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*by Edy Sutriyono 1*

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## The Geologic Process of The Saka River area: Related to the History Woyla Elevated Ocean in The South Sumatra Island Region, Republic of Indonesia

Idarwati<sup>1,2</sup>, H S Purwanto<sup>1</sup>, E Sutriyono<sup>2</sup>, C Prasetyadi<sup>1</sup>

<sup>1</sup>Department of Geological Engineering - Universitas Pembangunan Nasional "Veteran", Yogyakarta, Indonesia

<sup>2</sup>Department of Geological Engineering - University of Sriwijaya, Indralaya, Indonesia  
idarwati@ft.unsri.ac.id

**Abstract.** The lithological and earth structures which compose the geologic process space are terribly fascinating to study. elaborated investigation of pre-tertiary rock subduction at the Woyla web site is rarely carried out. the variability of rocks derived from the Woyla oceanic plate, that folded on the West Sumatra continental plate within the Age of Reptiles era, illustrates the magnitude of the subduction impact mirrored in the structures that are still reflected in the abandoned rocks. The ways want to discover this subduction event are elaborated field observations, skinny section, XRD, and earth science structure measurements, supported by drones and satellite imagery. The lithology of basalt, flint, serpentine, marble, and arenaceous rock is vital to the presence of the Intraoceanic Arch of Woyla within the Saka phase. elaborated structural calculation show that the Saka segment went through several tectonic stages from the Mesozoic to Recent, that is mirrored in the Saka fault and therefore the Penanggungan fault.

### 1. Introduction

A geological process that happens in the Mesozoic is that the results of the encounter of the continent part of West Island with the interoceanic arc of Woyla [1]. West island consists of inferior metamorphic rocks like phyllite, slate, native slate, quartzite, and marble, that were another to the Tarap Formation consistent with [3]. The Tarap Formation correlates with the Tarantam and Kuantan Formations in Central Sumatra and therefore the Gunung-Kasih complicated in Lampung [2]. The Interoceanic Arch of Woyla consists of a volcanic mixture, particularly basalt, and andesite, whereas the oceanic aggregate consists of ocean rock within the type of flint and serpentine. The administrative position of the Saka phase is found on the Saka stream in the space from Buay Rujung Agung to Buay Runjung (Figure 1).



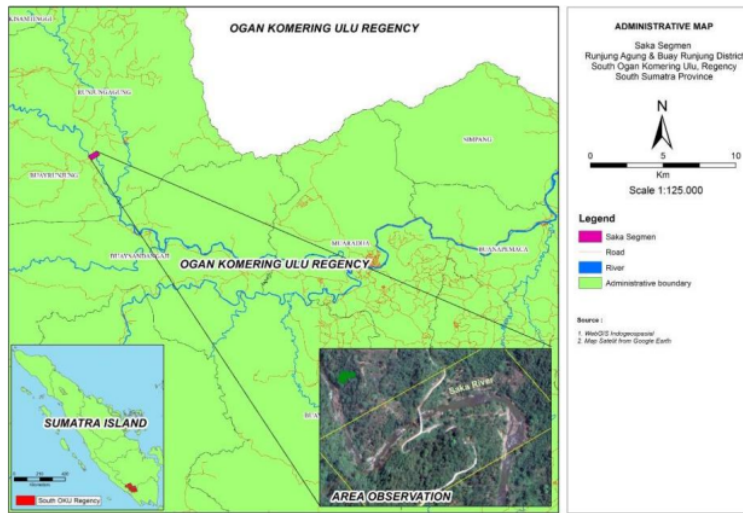


Figure 1. body map of the Saka phase, South Ogan Komerang Ulu

2. The interpretation of the study case

The Saka segment is found within the western a part of the Garba advanced and runs from the NW-SE. The Saka stream localized in an exceedingly steep basement rock-type depression with a lithology of granite, basalt, and andesite with inserts of flint and snakelike marble. The local rock has a similar fracture scheme that runs parallel to the flow scheme. This flow is one among the foremost ideal manifestations of the dissemination of structural information during this study, there's a displacement of the fault block headstream, characterised by the existence of boudins developing within the scheme of the injury zone. supported field observations, there are alternative lithological entities additional down the Woyla Ocean Accretion Block, similar to basalt, full of spar veins and shells, and snakelike (Figure 2).

