

MINES BRANCH  
GEOLOGICAL LIBRARY

OPEN FILE

CR1958-0013

Q1-23

DEPT. OF MINES  
DARWIN

MOUNT ISA MINES LIMITED

TECHNICAL REPORT

No. 9.19

TITLE

FINAL REPORT "CALVERT" AUTHORITY TO  
PROSPECT NO. 511

OPEN FILE

DEPARTMENT Geological

AUTHOR G.C. Battey

DATE January, 1958

COPY No. 3.

MOUNT ISA MINES LIMITED

TECHNICAL REPORT

No. 9.19

TITLE: FINAL REPORT "CALVERT" AUTHORITY  
TO PROSPECT NO. 511

ISSUING  
DEPARTMENT: GEOLOGICAL

AUTHOR: G.C.BATTEY

INVESTIGATIONS  
CONDUCTED BY: T.H.HANEY, D.SAMPEY, W.MANSER,  
D.M.CRABB.

SUBMITTED BY: S.R.CARTER

DATE: JANUARY, 1958.

## **CONTENTS**

	Sect.
Mount Isa Mines Limited Technical Report No. 9.19	1
Summary	1
Final Report on Calvert Authority to Prospect No. 511	1
- Introduction	
- Investigation	
- Inspection of Radioactive Anomalies	
- Prospecting the Mount Drummond Volcanic	
- Geochemical prospecting	
- Prospecting the Northern Portion of the Authority	
- Costs	
- Conclusions	
- Recommendations	
- Acknowledgements	
- Distribution List	

## **LIST OF PLANS**

Locality Plan	1
Geochemical Sampling of Redbank Creek	1
Geochemical Sampling of Rocky Creek	1
Geochemical Sampling of Golden Creek	1
Map Showing Creeks Geochemically Sampled	1

### SUMMARY

For the second successive year Mount Isa Mines Limited held an Authority to Prospect in the neighbourhood of Calvert Hills Station in the Northern Territory. "Calvert Hills" Authority to Prospect (No.511) covered an area of 2,338 square miles.

All radioactive anomalies located by the aerial scintillometer survey conducted by the Bureau of Mineral Resources were investigated. No uranium mineralisation was found within the area covered by this Authority to Prospect.

A geochemical stream survey was conducted in the northern portion of the Authority to Prospect. Anomalies were produced downstream from the known mineralisation at the Prince and Redbank Mines. Other anomalies were examined but no copper mineralisation was found. An anomaly for lead was traced to a small occurrence of anglesite in vesicles in a lava of the Golden Creek Volcanics.

Intensive prospecting by experienced Company prospectors controlled by field geologists failed to locate any mineralisation of interest to this Company.

Mount Isa Mines Limited have maintained a field party in this area for the past two field seasons. A large sum of money has been spent but nothing of economic interest to this Company has been found. However, some of the more remote portions of this Authority have not yet been adequately prospected.

Further prospecting should be done in this area.

## FINAL REPORT ON CALWERT AUTHORITY TO PROSPECT NO.511

### INTRODUCTION

During 1956 Mount Isa Mines Limited held an Authority to Prospect an area of 2,320 square miles in the Nicholson River - Settlement Creek area. The stratigraphic succession had been outlined by officers of the Bureau of Mineral Resources and field work, by the Mount Isa Mines Limited field party, established that the various types of mineralisation present were confined to definite members within this stratigraphic succession. On 14th January 1957 Mount Isa Mines Limited were granted an Authority to Prospect for 12 months over some 2,338 square miles as shown on the accompanying plan.

### INVESTIGATION

The investigation of this area may be considered under the following headings:-

- (1) Inspection of radioactive anomalies recorded by the aerial scintillometer survey conducted by the Bureau of Mineral Resources.
- (2) Prospecting for copper within the Mount Drummond Volcanics.
- (3) Geochemical prospecting within the Golden Creek Volcanics.
- (4) Prospecting for copper and other minerals in the northern portion of the Authority to Prospect.

### INSPECTION OF RADIOACTIVE ANOMALIES

During the last month of the 1956 field season the Bureau of Mineral Resources conducted an aerial scintillometer survey over part of this area and radioactive anomalies were recorded near the Queensland border south of the Nicholson River. A party of one geologist and three prospectors spent a period of three weeks locating and examining these anomalies. Counts of up to twice background

were recorded on the Phillips Geiger Counters with which each member of the party was equipped. These anomalies occur over outcrops of the Nicholson Granite and it is believed that the anomalies resulted from the high background inherent in the granite rather than from any deposit of uranium. No uranium mineralisation was observed.

