

## **Fractured Basement Reservoir as New Hydrocarbon Potential in North West Corner Field, Offshore North West Java Basin**

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### **ABSTRACT**

PT PHE ONWJ is a subsidiary of Pertamina Hulu Energi operated in the Offshore North West Java block. ONWJ PSC has been producing around 37.000 BOPD and 172 MMSCFD gas, the producing zone commonly came from Parigi, Main, Massive, Baturaja and Talangakar Formation. With the existing Production Rate, it is quite difficult to attain sustainable rate in ONWJ. Since then new exploration paradigm to obtain new resources from new formation will be needed.

Generally, ONWJ's prospects and lead focused on Main, Massive, Baturaja and Talangakar formation have an average total resources less than 10 MMBOE. Meanwhile, total resources more than 10 MMBOE had hardly reached with conventional structures since they had been explored and developed as a production field. Therefore, basement is a chance formation that never been explored.

NWX Prospect is located in the western part of ONWJ area and surrounded by 2 mature sub basins (Sunda Trough and North Seribu Trough) which have proven as hydrocarbon kitchen. Some wells have penetrated basement as a rat hole and tested oil with no water. Limited data in basement raises the uncertainty of fractured basement potential. Vertical fracture distribution and its intensity are still remaining unknown. Since then, NWX-1 exploration well is designed to get better understanding of the Fractured Basement potential in North West Corner (NWC) area and aimed to acquire more advance logging data.

Prior to drill, G&G analyses have been performed to interpret the fracture distribution such as regional geology analysis, micro-resistivity image, conventional core, DST and well log analysis from the surrounding wells. Seismic data and ant-track attribute analysis have been applied to identify the fracture orientation and intensity. Regional data is utilized to construct structure development in NWC area. Image log helps to define open fracture orientation is coming from ZUG-10 and YYS-1 well. It has NE-SW trend with 60o – 80o dip which is similar with the regional structure and current regional stress orientation. Lithology description of AA-4 conventional core at basement shows schist with presence of fractures filled by calcite vein. Remarkably, some wells have no hydrocarbon indication based on well log data but been tested oil with no water.

NWX-1 post drill shows that the fracture is developed until 2000 ft below top basement. Sonic and micro-resistivity image log analysis reveals that fracture is very extensive. It has good correlation with the ant-track seismic attribute analysis. NWX-1 exploration well has been successfully drilled and gained useful data to get a better understanding of the Fractured Basement potential in ONWJ.