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AUSTRALIA AND NEW ZEALAND EXPLORATION COMPANY

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SEARCHED

FINAL REPORT

ON

EXPLORATION LICENCE NO. 10/75

GRANVILLE HARBOUR

TASMANIA

By

J.D. Lockhart

December 19, 1975

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SUMMARY

A magnetic anomaly previously detected by airborne methods has been located and delineated on the ground in Exploration Licence 10/75. The source was found to be a quartz-magnetite-pyrite bearing zone carrying no prospective base metal potential. Stream sampling elsewhere in the Exploration Licence revealed no anomalous values for tungsten, copper, lead or zinc.

A breakdown of expenditure on Exploration Licence 10/75 is shown in Appendix I.

INTRODUCTION

On July 3, 1975, Exploration Licence 10/75 was granted to Australia and New Zealand Exploration Company for a period of six months. The Exploration Licence is located on the west coast of Tasmania, between Duck Creek and Granville Harbour. It extends approximately eight kilometres east from the coast and is approximately 46 square kilometres in area. (See Figure 1) To the south of Exploration Licence 10/75 the Heemskirk granite (known to carry tin and tungsten mineralization) intrudes Precambrian Oonah quartzite and slate. In the north of the Exploration Licence, Ordovician-Silurian rocks unconformably overlie the Precambrian rocks.

An airborne magnetic anomaly strikes north from the granite contact in the south of the Exploration Licence, and then strikes west over the Ordovician-Silurian sequence. The purpose of the investigation was to delineate this magnetic anomaly on the ground and investigate its source with the idea that it may be a mineralized magnetite skarn. Elsewhere in the Exploration Licence, geochemical sampling was carried out to delineate any other areas of mineral potential.

Field work has been accomplished employing one geologist, one prospector-draughtsman and one field assistant.

A.C.S. Laboratories Pty Ltd (South Australia) has been used for all geochemical analyses.

Base maps and geologic data for the project and field work have been derived from the One-Mile Zeehan Sheet, Zeehan 1:31680 Topographic Map, R.T.A.E. Aeromagnetic Map for the Zeehan Sheet and airphoto coverage from the Lands Department (Tasmania).

MAGNETICS

Prior to this investigation an airborne magnetic survey flown for Rio Tinto Australian Exploration Pty Ltd had delineated a north-west trending magnetic anomaly. The possibility that this anomaly arises from a magnetite skarn formed by contact metasomatism of Ordovician-Silurian calcareous rocks at the margin of the Heemskirk granite was considered worthy of investigation.

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A ground magnetic survey was run to delineate the anomaly and investigate its source. The survey was completed using a chain and compass grid for ground control, and a Scintrex MF-2 fluxgate magnetometer to detect fluctuations in the vertical field. Normal zeroing and drift control techniques were employed to detect any diurnal variations.

The anomaly, as measured on the ground, is positive and elongate in the true north direction, with intense short wavelength negative anomalies superimposed upon it. The long positive anomaly can be qualitatively correlated with the airborne anomaly. No quantitative assessment has been undertaken. The short wavelength negative anomalies would attenuate rapidly with altitude and would not be detected by the airborne survey. It is evident that the aims of the magnetic survey to delineate the airborne anomaly on the ground have been successfully achieved.

The Gordon limestone is considered an ideal host for skarn-type mineralization. Lack of continuous outcrop prevents mapping of this unit in the Exploration Licence, except at the coast.

A north-south magnetic traverse was carried out in an attempt to define a suitable magnetic marker, but it proved negative. Readings over the sequence fluctuated only within the accuracy of the instrument. A similar traverse 600 metres to the east produced similar results.

GEOCHEMISTRY

Stream Sampling

Heavy mineral pan-concentrate samples have been taken throughout the Exploration Licence. The samples were assayed for tungsten, copper, lead and zinc. Lack of outcrop through the Exploration Licence precludes an efficient geological assessment, hence the emphasis on this detection method to provide a quick and efficient guide to mineralization. A total of 60 pan-concentrate samples was taken, sampling all major creeks and all but the minor tributaries.

Tungsten Pan concentrates were taken assuming tungsten (either as scheelite or wolframite) detected by this method will be detrital. Results indicated that assays around 200 ppm would be anomalous for this area. However, experience in other areas using this method of sampling has shown that this is not sufficient to indicate potentially attractive mineralization. Scheelite was virtually undetected in these pan concentrates, thus indicating a lack of this major target mineral in the environment.

