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Subsurface Geology and Oil Possibilities of the Taoyuan District*

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ABSTRACT

The Taoyuan exploration district, comprising approximately 1,500 sq km in northwestern Taiwan, is bounded on the north by the Hsintien-chi and on the south by the Touchien-chi. Nearly the whole pile of the post Miocene sediments which may reach a maximum combined thickness of about 6,000 m crops out in the area mapped.

The district can be further divided into two provinces—the eastern foothills and the western tableland—on account of the outstanding difference in the structural features and the stratigraphic distribution. The western tableland region is much more favorable for oil.

It is judged from a series of the isopach maps that the depositional belt of the younger Tertiary sediments in the district consists of the relatively stable Kuanyin shelf on the northwest and the fluctuating northeasterly trending Hsinchu basin to the south. The continuous tectonic disturbances in the Tertiary depositional belt during the middle Miocene to the Pliocene are clearly reflected in the series of isopach maps prepared. Two comparatively marked abrupt changes in configuration are noticed in the series of isopach maps, one in the stage between the upper Miocene Nanchuang and Tapu Formations, and the other between the Pliocene Chinshui Shale and Cholan Formation.

The regular northwestward updip thinning of the subsurface strata on the shelf area is obviously shown in the seismic profile. The interior of the depositional belt, which was probably situated at the eastern border of the district during the Shihti stage of middle Miocene age, has been subjected to shift slightly northwestward as the result of the progressive rising of the geanticline on the eastern flank.

The Kuanyin shelf might be the site to which migrated updip the petroleum generated in the interior basin over a long period of time. The Pingchen and Hukou anticlines, lying on the transitional zone between the basin and shelf, would have retained the conjecturable northwestward-migrating hydrocarbons in stratigraphic traps or structural traps.

The geologic conditions around the Kuanyin shelf area are ideal for the development of stratigraphic traps. It is desirable to drill a deeper test down to the Mesozoic basement in the Kuanyin shelf in order to understand the stratigraphic relationship between the Paleogene and the Neogene as well as to seek for the potential oil in the Paleogene sediments.

INTRODUCTION

The successive deep drillings carried out by the Taiwan Petroleum Exploration Division (TPED) in the Miaoli district have proved that the important

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