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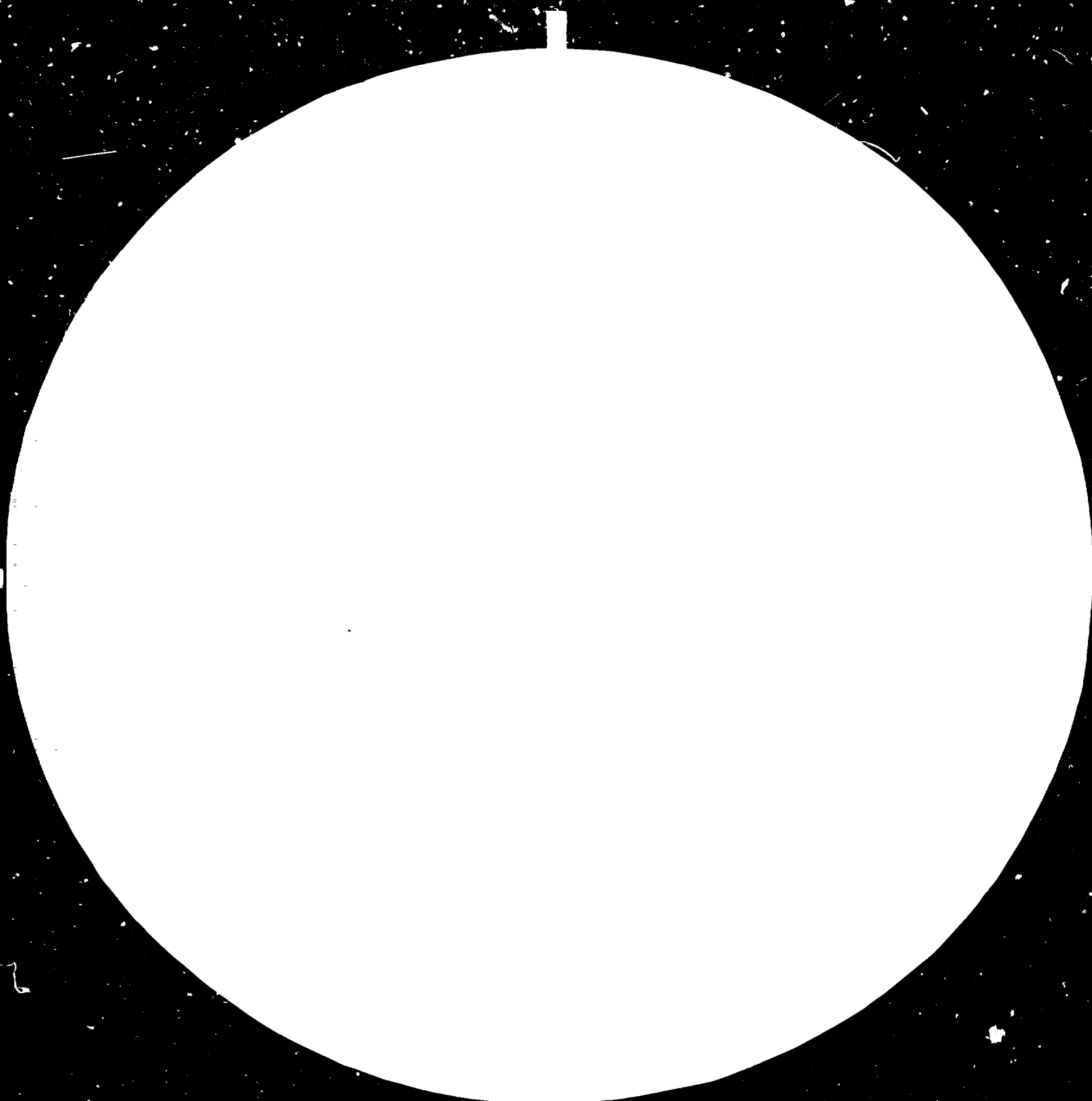