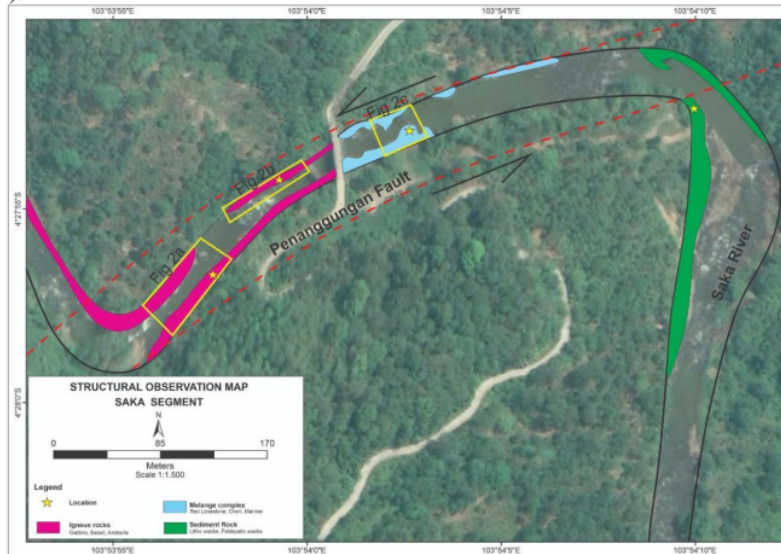


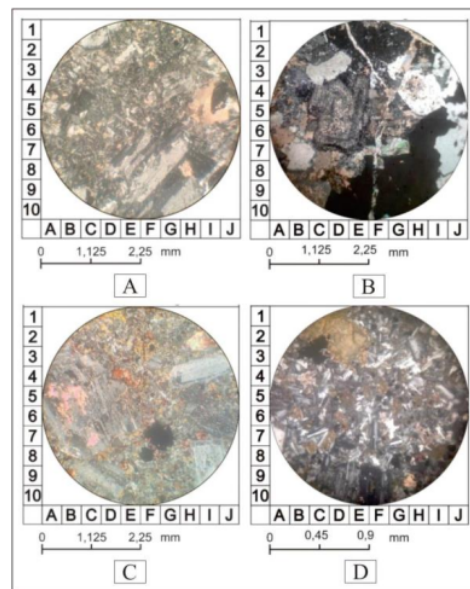
Figure 2. Propagation or path of rocks within the Saka phase a. Igneous rock; B. Melange; c. stone

### 3. Method of research

Elaborate the observed field is key to the present investigation. Rock samples, data of structural geology, and therefore the connection between the rocks were disbursed thoroughly in the Saka River area. The analysed of the sample are after wards transferred through thin sampled section technique and might be employed in microstructure analysis. The steps of the sampling method embrace rock lifting, sample marking, and panel cutting, that are then withdraw thin sections for analysed by petrographic method. a number of the samples were analysed by geochemical tool - XRD, that was disbursed at the middle for earth science Studies, to see the mineral and element composition. Aerial picture analysis, therefore the use of drones within the field are used to support the structural lines.

