ABSTRACT

Hydrocarbons, derived from fossil sources such as oil and natural gas, are critical energy resources. In Indonesia, the increasing population has led to a rising demand for hydrocarbon resources, which is inversely related to their availability, necessitating research into optimizing hydrocarbon exploration. Hydrocarbon exploration can be performed using the Amplitude Variation with Offset (AVO) method, which analyzes variations in seismic wave amplitudes with respect to changes in offset to detect hydrocarbon presence. This research aims to delineate potential hydrocarbon accumulation zones and assess the number of potential hydrocarbon prognosis wells within the "RDA" field. The research employs 3D seismic angle stack data to enhance the resolution and accuracy of subsurface structural identification. The findings indicate that eight potential hydrocarbon accumulation areas were identified in the "RDA" field, based on consistent amplitude anomalies and hydrocarbon-associated characteristics observed in several areas. This suggests significant potential for gas field development at the study site. Furthermore, the research identifies 11 potential hydrocarbon prognosis wells, each with distinct net pay and reserve estimates, indicating considerable hydrocarbon accumulation potential in the "RDA" field, which can facilitate more effective and efficient exploration planning.

Keywords: Amplitude Variation with Offset, 3D seismic angle stack, net pay, porosity, reserves.