REPORT ON FIELDWORK AT SPERO RIVER AND HIBBS LAGOON S.W. TASMANIA

FEB-MARCH, 1971.

891002

REPORT OF FIELDWORK

AT SPERO RIVER & HIBBS LAGOON S.W. TASMANIA

FEB-MARCH, 1971

HOBART, AUGUST, 1971 B. FLOOD

CONTENTS:

AMG REFERENCE POINTS ADDED

1 MAP SPERO RIVER 1" = 1000' FIG. NO. 1. DRAWING NO. A3-1.
1 MAP HIBBS LAGOON 1" = 1200' FIG. NO. 2. DRAWING NO. A4-1.
2 TEXT FIGURES

APPENDIX:
DRAFT REPORT AND MAP ON SPERO RIVER
ULTRABASIC BODY BY E.B. CORBETT

REPORT OF FIELDWORK

AT SPERO RIVER & HIBBS LAGOON S.W. TASMANIA, FEB. - MARCH, 1971

INTRODUCTION

Spero River and Hibbs Lagoon refer to respectively (a) an apparently isolated body of ultrabasic rocks with associated gabbros occurring on both sides of the mouth of Spero River and (b) the southern part of the belt of ultrabasic and gabbroic rock (on the Sorell Peninsula) extending from Macquarie Harbour to Hibbs Bay.

The aim of the investigation was to reassess the asbestos potential of the localities and at Spero River to obtain additional information about the extension of the body.

The fieldwork was carried out during the periods 22nd to 28th February at Spero River, and 28th February to 2nd March at Hibbs Lagoon.

PREVIOUS WORK

Spero River: The reader of this report is referred to the work by Taylor (1955) who summarised the initial investigation of the area, as well as giving a review of the general access to this part of the coast. Pertinent information from Taylor's map has been transferred to the map Fig. 1.

Based on previous fieldwork and aerial photos and aeromag L.E.E. presented a geological interpretation of the Hibbs belt ultrabasics by Audley-Charles (1958).

In 1967, B.H.P. had a field party in the area measuring a section along the Spero River from the coast as well as collecting geochemical drainage samples (Hall 1967). Altogether, 40 samples were taken.

The old pack-track from Birch's Inlet was already in a very bad condition in 1949, and any approach from the sea may prove "a hazardous undertaking". Thus a helicopter from the H.E.C. Hermit Valley Camp was used. The shore provides good landing sites for a helicopter, but as we wanted to be closer to the ultrabasic we landed near the top of Garibaldi 300' a.s.l. where the camp was erected, see Fig. 1.

Except on the ridges the ultrabasics are covered with a thick titree-bottlebrush bush with bauera and some cutting grass. The old pack-track shown on Taylor's map is visible only on the top of the crest near the camp. Access within the area thus proved difficult, and a more thorough local investigation will require the assistance of track cutters.

The few tracks cut by us appear on Fig. 1. The main one runs from the camp north-east down to the Spero River. Here a small landing was cut and a rubber dinghy was used in the Spero River from its mouth as far up stream as the old camp site.

Hibbs Lagoon: A bulldozer was walked in to this area from Noddy Creek to make the tracks in 1967. The route selected then was westwards to the buttongrass plain from Pad 2, along the northwest side of Modder River out to the coast, along the coastline to Griffiths Creek crossing up on to the buttongrass along the south side of Griffiths Creek until the forest belt was reached again, then southwards along the belt to the spot where line 10,000 N commences. Apart from this, there is no connection to the track system further north at Noddy Creek. There are two helipads on the tracks at Hibbs Lagoon. The one at 00N (Pad 6) was used by us and the camp was erected there; the other one is at the western-most end of the 10,000N track (Pad 5).

The general geology of the area was presented on the map by Hall et al (1969), while the geochemical results were presented by McIntyre & Bumstead (1969). It appears from the latter, however, that the lower part of the Spero River (about 1 mile) which intersects the ultrabasics has not been sampled. This is probably due to the fact that this part is affected by tidal water.

A short report and a geological map of Spero River by E.B. Corbett will be found attached to this report. This was based on aerial photo and aeromag interpretation as well as fieldwork carried out sometime in the season 67/68.

As the various maps from this area strongly contradict each other regarding geological boundaries, part of our work was aimed at clarifying this problem.

Hibbs Lagoon: Relevant previous work was carried out by B.H.P. in 1967-68, Hall & Corbett, and McGregor in Hall et al (1969). McGregor outlines a more detailed mapping of the Hibbs Belt from ½ m. to 2 m. north of the Hibbs Lagoon. This work was made possible as bulldozer tracks were put in concurrently. Figure 2 is a reduced map from this work somewhat altered and with additional information about asbestos mineralization.

Both the investigated localities were covered by low level colour photography after our visit. The photos have been used for the presentation of this report.

ACCESS

Spero River: As Taylor (1955) stated, access to this area is difficult.

The current work was performed only along the tracks already bulldozed. (See Fig. 2).

CURRENT INVESTIGATION AND RESULTS

SPERO RIVER

GENERAL GEOLOGY. The ultrabasic body is here enclosed mainly within Cambrian sediments. According to Hall (1967), at least 1000 feet of finely laminated argillite with minor thin bands of tuffaceous sandstone cut by thin lamprophyre dykes occur west of the ultrabasics. Taylor reports grey impure limestones within this succession, and these were also recorded by us. However, north of the river a gabbro occurs west of the ultrabasics. East of the ultrabasic Hall reported a unit about 9000 feet thick predominantly of finely laminated argillite, with well developed sequences of graded bedded conglomerate, sandstone and argillite, and thin bands of gritty conglomerate. The rocks in the immediate vicinity east of the ultrabasic consist mainly of a light brownish mudstone with minor beds of sandstone. Hall gives the dominant strike throughout the succession as N10 - 20W with a steep easterly dip.

