DEPARTMENT OF MINES
SOUTH AUSTRALIA

SUMMARY REPORT

of

REPORT NO. G.S. 2133. REPT. BK. 53/92

BLUE DOLOMITE DEPOSIT

SECS. 330-332, PT. SEC. 333, HD. ONKAPARINGA, CO. ADELAIDE

(MINES & QUARRIES DEVELOPMENT LIMITED)

by

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MINERAL RESOURCES SECTION

GEOLOGICAL SURVEY

This precis is a summary in non technical language of a report issued to Mines and Quarries Development Limited dated 10th October, 1961. A sequence of beds which are collectively known as the Montacute Dolomite Formation have been mapped in the sections listed in the heading of this report. Although the rock sequence is called a dolomite formation several other rock types occur in it such as slates and quartzites with slight variations and modifications.

Apart from slates the rock types in the deposit are suitable for crushing as aggregate if they have not been subjected to alteration of a chemical nature which makes them soft and in some cases friable (which is generally referred to as weathering) or subjected to fracturing which can produce closely spaced cleavage giving the rock the appearance of a slate.

Drilling carried out by the Mines Department, was designed to explore the sequence at depth, in places where the outcrop of rock was poor or non-existent, to obtain, if possible, core from unweathered rock to subject to laboratory tests and examination.

The amount of core recovered in drilling is measured with respect to the depth drilled and expresses as percentage core recovery. It is usual to assume that where there is no core recovery the rock is of poor quality and unsuitable for use as crushed aggregate, in this respect the core recovery from the three holes drilled was 76%, 81%, and 79% respectively, giving an average of just under 79%.

Drilling has indicated that weathered rock may persist to depths of over 100 feet, also that slaty cleavage is extensively developed in the dolomite beds. Further work would be necessary to outline the extent of the weathered zones and this may be most economically done by seismic techniques. The outlining of the weathered pockets is necessary for any calculations of reserves of suitable stone, and presumably in planning quarry operations. The estimate given in report G.S.

2133 is for the volume of stone in the area outlined, the reserves of suitable stone will be less than this figure and can only be determined when the volume of weathered rock can be estimated and adjustments made to allow for waste from unsuitable material such as slate and schist and 21% loss in core.

Three types of laboratory tests were carried out on the drill core from No. 2 site, these were:-

(i) Los Angeles Abrasion test designed to give some indication of the resistance of the aggregate to abrasion. The figures obtained ranged from 19% - 30% averaging 24%.

(ii) Sulphate Soundness test designed to indicate the resistance of the aggregate to chemical attack by circulating ground water. It is a measure of the loss in weight of the sample after immersion in a solution of sodium sulphate. The H.& L.G. Dept. test showed a loss of 1% which indicates the material to be satisfactory since the loss was less than 7%.

(iii) Average Least Dimension (A.L.D.) test; designed to indicate the shape of the aggregate. This test is of limited value because of the various features which influence the shape of the crushed aggregate, including the inherent nature of the rock, i.e. cleavage, joint and bedding planes and the type of crusher used.

As it stands the Highways tests on selected core indicate the material to be suitable for use as aggregate for bituminous surface treatment on roads with medium to light metropolitan traffic.

The main unknowns at the present time are (i) the shape that the aggregate will crush with the plant to be used; (ii) the volume of the pockets of weathering; (iii) the depth of overburden that can be handled economically. All these factors affect the volume of the reserves of suitable stone that will be available.

At this juncture one can say that work should continue to eliminate these unknowns.

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