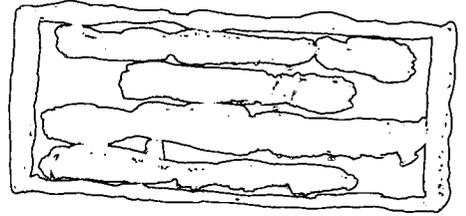


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DEPARTMENT OF SUPPLY AND DEVELOPMENT  
COMMONWEALTH COPPER & BAUXITE COMMITTEE

FIFTH REPORT

South Australian Copper Mines

6th October, 1941.

The Hon. J. A. Beasley, M.P.,  
Minister for Supply and Development,  
Parliament House,  
CANBERRA, A.C.T.

Dear Sir,

FIFTH REPORT  
SOUTH AUSTRALIAN COPPER MINES

We met at Burra on Sunday, 14th September, preparatory to making a personal inspection of the principal copper centres of South Australia, and were joined by the Hon. A. L. McEwin, Minister of Mines of South Australia and Mr. S. B. Dickinson, Assistant State Government Geologist, and later by Mr. Cornelius, Government Inspector of Mines. On Monday and Tuesday, 15th and 16th September, the party visited the following mines:-

Burra Copper Mines	Burra
Kapunda Copper Mines	Kapunda
Wallaroo Copper Mines	Kadina
Moonta Copper Mines	Moonta
Hamley Copper Mines	Moonta
Kanmantoo Copper Mines	Kanmantoo

and a number of smaller mines on the outskirts of the main mining centres.

2. Our investigations were considerably accelerated by the excellent geological reports and plans which had been prepared in advance by Mr. S. B. Dickinson, and which were supplemented by further explanation in the field in every case.

3. There follows a review of each of the areas in the order visited:-

(i) Burra Copper Mines.

This old mine has produced a large tonnage of profitable carbonate ore from open cut operations in the past, but on Mr. Dickinson's evidence the sulphide zone underlying the main body was of very small extent. It is evident that the main deposition occurred, and was localised by favorable geological structure. Fig. 1 (prepared by Dr. L. K. Ward) illustrates diagrammatically how large mushroom-like oxidised ore-bodies may form from relatively unimportant veins carrying sulphides. Fig. 2 compiled by Mr. S. B. Dickinson from old plans and records indicates that the Burra ore-body was of this type.

We are of the opinion that the future of Burra depends on a possible repetition of such structure on the northern extension of the Burra Mines. The present evidence is against dewatering the old mine or drilling it at this time.

(ii) Kapunda Copper Mines.

A great deal of mining and gouging has been done on this deposit. The evidence from past reports reveals that the ore-bodies consisted generally of a large number of narrow veins - quite high grade in themselves - and comprising both carbonates and sulphides. In addition, there is considerable apparent block faulting which complicates and adds materially to the mining problem and costs.

There are a number of small dumps of low grade ore lying at grass which might be treated by leaching.

(iii) Wallaroo Mines.

Here again Mr. Dickinson's maps and reports have illustrated considerable possibilities in the unexplored areas. The entire area is covered with overburden, making ordinary prospecting impossible. The attached plan (Fig. 3) shows the very interesting relationship between the Moonta deposits and those of the Wallaroo Mines, and the blank unexplored area connecting them stretching over several miles.

+ Fig. 4 shows in greater detail the very definite repetition from south-west to north-east of a series of productive veins impinging on a main and very large shear zone at the Wallaroo Mines. The prize in this field is, of course, the possible discovery of a similar ore-body in the unexplored areas of similar structure. The size of the regional structure makes it reasonable to assume that there is continuity of same. There still exists a large tonnage of ore in the old workings but it could not be economically extracted at present.

(iv) Moonta Mines.

Here again there appears to be no reason to open any of the old workings, and anything that can be done to revive the field must be the result of investigations of extensions of present known ore-bodies.

We understand that, on Mr. Dickinson's recommendation, the Elders West Lode extension will be drilled by the South Australian Government. A previous ore-body on this lode discovered late in the life of the field kept it going for some years.

