

No microscopic work appears to have been done on the basic dyke; no petrological report could be found and it seemed desirable to examine the mineral composition of the ore and dyke material and also the sediments of the Dundas formation.

Several core specimens from drill holes M6 to M16 were sent to the Petrological Laboratory of the Bureau of Mineral Resources in Canberra and investigated there by W.M.B. Roberts and J.K. Lovering. Their findings are summarised in an appendix at the end of this report.

The basic dyke material was identified as a metasomatised dolerite. Most of the original dyke minerals have been altered and replaced by secondary minerals.

The rocks of the Dundas Group consist largely of tuffs and volcanic ash, particularly near the basic dyke. Further away from the dyke they consist of shales, occasionally pyritic or carbonaceous.

The mineralogical composition of the nickel ore is interesting and unusual. The main nickel mineral in the compact ore is violarite, and in the disseminated ore it is millerite. Both minerals have a high nickel content and the nickel to sulphide ratio is also very high in this field. This is important, because ore of extraordinarily high grade has been won and may still be found and also because high-grade nickel concentrates may be produced from the disseminated ore. Therefore, even relatively low-grade disseminated ore may be of economic importance. On the other hand, the low sulphide content in the disseminated ore produces only very weak electrical indications and the disseminated ore may be overlooked in diamond drilling or other exploration.

The ore does not show any significant magnetic properties, although accessory magnetite and pyrrhotite are present; magnetic surveys have not, therefore, been of much value in the Cuni North area.

(B) Costeaning.

Recommendations for testing included costeaning as well as diamond drilling, and some costeans were dug following both the I.G.E.S. survey and the Bureau surveys.

The S.P. survey indicated mineralisation at fairly shallow depth in several locations and trenching was regarded as the cheapest and quickest method of testing. The testing work encountered difficulties however, due to influx of water in the water-logged ground. Gossanous lode formation was encountered in nearly every trench, below 1 to 2 feet of surface soil, but country rock and lode formations were so decomposed that results were not conclusive. In the trenches cut on the I.G.E.S. recommendations, pits were sunk 8 to 10 feet deeper, and sulphides were encountered, distributed through the gossan, on I.G.E.S. profiles 49N, 53N and 54N; reliable information about the dip, thickness and quality of the ore was obtained by drilling.

As no pits were sunk from the costeans which were made after the Bureau's survey, the information from these costeans is even less conclusive; however, the costean at 225E on traverse BR indicated some lode capping of lead mineralisation associated with weak self-potential indications. Another costean at 25W on traverse BD, dug to test a geochemical indication, also revealed