

EXPLORATION LICENCE 98/87

PRELIMINARY REPORT FOR F. BARDENHAGEN

A DIAMOND DRILL HOLE NEAR MT DIRECTION, EAST TAMAR AREA

OPEN FILE

Logged by J.L. Everard,
Division of Mines & Mineral Resources,
Department of Resources and Energy

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Conclusion

A diamond drill-hole was drilled by the Department of Mines for F. Bardenhagen, to test the potential for gold mineralisation in EL 98/87, covering six square kilometres in the East Tamar area. The hole was sited at EQ062321, near a small tributary of Symons Creek, about ^{4 km} ESE of the summit of Mt Direction and 5 km west of Turner's Marsh. On the Launceston 1:63 360 geological map (Longman *et al.*, 1964) the drill-site is shown as underlain by Quaternary alluvium (clay, sand and gravels), surrounded by hills of Jurassic dolerite. The nearest exposed Parmeener Supergroup rocks are Triassic sandstones underlying the dolerite on the flanks of Mt Direction and the Dismal Range, 3 - 5 km to the north and east. The nearest exposures of the Lower Palaeozoic Mathinna Beds, similar to those that host the gold mineralisation at Lefroy, underlie the Parmeener Supergroup 11 km to the north-east at Bangor (see also Pipers River 1:63 360 geological maps, Marshall *et al.*, 1965).

The hole passed through mostly weathered and broken dolerite before encountering Triassic quartz sandstones at a rather unexpectedly shallow depth of 28.2 m. The extensive fracturing of the dolerite and the apparent lack of any chilled margin or hornfelsed zone in the sandstone suggests a faulted contact. A NNW-trending air photo lineament shown near the drill site on the Launceston map may be the southward continuation of a fault, downthrown and presumably dipping to the east, shown east of Mt Direction on the Pipers River map. The hole may have been sited just east of the fault, and passed through it into Triassic sandstone lying beneath dolerite on the upthrown western side. However, a normal igneous contact cannot be completely ruled out on the available evidence.

More than 80 m of dominantly well-sorted, massive to thinly bedded quartz sandstone, with three major intervals of more thinly bedded micaceous mudstone and siltstone, were intersected. This sequence is fairly typical of the Lower Triassic quartz sandstone ('Unit 2' of the freshwater Upper Parmeener Supergroup) widespread in south-eastern and central-northern Tasmania (e.g. Forsyth, 1989, pp 315-323).

This dominantly quartz sandstone sequence passes gradually downward into a sequence of dark-grey, fissile, micaceous and sometimes calcareous mudstone and siltstone, and subordinate fine- to medium-grained, usually well-laminated sandstone, which extends to a depth of 171.45 m. Carbonaceous flakes and partings occur sporadically parallel to bedding in the mudstone/siltstone beds, but no coal was intersected. The sandstone beds, which occur mainly in the lower part of this sequence, locally contain a pinkish detrital mineral, probably garnet. These features are characteristic of 'Unit 1', the basal, Permian part of the Upper Parmeener Supergroup (e.g. Forsyth, 1989, pp 309-315) represented by the Clog Tom Sandstone at Beaconsfield, the Jackey Formation of the Great Western Tiers area, and the Cygnet Coal Measures in southern Tasmania. This correlation is supported by preliminary palynological evidence, including the presence of probable Permian spores assignable to the *Protohaploxypinus microcorpus* zone, at 151.7 m and possibly 137.1 m (S. Forsyth, pers.comm.). The upper boundary of the Clog Tom Sandstone correlate is provisionally placed at the top of the topmost unit of fissile, calcareous mudstone, at 111.7 m. The lower boundary, marked by 50 mm of pebble- to granule-conglomerate from 171.40 - 171.45 m, is clear and abrupt, giving a total thickness of 59.8 m for the formation. This compares to a thickness of 50 m for the Clog Tom Sandstone at West Arm, near Beaconsfield (Gee and Legge, 1979). However, a similar unit of uncertain age, exposed in the Dismal Range-Browns Hill area to the east of the drill-hole, is only 20 feet (6 m) thick (Longman, 1966).

From 171.45 to the bottom of the hole at 232.2 m is a sequence of dark grey, poorly laminated but usually fissile siltstone and mudstone, which coarsens slightly below about 197 m to dominantly pale grey, hard, massive argillaceous sandstone. Bioturbation, caused by worm burrowings, is ubiquitous, but the sequence is unfossiliferous except for foraminifera which indicate a marine environment. Clasts of various rock types, not of local derivation, are numerous below about 183 m and are probably dropstones (i.e. transported into the basin by floating, melting ice). This interval belongs to the upper glacio-marine subdivision of the Lower Parmeener Supergroup, and is correlated with the Middle Arm Group (probably units E and D) at Beaconsfield (Gee and

Legge, 1979) and the Bogan Gap Group (probably the Drys Mudstone) on the Great Western Tiers. The absence of a distinctive pebble conglomerate bed, known as the Blackwood Conglomerate (Unit F at Beaconsfield) is significant. This unit is widespread in the southern Midlands and central-western Tasmania, but lies less than 10 m below the top of the Lower Parmeener Supergroup at Beaconsfield, and very close to the boundary in the Tippogoree Hills, p. 309; Gee and Legge, 1979). This is consistent with removal of the conglomerate unit by westward overstep of the overlying Upper Parmeener Supergroup.