Zinc The zinc values recorded from the concentrates were somewhat spurious. Anomalous values, greater than 1000 ppm, bore no relationship to the assayed lead, copper or tungsten values. This may be due to the sampling method, which was primarily designed for tungsten detection.

Copper and Lead No anomalous copper or lead values were obtained.

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Rock Samples

Ten rock samples were collected from the magnetically anomalous gridded area and assayed for tungsten, copper, lead, zinc, nickel, cobalt, tin and vanadium. All the samples were iron-bearing with varying proportions of magnetite, pyrite, hematite and limonite. Analytical results are shown on the attached map.

The assay results negate the potential of the magnetically anomalous area.

GEOLOGY

As previously mentioned, the target host rocks for skarn mineralization in this area are the Gordon limestone and the upper portion of the Moina sandstone in a contact situation with the Heemskirk granite.

Dominantly, the granite is a coarse- to medium-grained variety, sometimes with a pink colouration. Finer-grained granite was noted close to the margins of the intrusion. Aggregates of tourmaline, usually associated with quartz, are common.

Within the Exploration Licence, a small elongate hill which protrudes northwards into the southwestern corner of the Exploration Licence, revealed little thermal effect at its margin. Some quartz-tourmaline veinlets associated with the granite are found along the contact with the Oonah quartzite. Of interest is the northward trend of this small part of the batholith, which is on strike with the magnetic anomaly. It is thought that intrusion in this vicinity has been controlled by a structural weakness, the same feature controlling the deposition of the quartz-magnetite-pyrite rock delineated by the magnetics.

Geological creek traverses in the gridded area revealed the major rock type to be a green-white quartzite, sometimes with minute pyrite crystals sparsely disseminated throughout.

The strike of the bedding/metamorphic foliation was found to be in a true north direction with a very steep dip to the east.

Actual outcrop in the area would be very much less than 1%, most of the information being derived from rock float in the creek beds.

It is thought that the pyrite-magnetite-quartz mineralization is epigenetic related to the Heemskirk granite intrusion.

J.D. Lockhart

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MAPS

- Figure 1 Plan of Duck Creek Area
- Figure 2 Topographic Plan of Duck Creek Area
- Figure 3 Geology of Duck Creek Area
- Figure 4 Aeromagnetic Plan of Duck Creek Area
- Figure 5 Geochemistry and Ground Magnetics
- Figure 6 Rock Sample Locations
- FIGURE 7 GEOCHEMISTRY & GRID LOCATION.
- FIGURE 8. MAGNETICS.
- FIGURE 9 GRIDDED AREA. DUCK CR-----TAS.

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COMMONWEALTH OF AUSTRALIA

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STATUTORY DECLARATION.

(1) Here insert name, address and occupation of person making the declaration.

I, ⁽¹⁾ ANTHONY AUGUST STEGMANN
of 157 Liverpool Street, Sydney, N.S.W.

(2) Here insert matter declared to. Where the matter is long, add the words "as follows:—" and then set the matter out in numbered paragraphs.

do solemnly and sincerely declare ⁽²⁾ that as the Accountant of Australia and New Zealand Exploration Company, I have ascertained that expenditure of the Company on Exploration Licence 10/75, during the period July 2, 1975, through January 3, 1976, was \$11,949.57 broken down as follows :-

Salaries	\$2,570.53
Wages	1,044.80
Fringe Costs	275.29
Office Rent	607.80
Telephone	248.38
Postage & Freight	47.67
Publications	1.00
Supplies- office	123.69
Maps & Reproductions	137.45
Bank Charges	3.00
Equipment Maintenance	150.68
Air Fares	428.92
Hotels & Food	64.70
Hire Cars & Taxis	16.00
Equipment- non capital	217.23
Vehicle Expense	1,428.85
Option/Prop. Payments	18.40
Camp Accommodation	1,442.68
Assays	387.60
Sydney Overhead	2,734.90
	<u>\$11,949.57</u>

And I make this solemn declaration by virtue of the *Statutory Declarations Act* 1959, as amended, and subject to the penalties provided by that Act for the making