### 4. The result and discussion

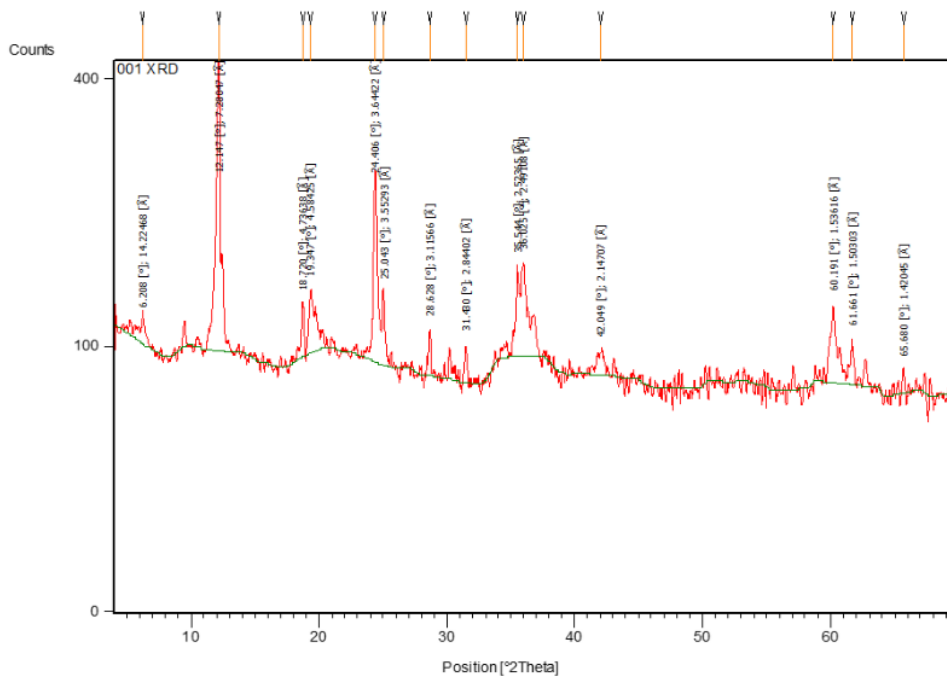
Localities of the Saka's lithology characterized as the rocks of the marine accretion rocks, that is include igneous rocks, farrago rocks, and matter rocks. The headstream a part of the Saka stream consists of igneous rock, consisting of take a look at rock compass point 1A Monzo-Gabro, SW 1B Gabbro, SW 1C mafic rock, IFFG 8B igneous rock Basalt, IFFG 8C Diorite, IDW part disturbed Andesite. The results of the microscopic analysis show that the dimensions of the Monzo-Gabro crystal & It; 1 2.5 mm, holocrystalline, fine phaneritic, with non-uniform allotriomorphic grain relationships consisting of biotite, pyroxene, opaque (Fig. 3) minerals, quartz, in some places some oligoclase blood vessel calcite, chlorite, sericite, feldspar, augite, and diopside. igneous rock is created of plagioclase, clay minerals, opaque minerals, and quartz. The volcanic rock andesite with crystallinity grade as holocrystalline, irregular-grained porphyryite, fine phaneritic within the sample of IFFG 8B consists of sericite, plagioclase, biotite, opaque mineral, stone spar, and diopside. The analysis of the petrographic sample shows that some plates have a structural segmentation. igneous rock is formed like AN eedric anhedral crystal made from quartz, calcite, plagioclase, opaque minerals, sericite, chlorite, chemical compound minerals, and some clay substance found within the centre of the path.



**Figure 3.** the microscopic section showing the substance composition of the lithology A. Monzo-Gabro, heritable transformed igneous rock, C. Diorite, D. volcanic rock Andesite (Aug: Augite, Or: Orthoclase, Ox: Oxide mineral, Cl: Chlorite, Qz: Quartz, Bt: Biotite, Pl: Plagioclase, Cl: Mineral clay, Cal: Calcite, Opq: Opaque mineral, Ser: Sericite, Kfs: K Feldspart.)