Approaches have been made to us by interested parties in Moonta in reference to two outside properties, namely, the Moonta Extended and Wild Dog. However, we do not consider that commitments for exploration are warranted within the Terms of Reference in view of the results obtained to date.

The Alice was also presented for consideration, but the South Australian Government's drilling does not indicate any possibility of immediate and profitable tonnages being obtained, and exploration costs could not be considered at this time.

(v) Kanmantoo Copper Mines.

This area is one of the old fields of the State and has been recently tested by an operating mining company which was not favorably impressed with immediate tonnage possibilities. However, the Bremer Mine, which is adjacent, is reputed from the only records available, to be a much more regular deposit with the copper lode several feet wide still existent in the lowest level.

4.

RECOMMENDATIONS:

(i) Burra Copper Mines.

The work of close geological mapping of this area should be completed by Mr. Dickinson, and should be followed by a geophysical survey of the northern extension of the structure. If favorable indications of repetitive structure are obtained a diamond drilling campaign should be inaugurated which would probably be done by private enterprise.

(ii) Kapunda Copper Mines.

We recommend that the South Australian Government estimates the possible tonnage and grade of the old broken ore dumps, and the feasibility of leaching them by cementation methods. We do not consider that any money should be spent at this time in an effort to produce immediate copper by mining operations.

(iii) Wallaroo Copper Mines.

We consider that at the earliest moment a detailed geophysical survey should be made of the favorable structure within the area already mined, and along both ends of the main shear zone, followed by diamond drilling of favorably indicated areas.

(iv) Moonta Mines.

As in the case of the Wallaroo Mines, a geophysical survey is warranted, and we consider that the intervening area between the two past productive areas should be included in this. The results of the survey, if shallow deposits are found, would still permit of production within the time specified, following a diamond drilling programme.

(v) Kanmantoo and Bremer Mines.

We feel that judgment and recommendations in respect to these properties should form the subject of later presentation, following a thorough survey by the South Australian Assistant Government Geologist, Mr. Dickinson.