On the top of Garibaldi some 50 ft. of a quartzitic gravel deposit occurs. It is unconsolidated and assumed to be of Tertiary age. The eastern and western ultrabasic contacts are not exposed, but the inferred boundaries were located by outcrop mapping. The eastern contact south of the river, however, was observed and described by Taylor (1955).

The eastern and western boundaries of the ultrabasics seem to be in accordance with changes in vegetation apparent both in the field and in aerial photos.

This contrast is here the only means upon which the north and south contacts have been drawn - aeromag not taken into account. The Garibaldi body terminates somewhere between Spero River and Endeavour Bay, as sediments similar to those west of the contact outcrop along the shore of Endeavour Bay south of Garibaldi.

The northern contact is more uncertain. An exposure of gabbro was found just north of the Spero River ultrabasic (sample 71/L1-28) adjacent to an apparently isolated lens of ultrabasic 100' wide.

THE ULTRABASIC BODY. Outcrops are fairly frequent around the upper northern slope of Garibaldi. Location of samples and indication of access tracks on Fig. 1 show generally where our observations were made.

Also on Garibaldi the ironcapping so frequently noted in the Noddy Creek area was observed. It is found mainly as boulders around the upper part of the No. 2 stream, close to the Tertiary gravel, but one small outcrop of "in situ" ironcapping on top of a coarse grained pyroxenite was recorded.

Classification: During the fieldwork, a number of different rock types were observed, and an attempt to classify them on mineralogical and structural evidence follows. Owing to the haphazard distribution of exposures and lack of observations of boundaries between the classified rock types in the field, the classification must be regarded as highly subjective. This is a reason why it diverges from the one used by Taylor (1955).

1. Pyroxenites: This rock is dark to medium green, with a yellowish green lustre from the pyroxene crystal cleavage surfaces. It is mainly coarse grained with individual crystals of approximately 1 cm or less, the larger grains protrudiing from the weathered surfaces. The weathering colours are different shades of brown becoming darker with increasing grain size. Various degrees of serpentinization generally occur.

2. Banded Pyroxenites/Serpentinites: Possibly there is a gradational transition between the pyroxenites and these banded rock types. The bands normally vary between ½" to 4" in width; they are mainly parallel, but one may be seen to wedge out within the other. They display mineralogical differences as the classification name indicates, the pyroxenite band having the same characteristics as the pyroxenites above described. In some areas, for instance, the lower part of the track down to the landing, these pyroxenite bands dominate the rock, while at other localities the serpentinite bands do. As will be commented upon later this is of significance with regard to the asbestos potential.

The serpentinite bands are dark to blackish green and very finely textured. They weather to a greyish green colour. Normally also shades of brown appear, as various amounts of pyroxene relics often occur.

Strike/dip of the banding was measured at 18 different localities showing a variation in strike from 40°W to 50°E of N. The dip was normally steep to the E, varying from 45° to vertical. Throughout this range, the strike of the bands seems to concentrate either around 30°W or 20°E of N. The former position is in accordance with the regional strike/dip in this region.

3. Dark Green Serpentinite: Many of the outcrops investigated during the fieldwork consisted of this rock. Their appearance is similar to the serpentinite bands described above. Some degree of shearing in these rocks is often evident.

4. Sheared Serpentinites: Owing to the scarcity of exposures, the internal relationship between the three former rock types can only be assumed. It seems quite clear, however, that the sheared serpentinites may originate from all three described ultrabasics. The sheared rocks are widespread and a definite continuity of an approximate N-S zone was observed where the samples 71/L1 - 21-23 were taken. The sheared serpentinite weathers to a lighter greenish grey colour and displays also a more grass green or grey green colour in fresh exposures than the unsheared serpentinites. However, all gradations between these rocks occur.

The shearing planes, although rather irregular, have been measured with a strike varying from 45°W to 70°E of N with vertical or steep dips towards the E. Most readings were around 10°E of N, which is in accordance with the regional structure.

Relict "boulders" of banded ultrabasic down to fist size have been found within the sheared rock. Probably a fully exposed Spero River Ultrabasic body would display these sheared serpentinites in zones of varying width and length within all the aforementioned rock types.

Microscopic Examination of the Ultrabasics: The present petrographic investigation is based on 10 (only) thin sections, 71/L1 - 14, 18, 24 (2) from the banded pyroxenite/serpentinite, 71/L1 - 6, 17 from the dark green serpentinites and 71/L1 - 5, 22 from the sheared serpentinites.

