PEMATANG LANTIH VIBROSEIS 3D SEISMIC SURVEY: AN INNOVATIVE TECHNIQUE APPLIED IN SUMATRA.

Adde Avrino*
Jacques Bonnafé-Clauss*
Susanto S. Wibowo*
Jerès R. Cherdasa*
Rimbawan Prathidina*
Nobuhiro Shimada**
Stevanus P. Silaban***

ABSTRACT

An innovative technique was used to image an oil structure in Sumatra that will accelerate the drilling and subsequent production. The terrain is covered by palm oil plantations, where typically seismic surveys are acquired using explosives as a source.

By using a non-explosive source, Vibroseis, shooting along existing roads and tracks, often plantation trails, Mont D’Or was able to significantly reduce permitting time and minimize operational delays resulting in reduced time and cost.

This non-explosive source was mounted on an 18 ton Vibroseis truck, emitting a seismic signal through a complex and delicate combination of electronic and hydraulic system.

The seismic data obtained is good quality imaged data with reflections down to 1 second TWT that delineates the Pematang Lanthih structure, faults and sedimentological packages.

In this kind of setting and environment, the challenges for this source are numerous: penetration, accessibility of the source, subsurface illumination and quality monitoring. By careful planning and follow-up, Mont D’Or and the contractor managed to acquire the 3D in a timely manner with minimal delays obtaining a good dataset. The 3D seismic survey fulfilled the geophysical objectives of imaging the structural elements and adding stratigraphic information of the field to define, locate and optimize drilling locations.

INTRODUCTION

The Tungkal Block is located within the Jambi Province of South Sumatera. Geologically the block lies on the Northern margin of the South Sumatera basin, a proven prolific hydrocarbon producing basin. Several hydrocarbon producing fields exist within the basin including the Mengoepeh field which also lies within the Tungkal PSC.

The current Tungkal block consists of three separate areas, Figure 1. The vibroseis survey is located on the crestal structure of Pematang Lanthih Field, an elongated antitlinal closure in order to evaluate the extent of the Pematang Lanthih structure.

The fluvio-deltaic sands of the Talang Akar Formation are the primary productive reservoirs in Pematang Lanthih Field (Figure 2).

The Pematang Lanthih oilfield is situated in an area with a series of major Plio-Pleistocene NW-SE trending three-way structural closure, and bounded to the North-East by South-Westward dipping thrust fault. The primary targets are the sands of the Talang Akar Formation (TAF). Top seal is provided by the mudstones and shales of the intra-TAF.

The first exploration drilling on the Pematang Lanthih structure started in 1958 by the drilling of PLT-1 and continued with PLT-2 well drilled in 1939. Several decades later PLT-3 was drilled in September 2014 and reached a total depth of 1420m MD. The PLT-3 well was cased for DST testing and four tests were undertaken. Tests result from all zones flowed a combined rate of 1350 BOPD. The PLT-3 discovery of this well confirmed the interest to further develop

* Mont D’Or Oil Tungkal Ltd.
** JGI, Inc.
*** Gelombang Seismik Indonesia

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