

## **Integrated Research of Geological Data in the Hsinchu Area, Offshore and Onshore**

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### **ABSTRACT**

After Eocene, a series of E-W trending horsts and graben was formed in the offshore Hsinchu area. The late-Miocene Penglai Orogeny, characterized by many inverted structures and strike-slip faulting, later affected this region. Geochemical analyses indicate that the Mushan and Wuchishan formations have favorable oil generative potential and have reached the mature stage. However, we envision that even in the deep grabens and in the low-lying structures, these formations are still situation within the oil window. In the onshore and offshore Hsinchu-Miaoli region, four significant source rock areas have been identified. 1. The Chunan Graben is the most important one, as the gas in the Tiechienshan gas field is most likely sourced by this graben. 2. The Hukou Graben, and 3. The D Depression is abound with a specific type of coal beds, that has restricted distribution of natural gas and locally containing a high percentage of carbon dioxide. 4. The coal fields in the northern part of this region, that are the source rocks for the gas in the Chuhuangkeng and Chutung areas.

Based on sedimentological studies, vast areas of good sandstone are located within the Mushan Formation, Shiti Formation and the Talu Shale in the offshore Hsinchu area. Whereas the source maturity in the Shiti Formation and the Talu Shale are low, their exploration potential is limited by low self-generation and will rely on favorable migration conditions. Many sandstone bodies within the Mushan Formation are in close juxtaposition or superimposed with the source rocks, and the favorable hydrocarbon potential has made them the most important exploration targets in the onshore and offshore Hsinchu-Miaoli region.

Two specific sand bodies in the northern and southern parts of the Chunan Graben are optimally located for entrapping hydrocarbons. This is further confirmed by production tests taken in exploration wells in the S, L and E blocks. Additional leads and prospects are also identified in this area, warranting significant attention.

**Key words:** Hsinchu-Offshore area, Miocene reservoir, Source rock, Chunan graben, Hukou graben

## 寶山-竹東地區震測模擬與重合前深度移位

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### 摘要

震測模擬與成像分析是輔助複雜構造震測資料處理與震測資料解釋之良好工具，寶山-竹東地區V1線震測模擬與成像分析結果顯示，對於目前之解釋構造，逆斷層下盤由於側向速度變化之效應，傳統之重合後時間移位已無法準確呈現細部之地下構造形貌，進一步之深度移位處理有其必要性。實際最終重合剖面與合成最終重合剖面之比對，淺部主要地層之反射信號相當符合，深部主要地層之反射信號大致符合，顯示目前之解釋形貌尚具有一定程度之準確度與可靠性。

重合前深度移位(PSDM)是最適宜克服複雜構造問題之技術，V1線重合前深度移位結果顯示，反射信號與成像品質有相當明顯之改善，尤其1秒以下較深部之反射信號更有顯著之改進，顯示此技術之建立及應用已臻成熟，然整體而言，由於信號/雜訊比之差異，淺部地層之成像品質明顯優於較深部地層，顯示較深部地層之信號/雜訊比依然是一重要課題。

關鍵詞：震測模擬、成像分析、重合前深度移位