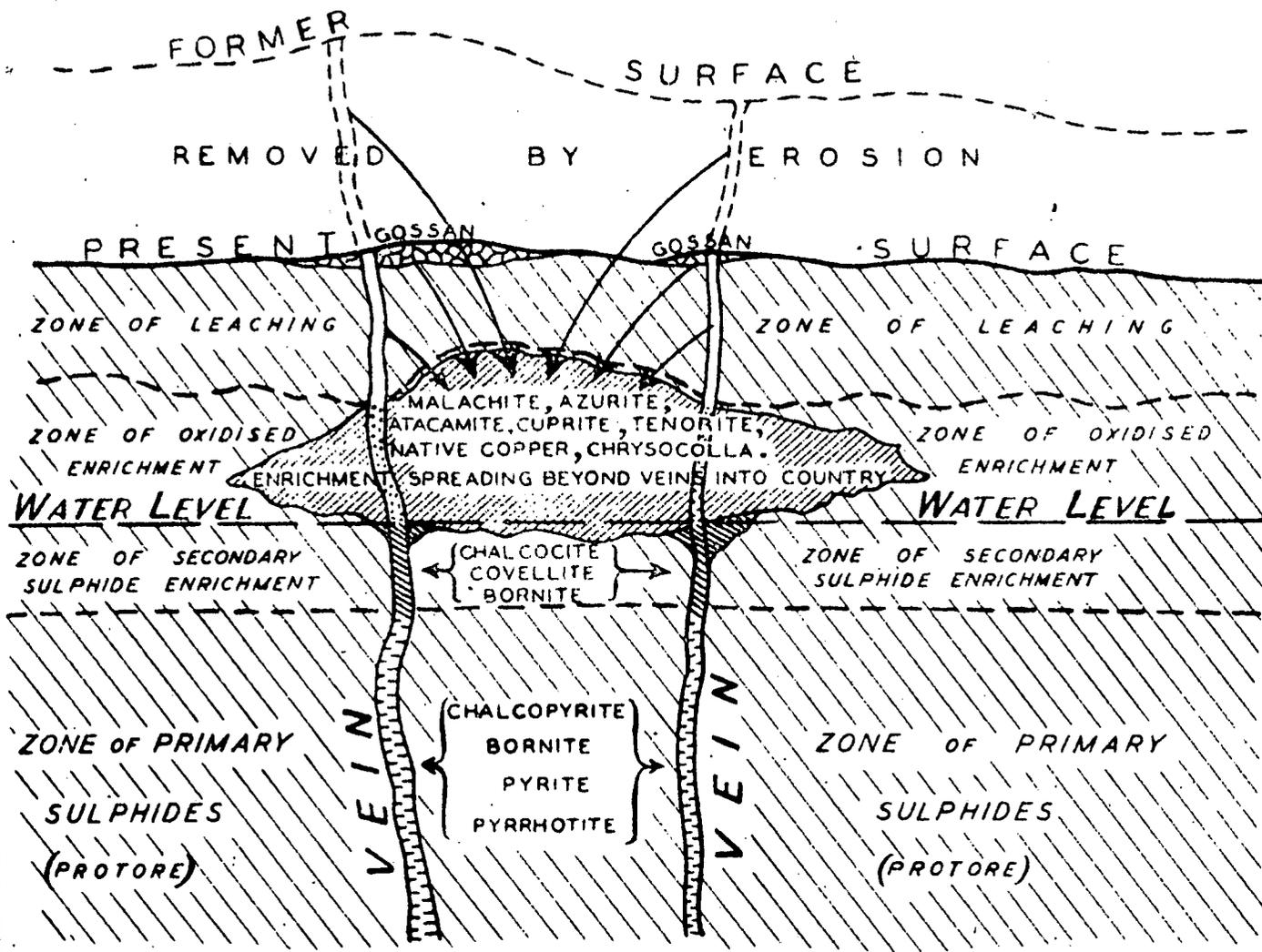
Yours faithfully,

(Sgd.) H. G. Raggatt - Deputy Chairman

(Sgd.) A. J. Keast - Member

COPPER AND BAUXITE COMMITTEE

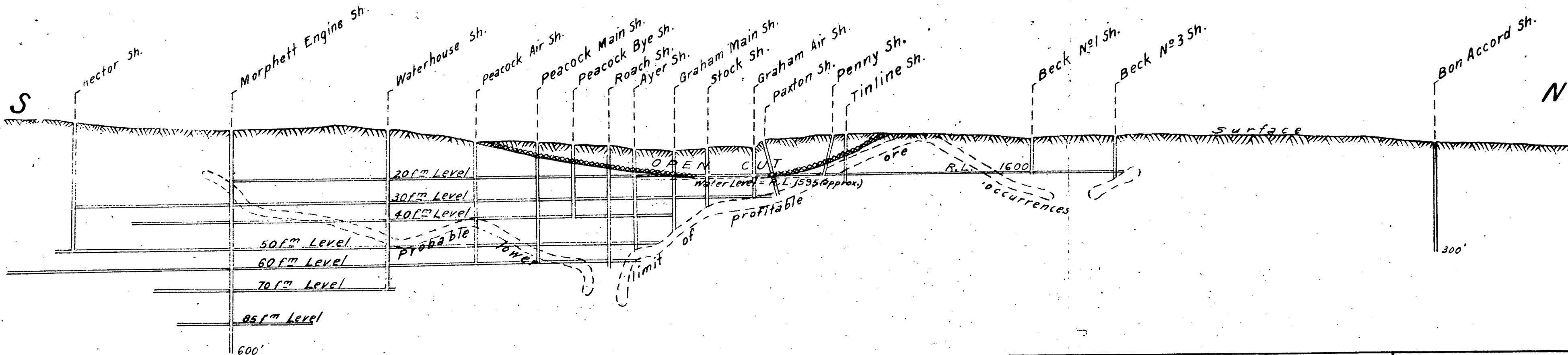
(Sgd.) M. A. Mawby - Technical Secretary



DIAGRAMMATIC SECTION OF COPPER VEINS SHOWING SECONDARY ENRICHMENT

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Fig. 2.



