

PROCEEDINGS, INDONESIAN PETROLEUM ASSOCIATION  
Twenty-Fifth Silver Anniversary Convention, October 1996

**MESOZOIC TO RECENT TECTONIC AND THERMAL HISTORY  
OF THE BIRD'S HEAD, IRIAN JAYA, EAST INDONESIA  
USING APATITE FISSIONTRACK ANALYSIS**

**Eddy Sutriyono\***

**Kevin C. Hill\*\***

**Paul B. O'Sullivan\*\***

**Ijep Saefudin\***

**ABSTRACT**

The Cenozoic tectonic evolution of Irian Jaya appears to have been strongly influenced by active collision between the northern margin of the Australian plate migrating northwards and the oceanic lithosphere of the Pacific plate moving westwards. The ongoing collision between these plates is well documented by the south dipping New Guinea subduction zone located north of the island of New Guinea and by the rapidly uplifted Fold Belt trending E-W across the island. In the Bird's Head region, the westward motion of the Pacific plate has been accommodated by the E-W trending sinistral fault, known as the Sorong fault zone, whereas the Fold Belt is curved NW-SE and forms the Lengguru Fold Belt in this region.

The Mesozoic and Cenozoic tectonics of this area and hence the hydrocarbon generation and trapping history have been poorly constrained in part due to the paucity of geochronological data. The present study aims to reconstruct the Mesozoic and Cenozoic thermal and tectonic history of the Bird's Head region using apatite fission track thermochronology. At this time, a total of 13 cutting rock samples derived from the Permian-Pliocene sequences in several selected Bintuni Basin wells, and 17 outcropping rock samples from the Lengguru Fold Belt have been analysed. O'Sullivan et al. (1995) presented a preliminary interpretation of the Mesozoic and Cenozoic thermal history of the Bintuni Basin rock from two wells. The present paper, however, attempts to assess quantitatively the Meso-Cenozoic tectonic evolution and thermal history of the Bintuni Basin and Lengguru Fold Belt area using data from more widespread sampling sites. Consequently, we present a better constrained thermotectonic history of the region in this paper.

---

\* Geological Research and Development Center

\*\* La Trobe University