NON-METALLIC MINERALS IN THE NATAL METAMORPHIC PROVINCE, SOUTH AFRICA

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INTRODUCTION

This contribution is intended as a companion to earlier papers by Thomas (1990) and Thomas et al. (1990), which related the distribution of precious and base metal mineralization in the ~ 1000 Ma Natal Metamorphic Province (NMP) to the tectonic evolution of the belt. This paper reviews known industrial (non-metal) mineral occurrences in the NMP and examines future potential. In this regard, it must be pointed out that while the NMP is not presently a significant source of metallic ores, non-metallic materials are currently being exploited on various scales.

GEOLoGICAL SETTING

The Natal Metamorphic Province forms a central part of the Kibaran-aged, high-grade Namaqua-Natal-Ophiolites mobile belt, which can be traced across southern Gondwana. The Natal belt has been modelled as an accreted terrane (Thomas, 1989), with an ophiolitic northern domain that was obducted onto the southern margin of the Archaean Kaapvaal Craton (Matthews, 1972). Metamorphic grades generally increase across the exposed part of the belt from greenschist facies in the north to granulite facies in the south. New geophysical data from Transkei suggests that a number of concealed Kibaran terranes are present under cover rocks to the south and that Natal-type crust has a significantly different magnetic signature to Namaqua-type crust (Du Plessis and Thomas, 1991). Isotopic dates from the NMP fall within the range ~ 1250 to ~ 900 Ma (Eglinton et al., 1989). Industrial mineral occurrences in the NMP have been subdivided into three categories, namely:

a) deposits currently being exploited;

b) occurrences of high economic potential;

c) occurrences of lesser or uncertain economic potential.

INDUSTRIAL MINERALS CURRENTLY BEING EXPLOITED

Marble

Granulite facies dolomitic and calcite marbles of the Marble Delta Formation (Mzimkulu Group) are mined at the three large Umzimkulu Quarries in the «Marble Delta» area, 10 km NW of Port Shepstone (fig. 1). Together, the quarries are the most important producers of carbonate in South Africa. The Marble Delta Formation crops out over a 5 km wide, sub-circular area, the structure of which has been interpreted as a refolded antiform (Otto, 1977). In this domal structure, lowermost dolomitic marbles are succeeded