PROCEEDINGS

Regional Geoheritage Conference 2016

THE 9TH INDONESIA-MALAYSIA CONFERENCE

ISBN : 978-602-8461-28-3

" Exotic Past For Our Future "

HYATT REGENCY HOTEL- YOGYAKARTA

24-25 NOVEMBER 2016

UNIVERSITAS PEMBANGUNAN NASIONAL "VETERAN" YOGYAKARTA

UNIVERSITI KEBANGSAAN MALAYSIA

United Nations Educational, Scientific and Cultural Organization

GLOBAL GEOPARKS NETWORK

BADAN GEOLOGI KEMENTRIAN ENERGI SUMBER DAYA MINERAL

DEPARTEMENT OF MINERAL RESOURCES THAILAND

DEVELOPMENT OF PUNDONG AREA AS GEOHERITAGE AND EDUCATION TOURISM PUNDONG PARANGTRITIS YOGYAKARTA

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ABSTRACT

Pundong region is part of an ancient volcano fossil area that grows in the southern part of the city of Yogyakarta. This ancient volcano located at the westernmost tip of volcanoes series that lined east-west. Range of this volcano is covered by limestone sediment that showing the distribution of marine fossils. The fossils can be seen on the rock.

On the lines from Kretek to the top of Pundong hill can be seen educational sites from volcano product, traces the history of the Dutch colonial era to the Japan era, and story of local legend. Education sites are lava basalt with structural sheeting joint and autobreccia, springs, pools that have occurred since the Dutch era, Sunan Mas cave, Sunan Mas mosque, unconformity boundary between andesite lava and Wonosari limestone, Japanese cave and distribution of mollusc fossil and coral as constituent of limestone.

This study uses a methodology to conduct cross-sectional profile of rock, outcrop observations and preparation of the information. This study aims to provide insight education Geotourism and education about the history of the Indonesian nation. Understanding the occurrences surrounding nature and understanding the history of the nation, it is expected to grow motivation patriotism and defend the state for the Indonesian nation. By better understanding the geography and culture of the Pundong people, the hope of the future obtained a much better idea for enhancing Pundong tours and welfare of local communities.

Key words: ancient volcano, historical sites, culture, tourism

INTRODUCTION

Pundong tourist area is part of the tourist area of Bantul, which still need to be developed and published. This area is fully loaded with the geological history of the past, the history of the struggle of the Indonesian people to the cultural history of the local community Pundong. With the planning of the south-south lane road that will pass through the region of Bantul, With the planning of the south-south lane road that will pass through the region of Bantul, so Bantul tour should be more developed, because it will get more tourists both local and foreign to prefer Bantul than other areas. In addition to the economy and welfare of Bantul people will be increased.

Pundong hills limited by the wide expanse of the Indian Ocean in the south and the Opak river in the north. The western part is the area of sand dunes, as well as in the eastern part

is a series of volcano fossils lined from west to east. This area is located in the Kretek district, Bantul, Yogyakarta, which is about 20 km to the south of the Yogyakarta city.

GEOLOGICAL PARANGTRITIS

The research area is part of the western Indonesian region affected by tectonic activity which is the collision between the Eurasian continental plate and the Indo-Australian Plate Ocean that has lasted since the Late Cretaceous and still continues today. In Java, the collision between the plates is directed perpendicular subduction which produces magmatic arc lines east-west trending.

Morphologically Pundong area is Tertiary volcanic morphology that is covered by limestones and surrounded by beaches and river sediment. Morphology this volcano does not show the form of a cone, as has been eroded. Morphology is organized by litostratigrafi unit of the Southern Mountain. Some researchers in explaining litostratigrafi Southern Mountain to one another there is a difference. This difference is primarily litostratigrafi unit of western parts (Parangtritis-Wonosari) and the eastern region (Wonosari-Pacitan). Proposed sequence stratigraphy of west part of South Mountain expressed by Bothe (1929) and Surono (1989). In the eastern part submitted by Sartono (1964), Nahrowi (1979) and Pringgoprawiro (1985), while Samodra et al. (1992) proposed stratigraphy in the transition area between the western and eastern parts. The geological map prepared by Raharjo, et al. (1977).