DEPT OF MINES	DATE 8/9/41	SCALE 1" = 200'
BURRA COPPER MINE		PLAN 2144 R. 2/15
LONGITUDINAL PROJECTION OF WORKINGS COMPILED FROM OLD PLANS AND RECORDS		
Tr. W.E.L.		by S.B.D.

HORIZONTAL SECTION OF  
**STRAIN ELLIPSOID**

SHOWING  
**ASSUMED FRACTURE PATTERN**

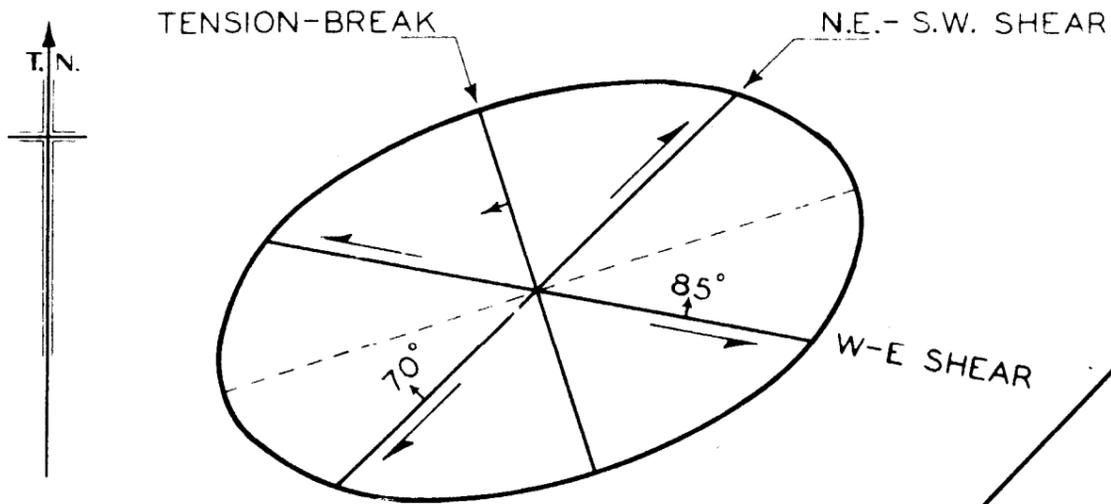
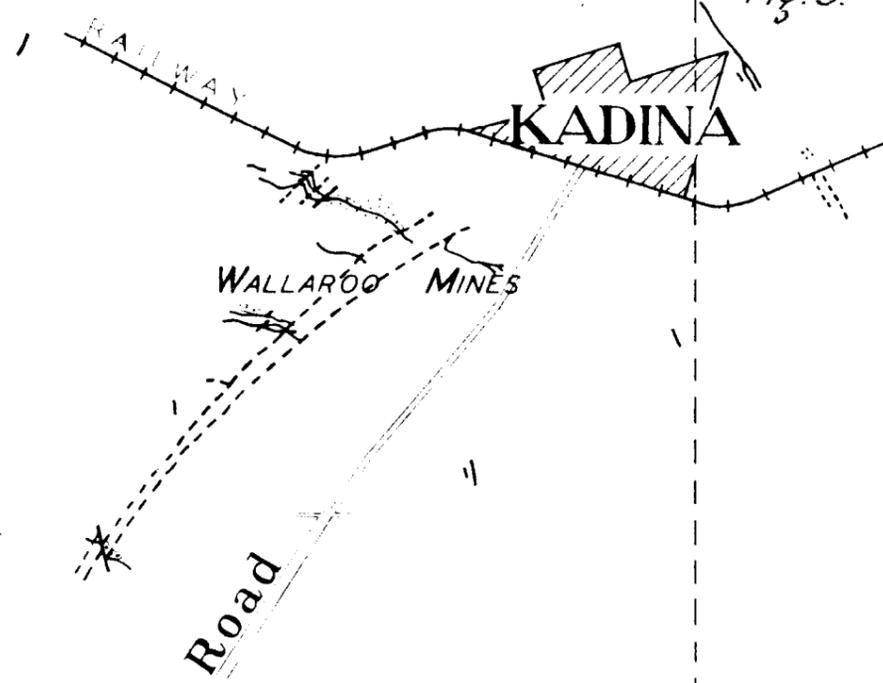
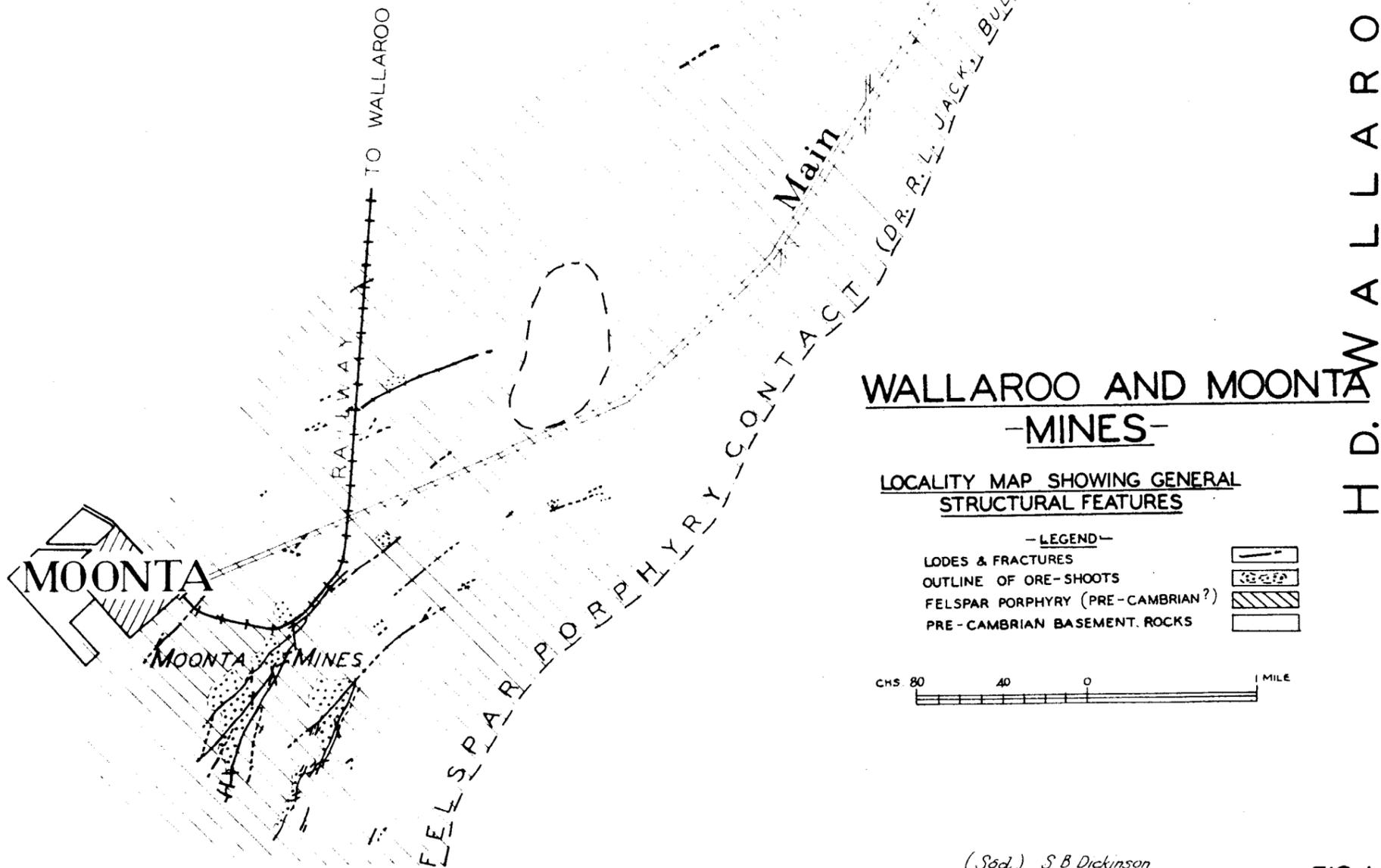


Fig. 3.