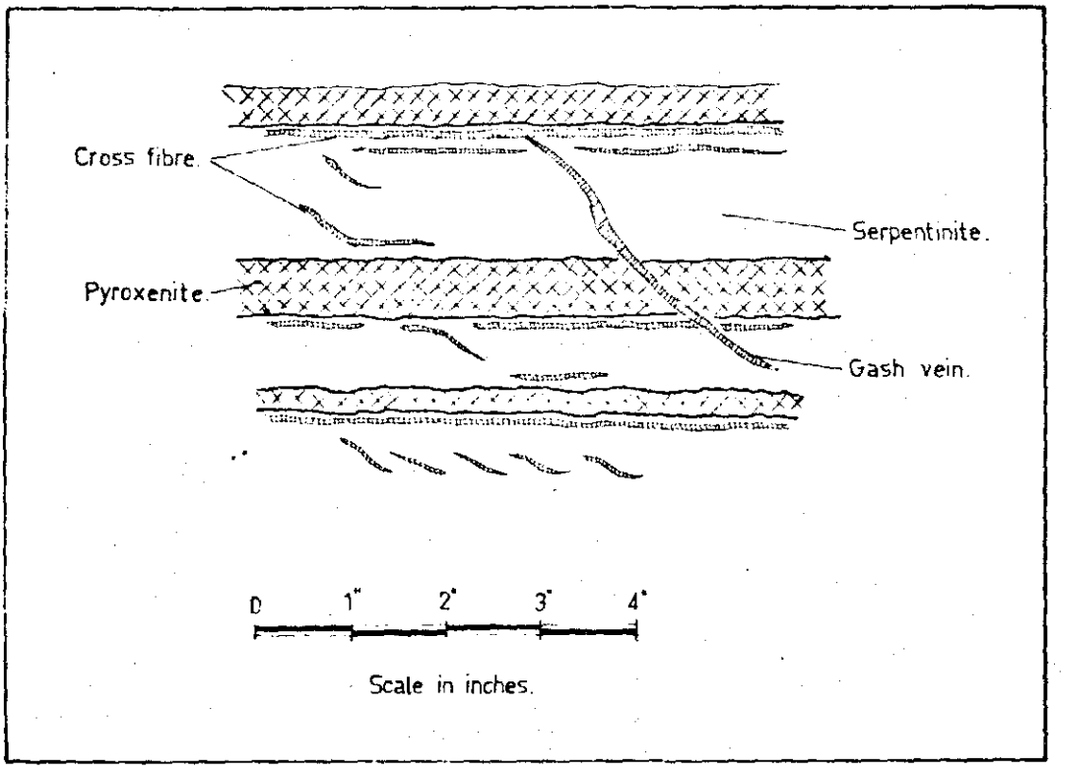


Fig. 3.

Typical appearance of parallel and gash veins of chrysotile cross fibre in banded pyroxenite/serpentinite, Spero River.

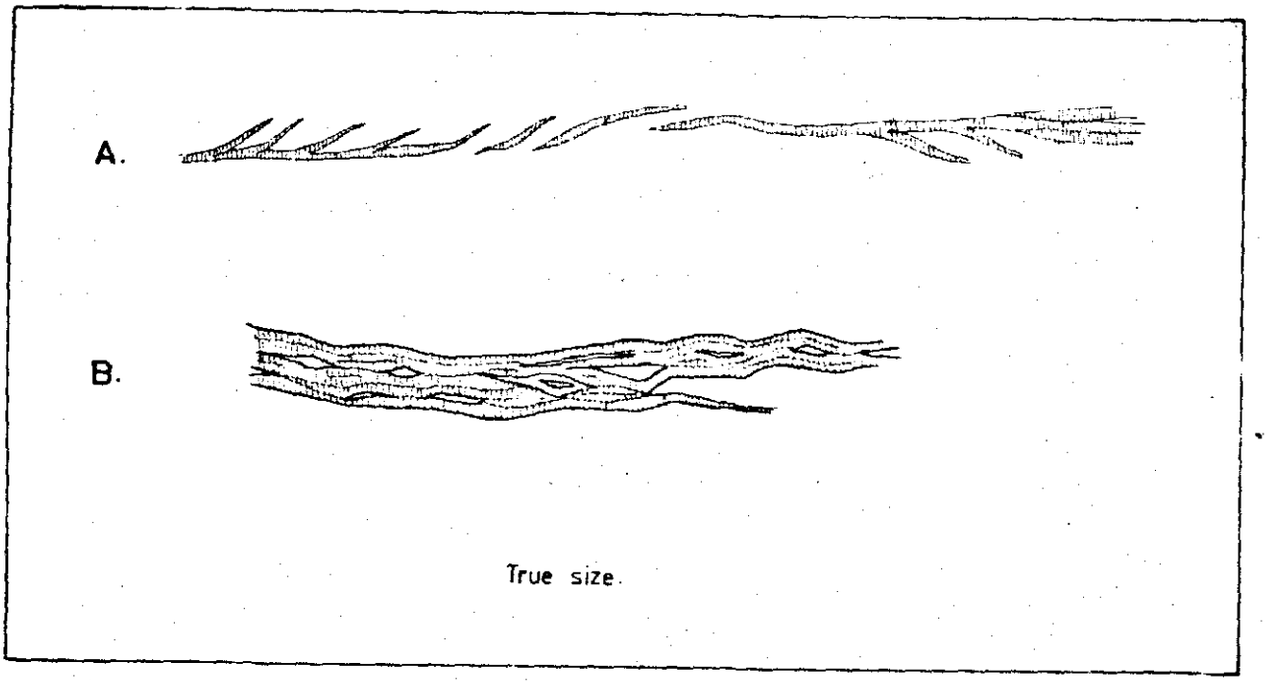


Fig. 4.

Details from veins of chrysotile cross fibre, Spero River. A. "En echelon" textured "parallel" vein. B. Vein demonstrating typical parting and enclosures of host rock.

The minerals encountered:
Serpentines, pyroxenes, opaques, talc and olivine?