Parangtritis is the western part of Southern Mountain with the oldest stratigraphic sequence is a Pre-Tertiary metamorphic rock and are exposed at Jiwo Mountain, Bayat. Then precipitated unconformity by Tertiary rocks consisting of Kebo-Butak, Semilir, Nglanggran, Sambipitu, Oyo, Wonosari and Kepek Formation. Lithologies of formation contain volcanic activity results include: Kebo-Butak, Semilir, Nglanggran, Sambipitu and Oyo Formation.

Rocks in the study area consisted of Nglanggran Formation, Wonosari Formation and beach sediment. Nglanggran Formation is the volcanic eruption products that are part of a series of Tertiary volcanic complex. Age of lines of this volcanoes according Soeria-Atmadja *et al*. (1990, 1991) from Paleocene (58.58 ± 3.24 Ma) to Oligo-Miocene (33.15 ± 1.00 Ma - 24.25 ± 0.15 Ma). Volcanoes affinity including toleitic-calc alkaline series rocks constituent of basalt, basaltic andesites, andesite and dacite (Soeria-Atmadja *et al*., 1990, 1991 and Hartono, 2000). Wonosari Formation consists of limestones Middle-Late Miocene, while the Quaternary sediment includes alluvial of Opak river and sand beaches sediments.

RESEARCH METHODOLOGY

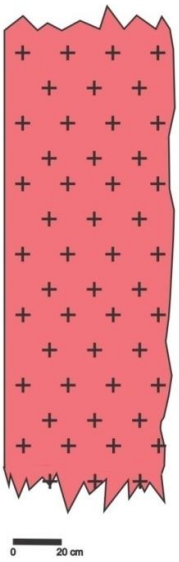
In conducting this research, problem solving is done by using a methodology that includes: profile cross-section of rocks, outcrop observations and preparation of the information. Because this study aims to provide insight education Geotourism and education about the history of the Indonesian nation.

RESULTS AND DISCUSSION

Basalt lava

Basalt lava exposed western slopes of the Pundong hill, currently planned as a four-wheeler parking. Lava shows the structure of sheeting joint and autobreccia. Description of basalt lava is gray, massive, hipocrystaline, afanitic- moderate faneric, inequigranular, suhedral-anhedral crystal form. Mineralogical composition consisting of pyroxene, plagioclase embedded in volcanic glass groundmass.

Figure 1. Basalt lava showing sheeting joint and autobreccia structures.



Basalt lava, sheeting joint and autobreccia structure, gray, massive, hipocrystaline, afanitic-moderate faneric, inequigranular, suhedral-anhedral crystal form, composition consisting of pyroxene and plagioclase embedded in volcanic glass groundmass. Thickness (± 2 m).

Figure 2. Cross-section profile of basalt lava.

Water spring

Spring and pool of water has been around since the Dutch era about 350 years. These springs are not exhausted during the drought. These springs are used by inhabitants as a source of daily necessities. It is said that in the era of Sultan Hamengkubowono VII, the spring water is used to irrigate sugar cane plantations. At that time Yogyakarta already using the technology of making sugar cane. Then in the era of Japan, this spring is used to support military activities in the area.

Total spring there are about 7 locations and the rise of the water is in the form of the temple. The water is then collected into large tubs and used inhabitants to meet their daily needs and the rest is collected into the pond to keep the fish. Flow of water is constant, then the future development of this spring can be developed as a ponds Pundong, thus

increasing tourist destinations. Some of the facilities that had been awakened are toilets and some information about the history of the springs. The geology of this spring is generated by differences in rock types. Andesite lava serves as an impermeable layer is covered by a layer of limestone Wonosari as a water reservoir. As a result of the topography and fault structure, the water can appear in the zone. The boundary of rocks is unconformity between basalt lava of Nglanggran Formation with Wonosari limestones Formation.