### PROSPECTING THE MOUNT DRUMMOND VOLCANICS

Volcanics had been noted in this area by L. MacAlister in 1955. They were outlined by aerial reconnaissance during the 1956 field season and included in the Authority to Prospect for 1957. It is probable that the Mount Drummond Volcanics are the equivalent of the Colless Volcanics which outcrop South West of Lawn Hill Homestead in Queensland. All occurrences of copper observed during the 1956 field season in both the Calvert Hills and adjoining Westmoreland areas were found to be associated with volcanics. Hence it was considered that the Mount Drummond Volcanics offered a prospect for copper mineralisation.

A party of two experienced prospectors spent a period of six weeks prospecting this area. No geological mapping was done but the volcanic formation was adequately prospected and no mineralisation was found.

### GEOCHEMICAL PROSPECTING

A geochemical survey was conducted on Redbank, Rocky, Golden, Mountain and Running Creeks and on another unnamed creek in the order listed above. (See map D140)

Two geochemists and two field assistants were engaged on this survey for eight weeks. They were equipped with Land Rovers but used horses in Rocky Creek as it was inaccessible by Land Rover.

Two tests were used in this geochemical survey:-  
(a) A field test which comprised extraction with ammonium citrate and testing with dithizone in white spirit.

(b). A laboratory test which comprised extraction with N/10 hydrochloric acid and testing with dithizone in white spirit

The field test was found to be satisfactory for lead, but not for copper, even at a pH of 2. This is because the copper is not absorbed into the molecular lattice of the clay particles but is either precipitated on the surface and/or mechanically dispersed within them.

An effort was then made to carry the necessary equipment in Land Rovers and to do the analyses each night. This method was discarded because of the loss of time in packing the equipment each day and because of contamination from the reagent bottles. The analyses were then done in a field laboratory which was established at the base camp. However two weeks before the work was completed the supply of chloroform was exhausted and the remaining samples were analysed after returning to Mount Isa.

The only positive results were those in Redbank and Rocky Creeks.

#### Redbank Creek

A number of anomalies were obtained in the positions indicated on the accompanying map D140. ✓

- |                        |   |
|------------------------|---|
| Block H6               | With this method of sampling the dispersion of copper from the Redbank and Azurite Mines was only two miles. However the sampling interval of from one quarter to one half mile was sufficient to detect this mineralisation. |
| Blocks L5 and Q4       | High results were obtained at sampling positions 276 and 230 and the surrounding area was then thoroughly prospected but no mineralisation was found in rock outcrops.  |
| Block N7 $\frac{1}{2}$ | Results higher than average were obtained at sampling positions 249 to 260 but further investigation revealed no mineralisation.  |



Block M5 $\frac{1}{2}$

Positive results were obtained from a rock outcropping about 100 yards upstream from sampling position 327 but there was no visible mineralisation.

### Rocky Creek

The results of this survey are shown on the accompanying plan D141.

- Lead: There was only one positive lead result obtained in this creek and it was traced to an outcrop of lava containing visible anglesite in vesicles. The occurrence is not economically significant.
- Copper: A geologist and an experienced prospector examined the area surrounding the high result at sampling position 19 but they found no mineralisation. No investigation was made of the other two results which were much lower.

### PROSPECTING THE NORTHERN PORTION OF THE AUTHORITY

A geologist and three prospectors spent fourteen weeks prospecting the northern portion of this area. Known deposits of copper occur at the Prince and Redbank Mines within the Golden Creek Volcanics but beyond the boundaries of this Authority to Prospect. It was considered that these volcanics offered a good prospect for further copper mineralisation.

Old workings were found on a deposit of copper on a flat north of Running Creek. The mineralisation consists of malachite and azurite in kaolin very similar to that at Redbank. There is a shaft sunk to a depth of 25 feet and an open cut 15 feet by 10 feet with a depth of 8 feet. No extension of this mineralisation was observed and no further work on this deposit is warranted.

No other mineralisation was found.

