

Seismic Evaluation of Hydrocarbon Prospectivity in Offshore North Bali, Indonesia

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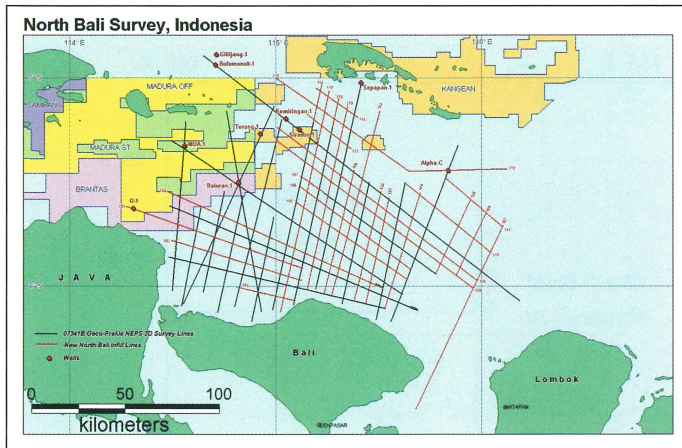


Fig. 1. Overlay of seismic 2D in open blocks.

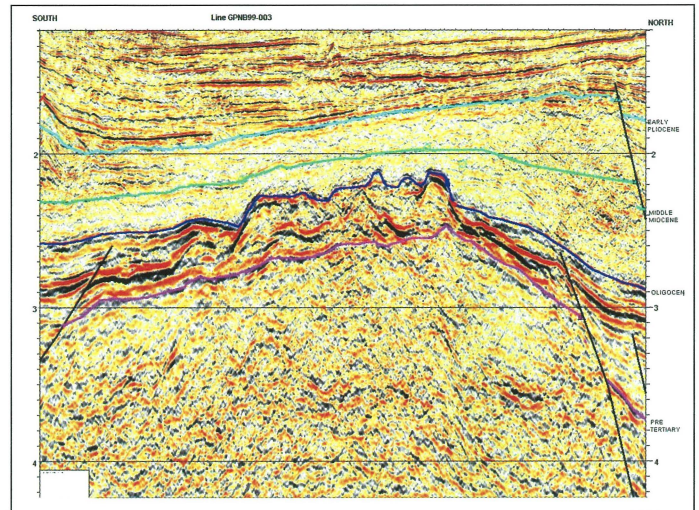


Fig. 2. Seismic section showing Lead A.

Introduction

The 2D seismic survey is located offshore North Bali, East Java, Indonesia. The nineteen seismic lines of GPNB98 and twenty-six lines of 2D Infill survey was acquired in December 2001 (Figure-1). The East Java Basin consist of four distinct tectonic realms: the Northern Platform, the Central Terrace (including Central High and Kemirian Terrace), the Southern Basin, and the South Thrust. This survey falls mainly into the Southern Basin with some of the southern portion in the South Thrust zone.

Seismic Interpretation and Leads in North Bali Offshore

Figure 2 illustrates the seismic interpretation of the survey area. The light blue horizon is near the top of the Pliocene, the light green one is near the top of the Middle Miocene, the dark blue one is near the top of Oligocene and the pink one is near the top of the Pre-Tertiary basement (Cretaceous metamorphic basement). The normal faults were generated as a result of extensional forces during the early rifting stage, and were later re-activated and converted to reverse faults under the influence of compressional forces (red fault).

Prospectivity

The isopach map of Oligocene to Eocene (Figure 3) reveals a NWW-SSE trending rift basin during the Early Tertiary. Considering an average water depth of less than 1000 m, the area contains very thick Tertiary deposits.

Leads

The Multiple tectonic episodes originating from plate movements led to intensive structural development and sedimentary variations that produced numerous structural and stratigraphic hydrocarbon traps.

A total of 14 major leads with structural trapping are identified from the time maps. In addition, reef build up features are identified in Eocene and Pliocene sections.

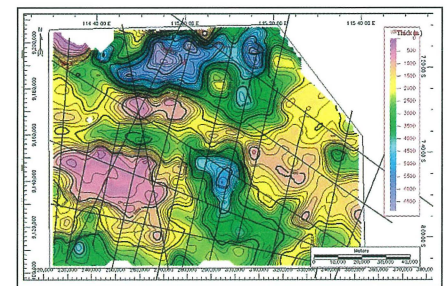


Fig. 3. Isopach map of Oligocene and Eocene.

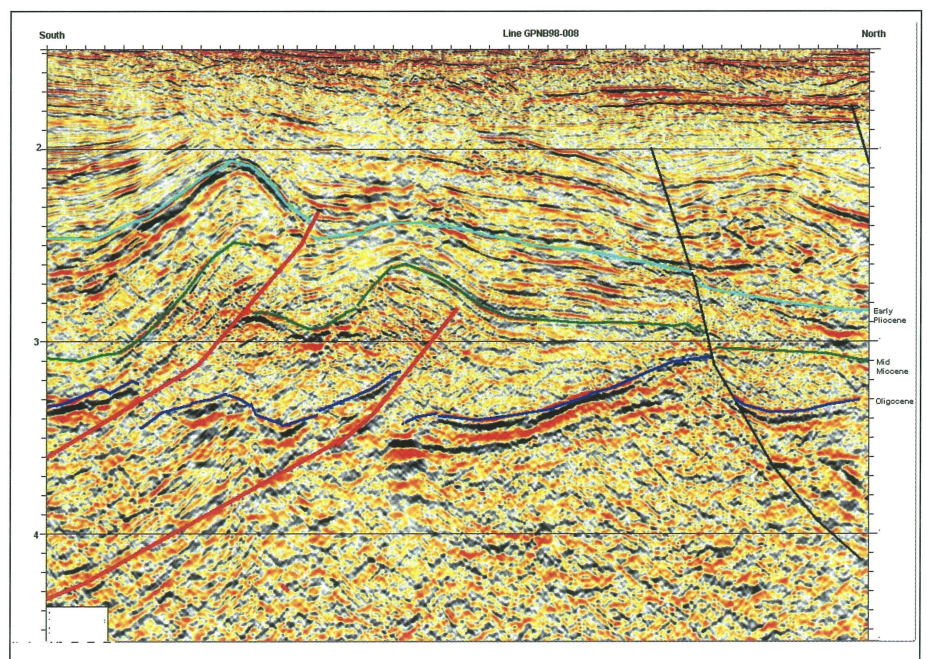


Fig. 4. Seismic section showing some leads in Oligocene and Pliocene sequences.