

## Visit to S. T. Kerrison's lease at South Mount Cameron

by D. J. Jennings

On Wednesday 21 June Senior Geologist D. J. Jennings accompanied Mr S. T. Kerrison of Soottsdale to ten acre lease 102M/69, midway between Pioneer and South Mount Cameron, north of Corduroy Creek and east of the main road. The lease, as pegged, is square in shape and has a boundary parallel to the new road alignment. The area consists of a rising bank north of the creek and includes a negligible area of permanent water in the southeast corner.

### Work done

An option over the lease by the B.M.I. company has been allowed to lapse, but during its tenure Mono Pumps Pty Ltd was commissioned to sink some twelve auger drill holes to basement. These were of wide but irregular distribution and varied in depth from twelve feet to thirty feet. One hole apparently was sunk to eighty feet in 'kaolin' suggesting extremely soft weathered bedrock was encountered. Mr Kerrison has a copy of B.M.I.'s survey plan of the bore hole sites to which incomplete pencil notes have been added regarding the lithological section. A freehand sketch of this information was taken (fig. 1). Follow-up sample drilling with a percussion rig was planned, but was not carried out. After B.M.I. relinquished the lease Mr Kerrison employed a tractor with backhoe to sink fourteen pits (fig. 1, 2), some of which reached nineteen to twenty-one feet below surface. At the time of inspection most of these had filled with water to within four feet of surface and some were overflowing. The B.M.I. company has shown an interest in regaining an option on the lease but since the potential has been demonstrated new option terms have not yet been negotiated. Information on auger bore hole sites and pit sites was taken from Mr Kerrison and is included below.

A diagrammatic representation of auger hole information has also been attempted (fig. 3) and all information available from holes and pits has been appended.

Lease 102M/69 is permanently flooded at its extreme southeast corner by water in the dredged portion of Corduroy Creek. In the old dredged lagoon water is reported to back up in winter which would inundate a further small area of the lease. The land rises gently to the northwest from water level at about 355 feet\* in the southeast to the highest part of 400 feet in the extreme northwest. The northeast-southwest diagonal of the lease coincides with a bank of moderate slope dividing a low area (about 370 feet and below) in the southeast from a high terrace in the northwest at 390 to 400 feet. Even after prolonged relatively dry weather water seepage is evident on this slope.

### The Tertiary section

Mr S. T. Kerrison's testing indicates that values are poor throughout the soil and fine wash overburden. Payable values are located in the shingle which auger drilling indicates forms a persistent bed some eight to ten feet in thickness below about 355 feet\* in the southeast quadrant of the lease. The matrix of the shingle bed here is of silt, sand and grit. The lens of shingle rises and thickens from south to north.

In the central and northern parts of the lease the matrix of the shingle contains a greater clay component. No comments are recorded on the nature of the bottom in the auger holes. Perhaps hole 74 would strike shingle if continued. Also of interest, hole 85 recorded no shingle, while pits 12 and 13 immediately to the south located shingle with good tin values before ten feet in depth. Pits 9 and 10 both located shingle before ten feet in depth while hole 30 recorded shingle only below 24 feet in depth. Perhaps in this hole gravel (12-24 feet) and shingle (24-30 feet) are similar material.

### Panned samples

During the visit samples were washed on a shovel from several dumps of shingle excavated by the backhoe. Invariably good prospects were obtained. A further five samples were washed in dishes from pits 3, 11 and 12. Sample 11 produced a prospect, sample 12 was estimated at one pound per cubic yard ground, and samples from piles 9 and 3 each gave estimated values of two pounds per cubic yard. These five samples were bulked and subsequently concentrated by washing with magnetic heavies removed by hand magnet.

---

\* Relative levels from datum assumed on the B.M.I. plan:  
south — Hole 78, base 244 feet, thickness 10 feet  
north — Hole 82, base 359 feet, thickness 18 feet.

Total dry heavy fraction	33.32 g
Magnetic fraction	4.52 g
Non-magnetic heavy fraction	28.80 g

Therefore magnetic fraction constitutes 13.6%

A little zircon etc. remains in the non-magnetic heavy fraction, so cassiterite constitutes some 85% of the total heavy fraction.

28.8 g per 3 dishes	= 120/5	28.8 grams per cubic yard	
	= 120/5	63.3/1000	16 ounces per cubic yard
		= 24 ounces per cubic yard	

## Factors affecting Aid to Mining

Mr Kerrison's request for drilling services serves a twofold purpose:

- to try and confirm that the superficially promising area will live up to expectations;
- indicate from the depth and values what size and style of equipment is best suited to work the deposit, as a basis for an application for aid for mining equipment.

