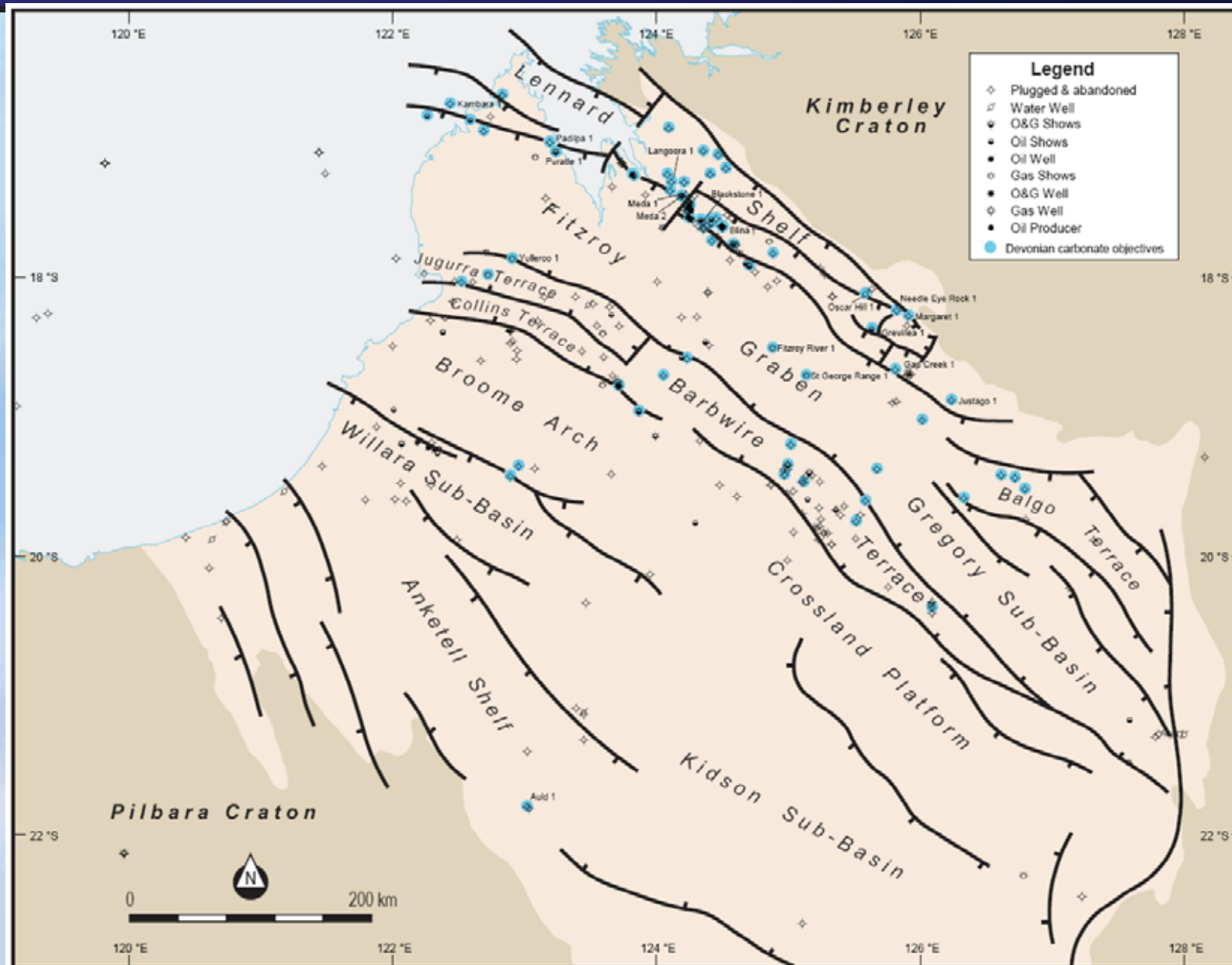
Location Map, Devonian Reef Complex outcrop, Canning Basin

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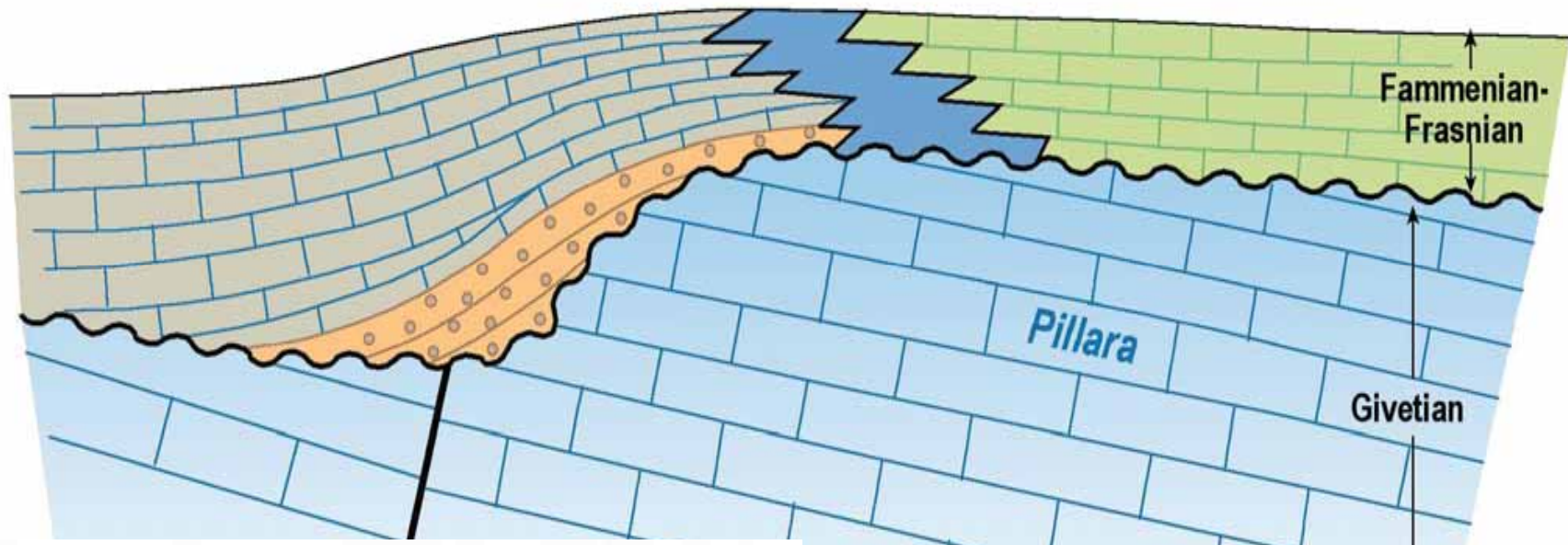
Canning Basin, showing wells targeting Devonian carbonates

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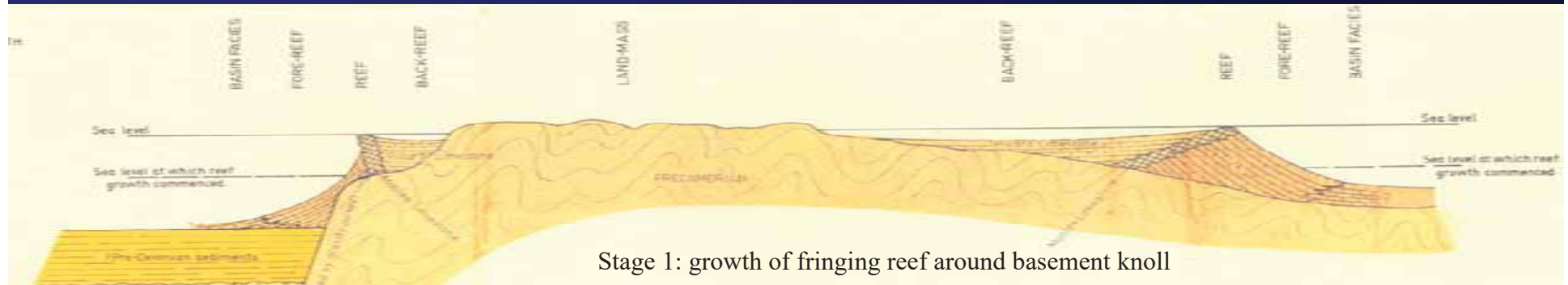
Cartoon depiction of Guppy (1958) model

P&R

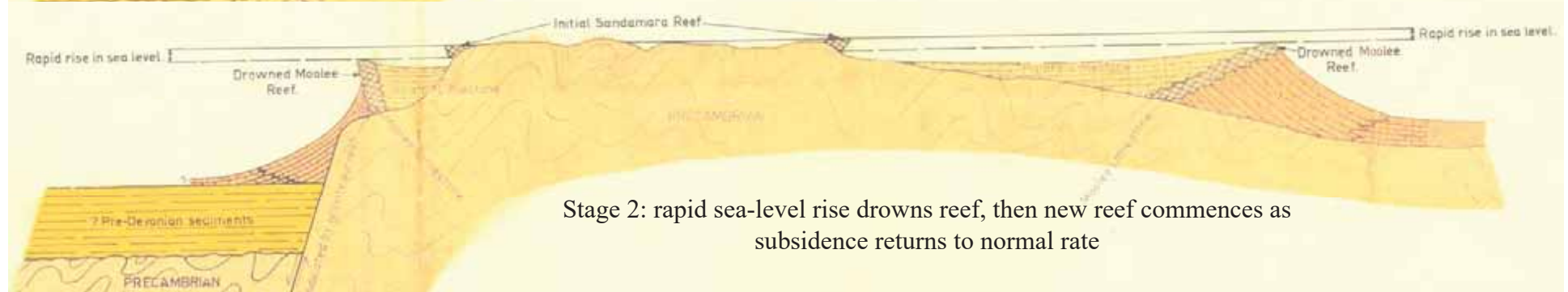


Smith, Playford and Williams (1956)

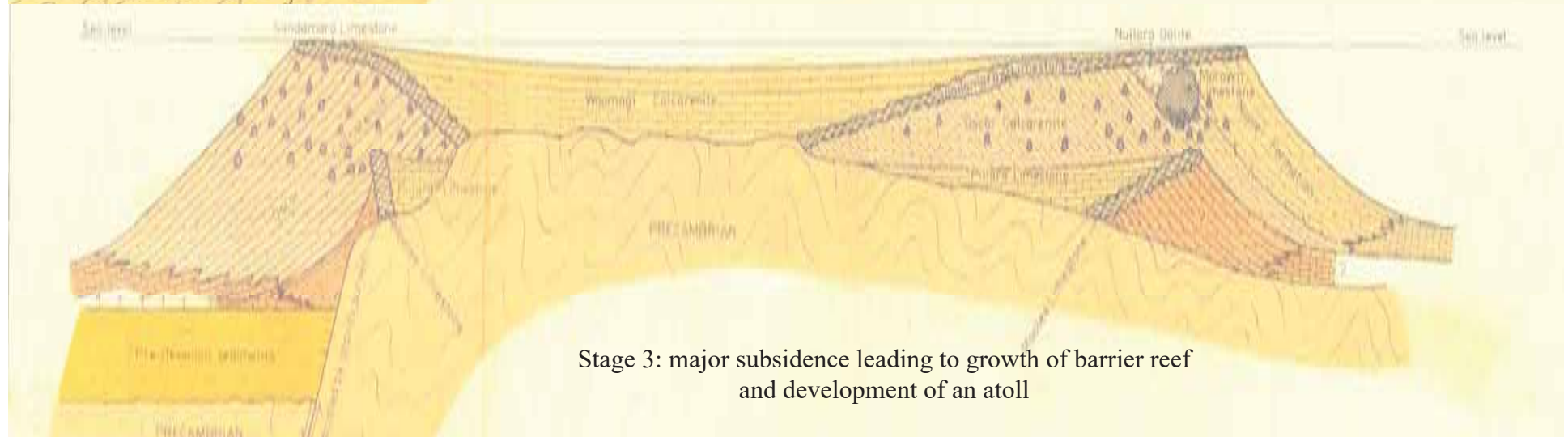
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Stage 1: growth of fringing reef around basement knoll



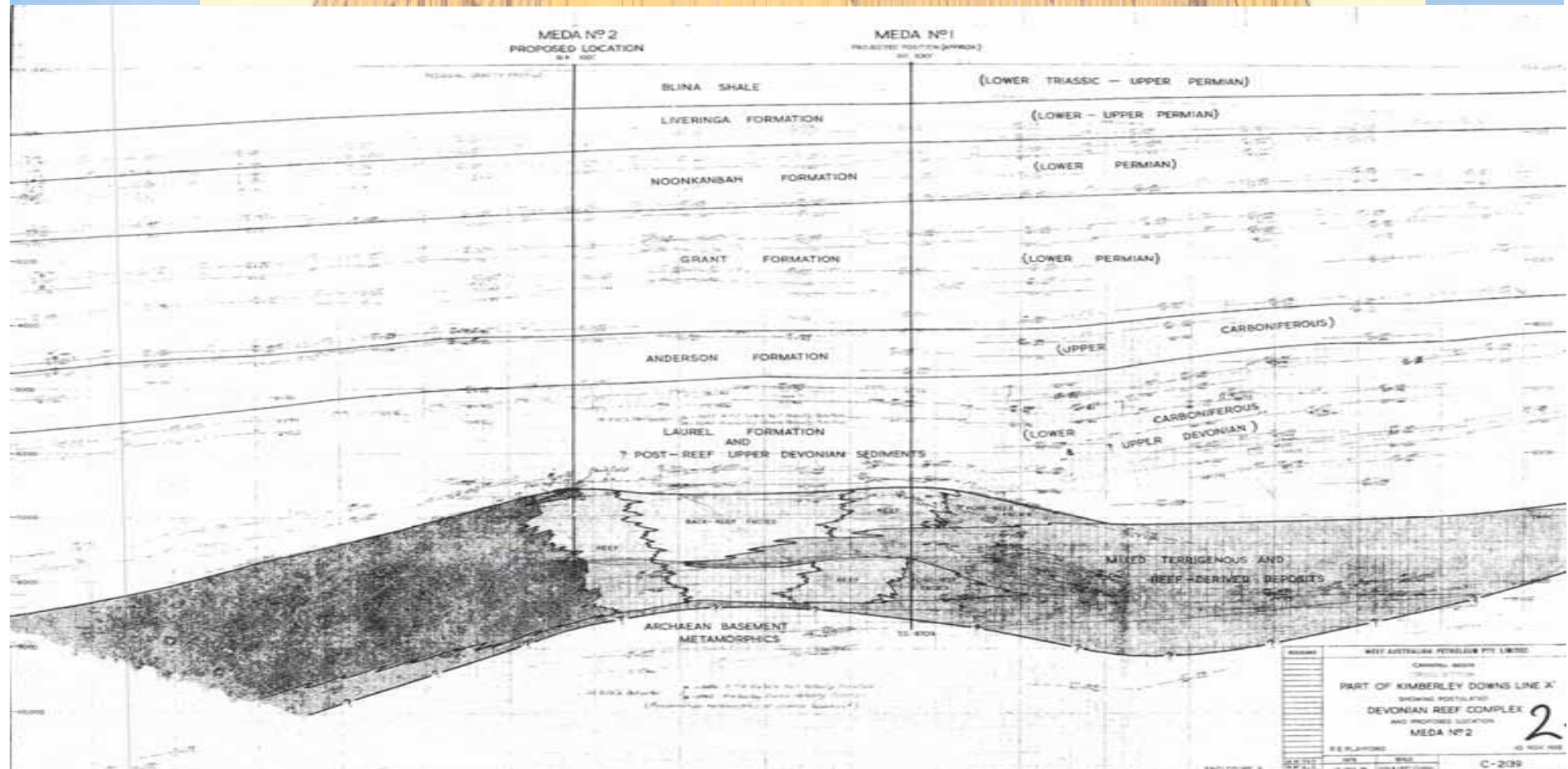
Stage 2: rapid sea-level rise drowns reef, then new reef commences as subsidence returns to normal rate



Stage 3: major subsidence leading to growth of barrier reef and development of an atoll

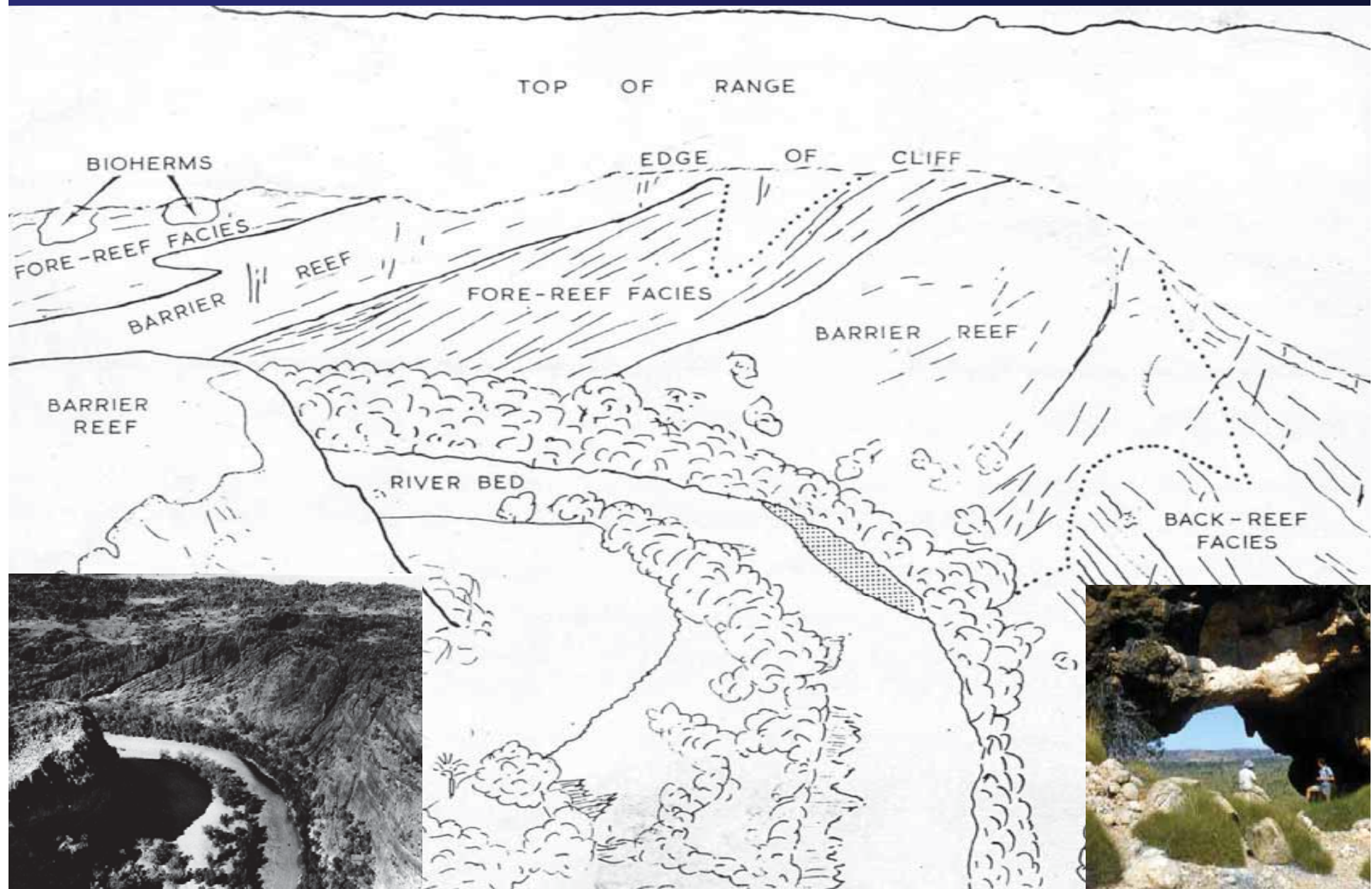
Wapet's Meda-1 and -2, 1958

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A first Playford drawing of the 'classic face'