## COSTS

Total expenses on the Calvert Authority to Prospect during the period July 1956 to December 1957 are as follows:-

Wages, Salaries, Pay ✓	
Roll Overhead	£5,661
General Stores	718
Transport	1,006
Provisions	703
Travelling	58
Petrol and Oil	221
Charter of Aircraft	1,029
Freight	89
Camp Equipment	31
Motor Spares	9
Scintillometer Spares and Licence	132
Miscellaneous	34
Aerial photographs	279
	<hr/>
	£9,970
	<hr/>

Expenses during 1956	£953
Expenses during 1957	£9,017

### CONCLUSIONS

Field work has been carried out in this area for the past two field seasons but nothing of economic interest to this Company has yet been found. However some of the more remote portions of this Authority have not yet been adequately prospected.

### RECOMMENDATIONS

Further prospecting should be done in this area.

### ACKNOWLEDGMENTS

Visits were paid to the field party of the Bureau of Mineral Resources who were doing regional mapping in the Calvert Hills area. The cooperation and information given by the members of this party were of great assistance.

The local residents again assisted our field party in every possible way. In particular there were the Campbells of Wollogorang who made horses available for the geochemical survey.

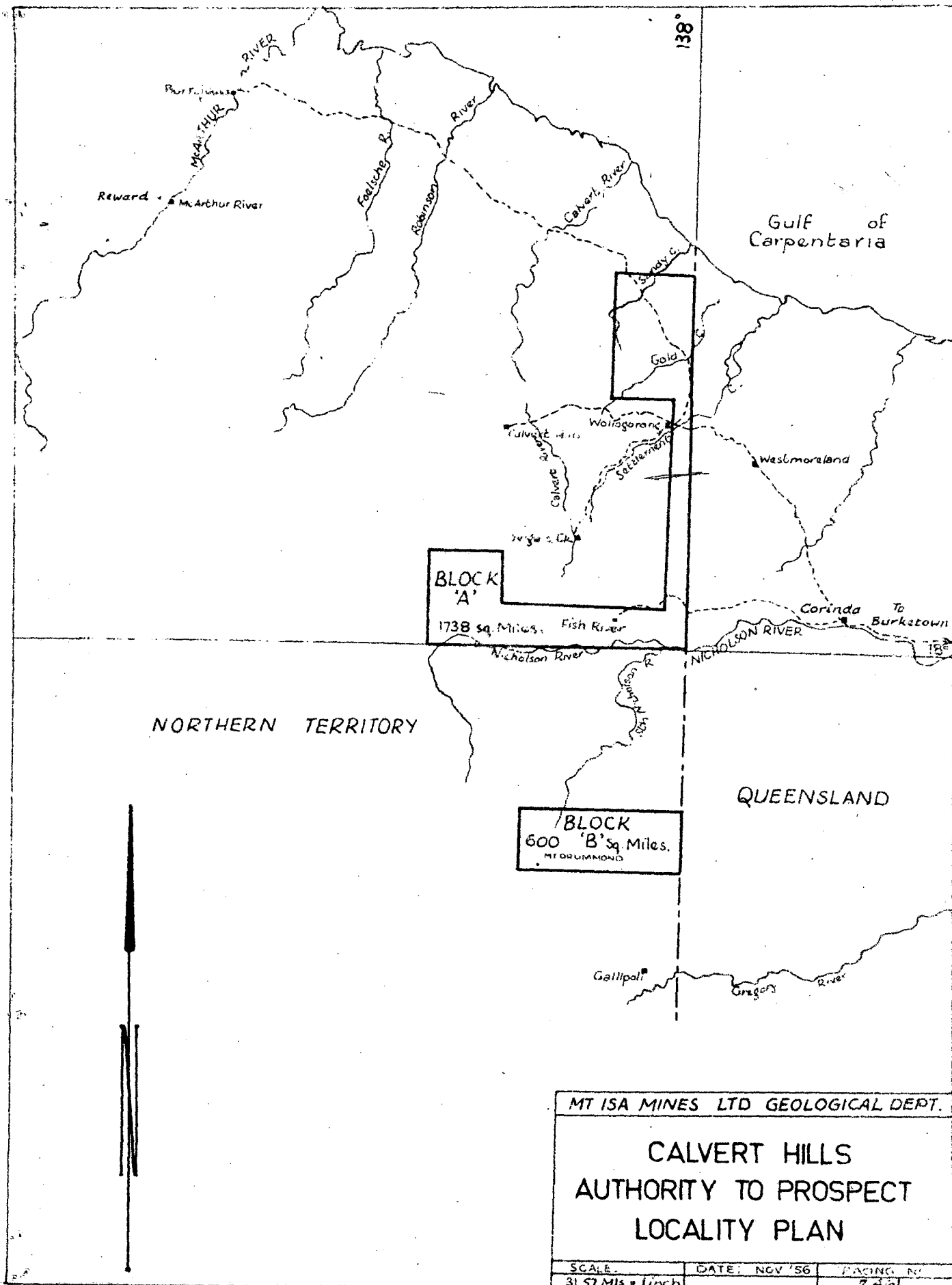
---

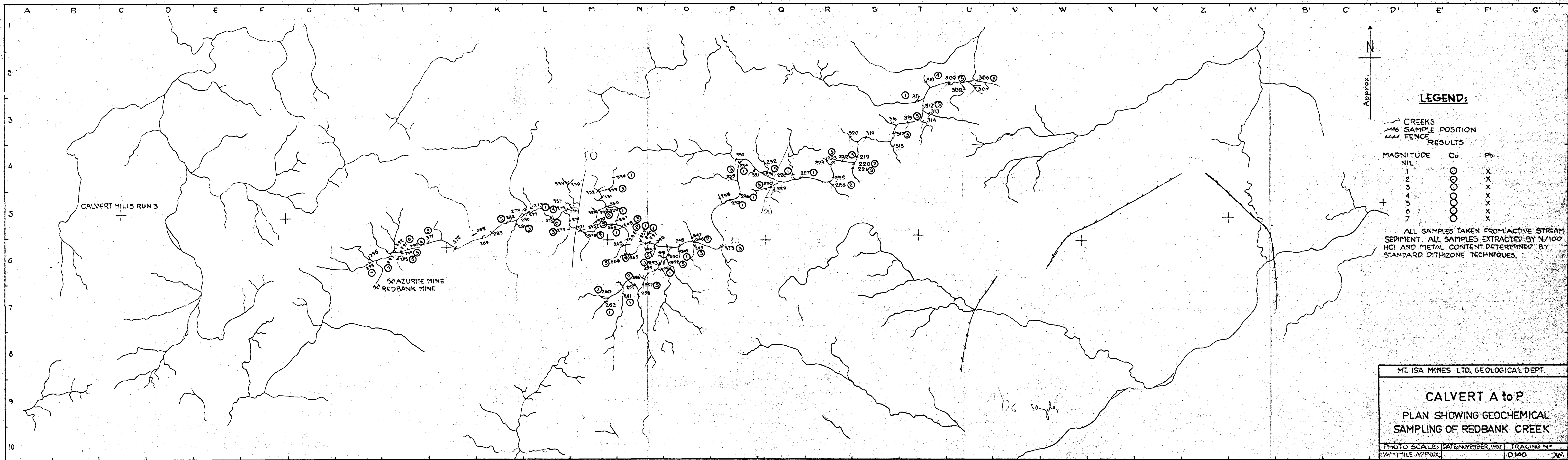
*G. C. Battey*

G.C.Battey

DISTRIBUTION LIST

1. DEPUTY GENERAL MANAGER
2. CHIEF GEOLOGIST
3. DEPARTMENT OF MINES, NORTHERN TERRITORY  
ADMINISTRATION
4. C.L.KNIGHT, C.Z.C.
5. BUREAU OF MINERAL RESOURCES
6. BRISBANE OFFICE
7. NEW YORK OFFICE
8. LONDON OFFICE
9. FILE.





**LEGEND:**

--- CREEKS  
x46 SAMPLE POSITION  
--- FENCE  
RESULTS

MAGNITUDE	Cu	Pb
NIL		
1	○	X
2	○	X
3	○	X
4	○	X
5	○	X
6	○	X
7	○	X

ALL SAMPLES TAKEN FROM ACTIVE STREAM SEDIMENT. ALL SAMPLES EXTRACTED BY N/100 HCl AND METAL CONTENT DETERMINED BY STANDARD DITHIZONE TECHNIQUES.

MT. ISA MINES LTD. GEOLOGICAL DEPT.

CALVERT A to P

PLAN SHOWING GEOCHEMICAL SAMPLING OF REDBANK CREEK

PHOTO SCALE: DATE: NOVEMBER, 1957 TRACING N°

1/4" = 1 MILE APPROX. D. 140 26.