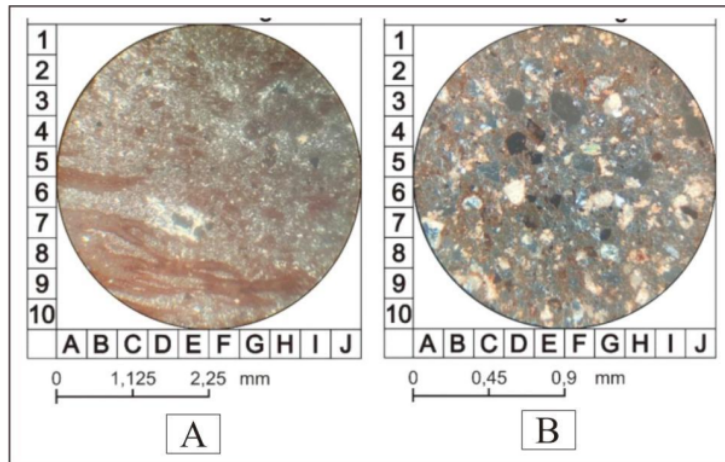
The omnium-gatherum rocks here as marble, flint, curved and red limestone. Marble contains parted shells, flint, and serpentine are the keymarks of this area, that is during a melange complex. The serpentine minerals are extracted from the skinny section in IFFG eight N. The results of the XRD test confirmed that the existence of Faujasite, antigorite, quisotile, and nacrite minerals counsel the existence of serpentines within the Saka watercourse (Figure 4).

Table 1 depicts the power load that will be applied to the planned system, as well as how the power will vary before and after the filter is installed, with an emphasis on reactive power (Q). It is well known that passive filters can create reactive power owing to the existence of a capacitor component in the passive filter, so that reactive power withdrawals at PLN can be reduced to avoid fines due to excessive reactive power withdrawals when PLN has a set norm at low PF. The total design power required may be computed as follows: The next step is to enter the data into the ETAP program using the data that has been designed, Table 4 shows the outcome of the system load flow that was created.



**Figure 4.** The XRD trial results informed the presence of nacrite, chydotilr, faujasite, and antigorite.

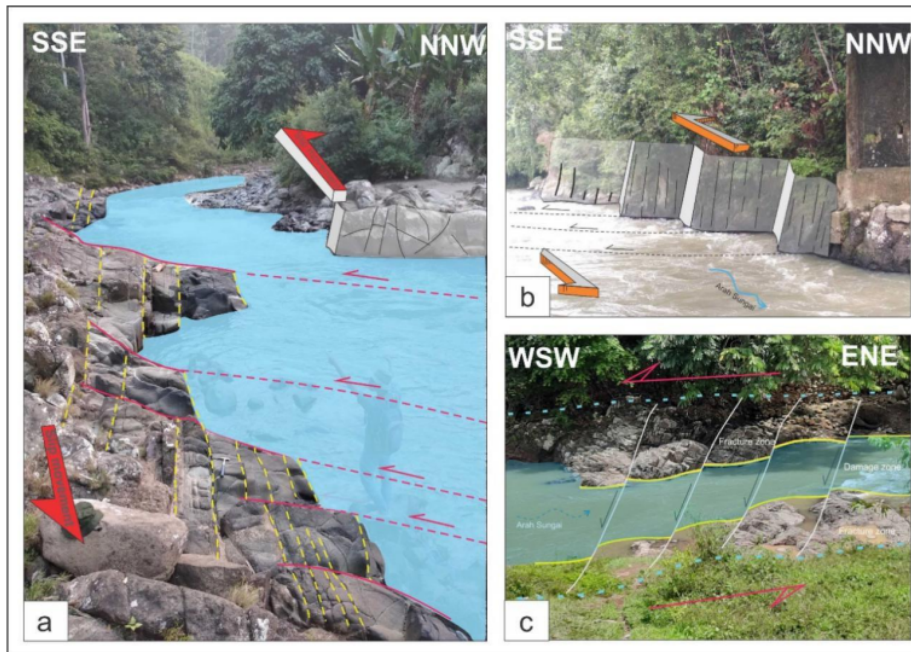
Silicon dioxide during this space is understood as flint within the Insu Bukit Situlanglang area. Dated fint on Situlanglang ridge that is an element of the geological period Garba Complex [6]. At the bottomstream of the Saka riverarea, there are matter rocks in the sort of lithic wacke to feldspathic wacke (Figure 5).