P&R

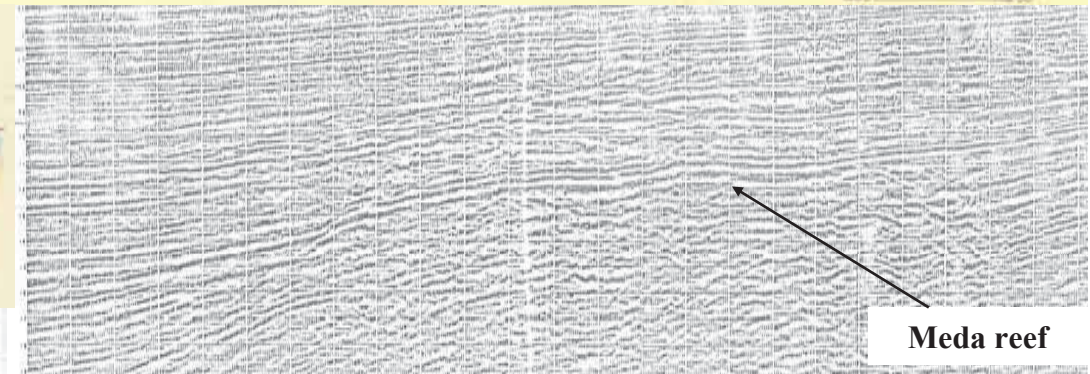
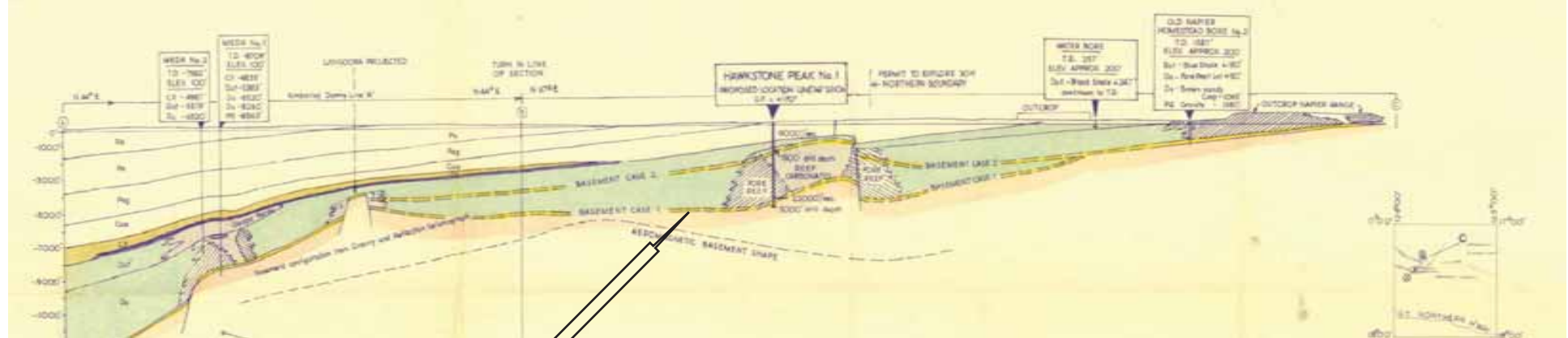


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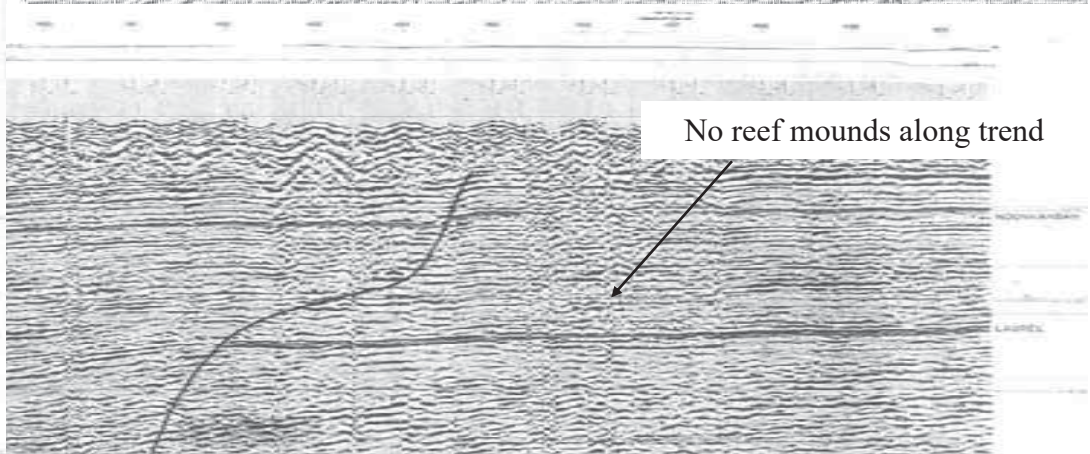
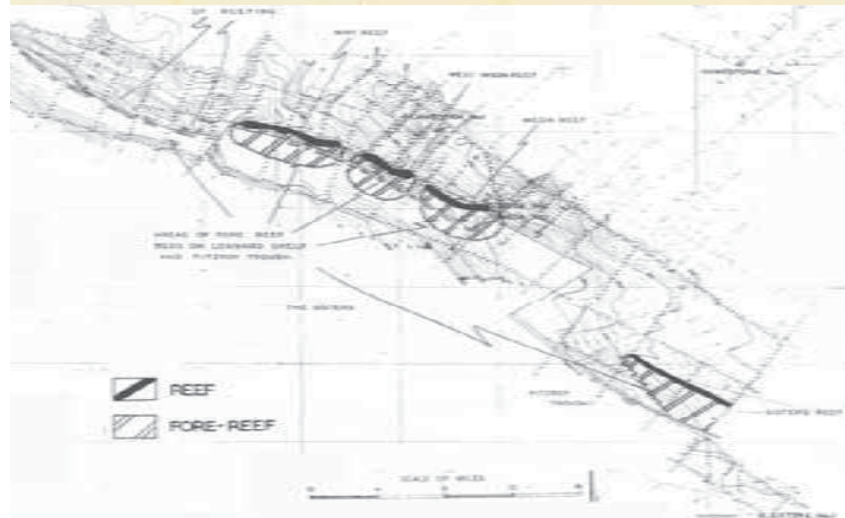


Wapet exploration 1958-66

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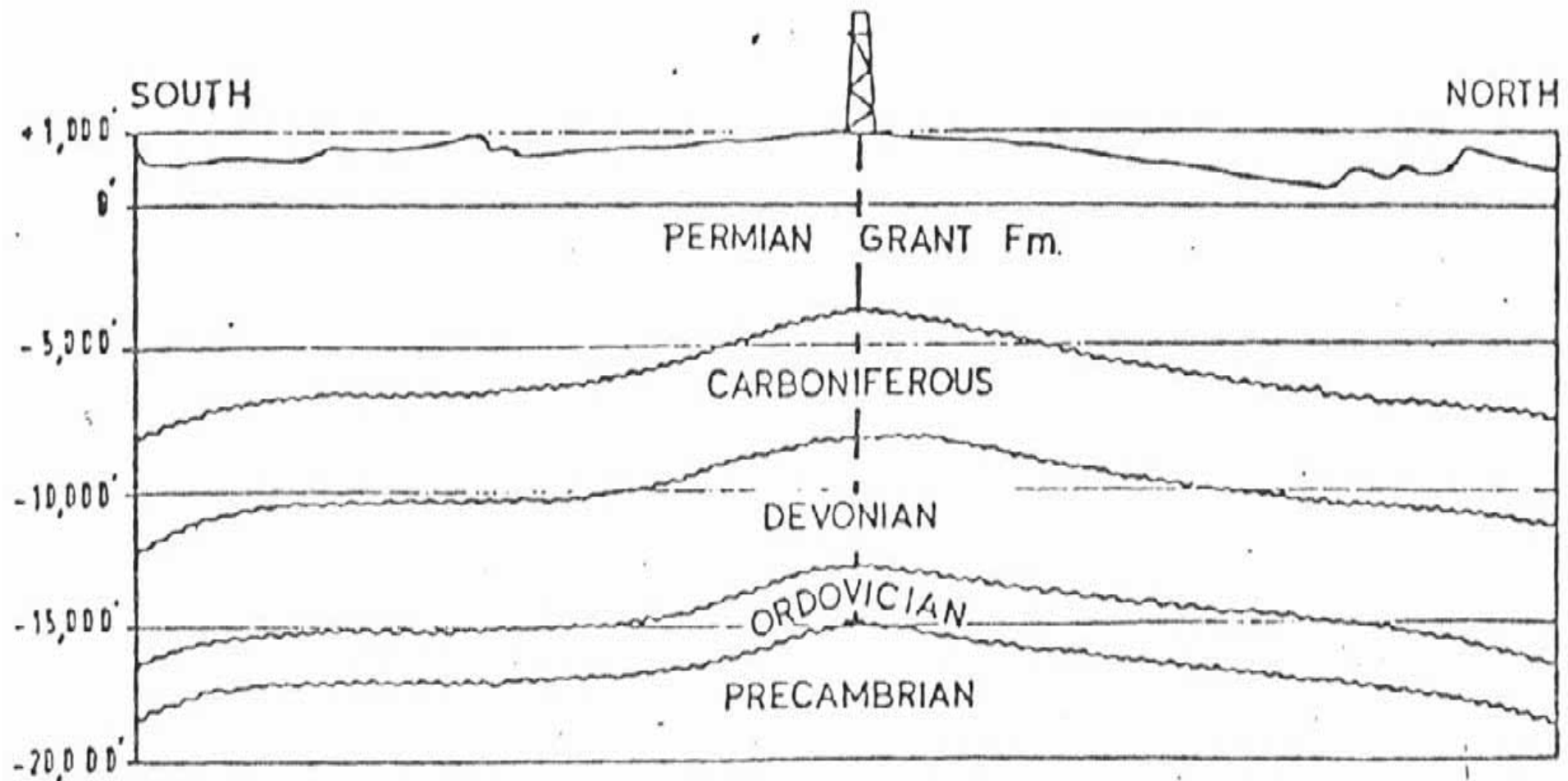
Meda reef



No reef mounds along trend

Conoco's (1966) St George Range-1 pre-drill prognosis

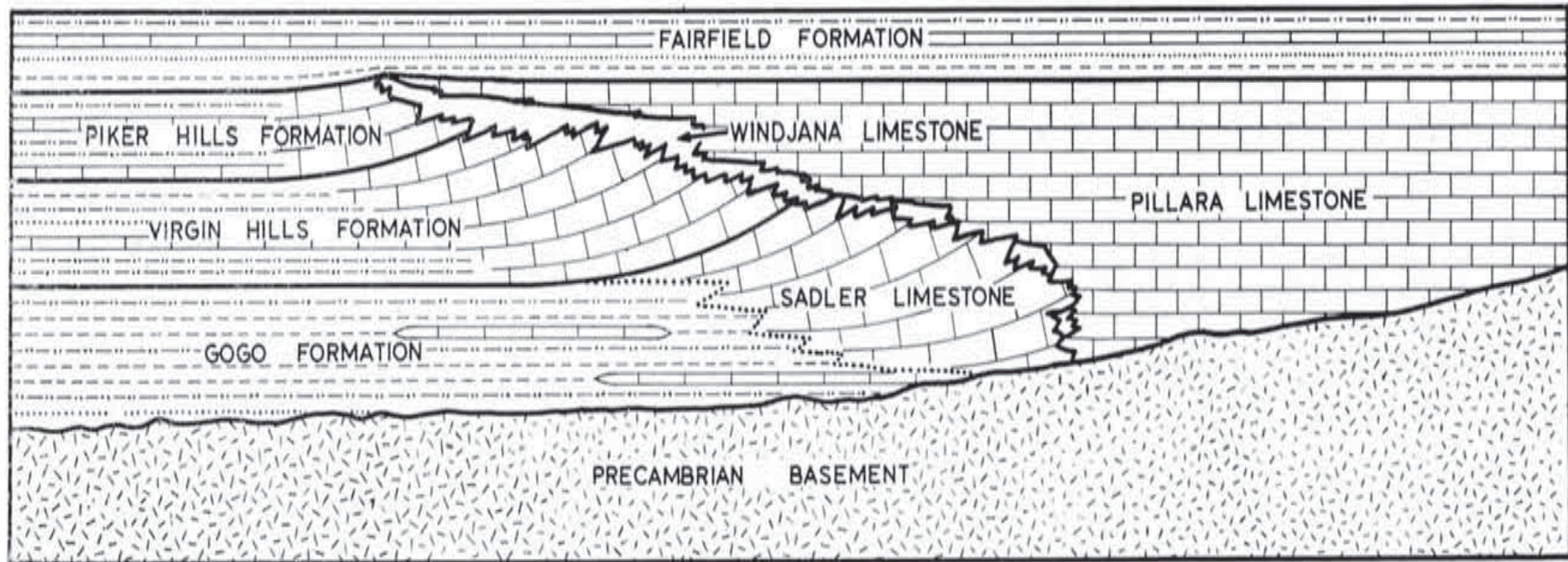
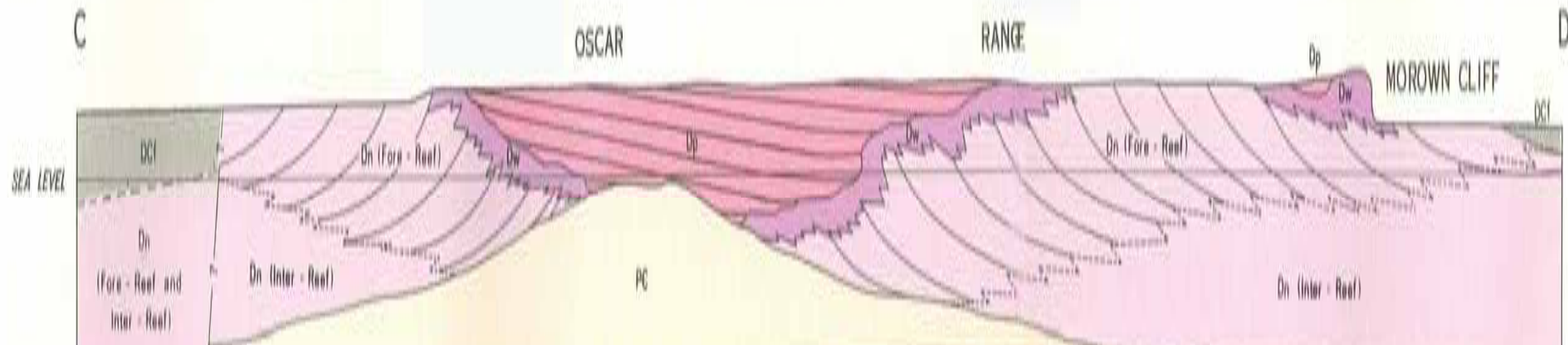
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CROSS - SECTION
AS ANTICIPATED BEFORE DRILLING

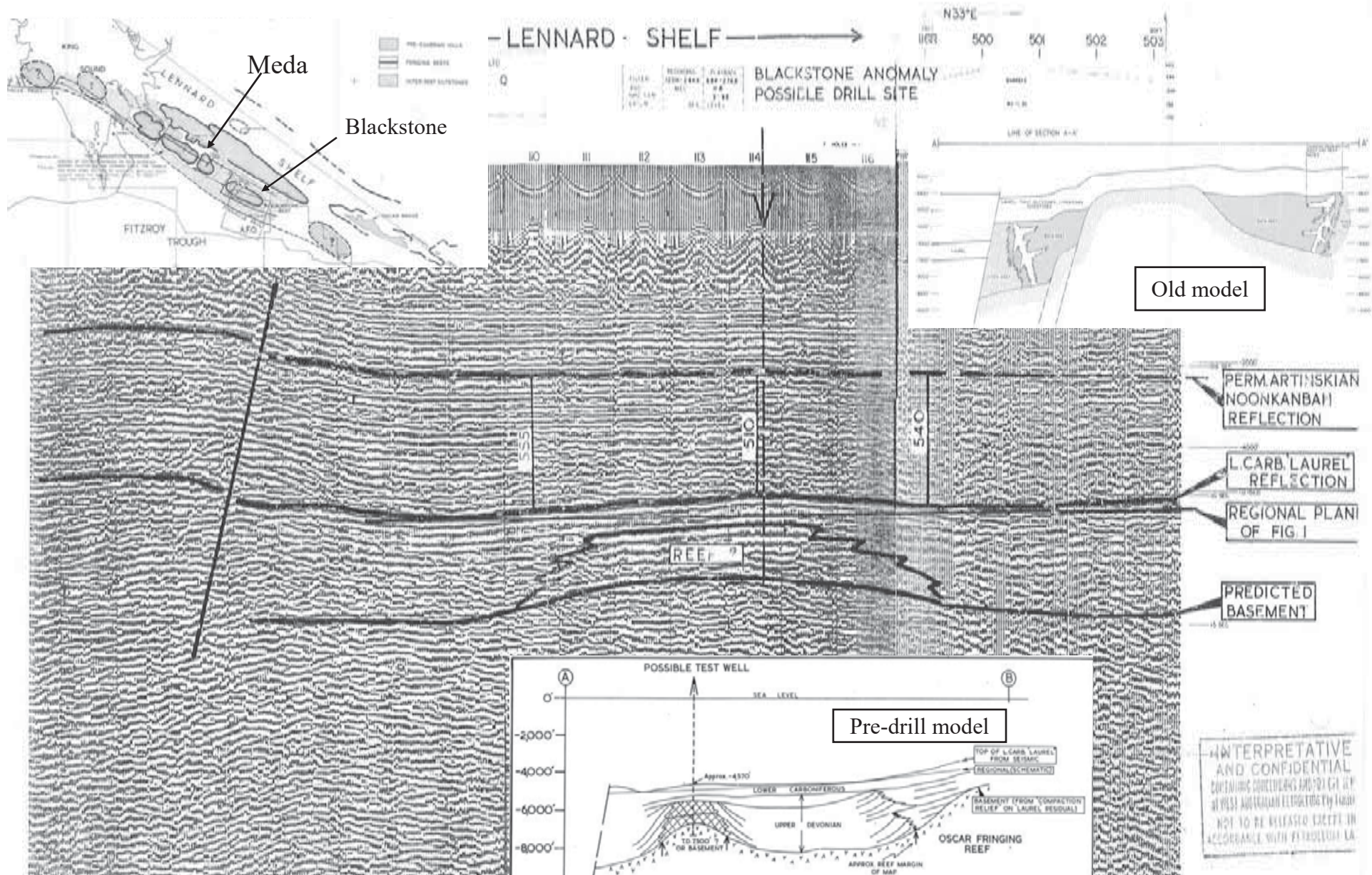
Playford and Lowry (1966) model

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Wapet's Blackstone-1

P&R

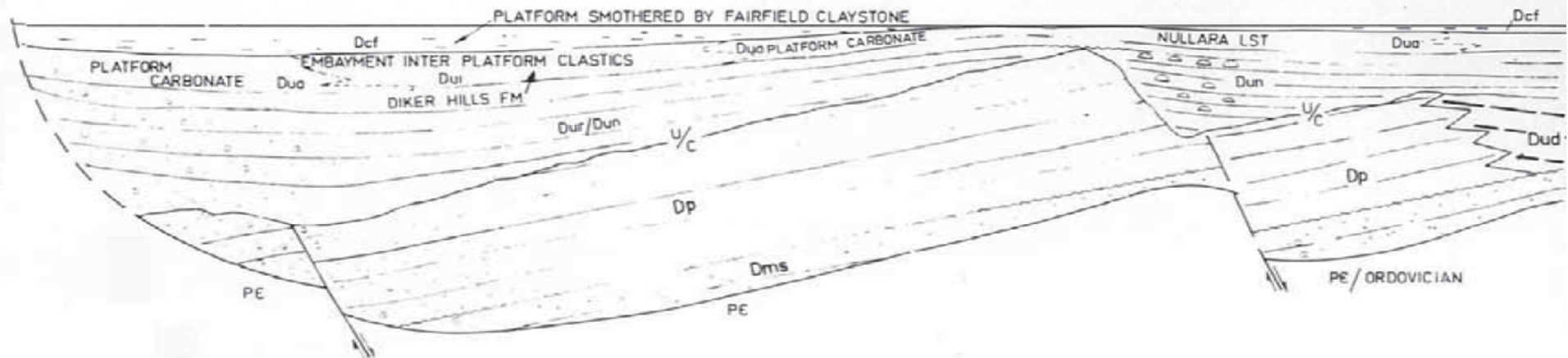


Wapet new early 1970s model (Lyons, 1972)