Figure 3. Tub of water, ponds and springs are constructed as a temple.

Surocolo cave

Surocolo cave or Sunan Mas cave is a historical relic of a story Sunan Mas or Sunan Amangkurat Amangkurat III. This cave is the hiding place of the sunan during confrontation with the Netherlands. In the vicinity of the cave was built Sunan Mas mosque and the mosque was used for religious by local residents. Planning ahead, the mosque was developed to increase the value of history in the form of spiritual tourism.

Figure 4. Sunan Mas or Sunan Amangkurat III cave.

Unconformity Boundary

The next geological phenomenon found in this area is the relationship between andesite lava and Wonosari limestone. On the track of Surocolo spring to Japanese cave there are outcrops of andesite lava with Wonosari limestone. Andesite is covered by limestones, the boundary between these two rocks are shown in dark brown discoloration (andesite) and tawny (limestone). Stratigraphic relationship of rocks between the two rocks is unconformity. Based on petrographic analysis of limestone (wackestone) is yellowish brown, massive, grain size <0,062 mm, moderate rounded-angular, unsorted and open

fabric. Fragments are allochem, interclast and carbonate lime as cement. While andesite shows gray, hipocrystaline, moderate faneric-afanitic, inequigranular and suhedral-anhedral form crystal. Mineralogical composition composed of plagioclase and hornblende in volcanic glass groundmass.

Figure 5. Shows the boundary between two lithologies. The brown color is andesite and brownish yellow color is limestone.

Figure 6. Cross-section profile andesite and limestone (wackestone).

Wonosari limestone (wackestone), yellowish brown, massive, grain size <0,062 mm, moderate rounded-angular, unsorted and open fabric, fragments: allochem, interclast and carbonate lime as cement.

Unconformity boundary

Andesite, gray, hipocrystaline, moderate faneric-afanitic, inequigranular and suhedral-anhedral form crystal, mineralogy: plagioclase and hornblende in volcanic glass groundmass.

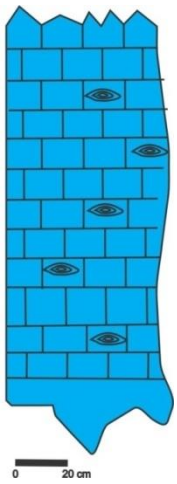
Japanese cave

At this location there are several Japanese caves that has built road, so that the relationship between a Japanese caves to the location can be easy. The caves are a manifestation of the concept of Japan's defense when fighting with the Dutch in defending colonialism in Indonesia. This caves as a defense when there are attacks from the south and the air.

Japanese caves are built on limestone sediment that shows the distribution of molusca fossils as a constituent of limestone and coral reefs. These fossils should be protected, because it can provide educational experiences regarding basic knowledge of biology or biostratigraphy. These organisms can be explained that these limestone forming in the sea. Petrographic of limestone is showing brownish yellow color, composed of fragments of corals and molluscs are cemented by calcite. Fragments measuring 2-4 cm with moderate rounded-angular grain shape.

Figure 7. Japanese caves, which serves as a bastion Japanese in the Pundong hill.

Figure 8. Fossil as a constituent of Wonosari limestone.



Reef limestone,
brownish yellow color,
composed of fragments
of corals and molluscs,
calcite cement,
fragments: grainsize (2-4
cm), moderate rounded-
angular.

Figure 9. Cross-section profile of reef limestones.

CONCLUSION

Pundong region has the potential Geotourism educational tours and educational history of the Indonesian nation. This tourist area is part of the tourist area of Bantul, which still need to be developed and published. The educational potential can be found on the path of Kretek to the top of the Pundong hill.

Line of educational tours are basalt lava with sheeting joint and autobreccia structure, springs, pools that have occurred since the Dutch era, Sunan Mas cave, Sunan Mas mosque, unconformity boundary between andesite lava and Wonosari limestone, Japanese cave and mollusc and coral fossils distribution as constituent of limestone. By developing tourist areas in Bantul, it will improve the economy and welfare of the Bantul people.

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