Mr Kerrison's initiative with a backhoe has shown an interesting situation. When the results of his programme of cradling measured samples from the prospect heaps are to hand a more complete interpretation may be possible.

Problems in working the area are few. The lease is almost devoid of trees and gives no sign of heavy boulders. Access is easy and water supply adequate, by pumping from a creek and dredged lagoons. If good values persist into the southeast corner of the lease Mr Kerrison will need to open up there, and extract shingle from a level below that of the creek bed and dump tailings to the south or east for which an easement may be required. As he progresses north and west the tailings problem is likely to be less troublesome.

Two reasons for urgency are suggested. Firstly in spite of the slope the lease is wet in part and manoeuvring a drilling rig will become progressively more difficult with winter rain. Secondly Mr Kerrison has scoured the northeast for used mining equipment and has options on several items which will expire in due course.

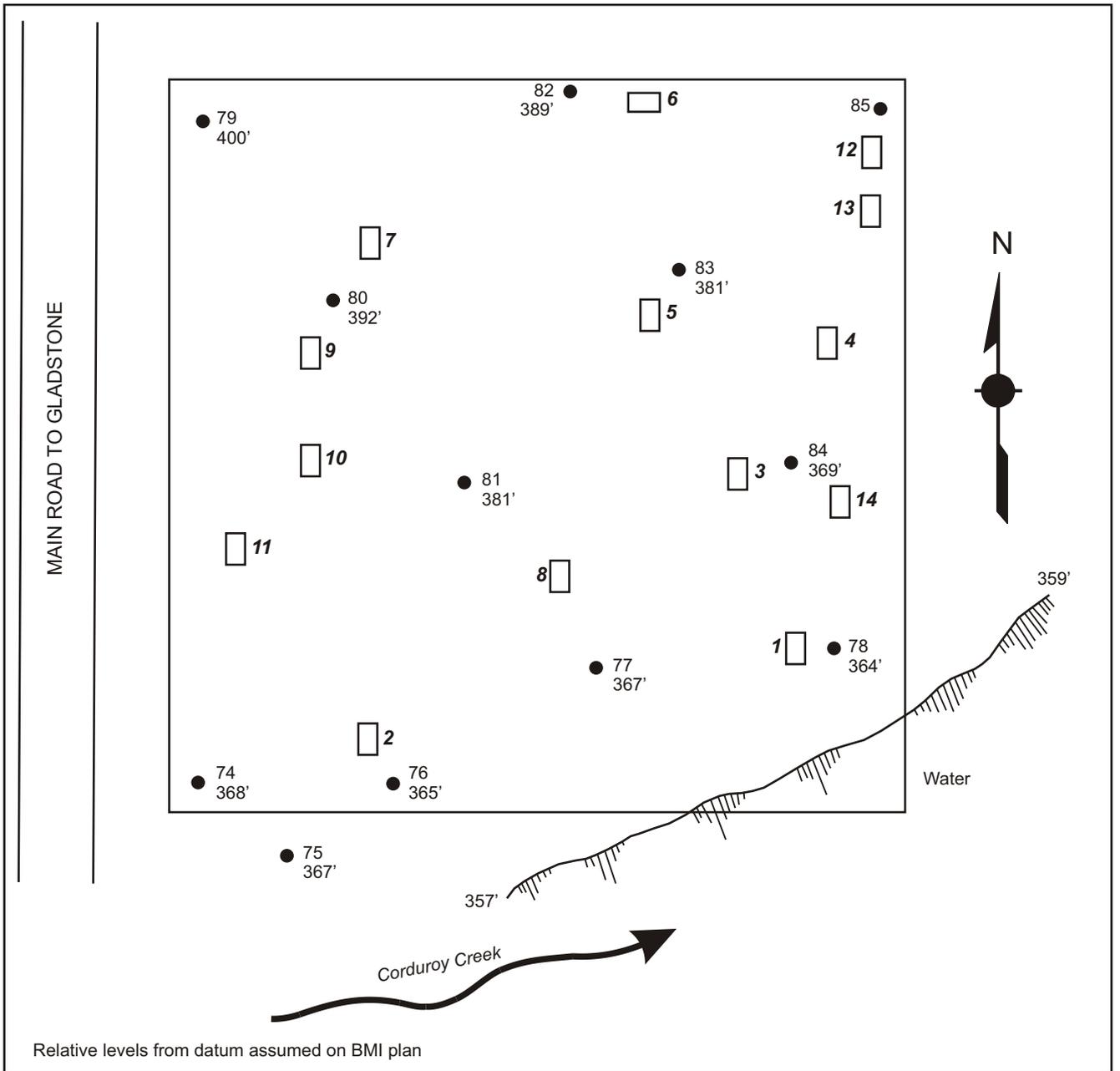
Mr Kerrison already has some equipment. This includes a 40 hp Perkins diesel engine, a 6 x 6 Kelly Lewis pump, 5" hydraulic elevator, a nozzle and four tips, fifty feet of boxing 3' x 2' (trailer mounted) and approximately 150 feet of six inch pipes (steel and polythene mixed).

