

STRUCTURAL CONTROL OF ADJACENT REEFAL AND INCISED VALLEY COMPLEXES IN THE NEOGENE OF THE SOUTHERN SHELF LAGOON OF BELIZE

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ABSTRACT

High resolution seismic lines from the southern shelf lagoon of Belize reveal two drainage systems and two reefal plateaus whose distribution may be controlled by Neogene structures. Within the two drainage systems, repeated Quaternary fluctuations in sea level have resulted in a series of stacked incised valley fills.

From west to east lagoon is subdivided into four zones. A submarine depression that hugs the coastline, called the Inner Channel zone, contains locally thick, siliciclastic Holocene valley fills overlying late Tertiary to early Quaternary folded sediments that are often truncated and form a prominent reflector. To the east is a broad elongate plateau or zone with pinnacle reefs that may reflect keep-up reefs that are founded on Quaternary highs or in parts on older structural highs. Between this zone and the barrier reef tract farther east is another shore-parallel submarine depression, termed the Victoria Channel zone. In this zone, as documented by thick Holocene valley fills, sediment from the mainland is funneled through a long-lived channel system between the modern rhomboid reefs in the northern part of Victoria Channel. Farther south, this zone contains isolated pinnacle reefs and a higher carbonate content, as most of this zone is shielded from modern siliciclastics by the pinnacle reef plateau. Farther east lies the barrier reef tract whose trend mimics the coastline and deeper structural trends. Repeated Quaternary sea level fluctuations have resulted in alternating high stand reef sedimentation on the plateaus and low stand siliciclastic sedimentation in the depressions, accentuating a submarine basin and range topography that trends with major structural lineaments in the region.