

Lithofacies of the Halang Formation in the Cijurey River-Majalengka

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Abstract

This report discusses lithofacies composition of the upper part Halang Formation that is well exposed along the Cijurey River, Majalengka - West Java. A total of 450-m-thick continues section of the Halang Formation have been measured and described. The lithofacies composition of the Halang Formation in the Cijurey River consists of alternating thin- to very thin-bedded sandstones and mudstone, un-bedded mudstones, very thick pebbly mudstones, breccia and slump. Andesitic igneous rock intruded locally to this formation.

Keywords: Cijurey River, Halang Formation, deep-water, Bogor Trough, West Java

1. INTRODUCTION

The stratigraphy in Majalengka area has been studied in the last several decades (e.i. Djuhaeni and Martodjojo, 1989; Djuri, 1973; Martodjojo, 1984), the most works concentrating on the regional overview in stratigraphy scopes and pay a little attention on detail lithofacies characteristics.

The Halang Formation was reported to have been distributed in an area from Majalengka - Kuningan (West Java) through Purwokerto - Banyumas (Central Java), and it consists of various lithology that developed in various sedimentary settings (e.g. Condon et al., 1996; Djuri, Samodra, Amin, & Gafoer, 1996; Djuri, 1973; Kastowo, 1975). However, detail characteristic from the outcrops database is very little published.

The aims of this study are to (1) document the lithofacies description along the Cijurey River, and (2) interpret sedimentary processes of the deposits.

2. DATA

The data is collected from the outcrops that exposed at the floor of river and riverside cliffs along the Cijurey River. The succession has dip of bedding surfaces, which varies from about 20° to 35°, and the dip directions are considerably variable to the south. A total of 450-m thick section of the Halang Formation is described from the youngest outcrop-exposed in the Cijurey River through the outfall of the Cijurey River into the Cilutung River (Fig. 1).

3. STRATIGRAPHY SETTING

The Halang Formation is one of Neogene sediment infill that believed to have been delivered into the Bogor Trough from the south volcanic-arc source (Martodjojo, 2003). The Halang Formation is grouped into two members, lower and upper members. The lower member consists of sandstone and breccia, while upper member consists of sandstone and sandy shale. The formation is deposited during Middle-Late Miocene (Djuri, 1973). Djuhaeni & Martodjojo (1989) named the deep-water volcanic succession in this area as Cimanuk Group, which consists of the Cinambo, the Cantayan and the Bantaujeg Formations, rather than the Halang Formation.

To the north, this formation is overlaying conformable the Cinambo Formation that has been deposited during early Miocene, and it represents the oldest sedimentary rock that is exposed in the study area. The Cinambo Formation consists of claystone, tuffaceous sandstone, calcareous sandstone, and shale (Djuri, 1973).

To the south and far away to the north, those formations are overlain by mudstone dominated succession of Subang and Kaliwangu Formations, and fluvial deposits of Citalang Formations, which deposited during late Miocene-Pliocene time respectively (Djuri, 1973).

4. LITHOFACIES

The lithology composition of the Halang Formation that exposed in the Cijurey River is consisting of (1)

alternating thin- to very thin-bedded sandstones and mudstone, (2) un-bedded mudstones, (3) pebbly mudstones, (4) breccia, and (5) slump. Andesitic igneous rock found in one location under the bright. The igneous rock intruded the succession parallel the beds of succession.

4.1. Alternating thin- to very thin-bedded sandstones and mudstone

This lithofacies commonly found in the lower part of section and in the middle part. It is consisting of laminated siltstones, claystone and thin- to very thin-bedded fine- to medium-grained sandstones (beds 2 – 20 cm thick) (Fig. 2). The intercalated sandstone beds commonly show impersistent thickness, and internally contain the Bouma Tab, Tbc, and Tc divisions. This lithofacies is interpreted to have developed as hemipelagites or possibly formed as turbidite deposits in bathyal environment. Thin- to very thin-bedded sandstones are interpreted as deposits from turbidity current.

