Analysis of granitoid type of Bukit Nunggal Village, Air Mesu, Central Bangka Regency

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Abstract. The research was conducted in Bukit Nunggal Air Mesu Village, Pangkalan Baru District, Central Bangka Regency, an IUP PT Tanjung Bukit Nunggal with a height of ± 210 meters. This study is to find out more details about the type of granitoid rock which is a unitary hill but it is estimated that it is the intrusion body of several types of granitoid rock. The research method includes analysis of mineralization content and geochemical analysis in the form of XRF. The steps to be taken include literature studies, field research, laboratory analysis including mineralogical analysis and microscopic observations as well as geochemical testing of rock samples using XRF. The sampling procedure for analysis is carried out based on the height and changes in rock texture, on the number of rock types / lithologies available to be observed and examined for their mineralization content. Regionally, the study area consists of a hill which is interpreted as a potential rock for construction mining. It is hoped that this research can produce an analysis of the existing granitoid types by studying the lithology / rock, geological structure and mineral textures. There are 2 types of granite found in Nunggal Hill, namely granite and granite altered (gneiss), with its main minerals are quartz, feldspar, biotit, opaq and sericytic and chlorite minerals.

1. Introduction
Bangka Belitung Island province has a lot of potential, especially natural resources, one of which is in the field of mining (metal and non-metallic minerals). The potential of construction excavation materials in Bangka Island is quite large because geologically formed by granite intrusion so that some hills that can be used as mining commodities can be utilized economically. Based on the background above researchers are interested to see scientifically through research on granitoid rock facies in Nunggal Hill, especially in rocks that break through and that are breached (intrusion). The approach is a survey by mapping surface geology, where the observation position will be plotted using GPS, other geological phenomena will be in the data such as the geological structure of rocks, types of mineralization and sampel of rock. Many studies have been done to identify the type of granite that exists on Bangka island, among them are geology of bangka island consisting of granite intrusion klabat [1]. Klabat Granite igneous rock is the constituent of Bukit Kukus, with its morphology part of the Menumbing Hill hill complex which has a moderate to slightly steep slope [2]. The results of research in several research sites show the uniqueness of granite with the main mineral Quartz, plagioclac, biotite, hornblend [3]. Results of chemical analysis on SiO2 vs FeOtot/MgO diagram showing granite Singkep Island is included in the transition area between type A granite and type I &S [4]. In other location granite found
The form of intrusion like in the Sambunggiri Hill lithology of rocks around Mount Sambunggiri are lithologies: sandstone, converted stone, generally all lithology is filled with quartz veins and mineral polymetallic veins and granite intrusions [5]. Granite is the most widely known igneous rocks. Granite is an intrusive igneous rock textured panerik. It consists of about 25% quartz and 65% Feldspar [6]. Granite rocks that have the potential to be the source of thorium are Jebus granite, Pelangas granite and Menumbing granite found in West Bangka, as well as Gadung granite from South Bangka. Th-graded Jebus granite averages 85.96 ppm, granite The saddle is 66.73 ppm, Granite Menumbing 67.03 ppm, and Granite Gadung 76 ppm [7]. Metasediment rock of Bangka Island is the oldest rock, and a loose deposit of Alluvial as the younger [8]. Granite igneous rocks have types I, S and A (Cobbing, 2005) [9]. Bangka island buildings and smaller islands around it is possible to be closely associated with the Sunda shelf emergent at the Pleistocene time [10].

2. Methods
Observation of granite type on nunggal hill pays attention to several aspects, namely structure, texture and mineral content in all parts of granite. Samples of rocks taken randomly based on location, will be further analyzed by petrography and geochemistry. 6 samples for petrography analysis and 9 samples for geochemical analysis, the results of the observation of the sample will provide an overview of the type of granite based on mineral and element content. Research site as shown below at Figure 1.

Figure 1. Research Site Nunggal Hill

Figure 2. Survey and Sampling
3. Result and discussion

3.1 Geomorphology
Exposed topographic at the site of the investigation, the formation of land in the form of intrusion of acid igneous rocks with a height ranging from 210 meters to a height of 25 meters, especially at the location. The intrusion of Bukit Nunggal intrusion is the result of intrusion which is classified as a denudational original formation (Verstappen, 1983) [8], with the classification of land formation units is eroded hills (D1). This land formation occurs due to weathering, erosion, rock age motion and other processes that occur due to agradation or degradation.

