

PETROLOGY OF JURASSIC FORMATIONS AT ANDIGAMA, SRI LANKA

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Nearly one-tenth of Sri Lankan terrain consists of sedimentary rocks. Some Upper Jurassic sedimentary rocks are preserved in at least two or three faulted basins at Tabbowa and Andigama in North-West Sri Lanka. Unlike Tabbowa Jurassic rock outcrops, Andigama beds are completely covered by recent sediments. As such, due perhaps to sampling difficulties, detailed petrological studies of Andigama rocks are rare or not reported. However, such studies when undertaken can contribute towards reconstruction studies of Gondwanaland while providing an insight into poorly understood Jurassic petrology.

So, detailed field geological studies were carried-out by careful examination of deep agro-well sections extending to depths of 20 to 25 m below surface and located around the Andigama town. The sampling was extended to four main distinguishable strata along the well sections. The collected samples were studied under polarizing microscope and by X-ray Diffraction spectrometer (XRD) analysis.

According to the field observations, alternating dark and light colored cross-bedded sandstone and siltstone layers are suggestive of 'varved' depositional sequences reflecting agitated paleo-depositional environments such as shallow glacial lakes. In studied thin sections, angular quartz, unweathered plagioclase feldspar and rock fragments are embedded in a clayey matrix without tangential contacts between grains suggesting the presence of high viscous mud slurry during glacial depositional phases thereby preventing selective deposition. Also, such mud slurry is found associated with rock flour containing mica and clay and is formed due to grinding of underlying rock during glacial movement. The resulting deposits called 'boulder clays' have been reported from Weuda, Sri Lanka. Also, the presence of (a) rock fragments having internal micaceous sedimentary laminations, (b) high amounts of organic debris that would form coal seams, (c) unweathered plagioclase feldspars, (d) dominance of smectite group clay types like montmorillonite over kaolinite (based on XRD interpretations) in matrix suggest the prevalent paleo-glacial depositional environments during the Jurassic period. Based on these arguments, the Gondwana fragment containing Sri Lanka should have been situated away from the present tropical region during the Jurassic period where Andigama beds were forming as silty shales. However, the present study highlights the need for detailed stratigraphical and petrological studies on Andigama beds perhaps with a view to prospecting for the occurrence of coal within Andigama beds.