The mining lease lies adjacent to the main road. From an environmental point of view it might prove judicious to insist that a broad fringe of saplings and low vegetation be preserved along the fence line. Total removal of vegetation and topsoil up to and including the roadside nature strip (as demonstrated a few miles nearer Gladstone) invites and justifies harsh criticism. The adverse publicity should not be underestimated.

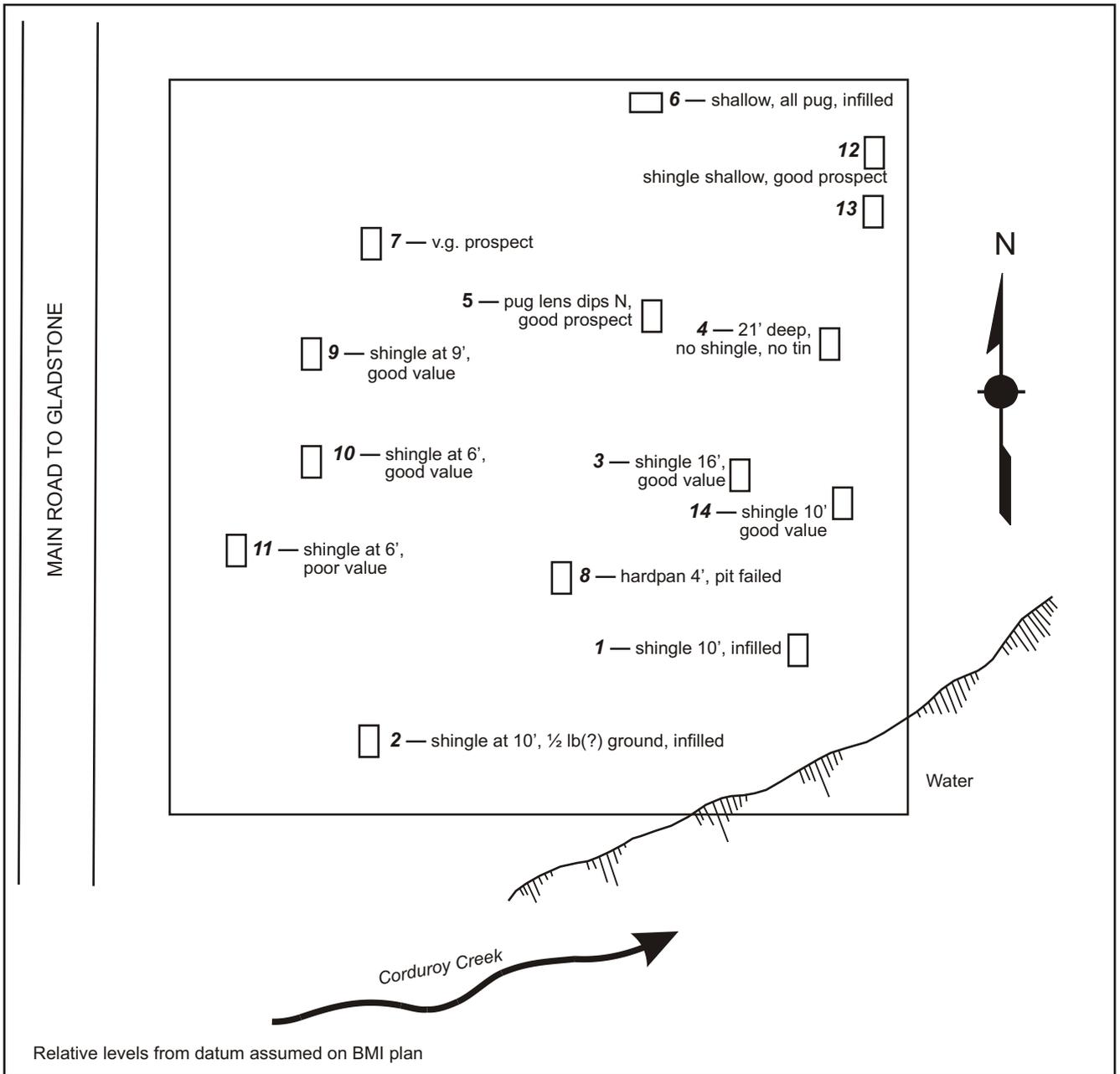
## Conclusions

About half of the lease carries a bed of river shingle between six and eighteen feet thick at a depth of ten to twenty feet. Invariably good prospects of cassiterite are obtained from the shingle; locally the material is rich. Nowhere has a test sample been obtained from the base of the shingle as it lies beyond the range of a backhoe. Without this information an assessment of total potential is difficult

[6 July 1972]