P&R

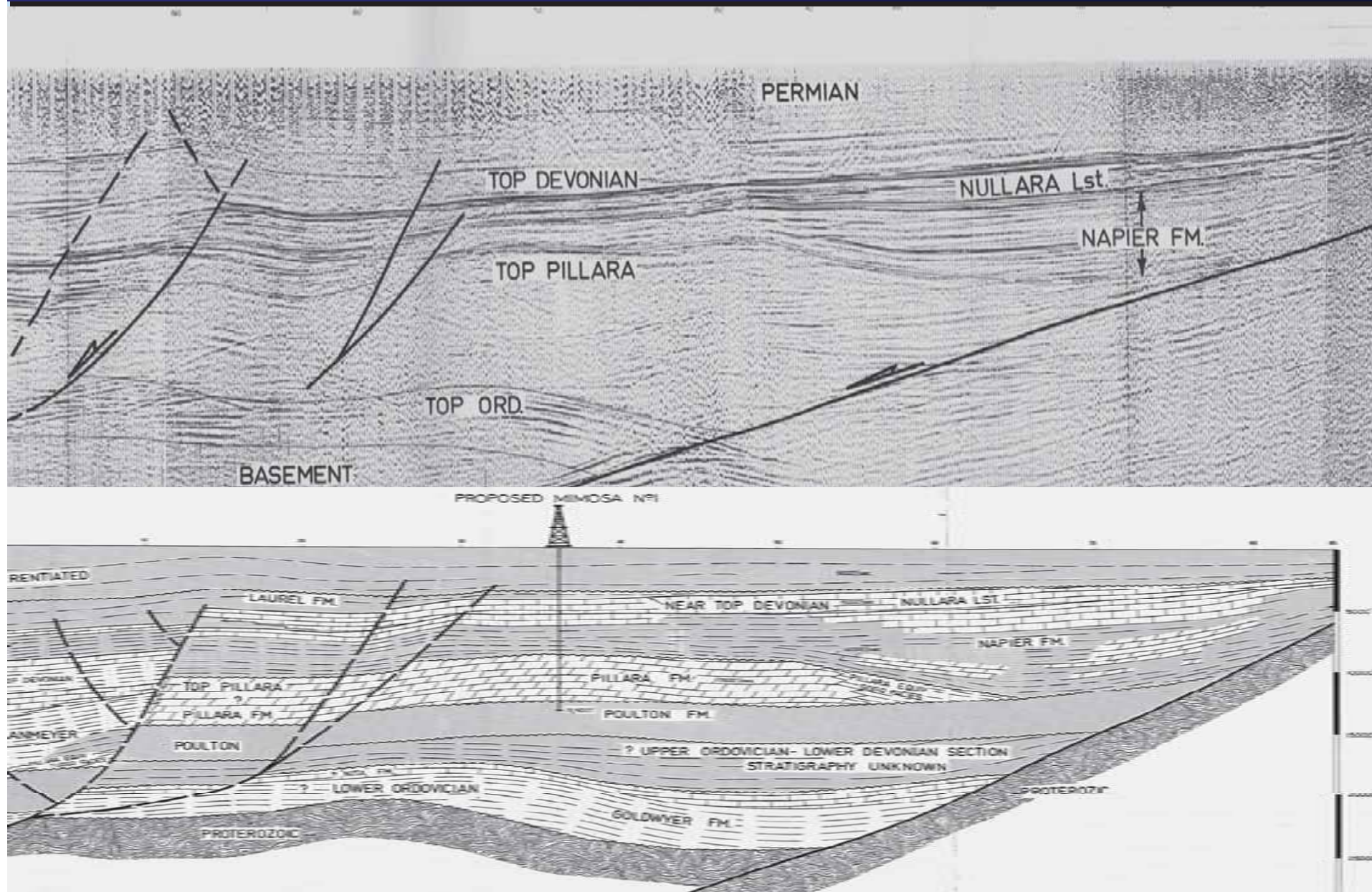
5 UPPERMOST DEVONIAN ? - LOWER CARBONIFEROUS (IV C_U I)

RE-ESTABLISHMENT OF PLATFORM CARBONATE CONDITIONS BY TRANSGRESSIVE DEPOSITIONAL CYCLE



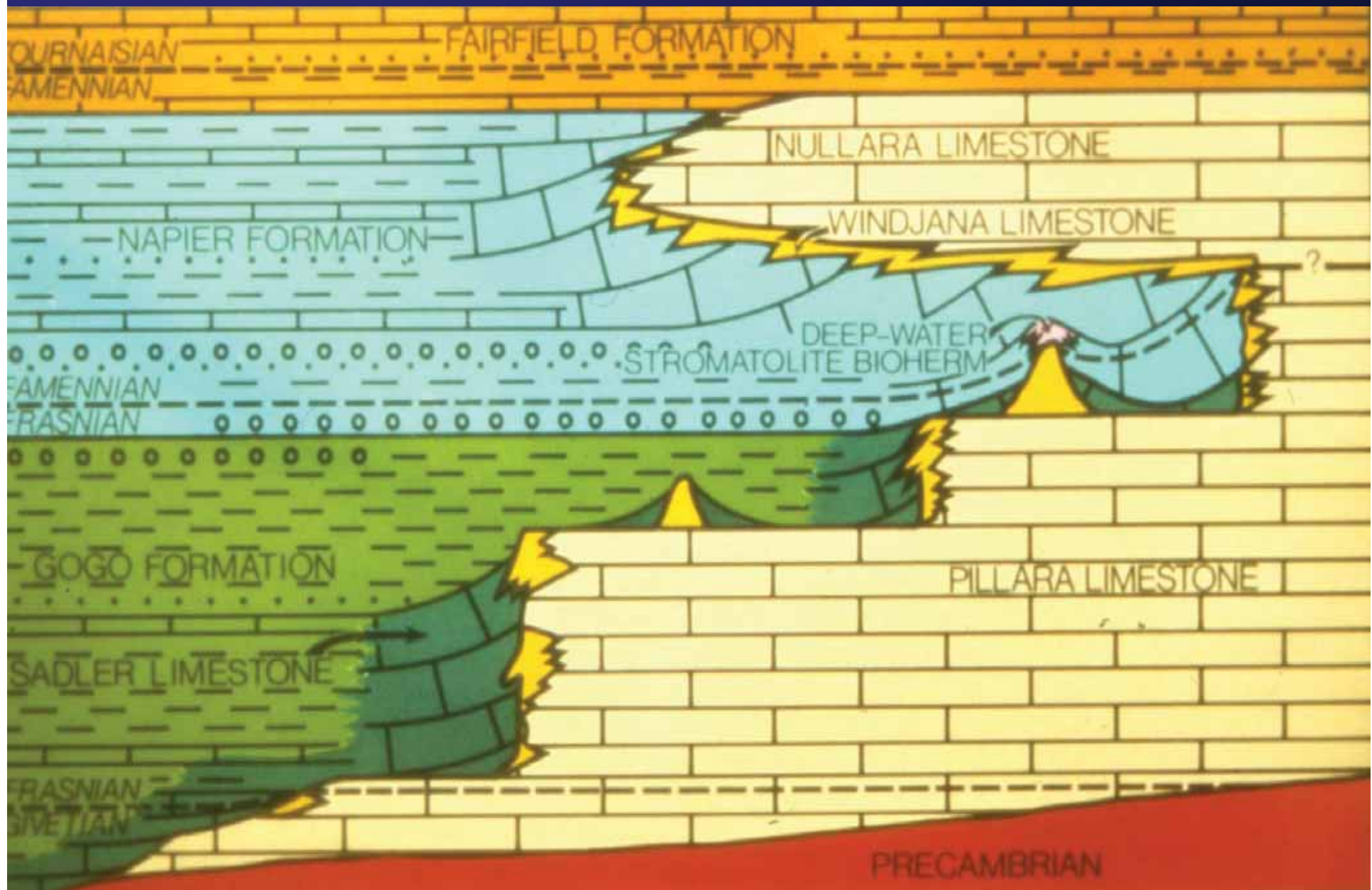
Seismic profile and geological interpretation: proposed Mimosa-1

P&R

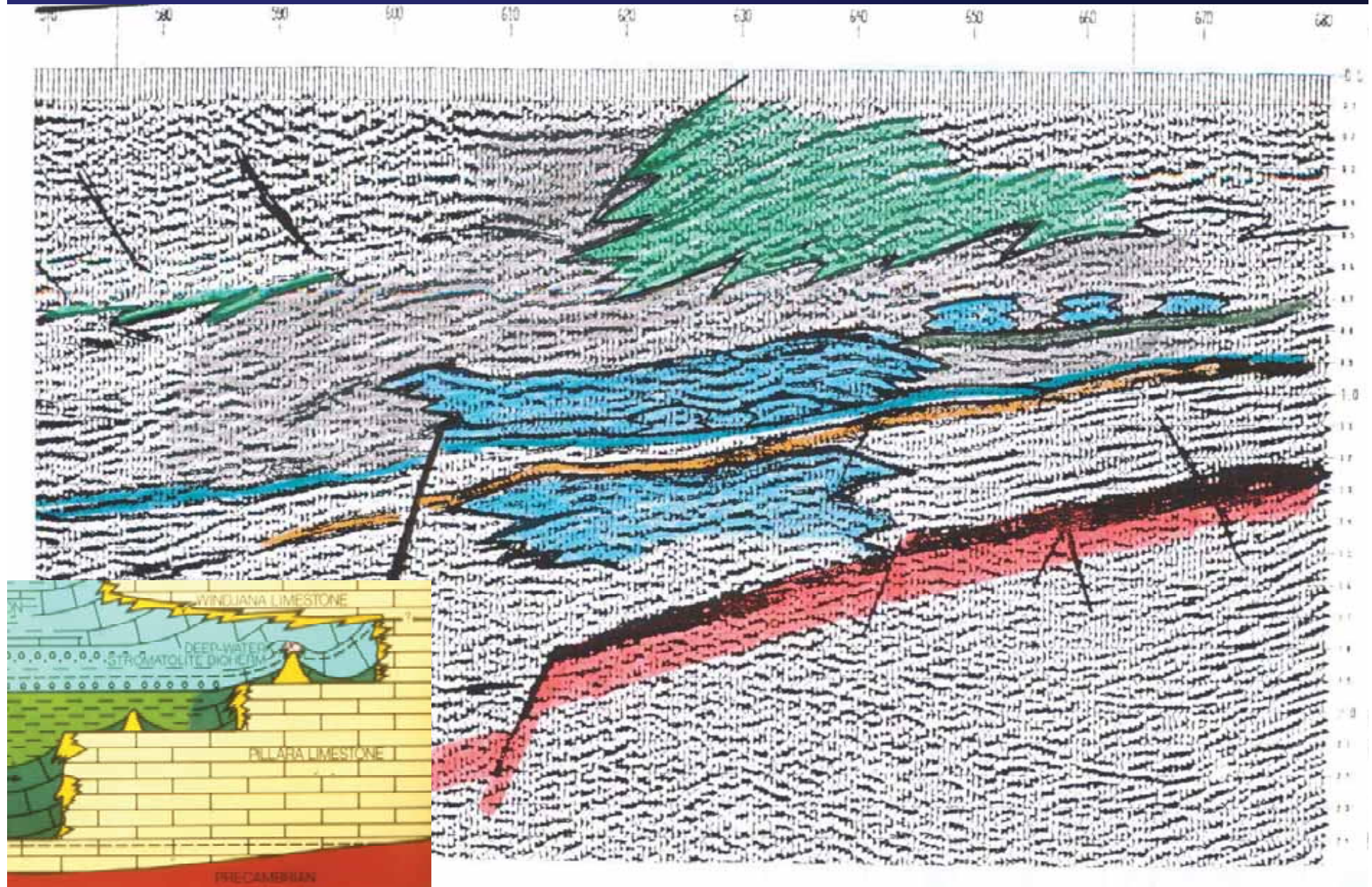


Playford (1980) model

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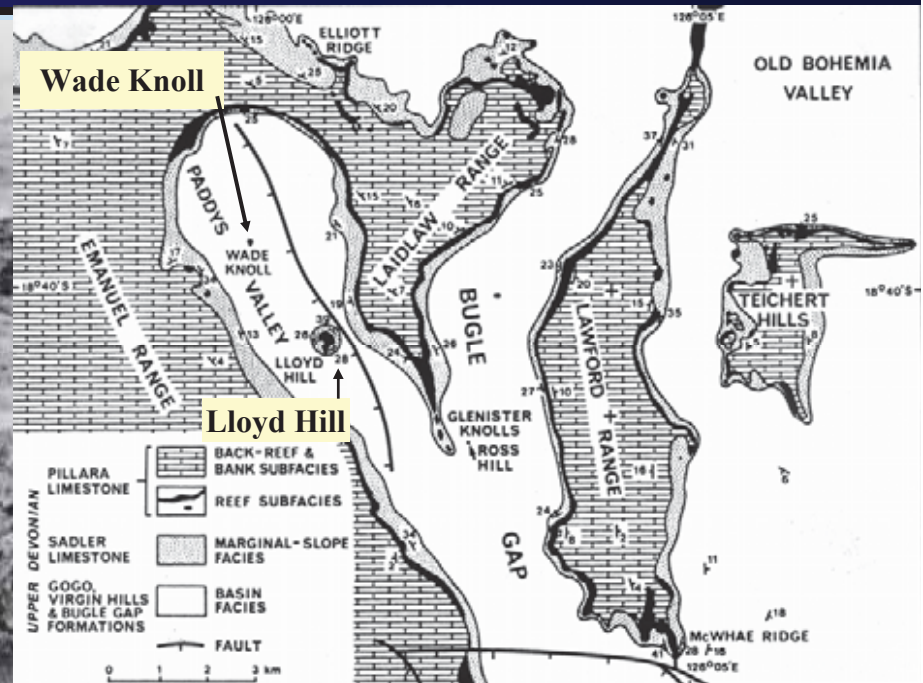