Serpentines: The serpentines were mainly seen as a fine grained fibrous aggregate often with the fibres in a kind of "chicken fence" mesh texture. This is probably a lizardite, as this is the dominant serpentine mineral occurring in the Tasmanian ultrabasic rocks (personal communication with A. Brown and M. Rubenach). Pseudomorphs of fibrous serpentine after pyroxene were observed, but the numerous pseudomorphs encountered are mainly optically homogeneous with parallel extinction simultaneous with enclosed pyroxene relicts if present. This variety is believed to be bastite. The optical properties for this mineral agree in general with those given for serpentine, and the relief was equivalent to the surrounding fibrous modification. The latter, however, was generally seen to embay and vein the bastite, indicating a later formation. In addition chrysotile is naturally present in the rocks although it was seen in only one of the sections as minute gash veins with a maximum width of approximately 0.1 mm.

Pyroxene: The pyroxenes are of two varieties. The predominant one is observed in grains up to around 7 mm, shows neutral colours, grey to yellowish interference colours and parallel extinction. As the opaques occur more frequently in the more serpentinized parts, or in the serpentinite bands, some iron is assumed to be present in the pyroxene, which would therefore be bronzite rather than enstatite. The bronzite always displays all degrees of serpentine. In a coarse grained pyroxenite, however, very limited alteration has taken place. Subordinate amounts of small clinopyroxene grains, mostly relicts but also intergrowths with the bronzite, occur. Especially in the coarse grained pyroxenite more frequent clinopyroxene grains (0.2-0.3 mm across) were noticed on boundary junctions between bronzite grains.

Otherwise clusters (approx. 1.5 mm across) of separate grains with simultaneous extinction indicate initial grain size in serpentinized parts. These have higher interference colours, oblique extinction, and twinning was observed.

Olivine? Some small (less than 0.4 mm) relict grains rather similar to the above, but with few distinguishable features except a possible parallel extinction, are seen. They are assumed to be olivine relicts.

Talc: This mineral was observed in two sections from the banded rock. It occurs as a fine grained aggregate of high birefringence, either in veins paralleling lizardite veins or as "patches" within some of the bastite pseudomorphs.

Opaques: The opaque minerals occur as anhedral to euhedral grains with a maximum size of approximately 0.6 mm. They also occur as fine grained aggregates along veinlets. The powdered rock reacts to a magnet, and some serpentinite specimens with a high opaque mineral content influence a hand compass. Thus magnetite is assumed to be the dominant opaque mineral.

A synthesis of the observations obtained with the microscope stress the following points:-

(1) The overall dominance of the serpentines and ortho-? clinopyroxenes.

(2) The advanced degree of serpentinization even within rocks called pyroxenites or pyroxenite bands in the field.

(3) The less distinct differences between the classified rock types when studied in thin section compared to macro examination.

It follows that applying names such as harzburgite and lherzolite should be avoided until there is ample evidence that the ultrabasics have contained olivine and clinopyroxene. On current observation clinopyroxene is scarce and the presence of olivine is doubtful. What we can see is an alteration of orthopyroxene to lizardite and bastite. It appears in thin section that rocks described in the field as pyroxenite may reveal around 50% of serpentine under the microscope. A pyroxenite band in a banded rock contained only minute pyroxene relicts, consisting mainly of bastite pseudomorphs with grain sizes up to 10 mm. Also grains within true serpentines detected as pyroxene with the pocket lens in the field appear to be bastite. The rock least affected by serpentinization is a coarse pyroxenite revealing only minor serpentine veins. The highest degree of serpentinization was encountered in the sheared zones where apparently most of the bastite has been reserpentinised to fibrous aggregates. The opaque minerals are assumed generally to be magnetite and are the only ubiquitous accessory mineral. They occur most abundantly in the serpentinized parts of the ultrabasic rocks.

Asbestos Mineralization: Cross fibre veins or slip fibre asbestos occur within all the varieties of ultrabasics except the pyroxenite. Asbestos occurrences were observed on both sides of the Spero River. There is a clear tendency towards fibre concentration in the banded rock with a dominance of serpentinite bands, and in the unsheared serpentinites.

(1) In the banded pyroxenite/serpentinites cross fibre veins mainly occur parallel or sub-parallel to the banding with the most extensively developed veins close to the "foot wall" of the adjacent pyroxenite band (See Fig. 3).

The thickness of the veins is mainly within the range 1/32" - 2/16" with a maximum width of 1/4". Gash veins cutting both types of bands were frequently noticed, normally wider and shorter than the former veins. Parting and "en echelon" texture within the individual sub-parallel veins often occurs, see Fig. 4, which implies that the fibre length is normally shorter than the vein width. Logging carried out on two closely spaced exposures just W of where sample 71/L1 - 10 was taken follows below.

Feet	1/32	1/16	2/16	
0-5'	14	5	2	= approx. 1.6%

Feet	1/32	1/16	2/16	3/16	
0-5'	19	7	3	1	= approx. 2.6%

(2) Within the serpentinites the asbestos occurs mainly as a stock work of cross fibre veins, but minor ribbon fibre was also observed. Also here the width of the veins is normally 1/32" - 2/16" with a maximum of 5/16". In many exposures where fibre was not readily observed a careful examination would reveal minute thread veins. Slip fibre occurs sparcely within the sheared zones adjacent to unsheared remnants of other rock types within the zone.

GABBRO. A gabbroic rock is well exposed in the cliffs along Spero Bay north of the river. Exposures were also found up along the river, in the bend just north of No. 2 stream where our sample 71/L1 - 2 was taken. Sample 71/L1 - 16 represents a highly altered mixed rock probably from the contact of gabbro and ultrabasic.