**Figure 1**  
 Location of BMI auger holes and Kerrison backhoe pits.



**Figure 2**

*Backhoe pits on Kerrisons lease 102M/69*

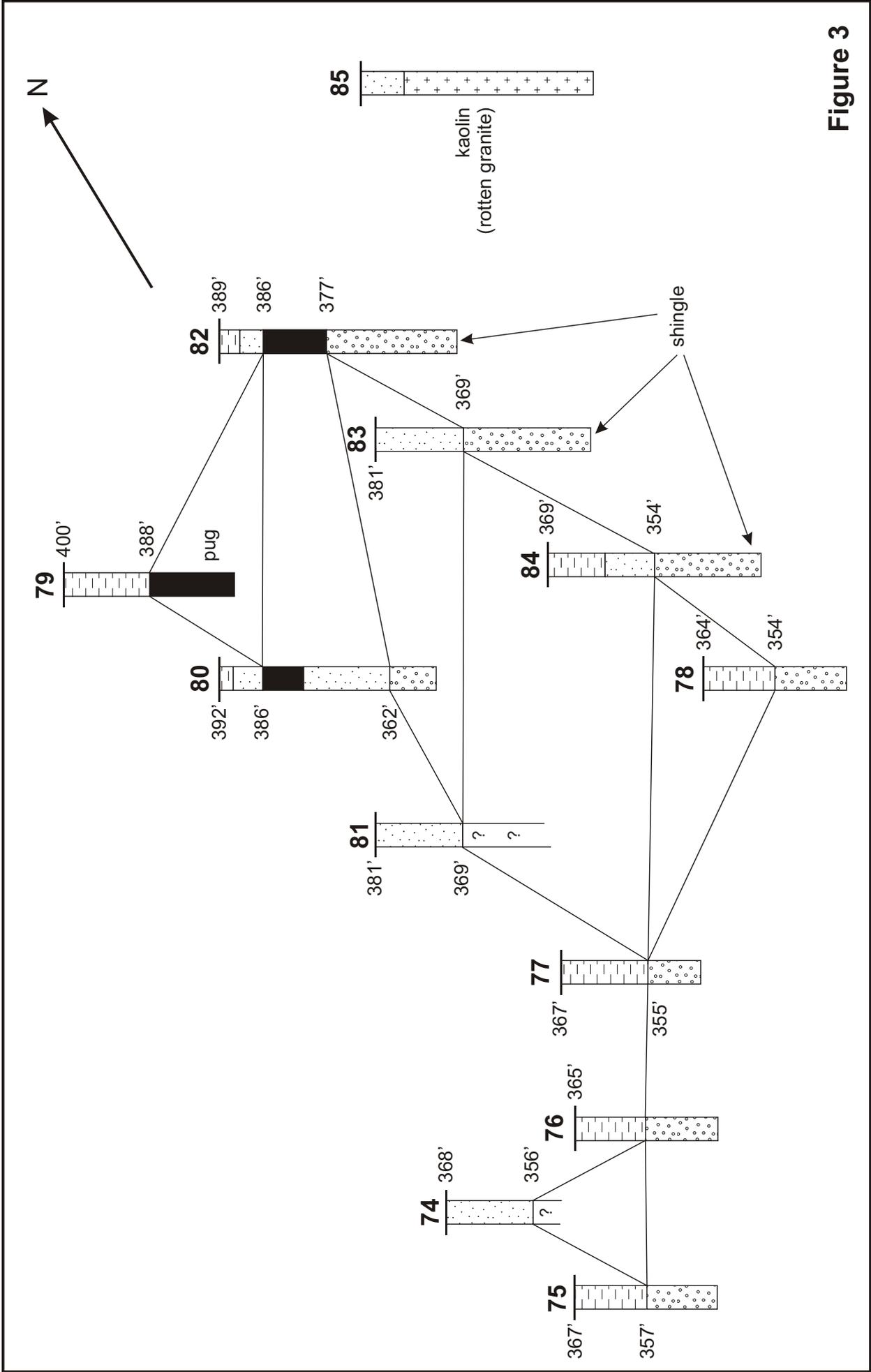


Figure 3

**APPENDIX I**  
**B.M.I. auger boreholes**

<i>No.</i>	<i>Collar datum (feet)*</i>	<i>Section (feet)</i>		<i>Lithology</i>
74A	368	0	1	soil - overburden
		1	6	sand - fine grained wash
		6	12	wash and gravel
75	367	0	10	soil - overburden
		10	20	shingle
76	365	0	10	soil - overburden
		10	20	shingle
Confirmed in pit 2 (now in filled)		0	12	overburden
		10	19	shingle (unbottomed)
77	367	0	12	soil and overburden
		12	20	shingle
78	364	0	10	soil and overburden
		10	20	shingle
Confirmed in pit 1 (now in filled)		0	10	overburden
		10	19	shingle (unbottomed)
79	400	0	12	soil and overburden
80	392	0	2	soil and overburden
		2	6	sand and small wash
		6	12	pug
		12	24	gravel
		24	30	shingle
81	381	0	12	soil, sand, overburden
		12	?	information incomplete, probably shingle
82	389	0	3	fine wash
		3	12	pug
		12	30	shingle
83	381	0	12	small wash
		12	30	shingle
84	369	0	8	soil and overburden
		8	15	pug and wash
		15	30	shingle
85	?	0	6	fine wash
		6	80?	kaolin? (rotten granite?)

\* Relative levels from datum assumed on B.M.I. plan

**APPENDIX 2**  
**S. T. Kerrison backhoe pits**

<i>No.</i>	<i>Depth (feet)*</i>	<i>Section (feet)</i>		<i>Lithology</i>
1	19 (unbottomed)	0 10	10 19	overburden shingle
2	15 (unbottomed)	0 12	12 15	overburden shingle (estimated ½ lb ground)
3	19 (unbottomed)	0 16	16 19	overburden shingle (estimated 3 lb ground)
4	21 (unbottomed)	0	21	overburden (clayey-quartz grit) (colour of tin only)
5	12 (unbottomed)	0 6	6 12	overburden, pug band dips north shingle (good values)
