

## Evolution and Hydrocarbon Potential Evaluation of the Tertiary Basin of Western Taiwan (2/2)

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### ABSTRACT

Several decades of hydrocarbon exploration in the Tertiary Basin of Western Taiwan had resulted in the discoveries of the gas and gas/oil fields of Chuhuangkeng, Chinshui, Tiehchanshan, Chingtsaohu, Niushan, Chutouchi, Pachanghsi, CBK and F Structure and other numerous uneconomical oil/gas wells. Production tended to decrease in recent years and our reserves would be depleted in ten to twenty years unless new discoveries are added. As the known hydrocarbon fields are only sparsely scattered in our basin area, it is believed that a large amount of oil and gas still remains to be discovered. To obtain a comprehensive understanding of the petroleum geology of western Taiwan, an exploration research project was initiated for a thorough geological investigation of the whole area. The project comprised regional stratigraphic correlation, sedimentological and reservoir analysis, source rock evaluation, structural evolution reconstruction and hydrocarbon migration studies. The ultimate aim was to locate more prospects for the future exploration.

The entire project continued for two years and is now completed. For the first year efforts had been concentrated on the area north of the Peikang High and a separate report had been published. In that report, detailed stratigraphy, structure and hydrocarbon characteristics of the Peikang High, Tungyingtao Basin and the CEY Structure were analysed and prospects which are worth drilling were suggested. Area south of the Peikang High was studied in detail in the second year, and the results of the two years project were combined to complete an integrated report as is presented here. In the present report, special attentions were paid to the evaluation of the Nanjihntao Basin and its vicinity, Penghu Basin and Tainan Basin, and favorable prospects there were also proposed. However, the details are not included in this report.

Researchs on source rocks and reservoirs indicated the followings: The best hydrocarbon potentials of the Tertiary basin of western Taiwan is in the area extending as far as the foothills east of Miaoli and Hsinchu and offshore to the west. This area includes the Chuhuangkeng-Hukou-CBK-CBE region in which the lower Miocene and Oligocene formations are good in respect of both source and reservoir.

In addition to the existing oil and gas fields, regions of from Chuhuangkeng to Chutung, of from Yangmei to Hukou and of offshore CBA-CBL-CBE-WLP are all worthy of further explorations.

The Tachia-Cholan region southeast and the Hsitaopang-Pakuali-Kuanhsi-Tashi region east and northeast of the area mentioned above are also good with regard to hydrocarbon potentials. These regions constitute the depocenter of the lower Miocene, and are now located in the down-thrown side of the thrust faults. The source rocks contain rich organic matters of high maturity. However, reservoir sands are of rather fine grain size and the structures tend to be fragmentary.

In addition to the existing gas fields, areas worth exploring onshore southern Taiwan include the outer zone of the Peikang High, Meilin-Hsiaomei, Chunglung, and Kuantzuling areas. For the offshore southwestern Taiwan, the Oligocene and Cretaceous strata of the F structure have a high hydrocarbon potential.

The Eocene strata of the CDA and CDW in Penghu area contain source rock for generating oil. The Nanjihtao Basin, Tungyintao Basin and the Cretaceous formations on the southeastern side of the Tungyintao Basin are also of high potential areas.

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**Key words:** The tertiary basin of western Taiwan, Hydrocarbon potential evaluation.