The exposure north east of the ultrabasic body (Sample No. 71/L1 - 28) indicates that the gabbro may enclose the ultrabasic both to the west and the north. A contact towards gabbro to the north is also indicated on the map by Hall (1969) probably based on aeromag interpretation.

The gabbro is of a similar occurrence to the one exposed further north at Hibbs Lagoon and Noddy Creek. It is light to medium green, lighter with stronger degree of alteration, somewhat light spotted and medium grained. It weathers easily.

Microscopic Examination of the Gabbro: A microscopic examination of two samples, 71/L1 - 2 and 8 has been done of which No. 8 was the least altered and therefore has been given a full description.
Minerals: Pyroxene, amphibole, plagioclase, chlorite, serpentine, sericite (talc?), opaques and sphene.
Estimated percentages in No. 8: Amphibole with chlorite 50%, pyroxene 40%, pagioclase and accessories 10%.
The pyroxene occurs mainly as subhedral platy and prismatic grains (c. 0.7 mm) with distinct grain boundaries with the generally surrounding amphibole. The grains are colourless, but dark brownish along the boundaries and the well developed cleavages. They appear as almost complete pseudomorphs consisting of a fine grained, almost submicroscopic aggregate. The latter consists at least partly of sericite (talc?) and serpentine. Within some grains scattered relicts of the original material appears with simultaneous and parallel extinction. Presumably the pseudomorphs have originated from an enstatite-bronzite.
The pyroxene pseudomorphs are set in a "matrix" of amphibole. The amphibole occurs in sub- to anhedral grains with a size slightly exceeding that of the pyroxene.

It has a weak greenish pleochroism, oblique extinction and well developed amphibole cleavage. It is probably an actinolitic hornblende.

The hornblende shows all degrees of alteration to a light chlorite. The plagioclase occurs only in limited parts of the section. It appears as subhedral prismatic grains approximately 0.5 mm long, strongly sericitized and brownish cloudy. In spite of the alteration the grains still show a distinct extinction, and twin lamellae are distinguished in some grains.

The main difference between the two samples examined is that the more altered shows a dominance of the altered pyroxene and is devoid of plagioclase. Here also hornblende occurs as a definite alteration product of the pyroxene, which also reveals a more extensive serpentinization along some of the cleavages. The latter quality may have a bearing on the proximity of the ultrabasic body. Rather surprising is the scarcity of opaque minerals in the gabbro as demonstrated in the two investigated sections.

SUMMARY OF OBSERVATIONS AT SPERO RIVER. The Spero River River ultrabasic body occurs on both sides at the mouth of the river. Due to the possibly later intrusion of gabbro into its northern portion it has a somewhat irregular shape, but is roughly elongated in a north-south direction. Its maximum width is about 3000' and its length at least 4000'. The eastern and western boundaries are well defined along the river while the termination to the north and south in Fig. 1 is based mainly on changes in vegetation. South of the river the body is totally enclosed in sediments, while the western and possibly the northern contact north of the river are with a gabbro. The regional trend demonstrates a generally northern strike with a steep dip to the east.

This direction is in accordance with banding and shearing within the ultrabasic body. The rock types within the body have been classified as 1. Pyroxenites, 2. Banded Pyroxenite/Serpentinites, 3. Serpentinites and 4. Sheared Serpentinites.

The latter rock is believed to have originated from the other three due to extensive shearing along zones following the abovementioned direction. The mutual relationship and abundance of the other rock types are not known due to insufficient exposures.

Asbestos cross fibre occurs in A. the banded pyroxenite/ serpentinite (2) with a dominance of serpentinite and B. the unsheared serpentinite (3).

Width of veins is mainly between 1/32" and 2/16", but fibre length is often less due to parting within the veins.

Some slip fibre was observed in the sheared serpentinite (4) close to "relict boulders" of unsheared ultrabasics. Slip fibre may also occur elsewhere within the sheared zones, but will have to be detected through testing of larger samples.

Fibre is thus fairly frequent in the northern and western part of the body, but was not observed in the south-eastern quarter due to thick bush cover and up to 50' of overlying Tertiary gravel.

Due to lack of exposures the fibre occurrences can at this stage not be referred to particular fibre bearing zones.

From a comparative study of the Noddy Creek occurrences it must be said that the fibre at Spero River is of a poorer quality with thinner veins, and frequent parting and mixture of rock material within the veins.

CURRENT INVESTIGATION AND RESULTS

HIBBS LAGOON

GENERAL GEOLOGY. The geology of this area is outlined on the reduced map Fig. 2.
Our only major disagreement with McGregor's original maps concern the rock classified by him as hornfels, but by us designated as a light green dyke. Due to this reinterpretation a short petrological description follows. It is based on one thin section from Sample No. 71/L1 - 34. The light dyke consists of numerous unorientated subhedral to anhedral plagioclase and amphibole phenocrysts. Their sizes are generally 1-2 mm, the often anhedral outline is due to substantial rim alteration. The amphibole has a slight greenish colour, oblique extinction, it sometimes shows polysynthetic twinning (cummingtonite?), and is extensively chloritized. The plagioclase is brownish cloudy and frequently contains fine grained fibrous hornblende which also constitutes an important part of the matrix. Otherwise the matrix consists of fine grained (approx. 0.1 mm) plag., chlorite, quartz, opaques (probably pyrite), and sphene.