4.2. Unbedded mudstones

Unbedded mudstones are commonly found in upper part of the section. The thickness of this lithofacies is ranging from 7–36 meter, with locally interlaminated with mudstone and fine-grained sandstones. This lithofacies is interpreted to have been developed by turbidity current or suspension.

4.3. Pebbly mudstone

Pebbly mudstone beds are commonly found in the upper interval of the Halang Formation. Beds are commonly consisting of mudstones with pebble-size of sedimentary rock fragment. Pebbly mudstones show sharp contacts with the underlying and overlying beds (Fig. 3). These facies are interpreted to have been developed by subaqueous debris flow (mass transport deposits)

4.4. Breccia

Breccia is commonly lower part of section, typified by matrix – to component supported, the component sizes are various, ranging 4 – 30 cm, and consisting of sedimentary and igneous rocks fragments (Fig. 4). Breccia is

interpreted to have been developed by debris flow.

4.5. Slump

These facies are most commonly observed in the lower part of section. The thickness of slump deposits varies between 12–18 m. This facies contains folded alternating thin-bedded sandstone and mudstone. The original bedding and sedimentary structures of the component deposits are well preserved. Slump deposits show sharp contacts with the underlying and overlying beds (Fig. 5). This facies is formed by the mass-transport of semi consolidated alternating thin-bedded sandstone and mudstone on an unstable seafloor.

All the lithofacies of the Halang Formation that exposed along the Cijurey River, are mostly corresponding to the mass transport processes in the slope setting. Paleontology data is needed to conform this preliminary interpretation.

5. CONCLUSION

Lithofacies of the Halang Formation, which is exposed along the Cijurey River consists of (1) alternating thin- to very thin-bedded sandstones and mudstone, (2) un-bedded mudstones, (3) pebbly mudstones, (4) breccia, and (5) slump. Those lithofacies are interpreted as a product of mass transport deposits.

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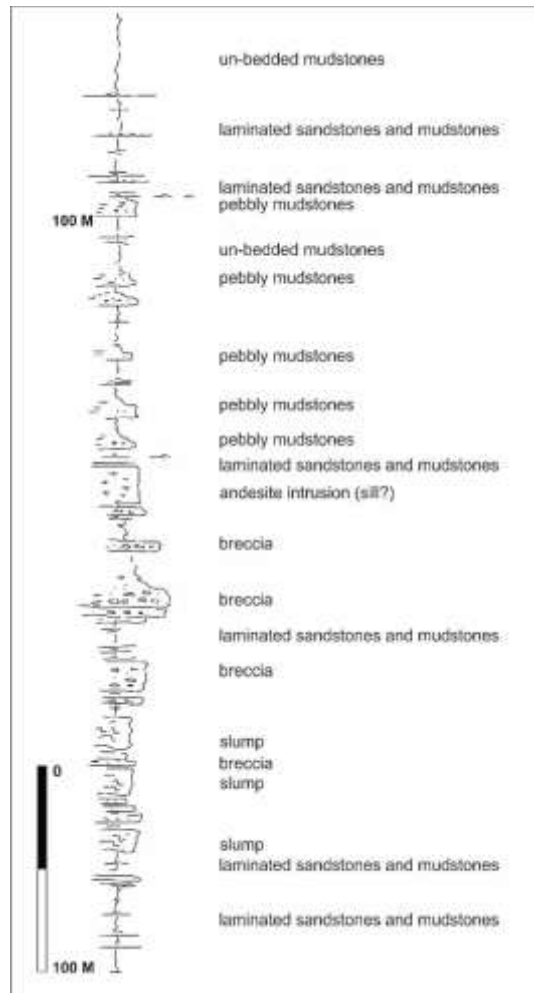


Fig. 1. Stratigraphic log diagram of the Halang Formation along Cijurey River



Fig. 2. Thin-bedded sandstones and mudstone in the Cijurey River



Fig. 3. Pebbly mudstone



Fig. 4. Component-supported breccia exposed in Cijurey River



Fig. 5. Slump deposits