Givetian-Frasnian platforms and pinnacles

P&R



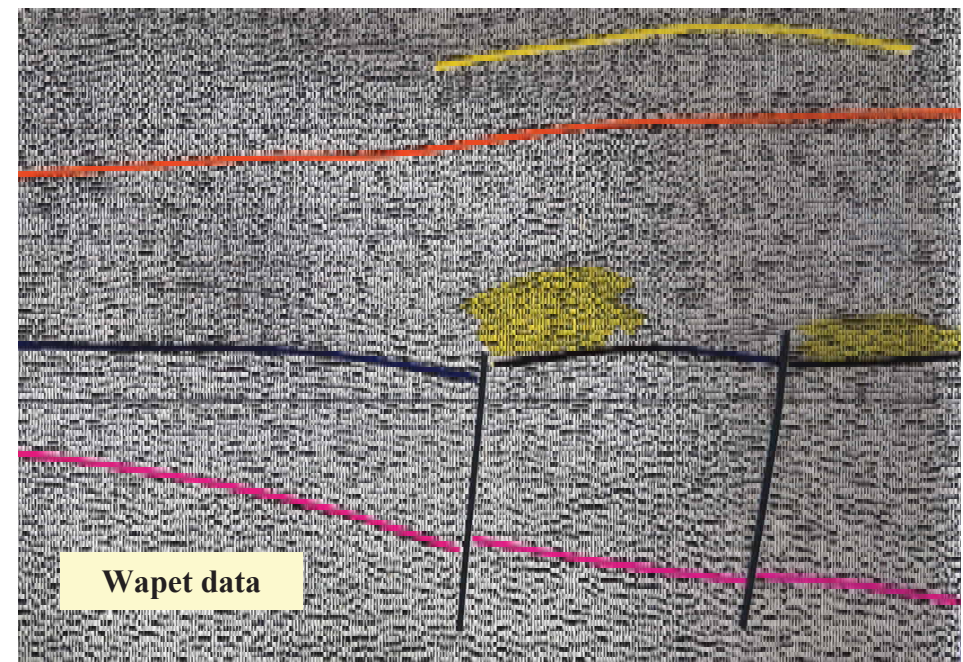
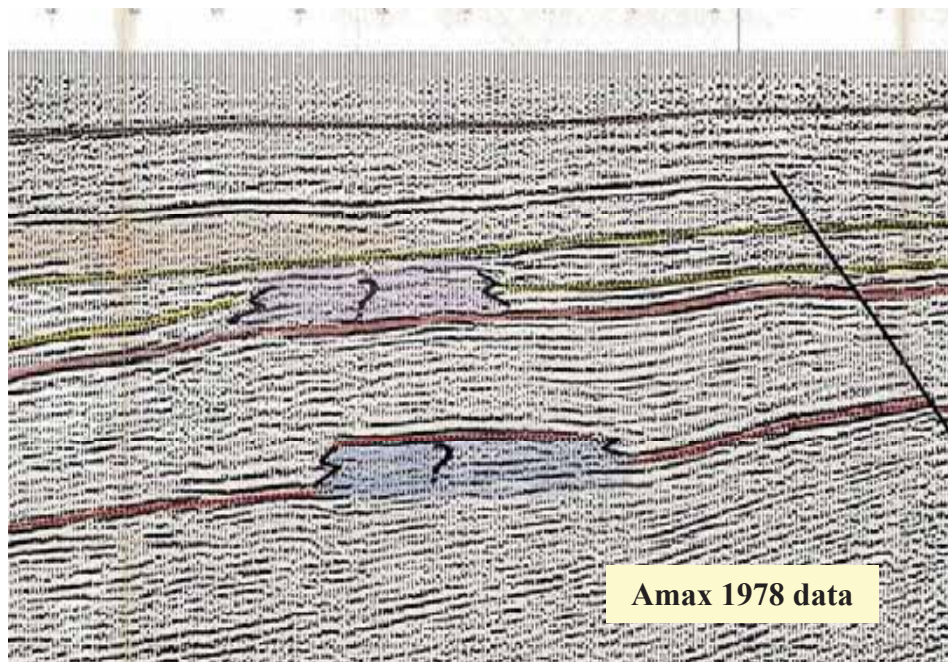
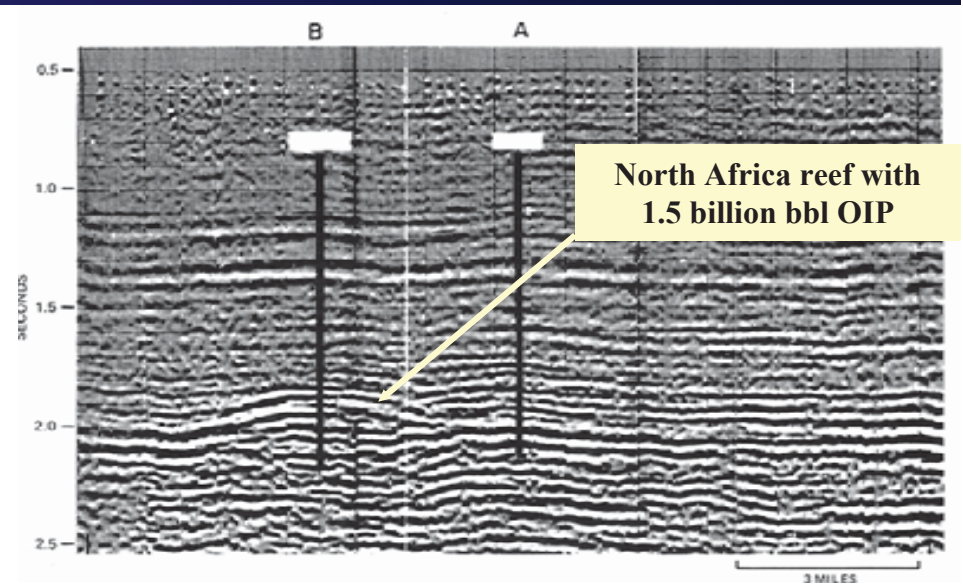
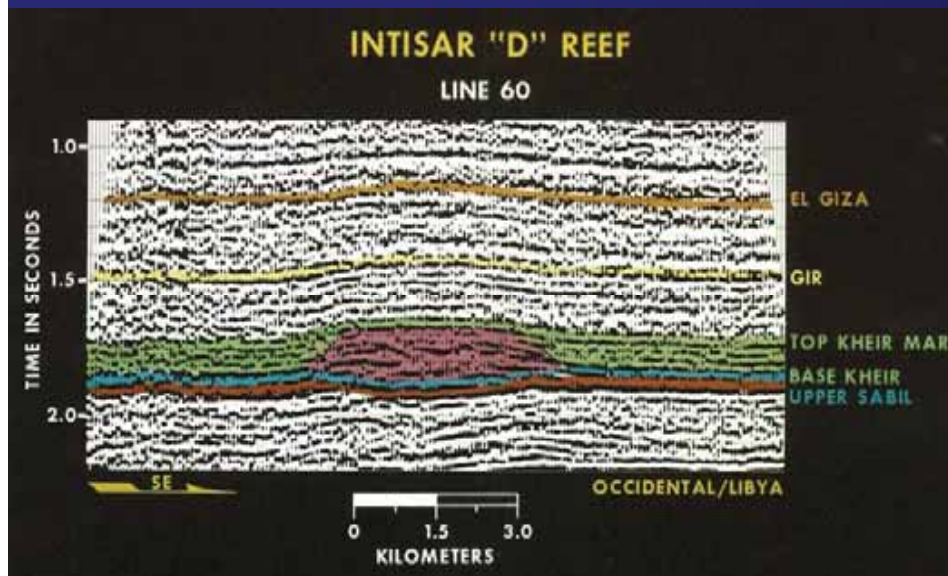
Lloyd Hill



Wade Knoll

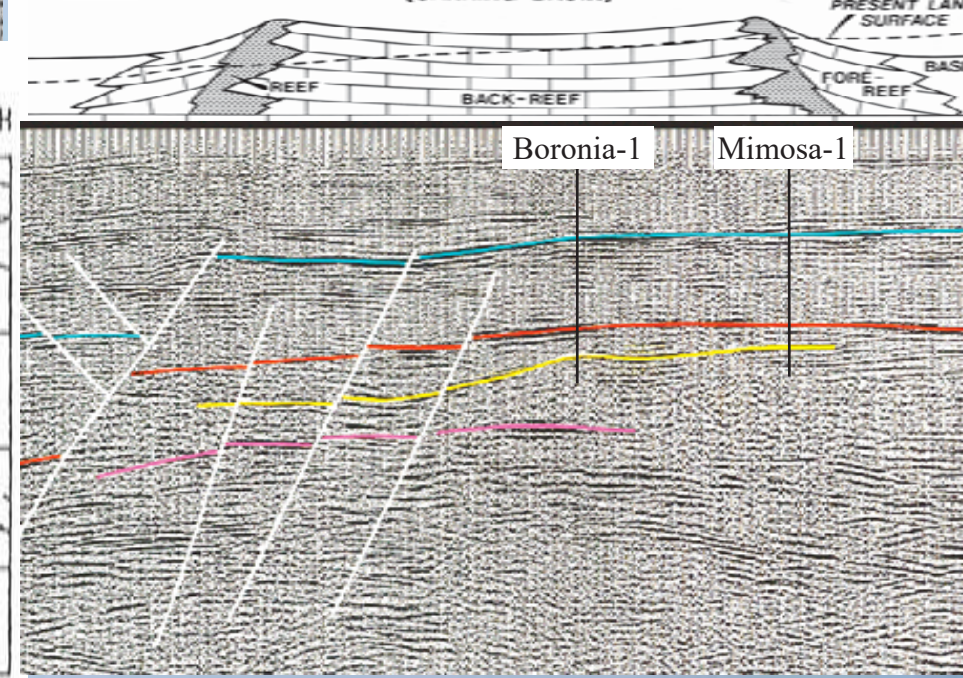
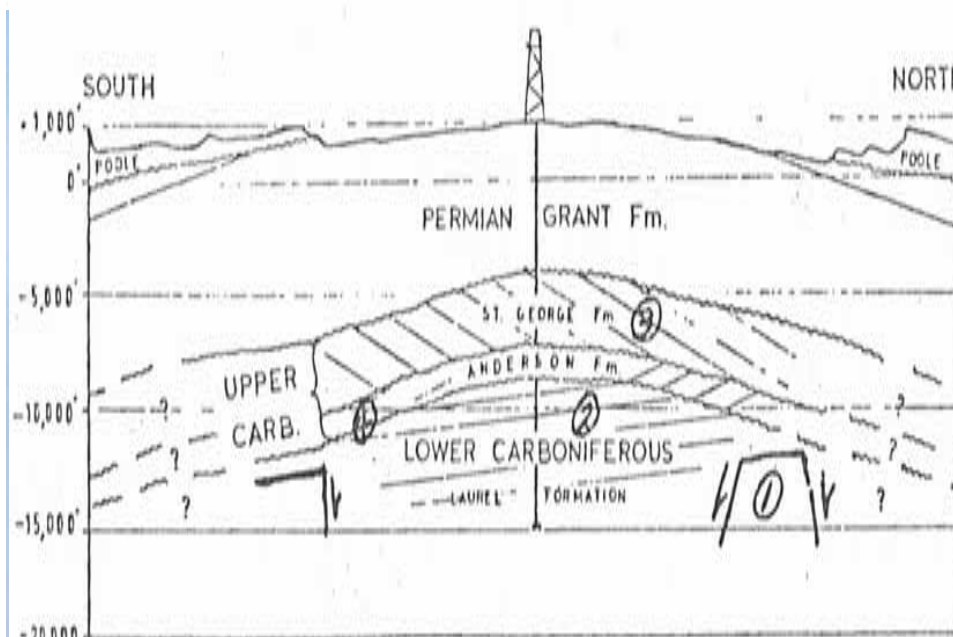
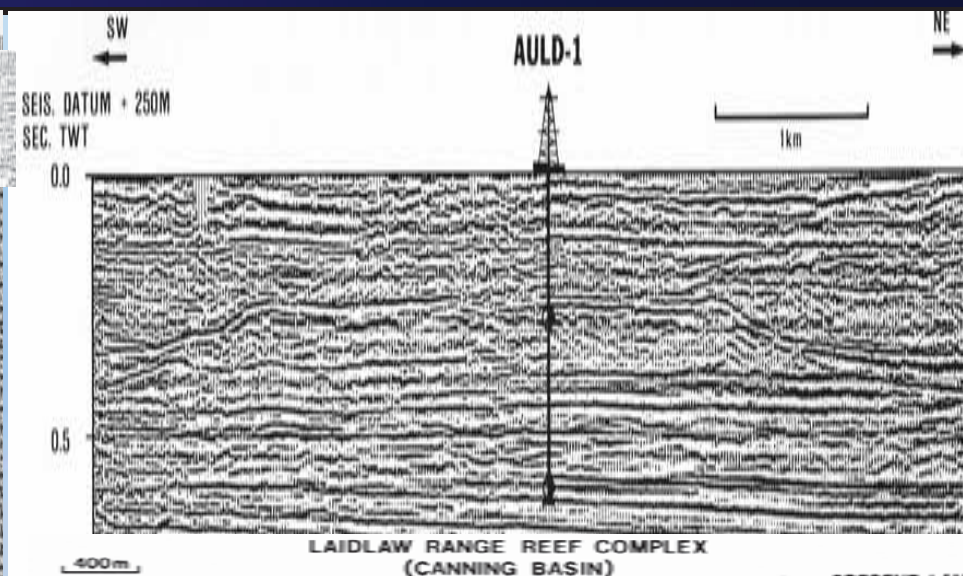
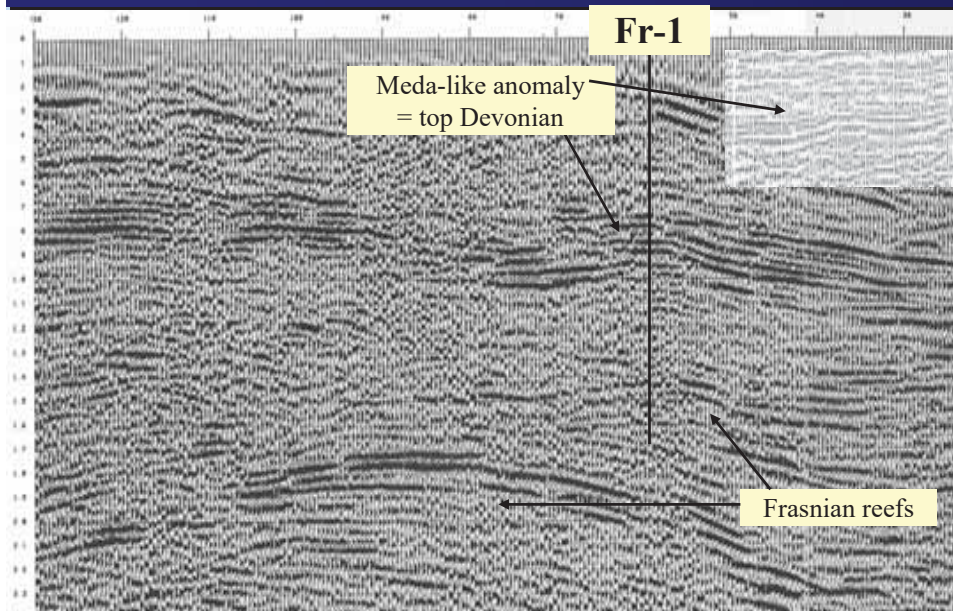
Seismic shapes and blobs

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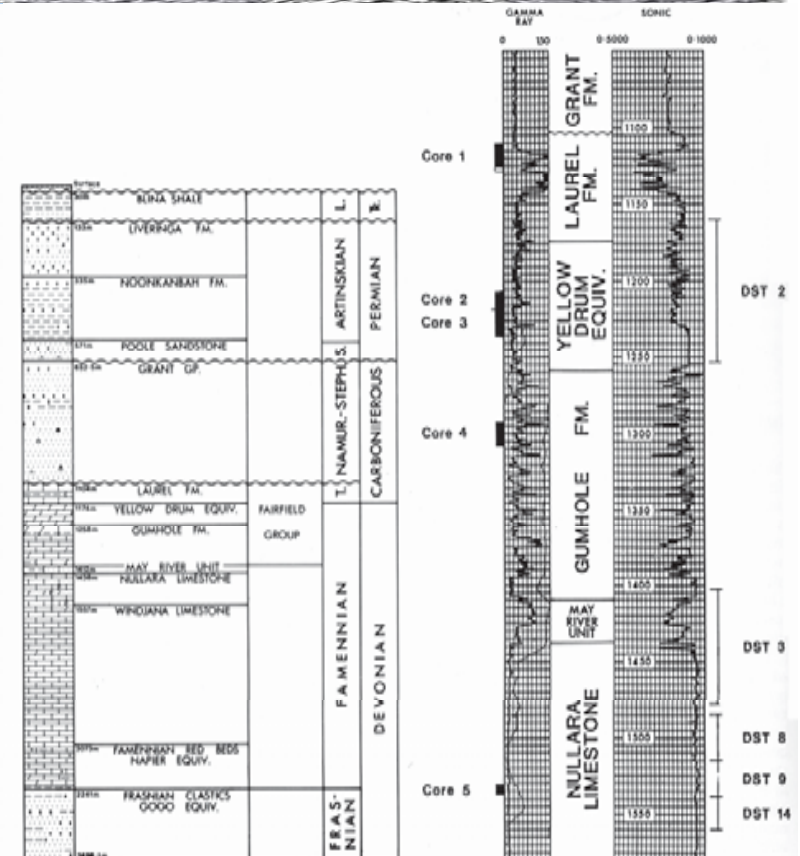
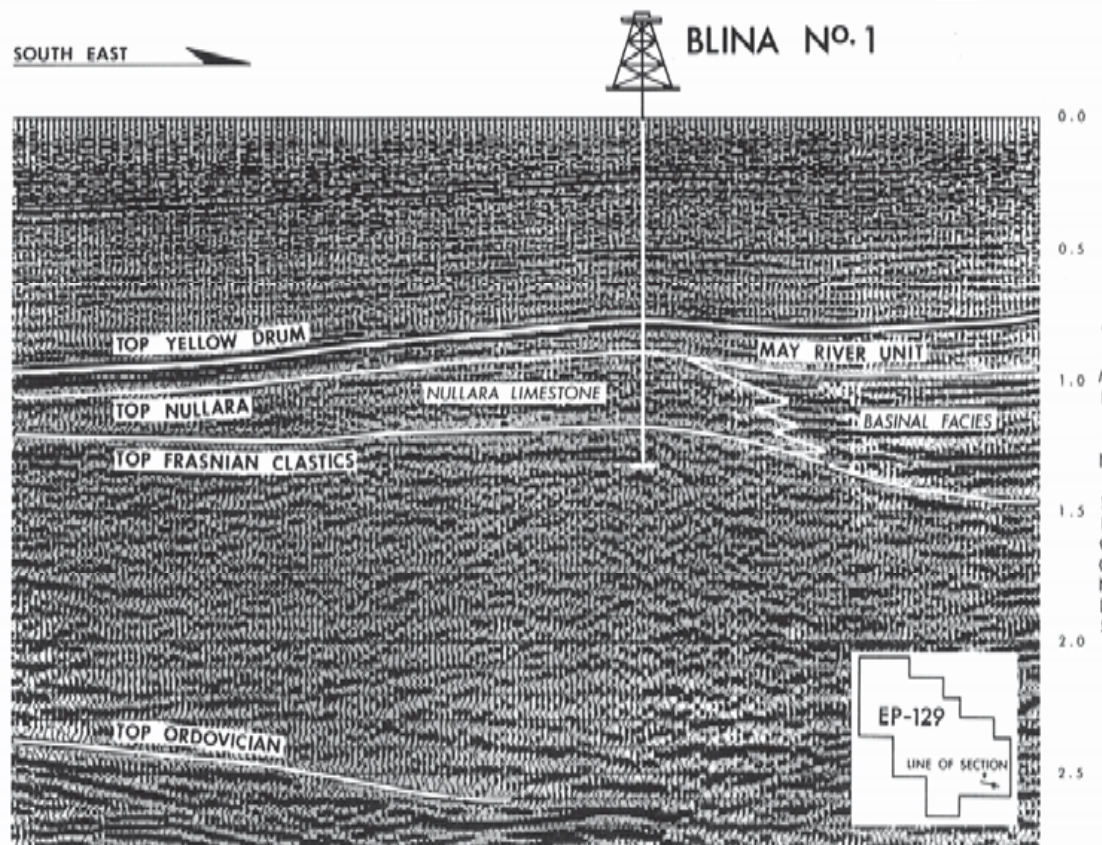
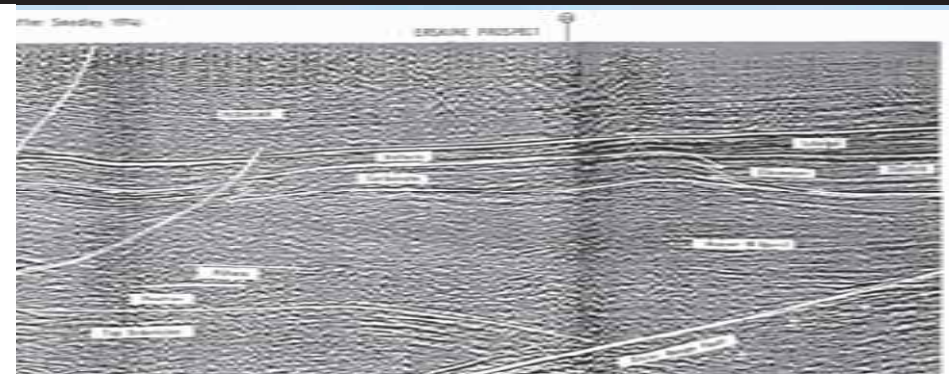
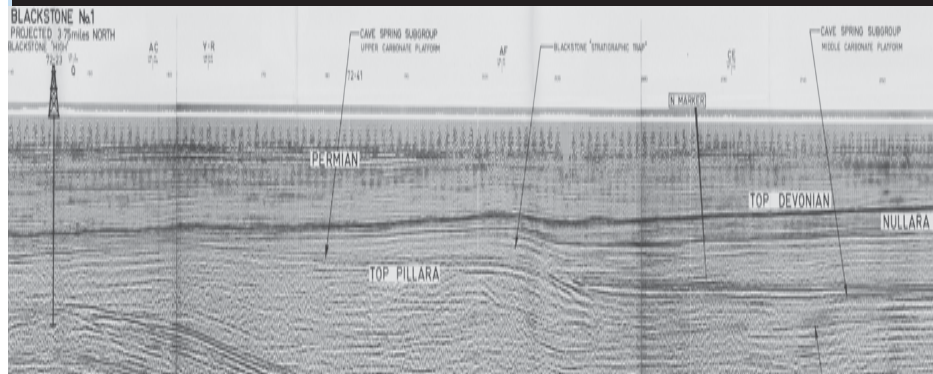
Wells drilled on 'seismic reefs'