The total thickness of the Lower Parmeener Supergroup is about 630 m at West Arm, 27 km WNW of the drill hole (Gee and Legge, 1979), about 440 m near Bangor, 4 km to the NE (Marshall, 1969) and about 485 m in the Lilydale-Karoola area, 3-13 km to the east. As the top of the Lower Parmeener Supergroup occurs at 171.45 m depth in the hole, potentially mineralised Mathinna Beds basement is unlikely to be encountered until 600-650 m depth. Although it would be technically quite feasible to extend the hole to this depth, it would be probably not justifiable unless there were geophysical or other reasons to suspect mineralisation. There is no evidence for any mineralisation in the core drilled at present, and the likelihood of any above a depth of 600-650 m is considered very remote.

Although the hole has not been economically successful, it has provided valuable stratigraphic information about the nature of the Lower-Upper Parmeener Supergroup boundary in this district. More detailed logging and further palynological work will be undertaken for general scientific information and published at a later date.

SUMMARY LOG - MT DIRECTION DIAMOND DRILL HOLE

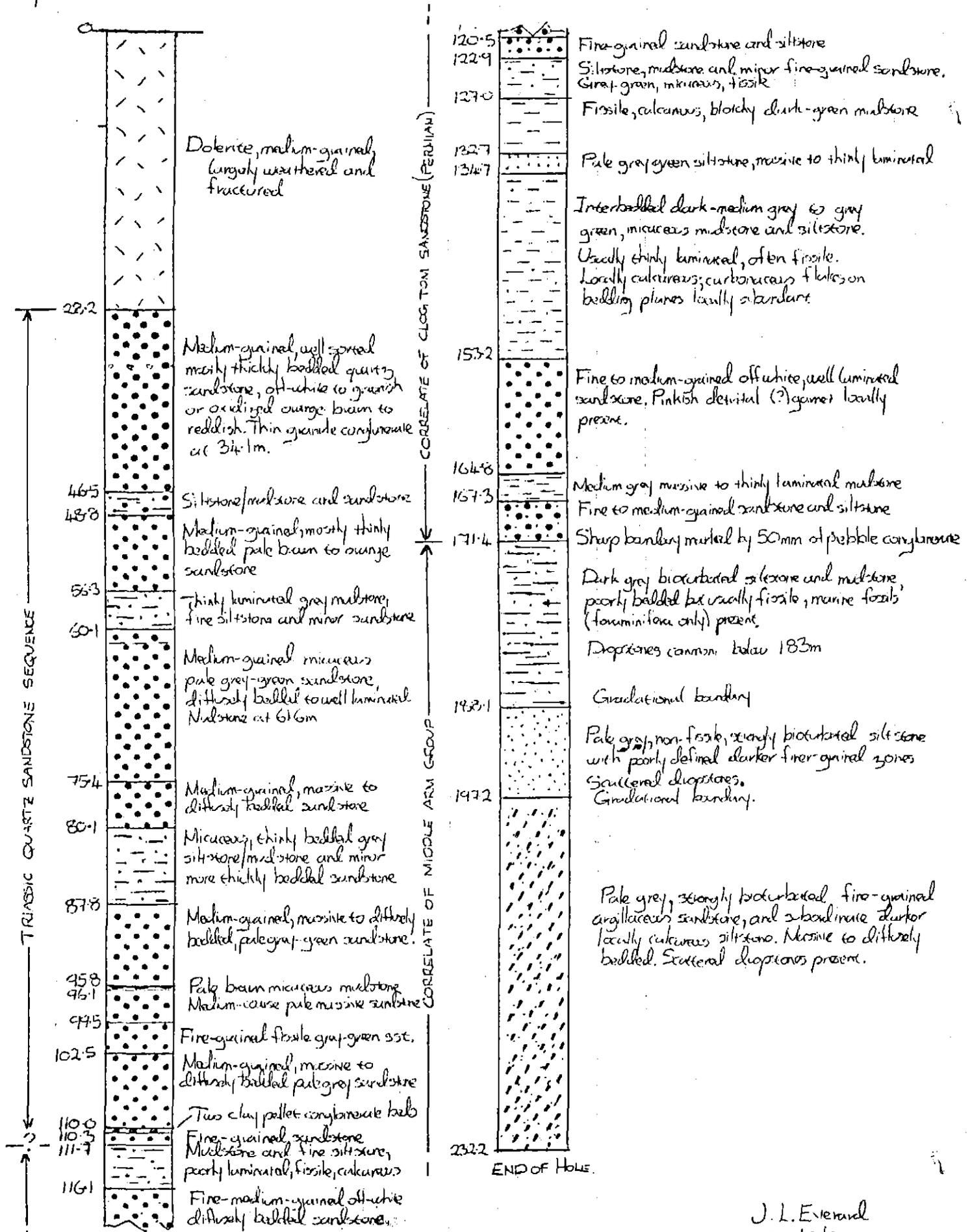
- 0 - 28.2 m Dolerite, medium-grained, largely *weathered* and fractured.
- 28.2 - 46.5 m Quartz sandstone, mostly medium-grained, well-sorted, thickly bedded with some thinly laminated intervals. Locally micaceous, especially in lower part of interval. Off-white to pale greenish or, more commonly, oxidised orange-brown to orange-red. Thin granule-conglomerate at 34.1 m.
- 46.5 - 48.8 m Siltstone/mudstone, poorly bedded, brown, and pale fine- to medium-grained sandstone, interbedded in equal proportions.
- 48.8 - 56.3 m Sandstone, medium-grained, mostly thinly bedded, pale brown to orange. Thin mudstone interval (20 mm) at 55.2 m.
- 56.3 - 60.1 m Grey mudstone and fine siltstone, and minor paler sandstone, thinly laminated.
- 60.1 - 75.4 m Sandstone, medium-grained, micaceous, pale grey-green. Mostly diffusely bedded to well laminated. Mudstone (10 mm) at 61.6 m.
- 75.4 - 80.1 m Sandstone, medium-grained, pinkish to brownish or pale yellow-green, massive to diffusely bedded.
- 80.1 - 87.8 m Siltstone/mudstone, micaceous, thinly bedded, grey (78%) and more thickly bedded sandstone (22%), interbedded.
- 87.8 - 95.8 m Sandstone, medium-grained, pale grey-green, massive to diffusely bedded.
- 95.8 - 96.1 m Mudstone, micaceous, pale brown.
- 96.1 - 99.5 m Sandstone, medium-to coarse-grained, mostly pale brown to off-white, massive to diffusely bedded.
- 99.5 - 102.5 m Sandstone, fine-grained, fissile, thinly laminated, micaceous, grey-green.
- 102.5 - 110.0 m Sandstone, mostly medium-grained, massive to diffusely bedded, pale grey.
- 110.0 - 110.3 m Two clay pellet conglomerate beds (140 and 100 mm thick), separated by massive medium-grained sandstone.
- 110.3 - 111.7 m Sandstone, fine-grained, pale grey-green, diffusely laminated.
- 111.7 - 116.1 m Mudstone and fine siltstone, poorly laminated but fissile, medium grey-green or stained maroon, containing carbonate and minor white mica.
- 116.1 - 120.5 m Sandstone, fine to medium-grained, off-white to pale grey-green, diffusely bedded.
- 120.5 - 122.9 m Sandstone, fine-grained, and siltstone, interbedded. Grey, diffusely bedded.