6	shallow and infilled			hard pug at shallow depth
7	12 (unbottomed)	0 10	10 12	overburden shingle with clayey matrix (good values)
8	shallow, abandoned	0 3	3 4	overburden iron pan
9	12 (unbottomed)	0 9	9 12	overburden shingle with clayey matrix, dips north (rich, estimated 3 lb ground)
10	10 (unbottomed)	0 6	6 10	overburden shingle (good values)
11	10 (unbottomed)	0 6	6 10	overburden shingle (poor values)
12	10 (unbottomed)	0 9	9 10	overburden shingle (good prospect)
13	10 (unbottomed)	0 9	9 10	overburden shingle (good prospect)
14	10 (unbottomed)	0 9	9 10	overburden shingle (good prospect)

### APPENDIX 3

A letter from Mr S. T. Kerrison, referring to lease 102M/69, was received by the Department of Mines on 5 July 1972. Referring to testing the lease Mr Kerrison states (in essence):

“Nine samples of shingle wash, each one cubic foot in volume, were collected from piles of material excavated at nine different sites by backhoe, which only penetrated the upper part of the shingle bed.

The nine samples were cradled separately, bulked, streamed and cleaned and in aggregate produced five ounces of cassiterite per nine cubic feet, indicating shingle wash averaging 15 ounces per cubic yard.

Four holes appeared rich (3, 5, 7, 9).

One hole appeared fair (10).

Four holes appeared rather poor ( $\frac{1}{4}$  lb. to  $\frac{1}{2}$  lb. per cubic yard) (1, 11, 12, 14).”

#### **Conclusions and Recommendations**

1. Mr S. T. Kerrison has carried out a commendable programme of testing.
2. The results seem promising.
3. The quality of the base of the wash is critical.
4. Several percussion drill holes on a N-S line through the lease, or on a regular grid with one hole in the southeast corner, seems well justified.