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REPORT ON DOLOMITE AT COW FLAT

by

C.J. Sullivan

DEPARTMENT OF SUPPLY AND SHIPPING.

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GEOLOGY AND GEOPHYSICS.

REPORT ON DOLOMITE AT COW FLAT.

Report No. 1947/11.



INTRODUCTION

The Cow Flat Area (P.M.L. 10) was visited on the 12th March, 1947, with the object of ascertaining possible *dolomite* reserves. This information was required in connection with an application by Metropolitan Lime and Cement Company Ltd., owners of a dolomite quarry at Wall's Siding, near Mudgee, for financial assistance from the Commonwealth Government. It ~~was~~ desired to ascertain whether, in the event of the latter company ceasing production, the Cow Flat deposit could provide sufficient dolomite to supply New South Wales requirements.

The Cow Flat deposit is owned by Western Fertilisers Pty. Ltd.

The following report should be considered supplementary to Report No. 1946/5 by E.H. Fisher, dated 4th February, 1946 and the Report on Limestone and Dolomite Deposits at Cow Flat and Wall's Siding by H.J. Cook dated 18th March, 1947. (1947/90)

SITUATION

The deposit occurs some five miles south of Georges Plain Railway Station, where the crushing plant is situated. A fairly good gravel road connects the deposit to Georges Plain.

PRODUCTION

Production for the past 12 months amounts to 2868 tons, of which 615 tons were magnesian limestone and the remainder dolomite. Output is at present being limited by non-availability of railway trucks.

GEOLOGY

The geology of the deposit is shown on the accompanying plan which is based on a plane table survey.

The main dolomite outcrop has been worked from an open cut 180 feet long, averaging 60 feet in width and ranging in depth from 15 feet near the mouth of the cut to 47 feet near the face. The floor of the cut is reported to be in dolomite and the face is mainly composed of this material.

Dolomite also occurs on the surface for 100 feet to the northeast of the cut over a width of approximately 100 feet. For some 200 feet to the northeast of this outcrop, any dolomite which may exist is largely obscured by soil. However, the dolomite in this district is softer than limestone and also weathers into a rather characteristic soil; from these and other criteria, it is considered likely that dolomite continues in this section. Outcrops of dolomite, with some limestone, may be found for a further 220 feet to the north-eastward.

Occasional outcrops of dolomite occur for some 80 feet to the west of the west wall of the open cut and it has also been noted in a pit sunk 130 feet eastward from the north-eastern corner of the open cut.

Careful inspection indicated that the southern extension of the dolomite cannot be traced very far south of the alluvium-covered area, found near the southern end of the open cut.

As shown on the plan, the dolomite-bearing beds are bounded on the east by slate and schist which trend in a northerly direction. Massive limestone occurs to the west of the dolomite. As far as can be foreseen, future production from the immediate vicinity of the present workings must come from the area lying between these two boundaries.

An inspection of the northeast face of the open cut shows that beds lying to the west of a strike fault which has an almost vertical dip and intersects the surface 12 feet from the west wall of the open cut, are dipping steeply to the westward, while beds lying to the east of the fault dip to the eastward at angles of 65 to 70 degrees. These beds also converge in strike to the northward and the structure appears to be that of a north-pitching anticline, faulted along the axial plane. A similar structure was mapped in the limestones shown at the southern end of the plan.

It will be noted that the dolomite appears to thin out in plan to the north-eastward and it is possible that this is a result of the northerly pitching anticlinal structure. It appears likely that, in the northerly section of the outcrop, the width of the dolomite will increase with depth.

ORIGIN OF THE DOLOMITE - PERSISTENCE IN DEPTH.

It will be noted from the plan that the dolomite does not persist in strike along one particular bed and it has already been pointed out that it appears to be associated with faulting and folding. These factors would suggest that the formation of the dolomite was a hydrothermal mineralisation effect, produced subsequent to the deformation of the original limestone beds. Elsewhere in the district, rocks believed to be of similar age, contain copper and gold deposits.

However, no evidence of the presence of metallic, or other hydrothermal minerals, was noted on P.M.L. 10 and it seems more logical to conclude that the formation of the dolomite was due to replacement, leaching, or addition of magnesium carbonate in limestone beds, which took place more or less at the time of deposition of the beds. In this case, subsequent folding and faulting would have had no effect on the localization of the dolomite. The lens of dolomite may be expected however, to pitch northward as it would have been folded along with the remainder of the originally flat-lying beds. Since the length of the dolomite lens seems to be at least 500 feet, it can be expected to persist in depth for a proportionate distance. There is no relation between the formation of dolomites and the present land surface and it is believed that this deposit will persist, at least to the economic depth of quarrying.

RESERVES OF DOLOMITE

Dolomite in sight: As will be noted from the plan, the dolomite outcropping ahead of the present face of the quarry extends for approximately 100 feet along the strike. With a quarry width of 60 feet, this outcrop would supply 25,000 tons of dolomite to a depth of 50 feet, or about five years supply at the present rate of output. *for the present New South Wales demand of 5,000 tons per year*

P.M.L. 11.

A smaller deposit of limestone and dolomite occurs on P.M.L. 11, situated 1.25 miles north-northeast of P.M.L. 10. A sketch plan of this deposit, based on compass and pacing surveys, accompanies this report. Some dolomite and a considerable

quantity of white limestone were formerly produced from this deposit, but it is now temporarily abandoned.

A lens of calcareous rock, predominantly massive white limestone, can be traced for a distance of 320 feet over a width averaging from 20 to 90 feet. The lens strikes about N 30° E and is bounded on either side by slates.

The face of No.1 open cut contains, in it's eastern half, a width of 12 feet of impure, dolomitic rock. In the western portion of the face, a width of 12 feet of talc is showing.

In No.2 open cut, the rock exposed consists mainly of talcy limestone, which probably contains a good deal of magnesia. No.3 quarry is in a white crystalline limestone, which, the manager states, is readily saleable.

P.M.L. 11 cannot be said to contain any considerable reserve of high-grade dolomite, though it could still produce magnesian-limestone for agricultural purposes plus considerable tonnages of white, crystalline limestone. Although the deposit on P.M.L. 11 is on the strike of that on P.M.L. 10, there is little to suggest that the two deposits are continuous.

CANBERRA,
28th March, 1947.

G.J. Sullivan.
Acting Chief Geologist.