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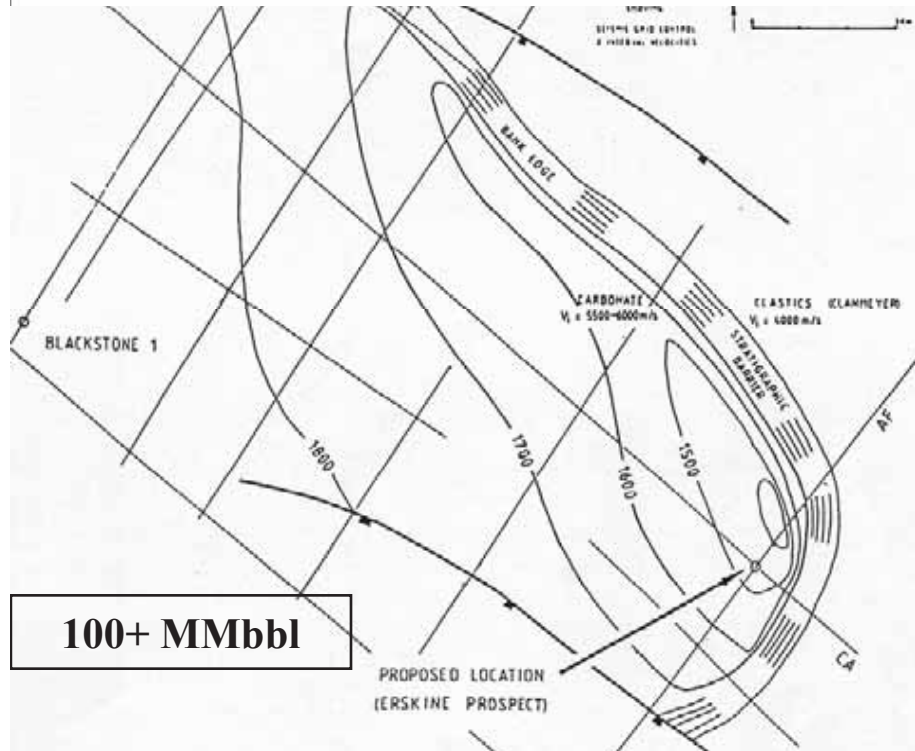
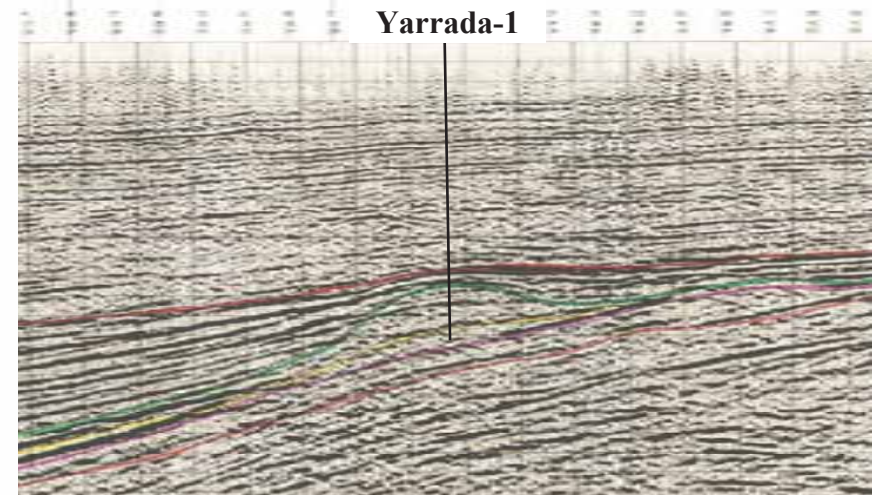
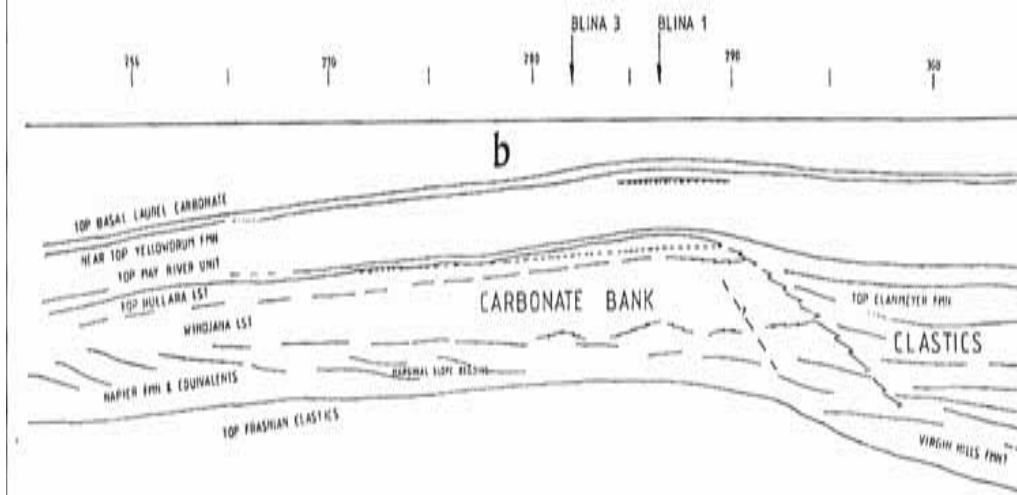
Blina-1: first and only oil producing reef

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Blina Oilfield: 100 to 1

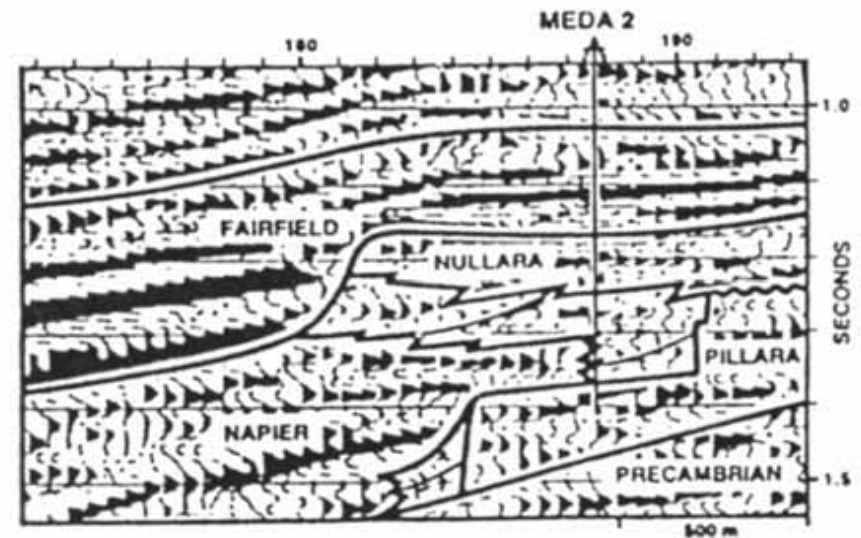
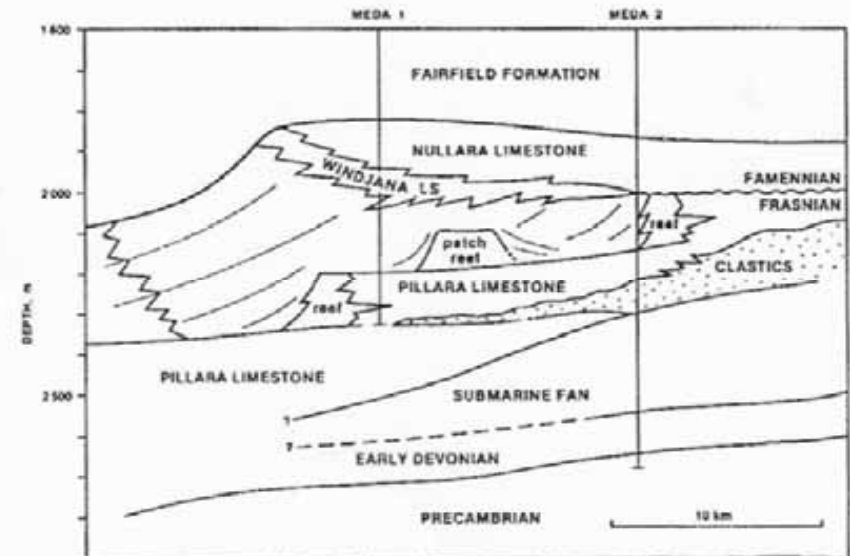
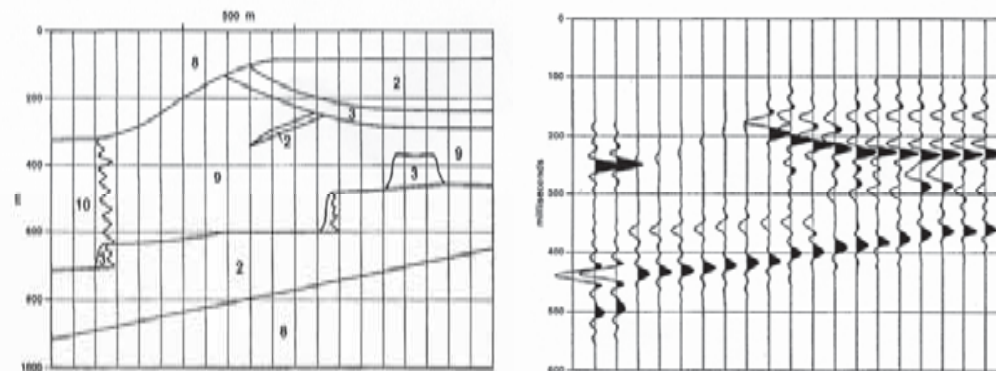
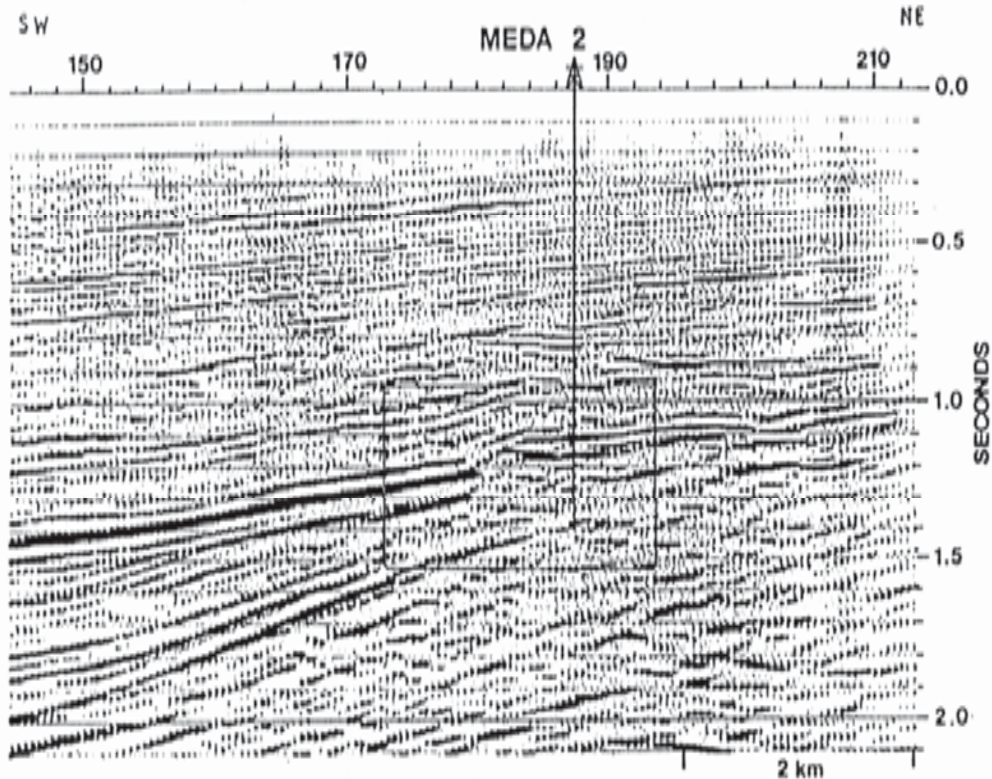
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Seismic modelling of the Meda reef (Middleton, 1987)

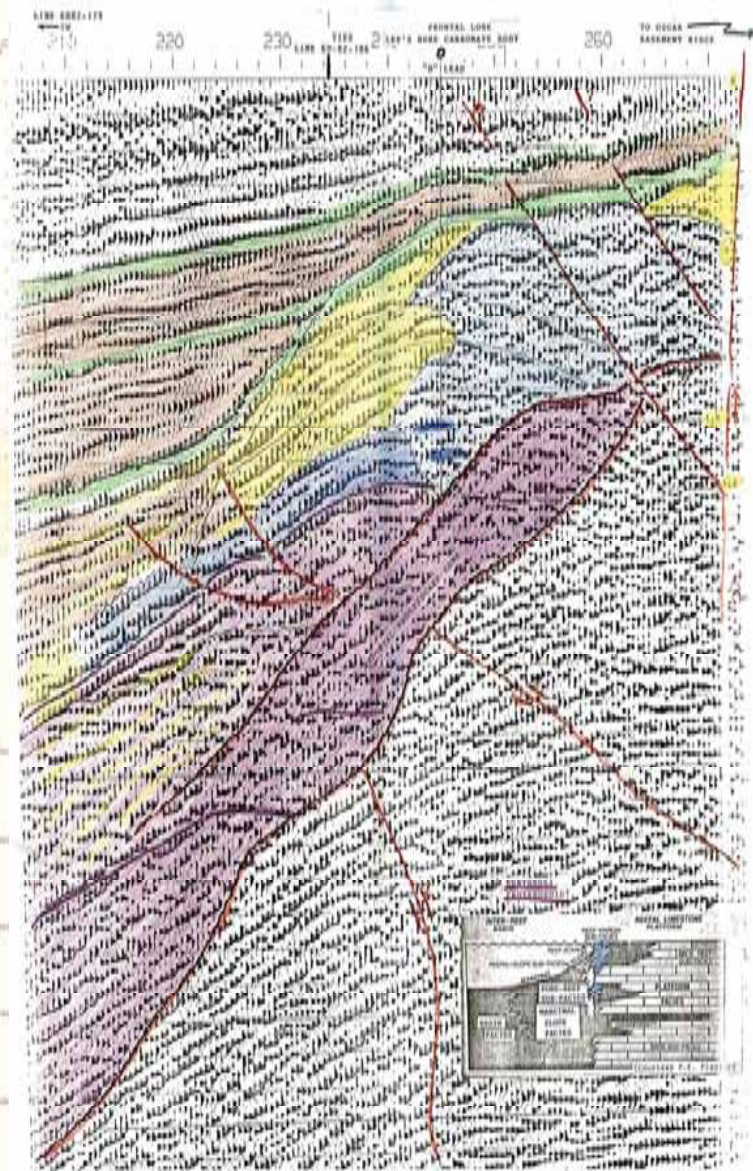
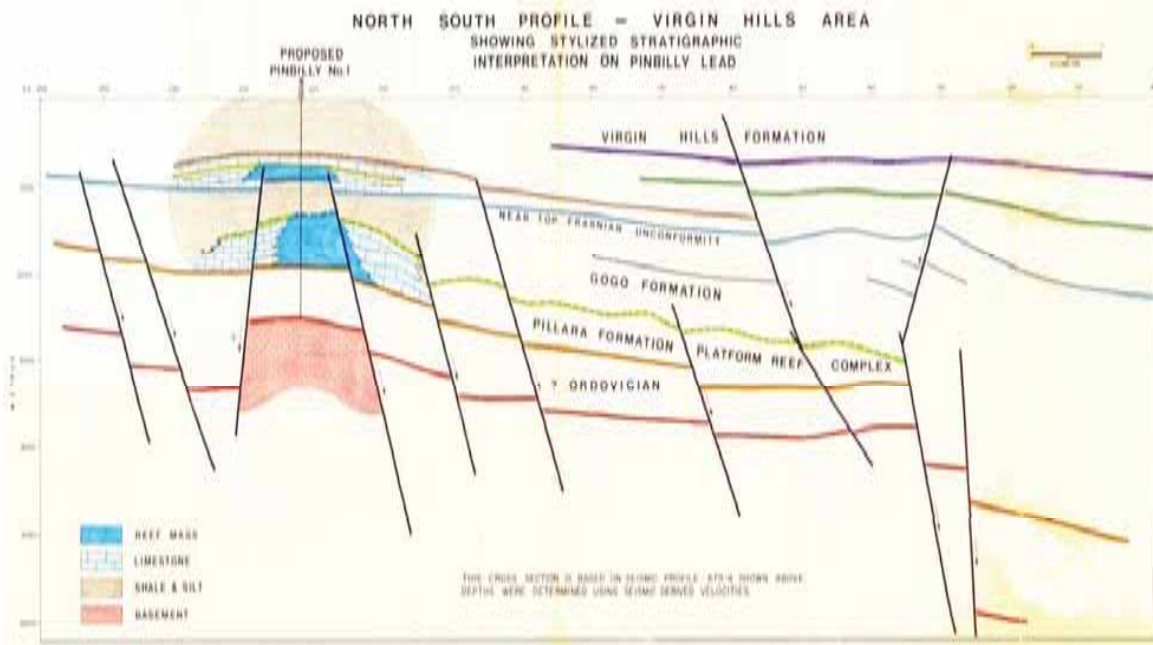
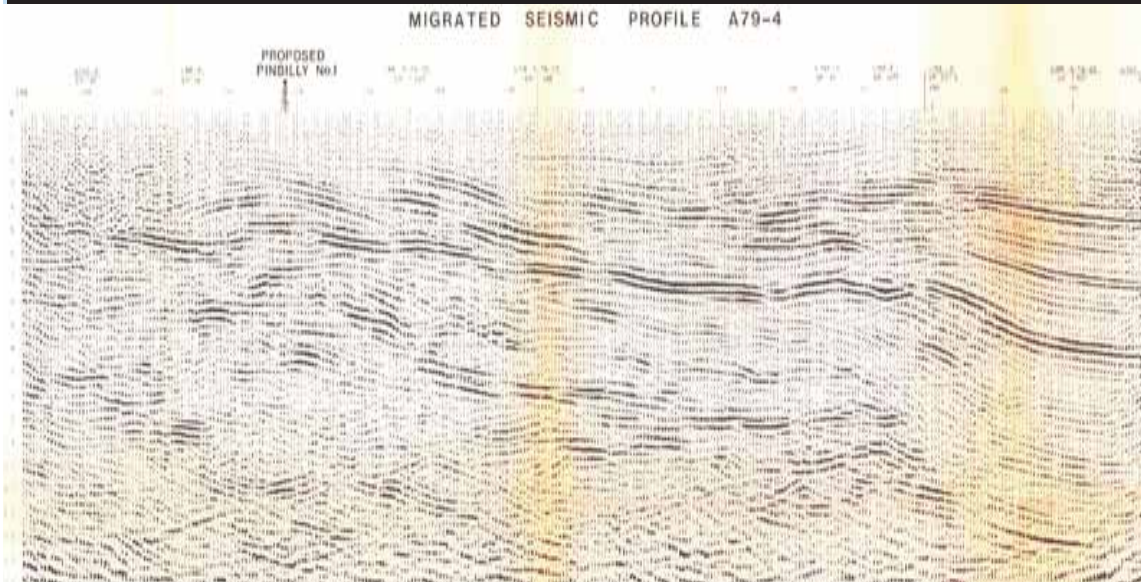
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LINE H79-10

