Paper 27

The role of advanced seismic interpretation in development planning for the Kinabalu Main Field, offshore NW Borneo

CHRISTIAN F. W. HOCKER & SONNY LIM H.B.
Sabah Shell Petroleum Co. Ltd.

The Kinabalu Field was discovered in early 1989 about 80 km off the west coast of Sabah, NW Borneo. Hydrocarbons are trapped on the downthrown side of a major growth fault in a very simple monoclinal structure with no known internal faulting. The Miocene siliciclastic reservoir sequence comprises extensive shallow marine sands and shales. By a combination of structural simplicity and extensive lithology, many shales form field-wide seals and create a complex fluid system with numerous separate hydrocarbon accumulations.

Despite the generally favourable aspects of the field, the benefit of reducing uncertainties in structure, reservoir and aquifer quality and extent as well as fluid distribution and properties prior to designing a major development plan was recognised. This led to an appraisal campaign consisting of a well which was extensively logged, cored, and tested, and the acquisition of a 3D seismic survey. This data set provided a sound basis for detailed Petroleum Engineering studies. In particular, interpretation of the 3D seismic data beyond structural information has confined initial uncertainties.

The paper discusses the contribution of advanced 3D seismic interpretation to integrated Petroleum Engineering studies for field development planning. The techniques used to define gross bulk volume and related uncertainties, to determine initial fluid contacts and to quantify the reservoir and aquifer development are highlighted. The conclusion from this work is that detailed 3D seismic studies can give a valuable contribution to development planning at an early stage in the field life, by providing data that would otherwise only be obtained by additional appraisal wells or from production history at a later stage for the field life.

Warta Geologi (Newsletter of the Geological Society of Malaysia), Vol. 18, No. 6, November-December 1992