![Figure 3. Eroded Hills](image)

The regional geological research area is in the Klabat Granite Formation. Klabat Granite Formation (TrJkg) is spread separately in north to south bangka island. In the northern part, the formation consists of granite, granodiorit, quartz diorit.

3.2 Lithology and Structural Geology
The results of the investigation related to the lithology of Nunggal Hill from direct observations on several blocks, as well as the results of petrography analysis showed that the type of rock is granite with its own uniqueness because there are mineralization content and different textures on some parts of the hill. the results of observations found that in granite existing geological structures are stocky with varying sizes, filled with polymetalic mineral veins and quartz.

![Figure 4. a) Stocky on rocks b) Quartz vein](image)

3.3 Petrology Result
The results thin section analyses of the rock showed some samples had the same mineral content but there were samples at locations containing the mineral amethis, because quartz have alteration.

3.4 Geochemistry Result
The results of geochemical tests showed that the elemental content in some samples was dominated by the content of Si, Al and Fe. This element comes from minerals contained in granite.
Table 1. Sample and Mineralization Content

| No | Sample | Lithology | Mineralization | Other Mineral |
|----|--------|-----------|----------------|---------------|
| 1  | A1     | Granit    | Feldspar 40%, Quartz 35%, Biotite 10%, Opaq minerals 1%, Klorite 10% and Serisite 4% |               |
| 2  | D1     | Granit    | Feldspar 50%, Quartz 30%, Biotite 10%, Opaq minerals 2%, Klorite 3% and Serisite 5% |               |
| 3  | 2      | Granit    | Feldspar 40%, Quartz 30%, Biotite 15%, Opaq minerals 2%, Klorite 3% and Serisite 10%. |               |
| 4  | K4     | Granit    | Feldspar 45%, Quartz 25%, Biotite 15%, Opaq minerals 2%, Klorite 3% and Serisite 10%. | amethis 1%, Klorit 9% and Serisit 10%. |
| 5  | M      | Granit    | Feldspar 40%, Quartz 35%, Biotite 5%, Opaq mineral |                        |
| 6  | I      | Gneiss    | Quartz 50%, Feldspar 20%, Muscovite 3%, Epidote 5%, Quartz vein 20% dan opaq minerals 2%. |               |

Table 2. Sample and Elements Content

| No | Sample Code | Elements Content |
|----|-------------|------------------|
|    |             | Mg (%) | Al (%) | Si (%) | Cl (%) | S (%) | Ca (%) | Mn (%) | Fe (%) |
| 1  | Sample 2    | 0      | 11.67  | 25.75  | 0      | 0.03  | 0.13   | 0      | 1.65   |
| 2  | K2          | 0      | 11.61  | 25.67  | 0      | 0.01  | 0.01   | 0      | 1.64   |
| 3  | Xenolith 1  | 0.97   | 12.70  | 22.95  | 0      | 0     | 0.02   | 0.13   | 9.21   |
| 4  | Xenolith 2  | 0      | 6.36   | 7.38   | 0.3    | 0     | 0.5    | 0.13   | 7.73   |
| 5  | J1          | 0      | 8.35   | 23.26  | 0      | 170.05| 1.73   | 1.87   | 1.51   |
| 6  | S4          | 0      | 12.26  | 26.07  | 0.04   | 0.05  | 0.01   | 0      | 0.67   |
| 7  | K1          | 0.9    | 7.95   | 34.17  | 0.04   | 0.07  | 0.19   | 0.03   | 1.24   |
| 8  | Sample 3    | 0      | 10.10  | 28.87  | 0      | 0     | 0.37   | 0      | 1.47   |
| 9  | Sample 6    | 0      | 10.08  | 31.20  | 0      | 0.07  | 0.52   | 0      | 1.24   |

Figure 5. Map of Sample Point
4. Conclusion

There are 2 types of granite found in Nunggal Hill, namely granite and granite altered (gneiss), with its main minerals are quartz, feldspar, biotite, opaq minerals and sericytic and chlorite minerals.

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Acknowledgments

We gratefully acknowledge the funding from Universitas Bangka Belitung through the RKAKL FT for the publication of this paper