

SARI

Sungai Cisaat di Kabupaten Brebes, Jawa Tengah, merupakan salah satu lokasi situs di Pulau Jawa tempat ditemukannya fosil vertebrata. Formasi Mengger yang berada di Sungai Cisaat yang tersusun dari material vulkaniklastik berupa fragmen tuf dan pumis mengandung fosil-fosil tersebut. Penelitian mengenai sejarah geologi dan vulkaniklastik daerah penelitian khususnya Formasi Mengger masih belum dilakukan secara mendetail. Penelitian ini bertujuan untuk mengidentifikasi dan membedakan proses pengendapan vulkaniklastik primer dan sekunder. Hasil penelitian ini selanjutnya dapat digunakan untuk studi kronologi batuan penyusun daerah Sungai Cisaat, berkontribusi dalam mengungkap vulkanisme purba dan mengusulkan pentingnya implikasi bahaya vulkanik di cekungan yang jauh sumber letusan. Metode yang digunakan dalam penelitian ini adalah pengukuran stratigrafi, analisis petrografi, palinologi dan mikropaleontologi dilakukan untuk menyelidiki jenis vulkaniklastik, mekanisme pengendapan, lingkungan pengendapan, asal sumber batuan, sejarah geologi serta *paleohazard*.

Batuan vulkaniklastik primer, vulkaniklastik sekunder dan vulkanogenik ditemukan di daerah penelitian. Terdapat satu litofasies vulkaniklastik primer yang dijumpai berupa tuf kristal-vitrik yang merupakan produk piroklastik jatuhan. Dua litofasies yang termasuk vulkaniklastik sekunder yaitu litofasies perselingan *resedimented ash-rich sandstone* dan *resedimented pumice lapilistone* silang-siur (RsRp-t) dan *resedimented pumice* dan *lithic breccia* masif (Rplb-m), dan lima vulkanogenik yaitu batulempung-batulanau masif (M-m), batupasir masif (S-m), batupasir silang-siur (S-t), batupasir tufan berlapis (St-h), dan konglomerat tufan silang-siur (Gm-t). Secara umum, daerah penelitian diinterpretasikan sebagai endapan hasil mekanisme pengendapan suspensi, arus traksi dan aliran massa. Asal sumber batuan merupakan hasil resedimentasi aliran piroklastik (ignimbrit) dari letusan secara eksplosif, terendapkan di lingkungan laut dangkal. Awal pengendapan oleh endapan vulkanogenik di lingkungan laut, kemudian terjadi erupsi pertama yang diwakili oleh litofasies tuf berlapis, kemudian terjadi jeda dan diendapkan lagi endapan vulkanogenik. Setelah itu terjadi letusan kedua yang membawa material endapan vulkaniklastik primer yang tertransport kemudian mengendapkan vulkaniklastik sekunder dengan jumlah pumis yang melimpah. Berdasarkan fosil foraminifera planktonik dan palinomorf yang terkandung pada batuan daerah penelitian, batuan diperkirakan berumur Plio-Pleistosen. Akibat dari adanya letusan diduga terjadinya kepunahan vertebrata dan vegetasi di daerah penelitian karena adanya aliran debris vulkanik.

Kata kunci : vulkaniklastik, resedimentasi, pumis, ignimbrit, *paleohazard*

ABSTRACT

The Cisaat River in Brebes Regency, Central Java, is one of the field in Java where vertebrate fossils are found. The Mengger Formation is located on the Cisaat River which composed of volcanoclastic material in the form of tuff and pumice fragments that contains these fossils. Research of the geological and volcanoclastic history in the study area, especially the Mengger Formation, has not been carried out in detail. This study aims to identify and differentiate primary and secondary volcanoclastic depositional processes. The results of this research can be used to study the chronology of rocks that form the Cisaat River area, as fundamental factors to reveal ancient volcanism and indicate the important implications of volcanic hazard in the basins that far from the source of eruption. The methods used in this study were stratigraphic measurements, petrographic analysis, palynological and microplaeontology to investigate volcanoclastic types, depositional mechanisms, depositional environment, rock source origin, geological history and paleohazard.

Primary volcanoclastic, secondary volcanoclastic and volcanogenic deposits were found in the study area. There was one primary volcanoclastic lithofacies found in the form of pyroclastic-fall tuff crystals-vitric. Two lithofacies that classified as secondary volcanoclastics, there were alternating resedimented ash-rich sandstone and resedimented pumice lapilistone cross-stratification (RsRp-t), and resedimented pumice and lithic breccia Massive (Rplb-m), and five volcanics, which were massive claystones - siltstones (M-m), massive sandstones (S-m). cross-stratification sandstone (S-t), stratification tuffaceous sandstone (St-h), and cross-stratification tuffaceous conglomerate (Gm-t). In general, the research area is interpreted as sediment resulting from the suspension deposition mechanism, traction current and mass flow. The origin of the rock source is the result of pyroclastic flow (ignimbrite) resedimentation from explosive eruptions. It was deposited in a subaqueous shallow marine environment. The initial deposition was by volcanogenic deposits in the marine environment, then the first eruption was represented by stratification of tuff lithofacies, then there was a break of deposition and volcanogenic deposits were deposited again. After that, a second eruption occurred which carried primary volcanoclastic sedimentary material which was transported and then deposited the secondary volcanoclastics with an abundant amount of pumice. Based on the planktonic foraminifera fossils and palynomorf contained in the rock of the study area, the age of the research area is estimated to be Plio-Pleistocene. As a result of the eruption, it is suspected that the extinction of vertebrates and vegetation in the study area was due to the flow of volcanic debris.

Key word : volcanoclastic, resedimented, pumice, ignimbrite, paleohazard