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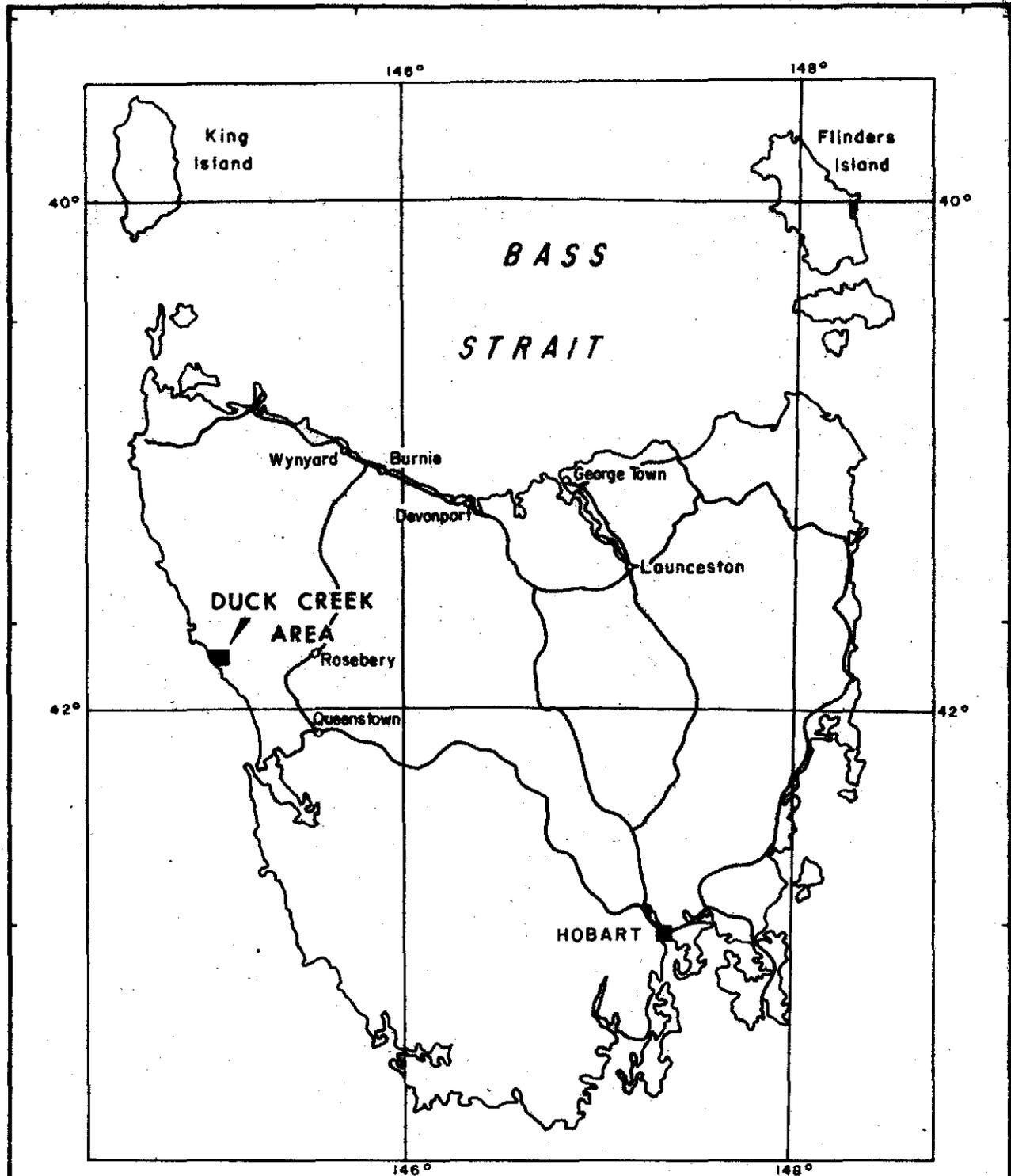
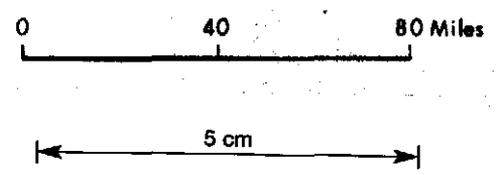