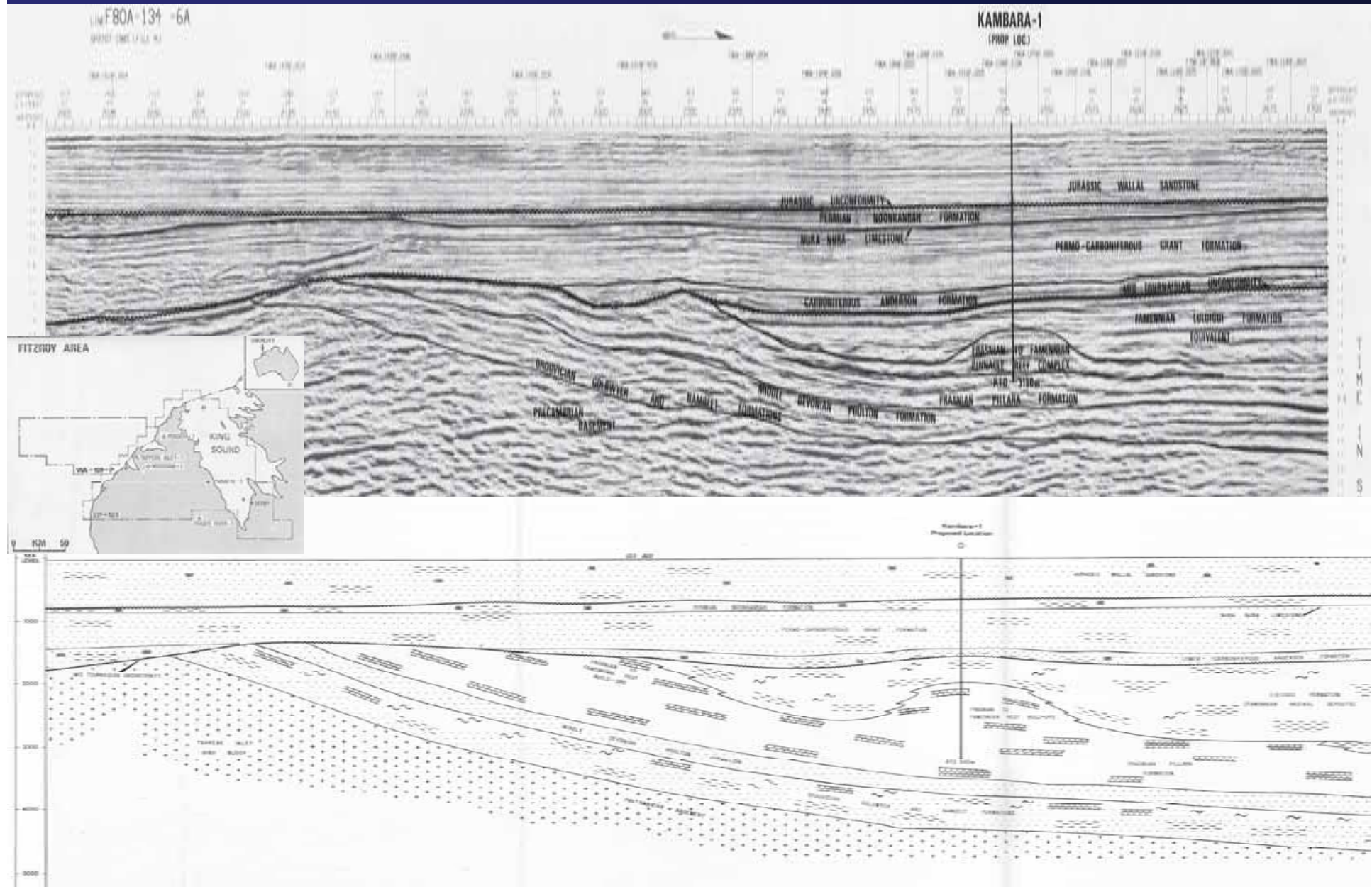


The Playford model on the seismic section

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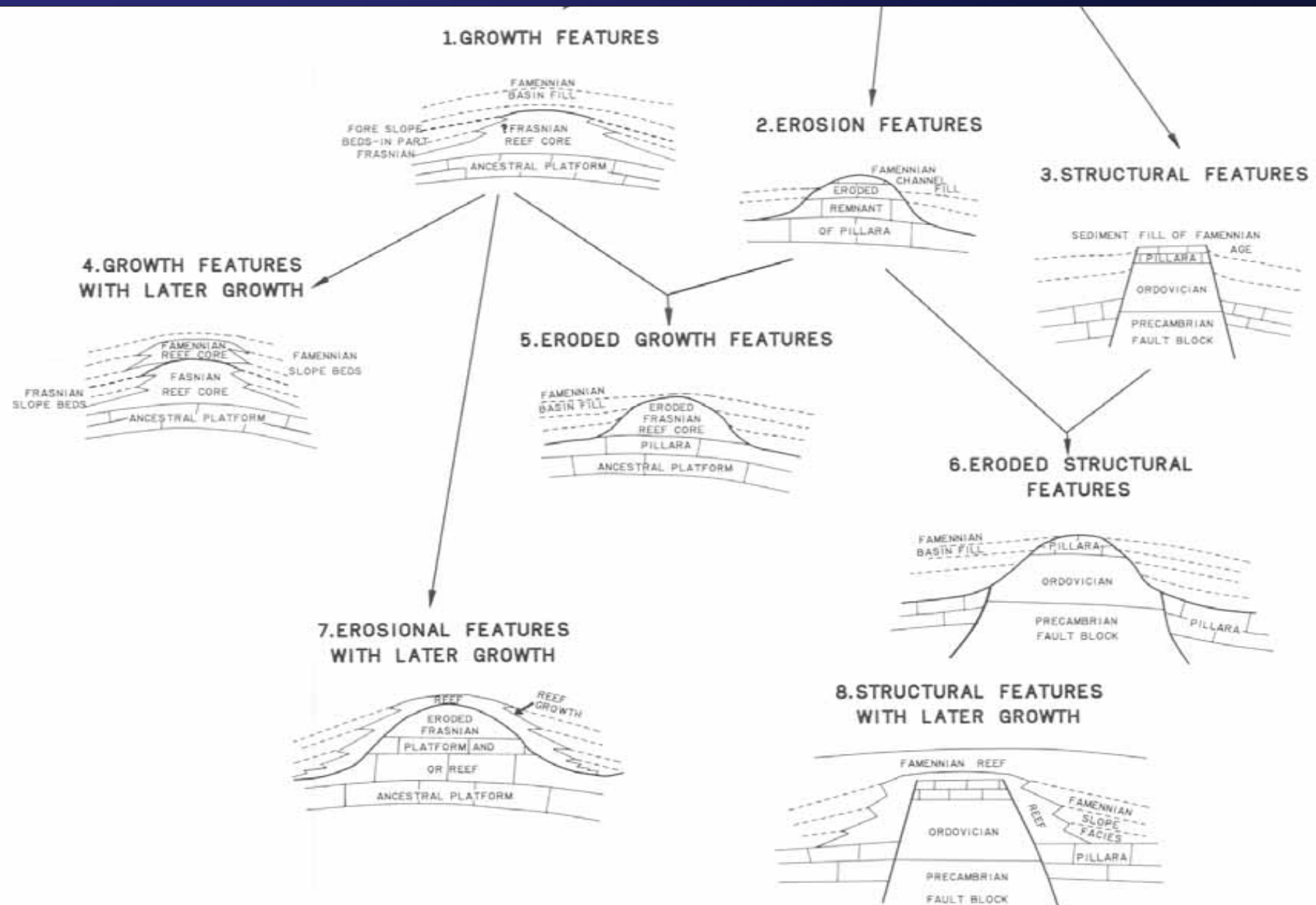


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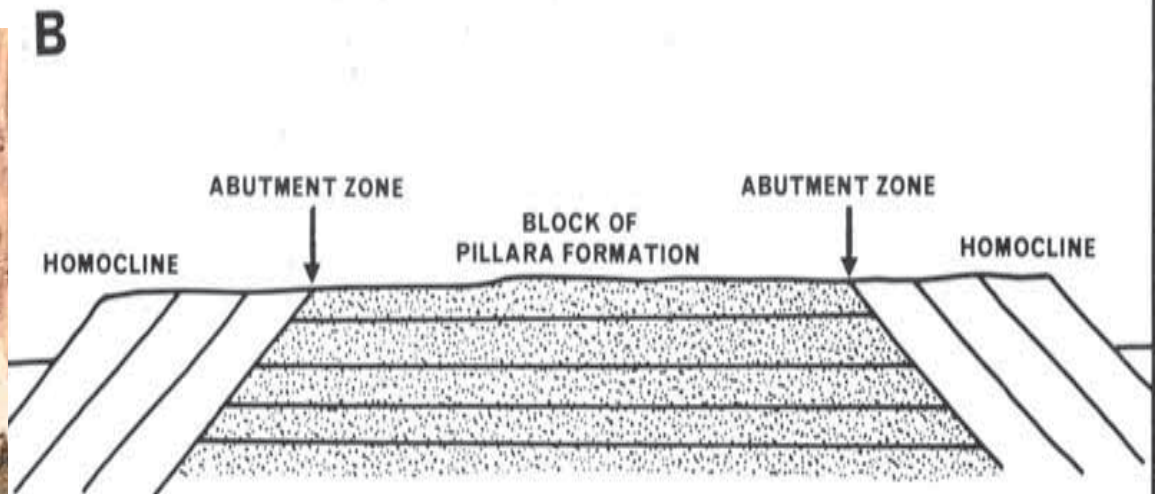
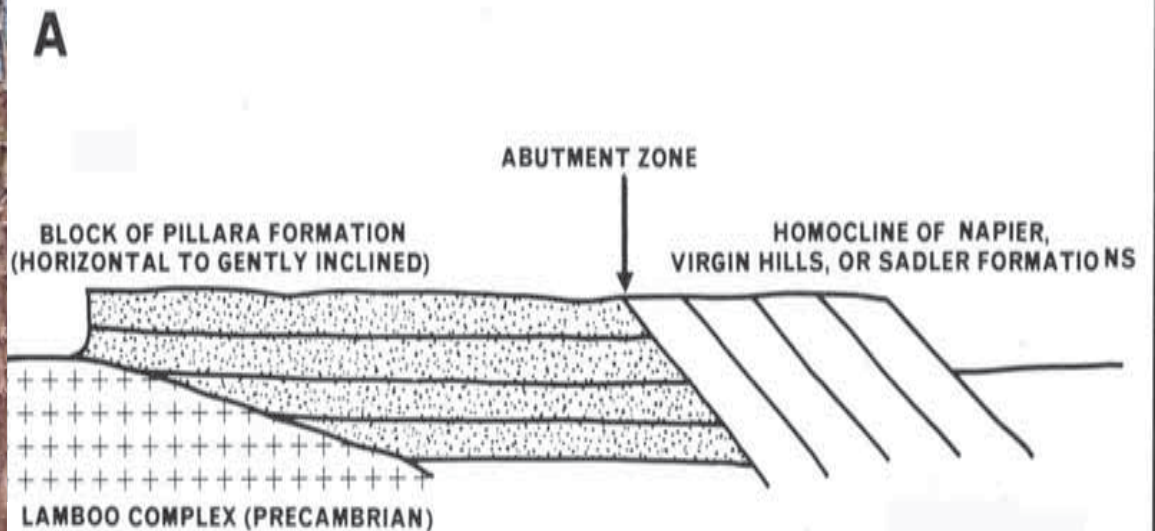
Esso (1984) geological models for seismic reef-like anomalies

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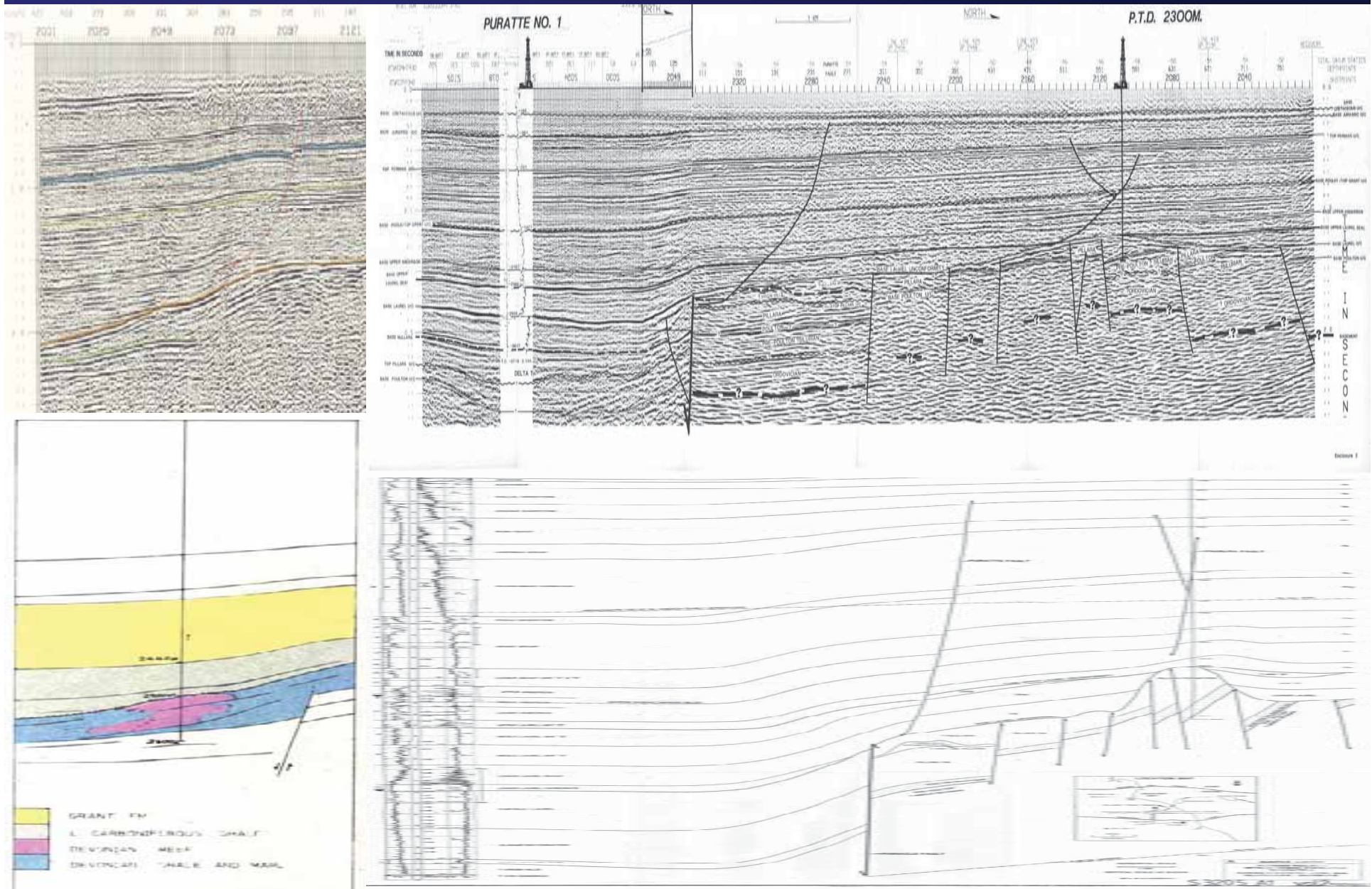
Logan and Semeniuk (1976) model

