

ABSTRACT

This research area is located in Timor-Tanimbar islands (Southern Banda Arc). This research is aimed to produce a regional tectonostratigraphic synthesis for the Mesozoic – Cenozoic evolution of the southern Banda Arc and adjacent parts of the NW Shelf; assess likely provenance, fluvial pathways and potential quality of sand units to compare and contrast clastic units in the Timor-Tanimbar region with those in the area south of the Timor Trough; produce facies maps for important Triassic-Jurassic intervals across the research location to show likely facies relationships and transitions and estimate the impact of the collision on effectiveness on the Triassic reservoir. The goal is to address the potential of Triassic reservoir facies by making comparisons with analogous units on the NW Shelf, as well as model the effects of Neogene tectonic burial or uplift on the effectiveness of the system.

All data used in this research are well data, seismic data, geochronology data (crystalline rocks and zircon detrital), mineral deposit data, reservoir data and sedimentary petrology data. The data analysis method are integrating geochronology and detrital zircon analysis to make map/clustering of ages distribution and then predict the sediment pathway (provenance study); integrating geochronology data - mineral deposit analysis to reconstruct the geodynamic event; seismic data interpretation to reconstruct the basin evolution thorough geologic time and to map the Triassic time subsurface; integrating seismic data and well data to build paleogeography model at Triassic time and predict the good quality sand reservoir in Timor-Tanimbar area and integrate to 1D basin modelling to interpreting the reservoir effectiveness.

According to data analysis, it concludes that tectonically there are three important events in NW Shelf: Middle Triassic-Jurassic NNE-SSW extension phase, Late Jurassic NE-SW extension phase and the Neogene collision Phase; The sediment source of Triassic Sand of Timor-Tanimbar come from Australia and Head's Bird Papua; The development of sediments from southeast to northwest in the Timor area in sequence is fluvial facies, deltaic facies and marine facies (by turbiditic current process); and the Neogene collision effects on decreasing of Triassic sand porosity and permeability beneath 7758 meters from Timor-Tanimbar surface.

Keywords : Timor-Tanimbar, geochronology, provenance study, Triassic time, paleogeography, basin evolution