Although not very noticeable in the sectioned specimen the dyke often contains numerous pyrite grains around 1 mm across. Due to this, assaying was carried out by McGregor, (Hall et al 1969), but only insignificant amounts of base metals were revealed.

A similar dyke rock was also encountered at 4730N.

Dark green dykes similar to the one at 6000N were found probably enclosed in the former dyke at 1650N and also at 0 N - 200E.

ASBESTOS OCCURRENCES. The former report from this area only revealed the occurrence of asbestos at two localities, on the 0 N line (A) and just north of 7300N line (B). A close study of the exposures along the bulldozed track revealed asbestos mineralization over a far wider area.

0 N Line: 315W Minor cross fibre and gash veins less than or equal to 2/16" in scattered outcrops of various green serpentinites.

340W Minor cross fibre and one gash vein 1/16".

415W Block of banded serpentinite with ribbon and stockwork cross fibre 1/32" - 2/16".

440-485W Dark massive pale weathered serpentinite with ribbon and stockwork cross fibre.

Feet	1/32	1/16	2/16	3/16	%
440 - 445		1			0.1
445 - 450		3	1	1	0.8
450 - 455	4	7	2		1.3
455 - 460)	BARREN				
460 - 465)					
465 - 470)	NO OUTCROP				
470 - 475)					
475 - 480	5	6	5		1.8
480 - 485	4	7	1		1.3

650-750W - Light green sheared serpentinite, magnetite veins and magnetite; slip fibre observed.

750-825W - Boulders of dark green serpentinite with relict pyroxenite and frequent cross fibre veins 1/32" - 4/16".

825-850W - Same rock type as above, but no fibre recorded.

850-975W - Alternating pyroxenite-gabbro (gabbro contact zone).

Baseline 0 N - 7300N: When evaluating the new observations of asbestos along the track it is quite important to bear in mind the relationship of exposures to covered parts, see Fig. 2.

3750N - Boulders with ribbon fibre 1/16" - 1/4".
3915N - Cross fibre less than or equal to 1/16".
4100-4150 - Boulders and outcrop showing cross fibre 1/32" - 4/16".
4440 - Few boulders with stockwork cross fibre less than or equal to 2/16".
4950 - Few boulders with minor fibre.
6050N - A few veins of cross fibre less than or equal to 2/16".

7300N Line: 0-200W - Some minor fibre in serpentinite and banded ultrabasics.
200-320W - Frequent boulders of banded pyroxenite/serpentinite with cross fibre less than or equal to 1/4".

Base Line 7300N - 10,000N: Along this track cross fibre veins were encountered at 7650N, 8160-8200N, 8600N, 9200-9250N, 0360N, 9650N and 9800N.
As the exposures along this track are frequent these spotted occurrences are not regarded as significant; furthermore, as they are often in the form of thin, approx. 1/32" thread

veins and gash veins, minor occurrences of stockwork and ribbon fibre do not reveal fibre length exceeding 2/16".

10,000N Line: No occurrences of cross fibre observed.

SUMMARY OF OBSERVATIONS AT HIBBS LAGOON. The Hibbs Lagoon area is a direct continuation of the ultrabasic rocks in the Noddy Creek area. It consists of ultrabasics, mainly serpentinites associated with gabbros and some dyke rock. This igneous complex is enclosed within Cambrian sediments and volcanics.

Aeromag indicates a more extensive occurrence of the ultrabasic rock in this area compared with the one immediately to the north. This was probably the reason for jumping the central part of Hibbs Belt when the Hibbs Lagoon program was decided upon. The part of the ultrabasic belt investigated here is approximately 8000 ft. long and 1000 ft. wide in the north and 2100 ft. wide in the south, the eastern gabbro included. This widening out to the south is of interest as the best occurrence of crysotile asbestos occurs in the southernmost part of the investigated area. Southwards along the western contact it is still approximately 3000 ft. down to Hibbs Lagoon, while due to the NE-SW position of the Lagoon the distance is only about 1000 feet along the eastern contact.

In the southern part of the investigated area asbestos mineralization was found along the 0 N line west of the camp. East of the camp the serpentinite is generally sheared. Along the Baseline between the 0 N and 6000N frequent occurrences of cross fibre appeared between 3700N and 5000N. Most of the track up to 6000N shows few exposures.

North of 6000N the ultrabasic belt is thinner and partly mixed with sedimentary inlayers and dyke rocks. Although cross fibre occurs in several places along the north of line 7300N only a very small proportion of the exposed ultrabasic

reveals asbestos, and the mineralization in this area is not regarded as significant.

THE ULTRABASIC BELT BETWEEN HIBBS LAGOON AND SPERO RIVER

The countryside between Hibbs Lagoon and Spero River is quite inaccessible with thick vegetation. The various assumptions regarding the occurrence of ultrabasic rocks between these two localities are mainly based on aeromag and aerial photo interpretation. The L.E.E. Co. aeromag map gives strong indications of a lithological connection between the two areas, although it is not believed that the width and consistency indicated on Mrs. Corbett's map with regard to the ultrabasics are justified. Both the width and intensity of the magnetic anomaly between Spero River and Hibbs Lagoon are less than at these two localities, and the magnetic anomaly south of Hibbs Lagoon is less consistent than the one stretching northwards towards Macquarie Harbour.

Audley-Charles (1958) suggested the occurrence of one major ultrabasic intrusive south of Hibbs Lagoon beside the one at Spero River. This extends from approximately 1½ miles to 3 miles south-east of Hibbs Lagoon, its southern portion being marked as the plateau on Fig. 1. This plateau has a thinner and different vegetation from the surroundings, but an attempt to land a helicopter there last season proved not possible.