**Figure 5.** microscopic sample section that showing the mineral content of rock a. lithic wacke IFFG 8K, b. feldspathic wacke IFFG 8 (Opq: Opaque mineral, Pl: Plagioclase, Chl: Chlorite, Ox: Oxide chemical compound solid substance, Qz: Quartz, Cl: Mineral clay, Cal: Calcite,)

The Saka part is processed by a horizontal fault structure, specifically, the Saka Fault trending NW-SE and several other native horizontal faults absolute to the NE-SW associate degree NE-SE that forms a pull-apart scheme [7]. The aspect of the faults throughout this phase tend to be characterised by an oversized steps structural pattern on the watercourse wall, forming trenches or pull apart with upright dips of fault (87-900) and further expanding to the east. This scheme indicates a relative movement, exactly a sinistral shift with the point – sou'-sou'-west pattern. The fault could be an element of the fault system that's understood via the lower lineament of the digital elevation model Saka Fault. The sediment quality is alleged to be the history of the sediment formation and its natural science processes among the past [8].

The observed structure that has localized at 3 points, specifically IWD and SW1, those regions included to the deformation changes scheme of the Penanggungan Fault. Generally, the plate is processed by a merge of harm zone and parting system trending N-S and SW-NW, the native metamorphic folded structure within the serpentinite certain N940-1000E (Fig 6). Then the region was layered with the earlier analysis to connect the structural continuity and Poly-history deformation within the Saka segment. The result of Poly-history analysis showing the sinistral fault scheme at the observation site could also be a product of an after deformation from the Saka Fault throughout the Pleistocene epoch period. this is often often shown from the assorted fault patterns and rates, where the Penanggungan Fault cuts the Saka Fault as approach as  $\pm 547$  m and relatively tend to ENE-WSW (N700E / N2500E). In geometric terms, this fault isn't capsulate among the conjugate / completely different of the Saka Fault, although the sort is relatively sinistral. this is often often a results of the two faults that don't kind academic degree {oblique associate degreegleangle} but an oblique angle  $>900$  ( $\alpha=100$  and 10). This fault as the second advanced order (D2) that's processed by the deformation method of the natural action Line. supported this, if it' involving regional or earlier research, the Penanggungan Fault is enclosed within the Glacial epoch Garba difficult Transtension product. The structural activity is alleged to be the tectonic setting that's succeeding its structural pattern [9], [10].



**Figure 6.** The observed of localized structural fault a) plate SW1, processing structural of pull-apart scheme in igneous rock involving boudin on the SE side, and developing to the NE (b and c). The step sequence is proof of the most management of the transtensional technique that evolved throughout the Plio-Pleistocene

The intrusions of Granite that exist across the Saka stream show that the granite as the results of melting rocks due to the geologic process that occurred at intervals the Mesozoic. The granite distribution as a part of the igneous rock in Garba to the Liki, Sui, Gilas, Meniting, Pisang areas to the Lubar space [5]. chemical analysis generated on granite exploitation the K / unit methodology as the Late Cretaceous age [4].

### 5. Inference

The Saka line concluded as a component of the Woyla Oceanic increasing is; 1) Igneous rock with characterized as the mid oceanic ridge (MOR). 2) Marble, chert, curving, and matter rocks indicated as lithic wacke to feldspathic wacke that these rocks originate from oceanic increasing at intervals the geologic process zone. 3) The observed sinistral fault might be an after-deformation product of the Saka Fault throughout the Glacial epoch and Penanggungan Fault has been surrounded at intervals the Pleistocene Garba advanced Transtension product.

### 6. Appreciations

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