



Simpodium Kebudayaan **INDONESIA-MALAYSIA** **KE -10 (SKIM X)**

Tema:

**Keselamatan Insan Nasional dan Serantau:
Aspirasi dan Realiti**

- 29 -31 Mei 2007
- Universiti Kebangsaan Malaysia

Anjuran Bersama

**Fakulti Sains Sosial dan Kemanusiaan
Universiti Kebangsaan Malaysia
Bangi, Selangor D.E.**

dan

**Universitas Padjadjaran
Bandung Indonesia**

PROGRAM & ABSTRAK



Pemenang
Anugerah Kualiti
Perdana Menteri
2006

THE INFLUENT OF INTENSITY AND TYPE OF ALTERATION TO THE SECONDARY POROSITY OF THE PRE-TERTIARY BASEMENT ROCK OF SOUTH SUMATRA BASIN

Euis Tintin Yuningsih
Department of Geology, FMIPA, UNPAD
etintiny@yahoo.com, etintiny@melsa.net.id



ABSTRACT

Study area located at the Jambi Sub Basin, South Sumatra. The area is bounded by the Tigapuluh Mountain in the north, the Barisan Mountain Ranges in the west, the basement high partially shown as the Duabelas mountain in the south, and, the basement high partially shown as Belitung, Bangka, Singkep and Lingga Islands in the east.

The samples are obtained from pre-Tertiary igneous rock at JSB-3, JSB-4 and JSB-6 wells that represent a part of pre-Tertiary basement rock from Jambi sub Basin, South Sumatra. Lithology of the pre-Tertiary basement at the Jambi Sub Basin is dominated by andesite in JSB-3, granite in JSB-4 and granodiorite in JSB-6. Weakly – strongly hydrothermal alteration occurred in all samples. Petrography study indicates that alteration mostly through replacement process of primary minerals followed by filling of secondary minerals through pore and fracture. The type of alteration is classified as outer/sub propylitic – phyllic, which can be divided into two alteration minerals assemblages; the chlorite – illite – calcite group in the first episode; and the sericite ± quartz group in the second episode.

Secondary porosity is resulted from the dissolution process in the rock forming minerals especially secondary minerals; and in the empty fracture or partially associated with the filled fracture. The type of alteration has influent to the secondary porosity of the dissolution process. The increasing of alteration intensity which is replaced primary minerals, also caused the increasing of secondary porosity

Keywords: Basement, igneous rock, hydrothermal alteration, replacement, secondary mineral, dissolution

INTRODUCTION

Geographically, South Sumatra Basin lies in southeastern of Sumatra Island. This basin is known as the third hydrocarbon producer after Central Sumatra and Kutai Basin in East Kalimantan. Some of drilling exploration through basement proved that hydrocarbon could be accumulate in the pre-Tertiary basement, that is give new exploration concept in the South Sumatra Basin. Hydrocarbon in the basement rock is believed as a result of tectonic activities caused by fractures system in the reservoir (which is also related with fault pattern). It is interesting if we connected with analysis of the occurrences of hydrothermal alteration, that is could be contributed to the secondary porosity.

Research area located at the Jambi sub Basin, South Sumatra. The area is bounded by the Tigapuluh Mountain in the north, the Barisan Mountain Ranges in the west, the basement high partially shown as the Duabelas mountain in the south, and, the basement high partially shown as Belitung, Bangka, Singkep and Lingga Islands in the east. Research area is located at the pre-Tertiary Basement High structurally defined as anticline with northeast – southwest trend. Figure 1 shows research area in relation with regional tectonic of Sumatra.

METHODOLOGY

The objective of the research is to determine the lithology, mineralogy, and characteristics of secondary/alteration mineral and its relation with the formation of secondary porosity within the pre-Tertiary basement of Jambi sub Basin, South Sumatra by petrographic study.

The samples are obtained from the pre-Tertiary igneous rock at JSB-3, JSB-4 and JSB-6 wells that represent a part of pre-Tertiary basement rock from Jambi sub Basin, South Sumatra. Samples identified are from full core and sidewall core. Data available covered megascopic data