Audley-Charles states further regarding what he describes as the Spero Belt: "These two intrusions may have a tenuous connection with each other and with the Modder Belt. Magnetics definitely suggest that other smaller intrusion exist at depth".

Mrs. Corbett, who walked up McCarty Creek in 1967, found a few isolated exposures of silicified serpentinites in the western part of the Creek. It is therefore conceivable that the Spero Belt consists of separated ultrabasic bodies, perhaps with some ultrabasic sills? in between, these rocks being cut or interfingered by gabbros.

REFERENCES

Audley-Charles, M., (1958) — The Ultrabasic Rocks of the Gordon Concession, S.W. Tasmania. Lyell - E.Z. - Exploration G73.

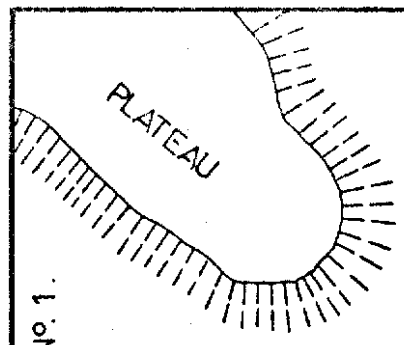
Hall, W.D.M., (1967) — Report for the period 18th March to 20th April, 1967. 7.6/26-3 S.W. Tasmania - Geological.

Hall, W.D.M. McIntyre, M.I., Corbett, E.B., McGregor, P.W., Fenton, G.R., Arndt, C.D., Bumstead, E.D., (1969). — Report on field work E.L. 13/65 S.W. Tasmania 1967-68. C.R. No. 793.

McIntyre, M., & Bumstead, E.D., (1969). — South-west Tasmania Geochemical Report E.L. 13/65 1966-1967. C.R. No. 803.

Taylor, B.L. (1955) — Asbestos in Tasmania. Tas. Dept. of Mines Mineral Resources No. 9.

FIG. Nº 1.



89025

Fig. Nº: 1

To accompany:

Dated:

THE BROKEN HILL PROPRIETARY CO. LTD. EXPLORATION DEPARTMENT	
E.L. 13/65., SORELL PENINSULA ASBESTOS SPERO RIVER. From aerial photos Noddy Creek 71. run5.	
Prepared by: B.F	Centre: HOBART.
Date: 7-7-71.	Drawing No: A3-1
Drawn: M L	Project No:

N

Mc CARTY CREEK.

AMG 365082E 5278713N

SPERO RIVER

SPERO BAY

AMG 363417E 5278050N

Bog

STREAM No 2.

STREAM No 1.

GARIBALDI.

Camp.

LEGEND

- Ultrabasic.
- Gabbro.
- Sediments.
- 10 Location of sample ei. 71/L1-10.

Geological boundaries.

- Defined.
- Inferred.
- Boundary towards overburden.
- Track.

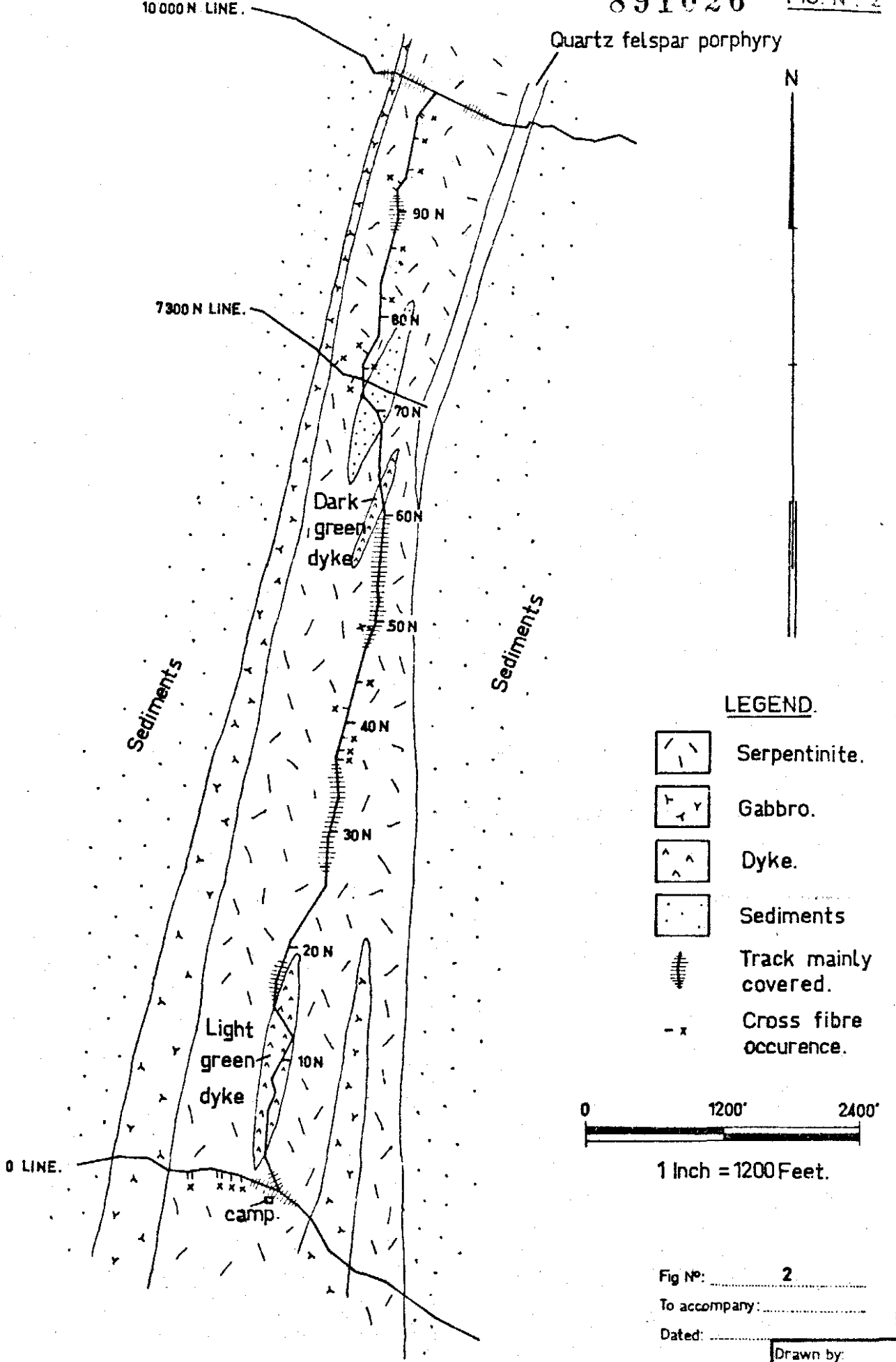
0 1000' 2000'

