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Limestone for the Australian Commonwealth Carbide Company, Electrona

by T. D. Hughes

The Australian Commonwealth Carbide Company is demanding supplies of limestone with a grade over 95% $CaCO_3$. Recent shipments from their Ida Bay quarries have frequently not maintained this figure

Limestone may be obtained from the following sources:

1. The company's own quarries by quarrying or underground mining of favourable beds.
2. Other places in Tasmania.
3. By ship from Australian or overseas sources.

Apart from such considerations as continuity of local employment, simple costing figures favour the local source if the desired grade can be maintained.

It is anticipated that this grade can be maintained in the vicinity of the present quarry.

The experience of the Geological Survey has been that these particular limestones — the Gordon Limestone of the Ordovician — do maintain a fairly constant grade in individual beds. It is therefore expected that the values obtained in bores in the vicinity of the present face will be maintained along the strike of these beds. A fairly close correlation can be made of the values in bores 13 and 15.

A section of Bore 15, above the grey band, shows:

10 feet	95.9% $CaCO_3$
5 feet	87.9% $CaCO_3$
19 feet	96.1% $CaCO_3$
3 feet	93.9% $CaCO_3$
1 foot	96.3% $CaCO_3$
3 feet	93.2% $CaCO_3$
7 feet	96.2% $CaCO_3$

If the five foot section near the top is excluded then an average grade of 95.7% $CaCO_3$ for 43 feet can be maintained.

The bores were carefully sampled, the cores split and an analysis taken every foot. The lowest figure, excluding the 5 feet section, was 92.3% $CaCO_3$ and the highest 98.2%. The actual beds of course do not correspond to this foot by foot sampling and the boundary of each bed usually provides a plane of breaking. It is of course neither necessary nor advisable to equate individual beds with individual shipments and a judicious mixing of the beds should give the desired grade, even if the lowest grade beds are included.

It is felt that in the past, lower grade shipments have been the result of mixing of some of the poorer grade beds, such as in the five feet section mentioned above, rather than in variation in the beds themselves.

It is therefore recommended that:

1. The present quarry be extended to the west using the top of the grey band as the floor and having a bench height of 48 feet. The beds have only a small dip both parallel to the hillside and at right angles to it.
2. The quarry face should be extended as far as possible along the hillside, rather than in depth into the hill, to avoid excessive overburden (i.e. poor grade limestone).
3. The 5 foot bed (10 feet from the top) should be clearly marked on the quarry face and care taken that it is always excluded. The top of the high grade stone, 48 feet from the top, should also be marked and any beds above this excluded.
4. This recommendation is based on the assumption that individual beds remain fairly constant in composition. However there is a danger in taking this too much for granted and as the work progresses a rigid system of sampling should be undertaken, either by channel samples across beds in the face or by drilling ahead.
5. A further system of benches, whether above or below the one recommended, may later be developed.
6. To increase the efficiency of quarrying it is suggested that:
    1. A contractor be engaged to construct a road up to the top of the grey band, clear away surface rubbish, and prepare the face for quarry operations.
    2. A mechanical crusher be installed at the quarry.

With the provision of the above requirements and the careful selection of stone and the dumping of below grade beds, it is considered that a grade of stone could be obtained comparable with that from the mining of selected beds and at a cheaper overall cost.

It is not considered that a better grade of limestone could be quarried in larger amounts elsewhere in Tasmania.

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