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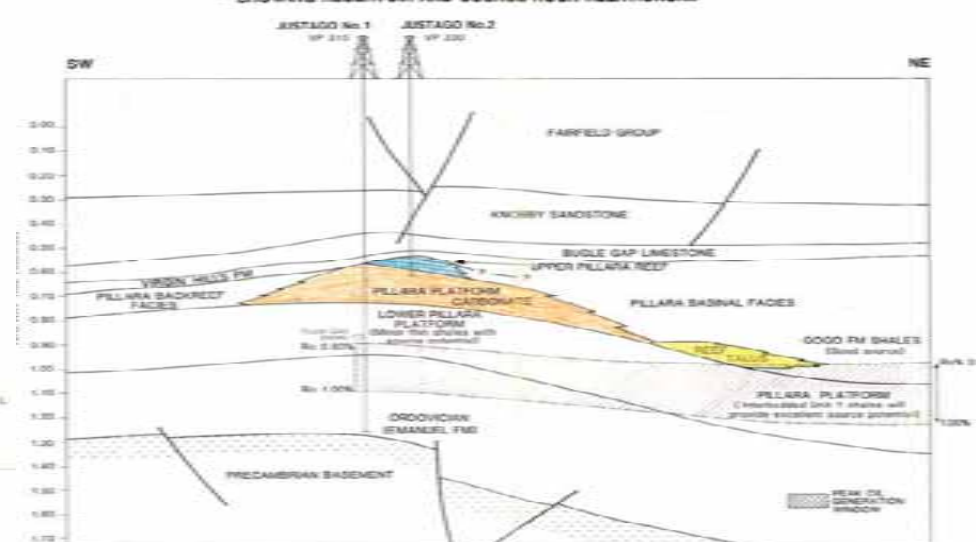
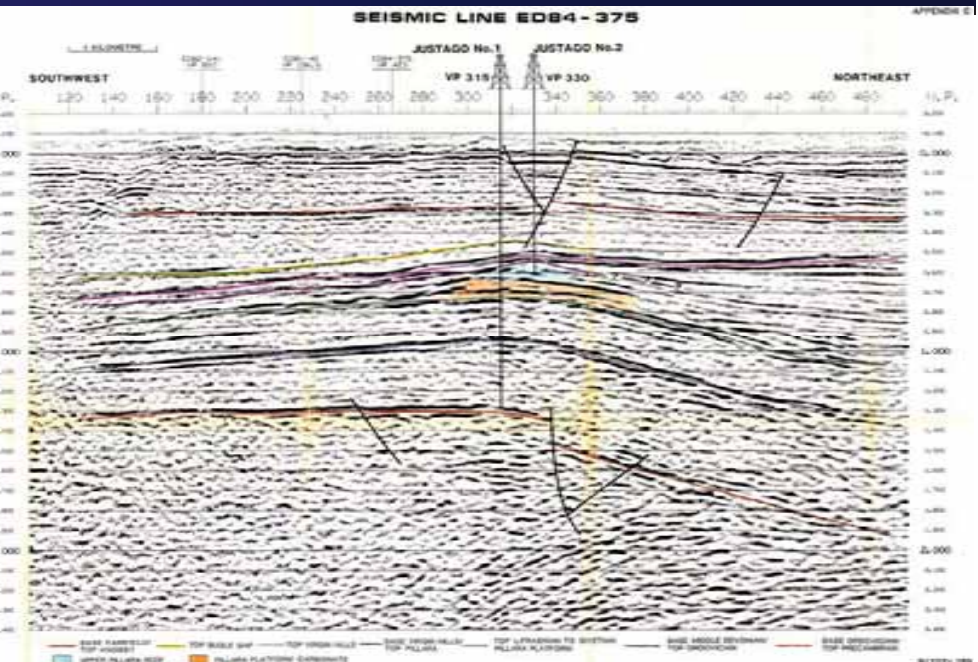


Esso's Puratte-1 and Santos' s Padilpa-1

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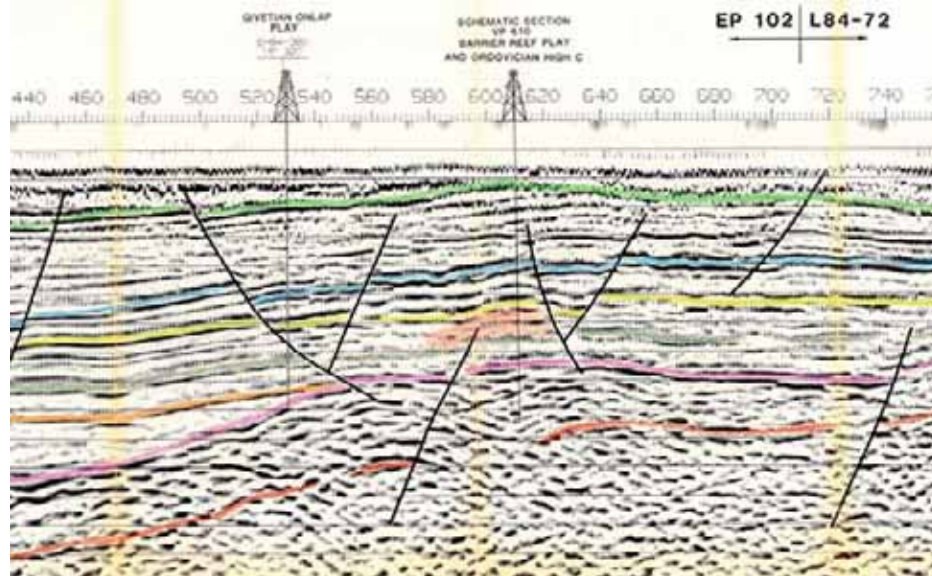


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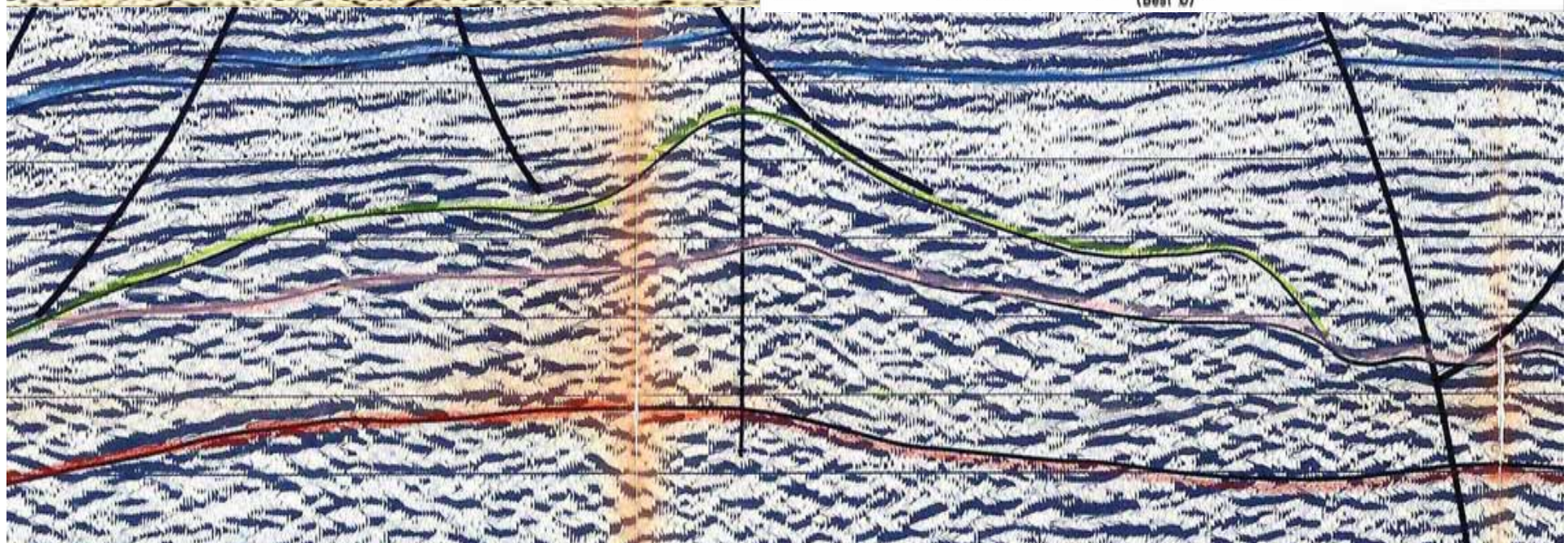
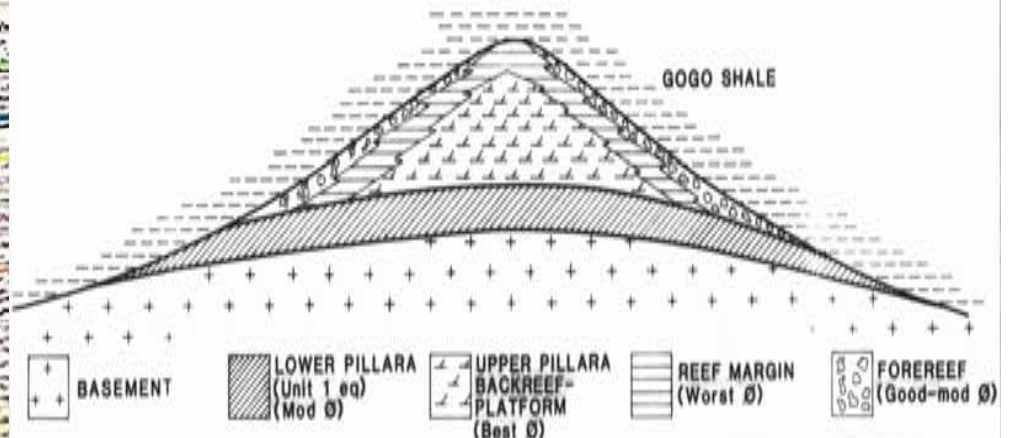
Gap Creek-1

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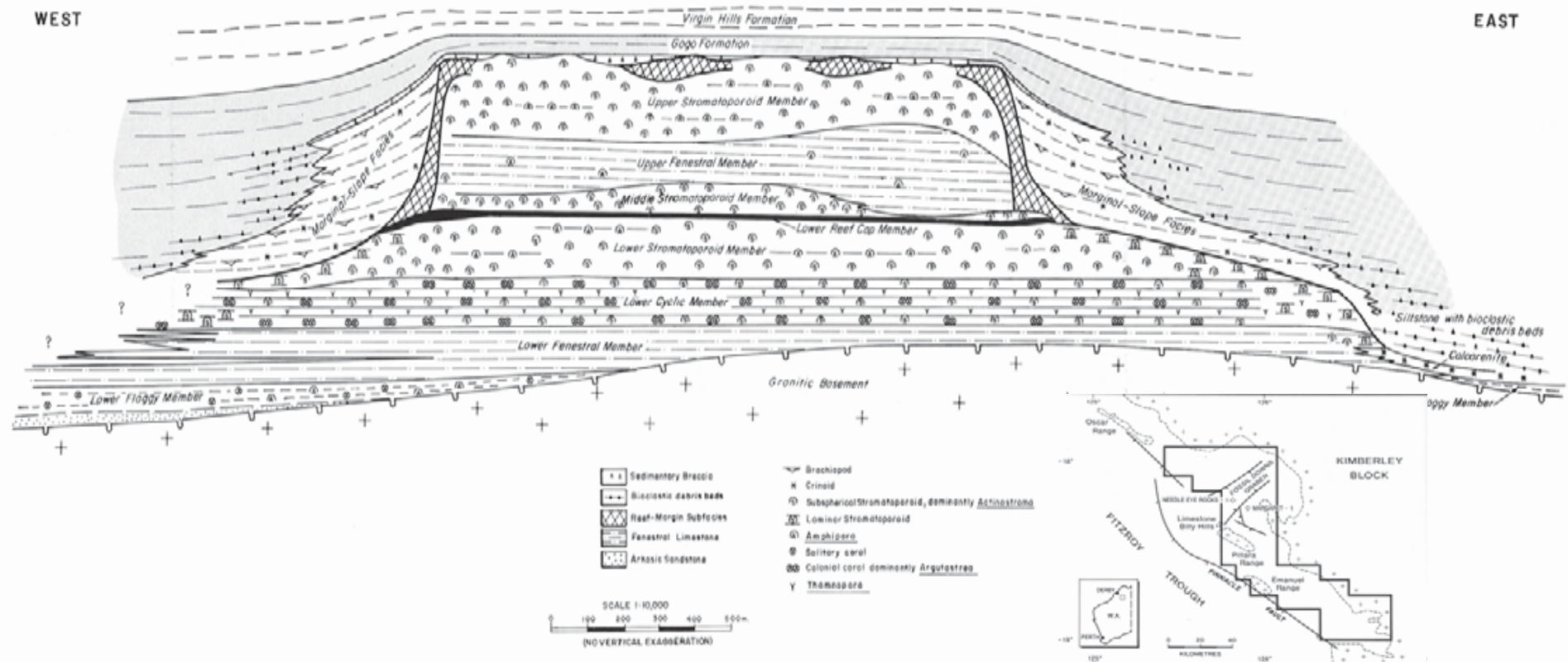


DIAGRAMMATIC CROSS-SECTION THROUGH PINNACLE REEF

(SHOWING RELATIVE DEGREE OF POROSITY DEVELOPMENT)

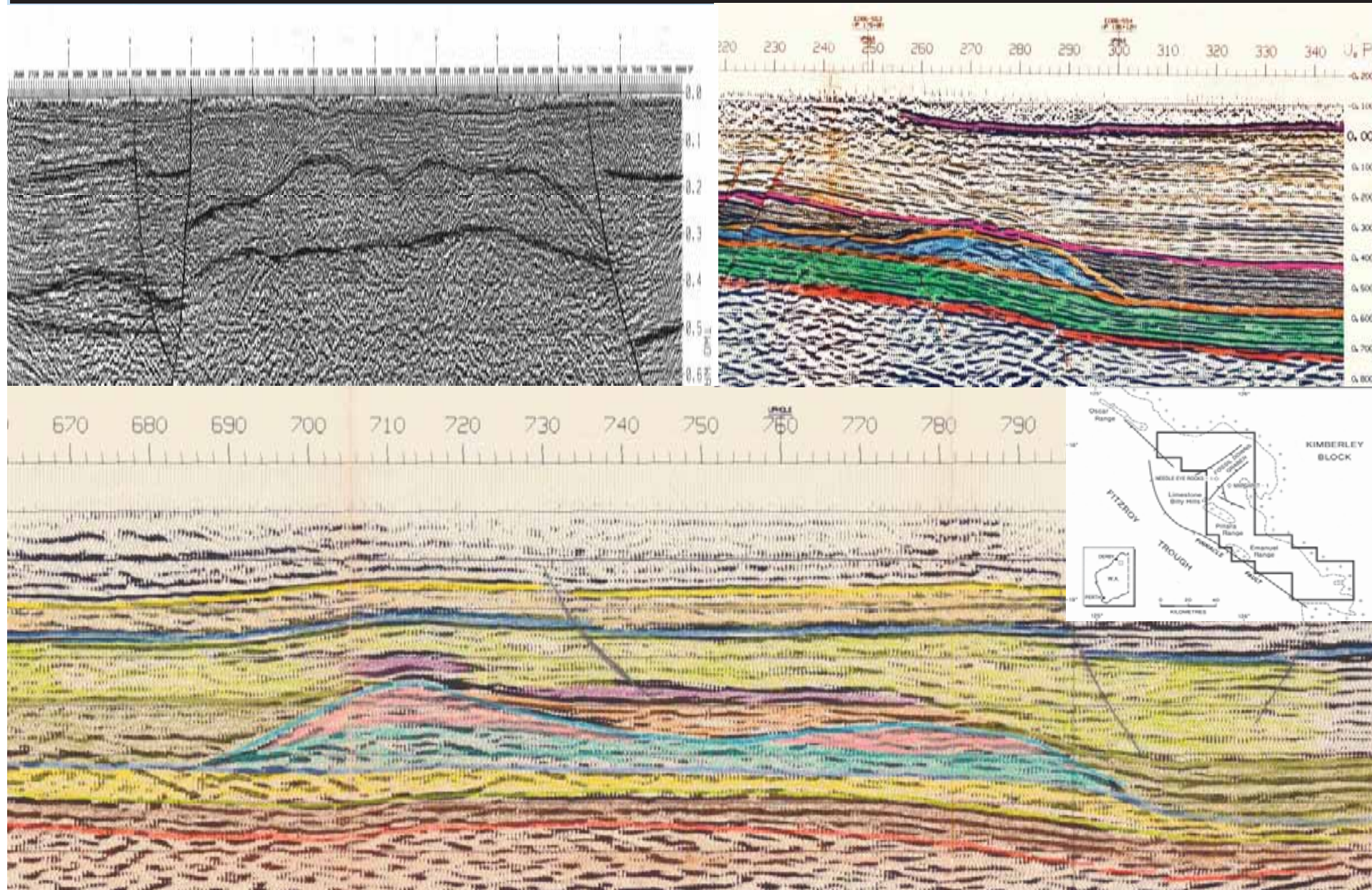


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Limestone Billy Hills seismic reefs

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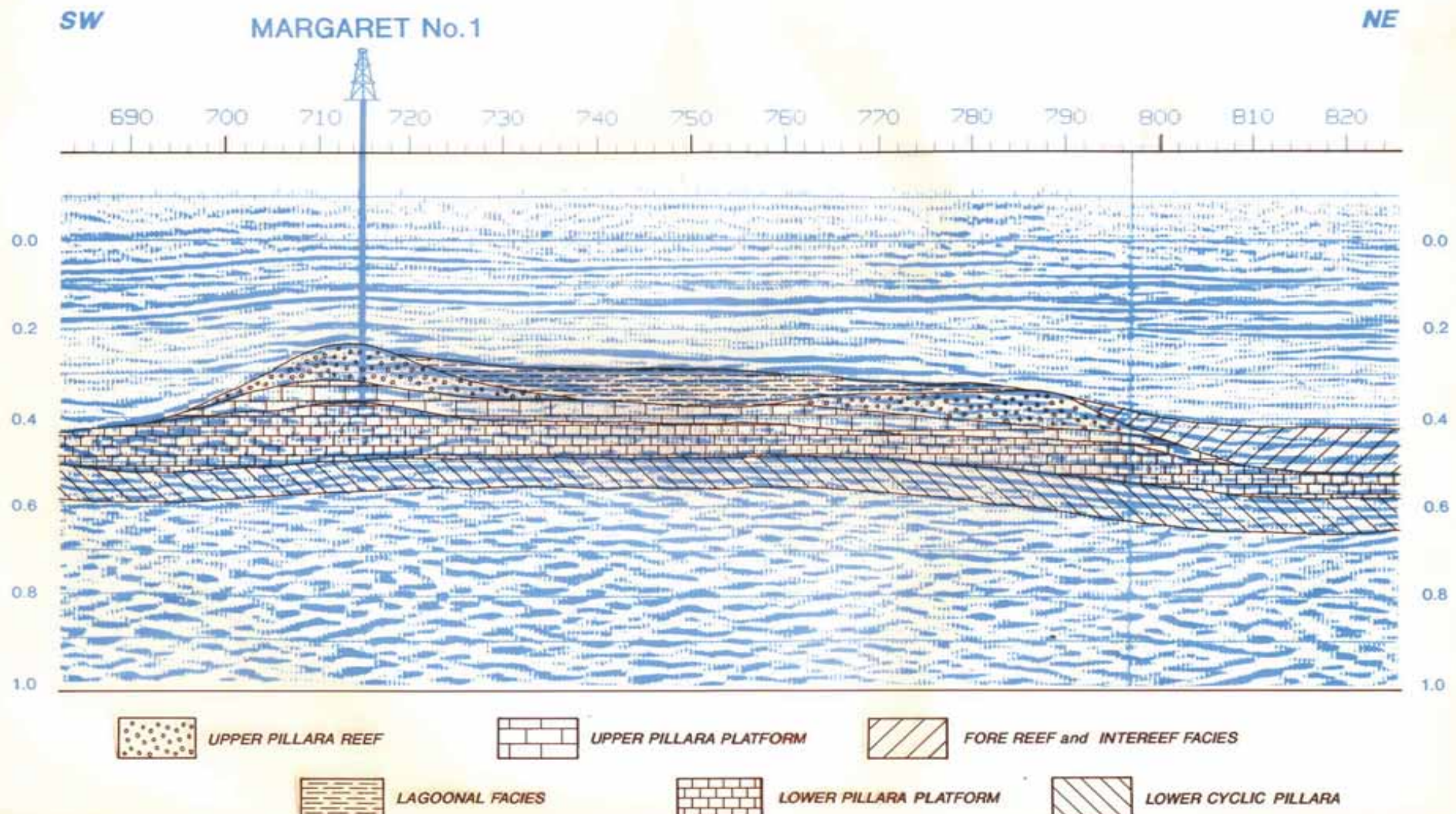