Moonta Bay



**WALLAROO AND MOONTA  
-MINES-**

LOCALITY MAP SHOWING GENERAL  
STRUCTURAL FEATURES

- LEGEND -
- LODES & FRACTURES
  - OUTLINE OF ORE-SHOOTS
  - FELSPAR PORPHYRY (PRE-CAMBRIAN?)
  - PRE-CAMBRIAN BASEMENT ROCKS

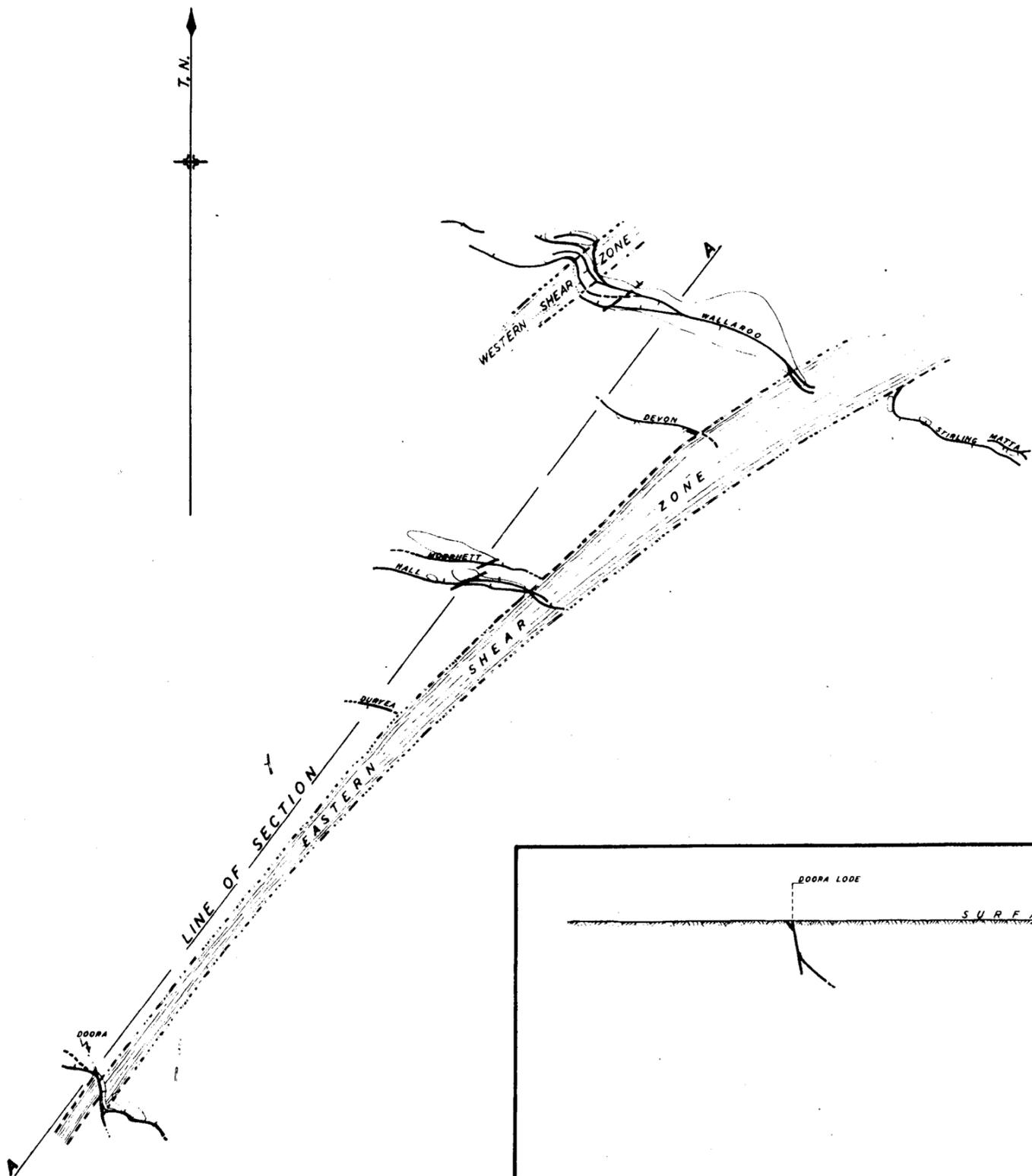


(Sgd.) S. B. Dickinson  
Asst. Government Geologist  
1941

FIG. 1.

H. D. WALLAROO

H. D. KADINA

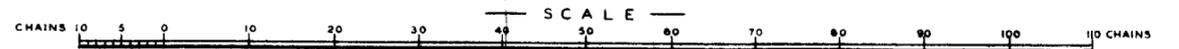


