

## Relationship between distribution of marine clay layers and spontaneous potential in Ibukino, Izumi-Senboku Area, Japan

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### 1. Introduction

The sulfide minerals are included in the marine clay layers of Osaka Group. If weather, they form the ore-body battery with oxidation reduction phenomenon. This process often causes to generate the high redox potential (Ryoki, 1990). It was shown that the distribution of the marine clay layer was able to be clarified by investigation of spontaneous potential (SP) on the ground surface (Ryoki, 2001). Continuously in this time, the investigation was done in the northern region to clarify the relationship between distribution of the marine clay layers and SP.

### 2. Theory

In general, if SP is measured around the sulfide deposit which has been buried underground, it is found that the negative potential compared with surroundings is distributed on the deposit (Kunori, 1959). The sulfide, 0.38-1.72 percent by weight as an amount of all S, is included in the marine clay (Itihara and Itihara, 1971). Therefore, it is thought that the low anomalies of SP compared with surroundings are shown in a comparatively new outcrop because the ore-body battery process is caused.

### 3. Study Area

SP was investigated along the main road in the area of about 1.5km x 1.5km of Ibukino, Izumi City, Osaka Pref. The number of measurement station was 309. According to Kansai Geotechnical Consultants Association (1998), it is assumed that the marine clay layers, Ma2-Ma5, are distributed in this area.

### 4. Method

A couple of Ag-AgCl non-polarization electrodes developed by Ryoki *et al.* (2007) was grounded to surface spacing of 50m. The potential difference measured between these electrodes with a personal computer system, as presented by Ryoki *et al.* (2008). Two electrodes were alternately moved. Afterwards, the potential difference of various points was multiplied one by one. Twin Loopers Method, presented by Ryoki and Kurita (2006), was suited to determinate the potential of each point. The investigation used 7 days on December 2006 through March 2007. The measurement route was set to a closed-loop every day or half a day.

### 5. Result and Discussion

As compared the investigation results with the distribution of the marine clay layers, it is understood that the low potential anomalies well correspond to the marine clay layers. On the other hand, if the measurement results are compared with geographical features, it is thought that local distribution of low potential does not depend on geographical features in the studied area.

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