

## **Extending Kencanaloka Field Production by Developing a Hidden Potential of Eocene Carbonate Gas Reservoir, a Case Study of K-85 Zone in Kencanaloka Field, Offshore North West Java**

**Icuk Dwi Wibowo<sup>1</sup>, Sobani<sup>1</sup>, Linda Fransiska<sup>1</sup>, and Mery Luciawaty<sup>1</sup>**

<sup>1</sup>PHE ONWJ, Indonesia

### **ABSTRACT**

Kencanaloka Field is located approximately 59 miles northeast of Jakarta and has been developed since 1986 by three platforms: K-A, K-B and K-C. Current production of Kencanaloka Field is 4500 bopd and 25 mmcf/d mostly coming from Miocene Reservoir: Parigi, Main, Massive, Baturaja, and Talang Akar Formation. It consists of fluvio-deltaic sandstone reservoir, shallow marine deposit sandstone and limestone with matrix porosity supported. As production decline, several G&G study has been performed to seek new opportunity in other reservoir. The concept was then tested to add reserves and maintain the production.

A new play from the deeper Pre Talang Akar Formation named K-85 zone has been developed to maintain and increase gas production. Based on stratigraphy column, K-85 carbonate is deposited just above the basement. Old interpretation of K-85 has marked as basement. The age dating has been performed range from Early Oligocene to Late Eocene. Petrography analysis has found no visible porosity due to high effect of compaction. However, most of penetrating wells has experienced with total loss. What it means? The reservoir could be highly fractured. It is supported by the conventional core analogue and petrography data.

K-85 is an Eocene carbonate reservoir and described as brecciated and re-crystalline limestone which associated with fracture. Kencanaloka-1 exploratory well, located in Kencanaloka East block and drilled in 1998, was tested 545 BCPD & 8.5 MMSCFD from this zone. Kencanaloka-15 well was then drilled to develop the zone in 2011. It has 18 MMSCFD as initial rate, 9 MMSCFD as current rate, 15 BCF as cumulative production with no water and steady reservoir pressure. However, only limited log data could be acquired during drilling those wells due to total losses. It raises the uncertainty on petrophysical properties and hydrocarbon in-place determination.

Adjacent to the producing block, K-85 opportunity has been identified in Kencanaloka West block. It has six existing wells that shown similar hydrocarbon indication from total loss experience and high gas reading. Those well were targeting well-known reservoirs in the above formations. Thus, it penetrated K-85 as rat-hole only. Likewise, it is challenging to determine the petrophysical properties and hydrocarbon in-place. The MBAL data and back-calculation approach from the producing block was then being used as analogue data.

Proposed infill wells targeting K-85 zone in Kencanaloka West block has been designed to prove hydrocarbon in-place and to add reserves as part of field development program. An advanced well log acquisition has been planned as it essential to get accurate petrophysical parameters. As concerns to total loss and high possibility of dealing with naturally fractured reservoir, the wells are designed to set casing on top of the zone and drill the zone using a MPD tool along with specific drilling mud. Risk mitigation plan and decision tree has been developed to drill

the K-85 zone. Those programs are offered to extend KL field production by developing K-85 zone. If successful, the new play would be applied to surrounding fields. There are several promising closure in northern part of Kencanaloka Field that never been explored yet.