**WALLAROO MINES**  
**SURFACE PLAN**

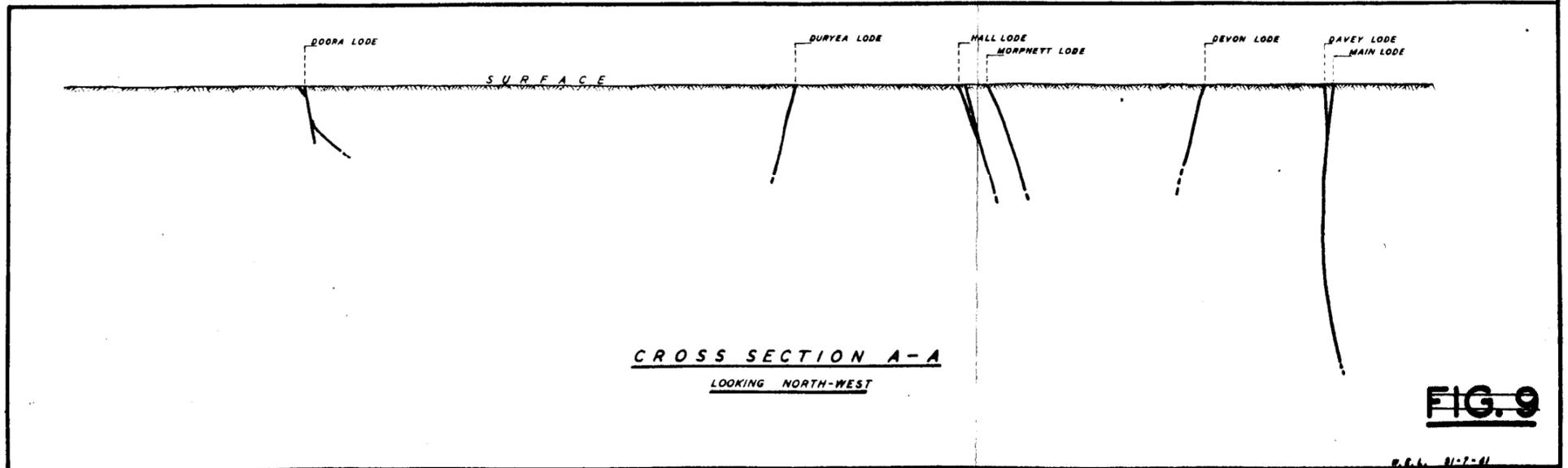
SHOWING  
**STRUCTURAL FEATURES OF FRACTURE PATTERN**

— LEGEND —

MAIN LODE SHEARS	
NORTHEAST-SOUTHWEST SHEARS	
NORTHWEST-SOUTHEAST FISSURES	
OUTLINE OF ORE-SHOOTS IN PLAN PROJECTION	



*S. B. Dickinson*  
 ASSISTANT GOVERNMENT GEOLOGIST 1941



**CROSS SECTION A-A**  
 LOOKING NORTH-WEST