Photo scale approximately.
1 inch = 1000 feet.

AMG REFERENCE POINTS ADDED

5 cm

891026 FIG. No. 2



LEGEND.

- Serpentinite.
- Gabbro.
- Dyke.
- Sediments
- Track mainly covered.
- Cross fibre occurence.

0 1200' 2400'

1 Inch = 1200 Feet.

Fig No: 2

To accompany:

Dated:

Drawn by: B.F.

Traced by: M.L.

Centre HOBART.

Date 6-7-71

THE BROKEN HILL PROPRIETARY CO. LTD.

E.L. 13/65. SORELL PENINSULA ASBESTOS. HIBBS LAGOON AREA.

REDUCTION OF SHEETS - HB40, HB45 & HB50

Project No.

Drawing No.

SPERO RIVER

by E.B. Corbett

891027

In 1950 Taylor mapped Garibaldi, a hill of ultrabasic rocks south of the Spero River about half a mile from the coast, with particular interest in the area as an asbestos prospect. He concluded the area was not promising due to difficult access, low concentration of fibre (less than 1%), short fibre length and the small size of the deposit.

Work by B.H.P. geologists was aimed at establishing the extent of the ultrabasic body, its relations with surrounding intrusive and sedimentary rocks and the prediction or discovery of base metal mineralization.

Garibaldi is the southern end of an unusually large ultrabasic body which extends to within two miles of Hibbs Lagoon. Taylor mapped an area of good exposures but the much larger body north of the Spero has not been investigated, due to thick scrub cover. Taylor is not justified in putting size limits on the whole deposit.

It is impossible to guess the value of the whole ultrabasic complex as an asbestos prospect, and detailed assessment would require difficult and costly clearing. However the area still has potential as a base metal prospect.

(i) The eastern edge of the ultrabasic body is apparently a site of intense alteration, with partial or complete dolomitisation of marginal serpentinite. This margin might be favourable for concentration of metals.

(ii) West of the ultrabasics are a series of basic intrusions showing some mineralization, and the host sediments include limestones which might be favourable sites for mineralization.

Apart from stream traverses from Spero Bay the area has had little attention from geologists. Exposure is excellent on the coast, reasonable in the streams and non-existant elsewhere.

Recommendations

(i) The ultrabasic rocks. Access to the northern part of the body must be provided and the most reasonable method is by track-cutting. It is unlikely that bulldozers could be landed at Spero Bay and the alternatives are overland from Hibbs Lagoon or via the old horse track from Birchs Inlet. The Birchs-Spero track is about 14 miles long (from the Sorell River landing) including nine miles of forest where it is very badly overgrown.

Proposed access lines are shown in Fig.2. A small base camp could be provided on the Spero about half a mile south of McCarthy Creek. Supplies would have to be brought to Spero Bay by helicopter and ferried to the camp by dinghy.

The first track would follow McCarthy Creek for about a mile (where little clearing would be necessary) then rise onto the plateau and follow it northwards for 1½ miles. At least two cross-tracks are suggested entially and the clearing of a landing site on the plateau. A better arrangement if possible would be to land men and tools from a helicopter to prepare a landing site and camp on the plateau and work from there. The plateau is covered with light ti-tree scrub and clearing should not be difficult.

A second track should be constructed from the southern end of the plateau along ridge tops to meet the Spero River ¾ mile from the coast. These tracks would provide sufficient information to decide whether any further work is justified in the pursuit of either asbestos or base metals.

(ii) Surrounding Areas. The complicated outcrops on the coast round Conder Point should be mapped in some detail to establish the presence of any persistent mineralization. More detailed work is also required in the Spero River and McCarthy Creek, east of the ultrabasics.

FIG. 2
SPERO RIVER ULTRABASIC BODY

Scale 30 chains = 1 inch

proposed tracks

5 cm

N

plateau in ultrabasics

gabbro

MC CARTHY CREEK

SPERO RIVER

campsite

SPERO BAY

GARIBALDI

Boundaries established by field mapping, photointerpretation and interpolation of the aeromagnetics