Margaret-1, Fossil Downs Embayment

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ED 87-553

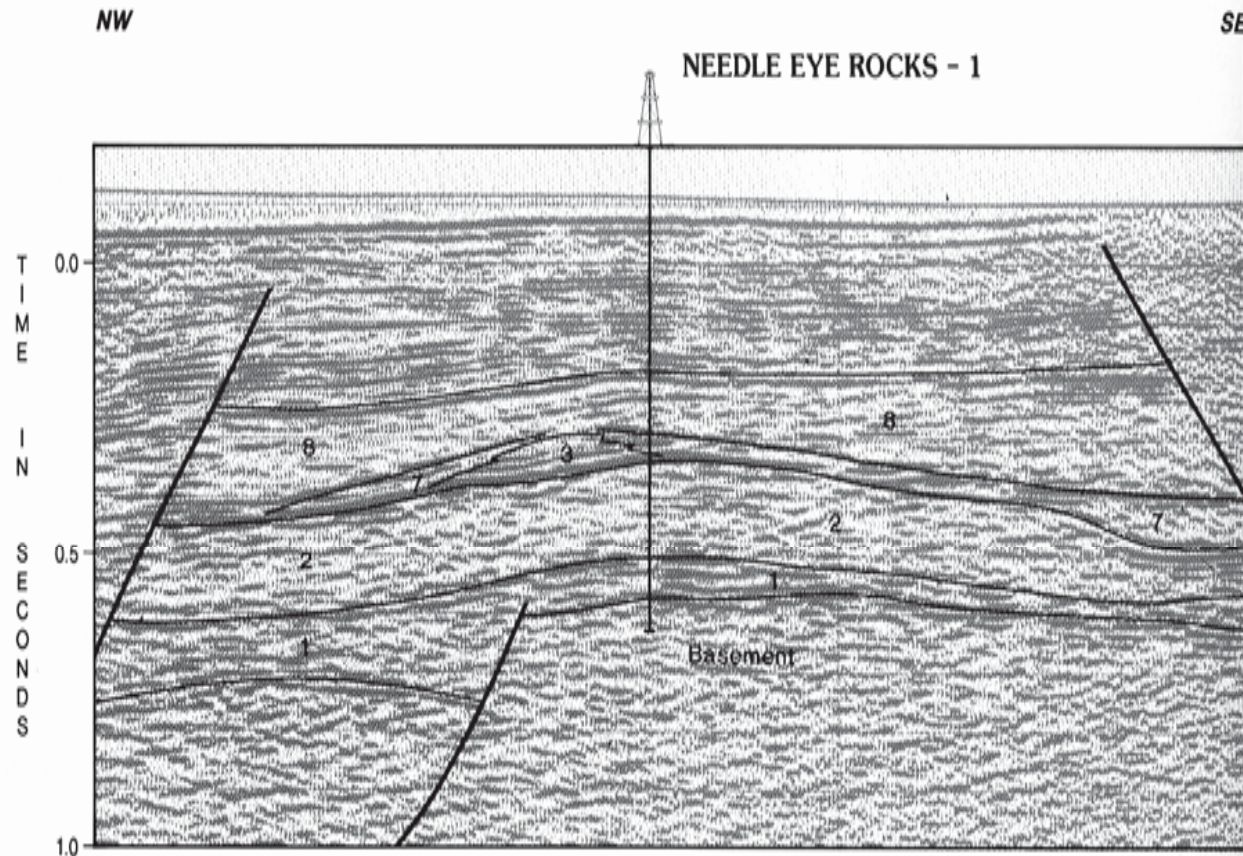
INTERPRETED FACIES DIAGRAM of the MARGARET FEATURE



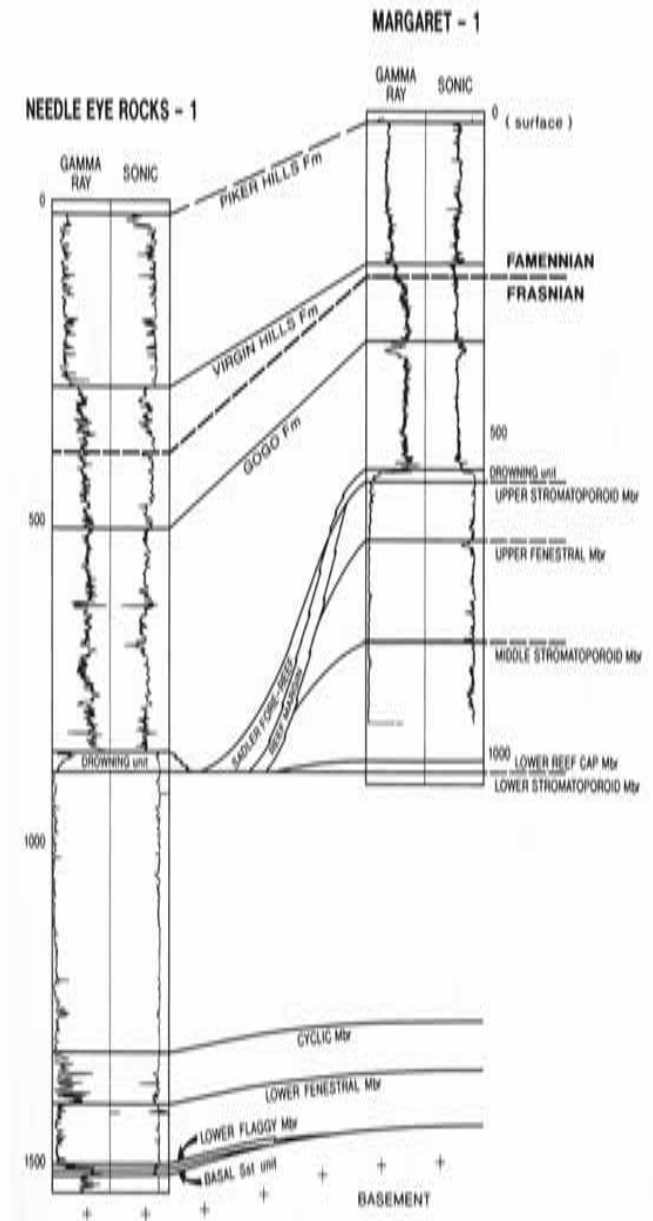
Needle Eye Rocks-1

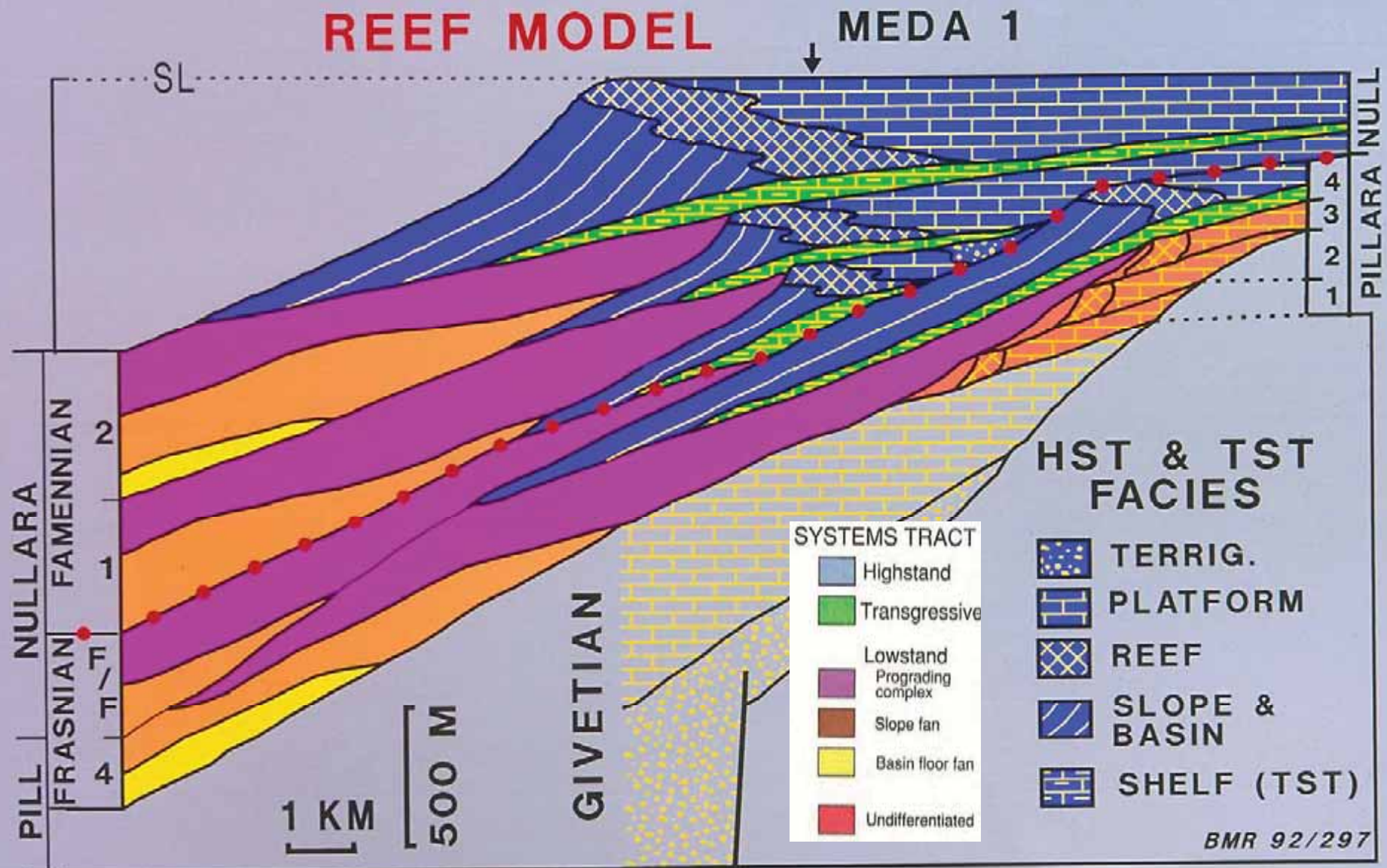
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INTERPRETED FACIES DIAGRAM of the NEEDLE EYE ROCKS FEATURE



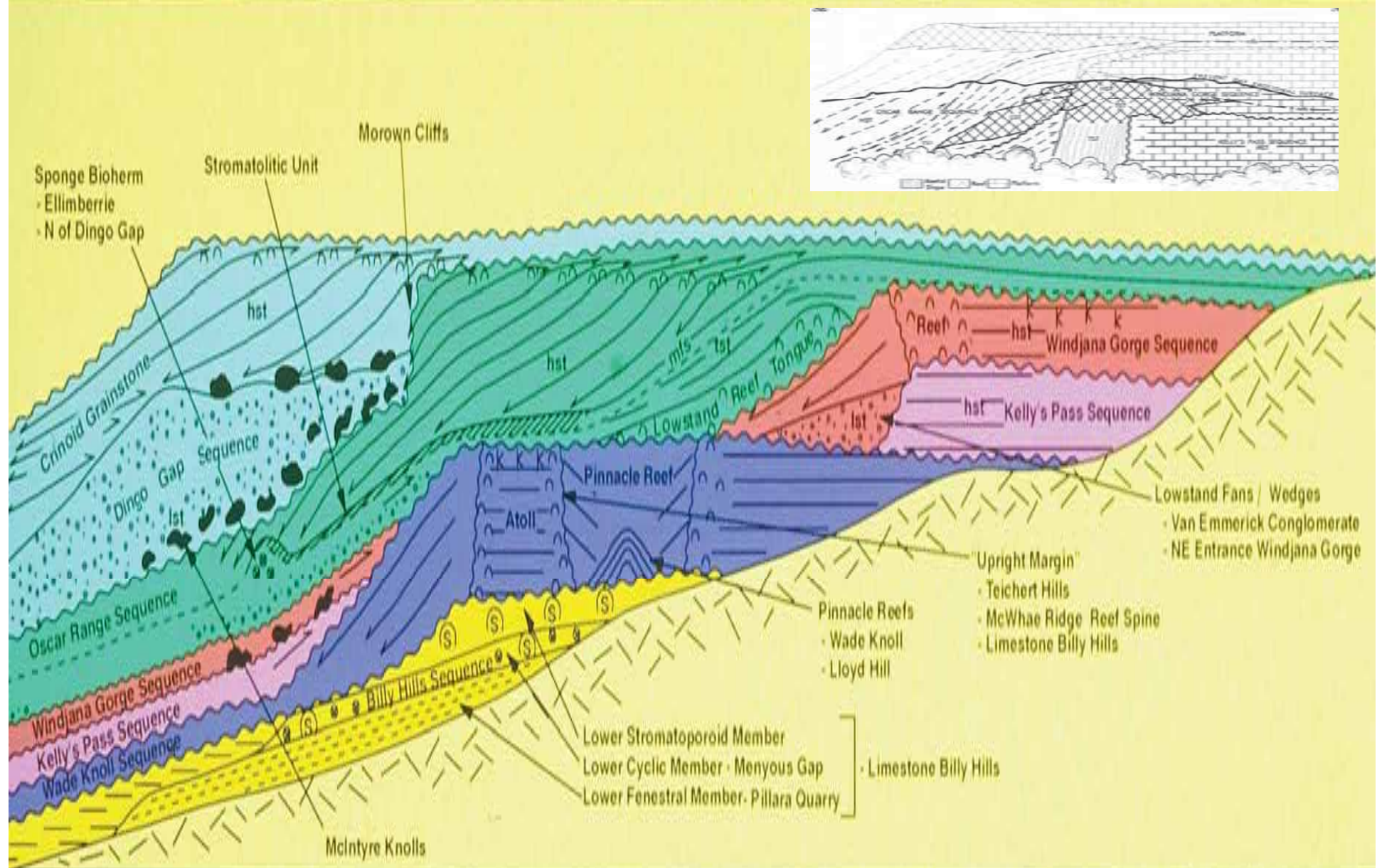
- | | | |
|---|----------------------------|--|
| 1 - Lower Flaggy / Cyclic Mbr eq. | Lower Carbonate Bank units | 5 - Reef margin |
| 2 - Lower Stromatoporoid Mbr eq. | | 6 - Lagoonal facies |
| 3 - Middle Stromatoporoid / Upper Fenestral Mbr eq. | Upper Reef Platform units | 7 - Saddler (Fore - reef) Limestone / Clastics |
| 4 - Upper Stromatoporoid Mbr eq. | | 8 - Gogo Formation (Basinal facies) |



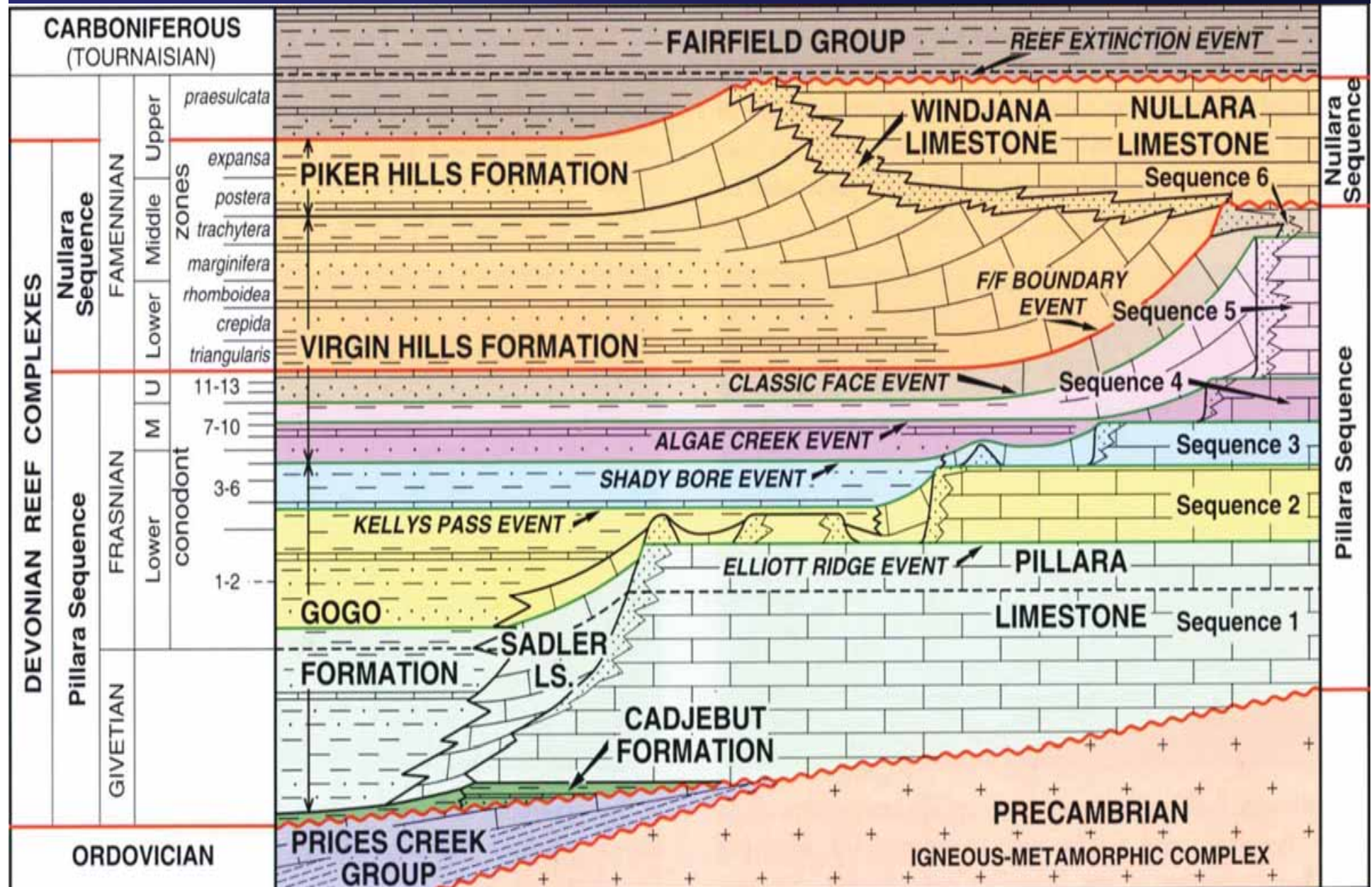


Whittam et al (1994) Sequence Stratigraphic model

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50 years of seismic imaging of the Devonian reefs

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