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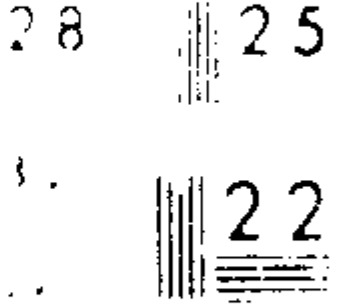
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COUNTRY REPORT

Non-metallic Mineral Deposits of Thailand

by

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Several important non-metallic mineral deposits have been found throughout the country as a result of combined efforts of the Department of Mineral Resources and the private prospectors. These efforts have been oriented towards diversification of the Thai mining industry. Fluospar, barite, gypsum, kaolin, ball clay, bentonite, pyrophyllite, silica sand, dolomite, marble and limestone are now known to be present in the kingdom. Amond these, only fluospar, kaolin, silica sand, barite, marble, gemstone and gypsum have been mined for both domestic uses and export. The others, except bentonite, are now being extracted for only domestic uses. Described below in some detail according to data available, are several of the more important non-metallic mineral deposits known in Thailand.

KAOLIN

Kaolin of both primary and secondary origins have been found and exploited in many localities in Thailand. The primary kaolin occurs as kaolinized granite and rhyolite containing only 20 - 40% of kaolinite. The associated minerals are quartz and to a smaller extent mica. The secondary kaolin is sedimentary deposit of Tertiary and Quarternary age containing 30 to 90 % of clay particles. The associated minerals are quartz and rarely mica.

A large number of kaolin deposits with their reserves exceeding 1 million tons. The clay mined from some of these deposits are at present processed by washing in setting tank and hydrocyclone for the removal of quartz, muscovite and other impurities. The washed clay is used mainly by ceramic industry. The paper and paint industry share the minor amount of production. The quality of washed kaolin is not suitable for its application in the paper and paint industries and Thailand imports the necessary quality of kaolin from other countries. With the growth of ceramic, paper and paint industries, the need therefore exists for immediate identification and exploration of new deposits and improving the washing processes to make the country self-sufficient with respect to the requirement of kaolin.

SILICA SAND

In Thailand silica sand is commonly found as beach deposits ranging from a few centimeters up to 2 meters thick (average about 1 meter). The SiO_2 content of most sand varies from 95 to 99%. Silica sand sheet or lenses are exposed on the surfaces or underneath thin layers of topsoil or impure sand. Probably most of this silica sand is derived from the weathering process of sandstone, granite and quartzite. The total reserves of high

grade silica sand were found along the shore line and exceed a few billion tons in quality. Silica sand has been exploited and washed for glass, ceramic and foundry industries at the rate of 50 000 tons per year.

FELDSPAR

Several small pegmatitic deposits have been mined, about 20 000 tons per year, for the need of feldspar in ceramic and glass industries. Unfortunately, pegmatite sizable reserve has not yet been found. granite has been exploited and processed to substitute feldspar but it can not be applied to fine ceramic and glass industries because of the high contaminant oxides. The need therefore exists for immediate identification and exploration of new deposits and improving the dressing processes.

GYPSUM

Massive and thick-bedded gypsum deposits were found in the central and southern provinces of Thailand. Their overall measured reserve exceeds 20 million tons. The gypsum is massive, white to very light grey and coarse to medium grained. The rock is high grade and contains more than 96% $CaSO_4 \cdot 2 H_2O$. The main impurity is quartz. Gypsum has been exploited, about 300 000 tons per year, for the need of cement and building material industries.

DIATOMITE

Fresh water diatomite of Pliocene age was known to crop out about 5,00 square kilometers in the middle and south of Lampang Tertiary basin, northern Thailand. The thickness of the diatomaceous earth ranges 10 up to 30 meters. Chemical analyses indicate that the diatomite is high in alumina (Al_2O_3 10 %) and iron (Fe_2O_3 1.5 to 9.7%) and so must be beneficiated in order to be usable as high grade raw material. Several mineral dressing techniques tried so far, have not been successful in upgrading this diatomite. However, small scale exploitation of diatomite has been carried out for the manufacturing of insulating bricks.