The Role of Geophysics in Oil and Gas Field Development

Khee Kok Kean and Mohd Izham Ismail *, Esso Production Malaysia Inc.

For years the role of geophysics has been associated with only the exploration phase of the oil business. With the development and refinement of geophysical techniques, this role now extends throughout the upstream activities, especially in gas and oil field development and production.

One such technique involves the construction of depth structure maps. A 3-D structural model can be built from these maps, therefore giving the size and shape of the reservoir. Special data processing of both 3-D and 2-D seismic data may help determine reservoir variations, lithologic changes, presence of hydrocarbons, fluid contacts and extent of an aquifer. The input of all these data into the 3-D structural model helps engineers compute the volume and extent

* Presented by Mohd Izham Ismail.

Warta Geologi (Newsletter of the Geological Society of Malaysia), Vol. 10, No. 6, November-December 1984

of hydrocarbons, the number of wells needed to economically develop the field and the placement of drilling platforms and/or wells.

Site surveys, which involve a wide range of geophysical tools, are used in the selection of safe platform locations. The data from a properly carried out site survey, will provide water depth, seafloor conditions and geohazards in the sub-seafloor strata. These data are also used in designing development drilling programs.

******