- 122.9 - 127.0 m Siltstone, fine-grained and mudstone. Grey-green, micaceous, fissile. Minor fine-grained paler sandstone.
- 127.0 - 132.7 m Mudstone, fissile, calcareous, blotchy, dark grey-green.
- 132.7 - 134.7 m Siltstone, pale grey-green, nearly massive to thinly laminated.
- 134.7 - 153.2 m Mudstone and siltstone, interbedded. Dark to medium grey or grey-green, usually thinly laminated, micaceous and often fissile. Locally calcareous. Carbonaceous flakes on bedding planes locally abundant.
- 153.2 - 164.8 m Sandstone, fine to medium-grained, off-white. Usually well-laminated, with thin wavy dark-grey micaceous siltstone laminae. Pinkish-red detrital grains (?garnet) locally present.
- 164.8 - 167.3 m Mudstone, massive to thinly laminated, non-fissile, medium-grey.
- 167.3 - 171.4 m Sandstone, fine to medium-grained, and siltstone. Off-white to pale grey, nearly massive or thinly bedded with narrow black carbonaceous laminae, sporadic pinkish (?) garnet grains present.
- 171.40 - 171.45 m Pebble-granule conglomerate, poorly sorted, friable, quartz and lithic clasts.
- 171.45 - 188.1 m Siltstone and mudstone, dark grey, bioturbated and poorly bedded but usually fissile, especially in the upper part of the interval. Small foraminifera (≤ 2 mm) and scattered tiny mica flakes parallel to bedding present. Clasts of exotic lithologies, probably dropstones, common below about 183 m. Grades into
- 188.1 - 197.2 Siltstone, pale grey, not fissile, strongly bioturbated. Some poorly defined darker grey zones of finer siltstone and mudstone. Scattered dropstones present. Grades into
- 197.2 - 232.2 m Sandstone, fine-grained, argillaceous, pale grey, and subordinate darker, locally calcareous siltstone. Strongly bioturbated, massive to diffusely bedded, scattered dropstones present.

END OF HOLE

008

MT DIRECTION DRILL-HOLE
Depth (m)



J. L. Everard
24/5/90

References

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