FIG. 1

AUSTRALIA AND NEW ZEALAND
EXPLORATION COMPANY

PLAN OF THE
DUCK CREEK AREA

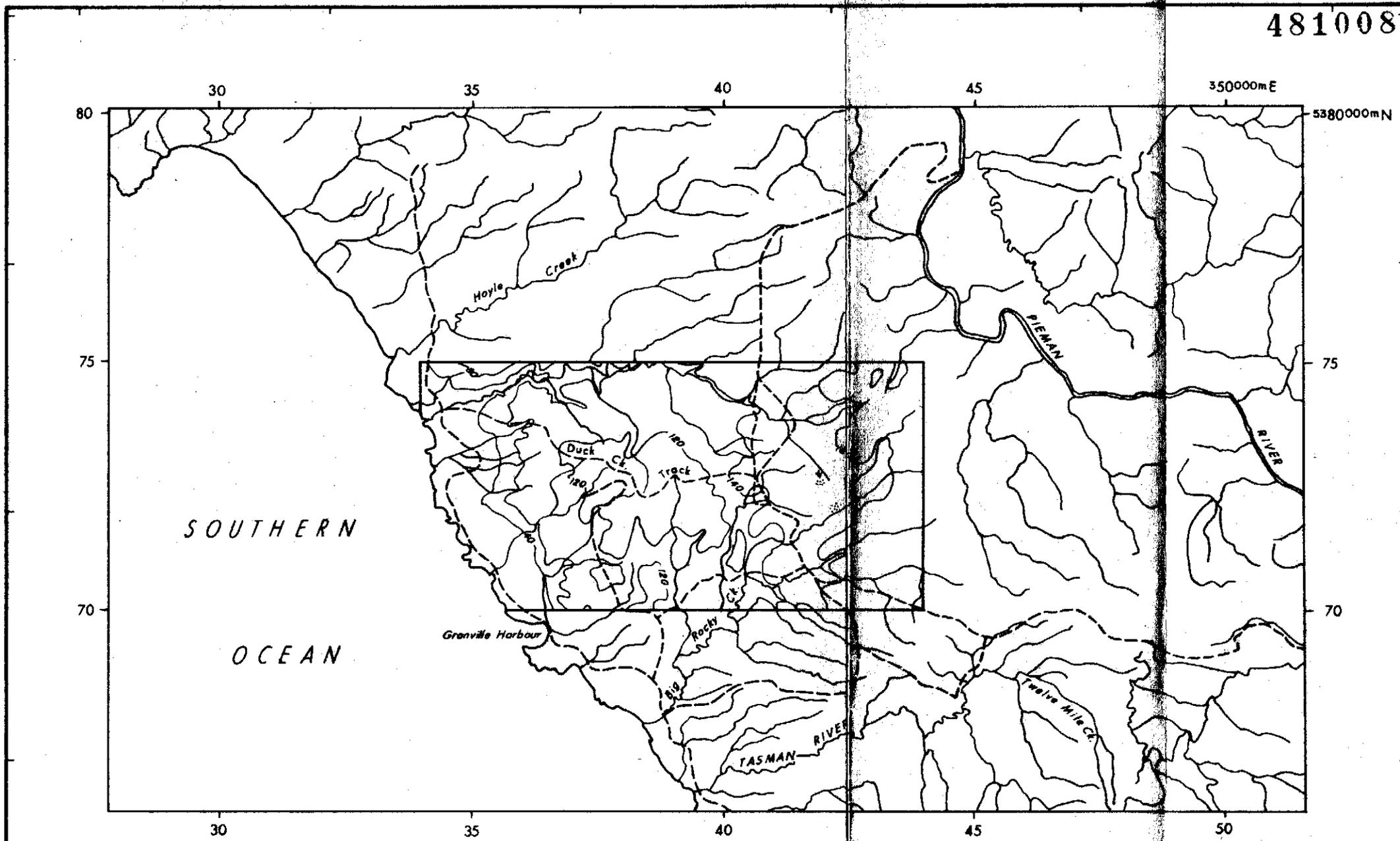


Prepared by,		Drawn by,
Scale, 1" = 40 Mls	Date, MAY 1975	Proj. N°
Drawing N°	Report N°	Lib. N°

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FIG. 2

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LEGEND

-  Vehicular Track
-  Swamp, intermittent
-  Stream, perennial
-  Contour with Value (metres)

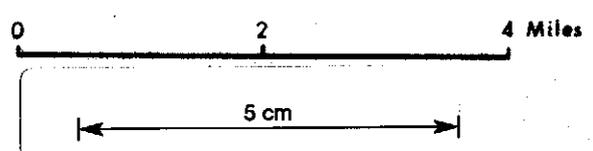
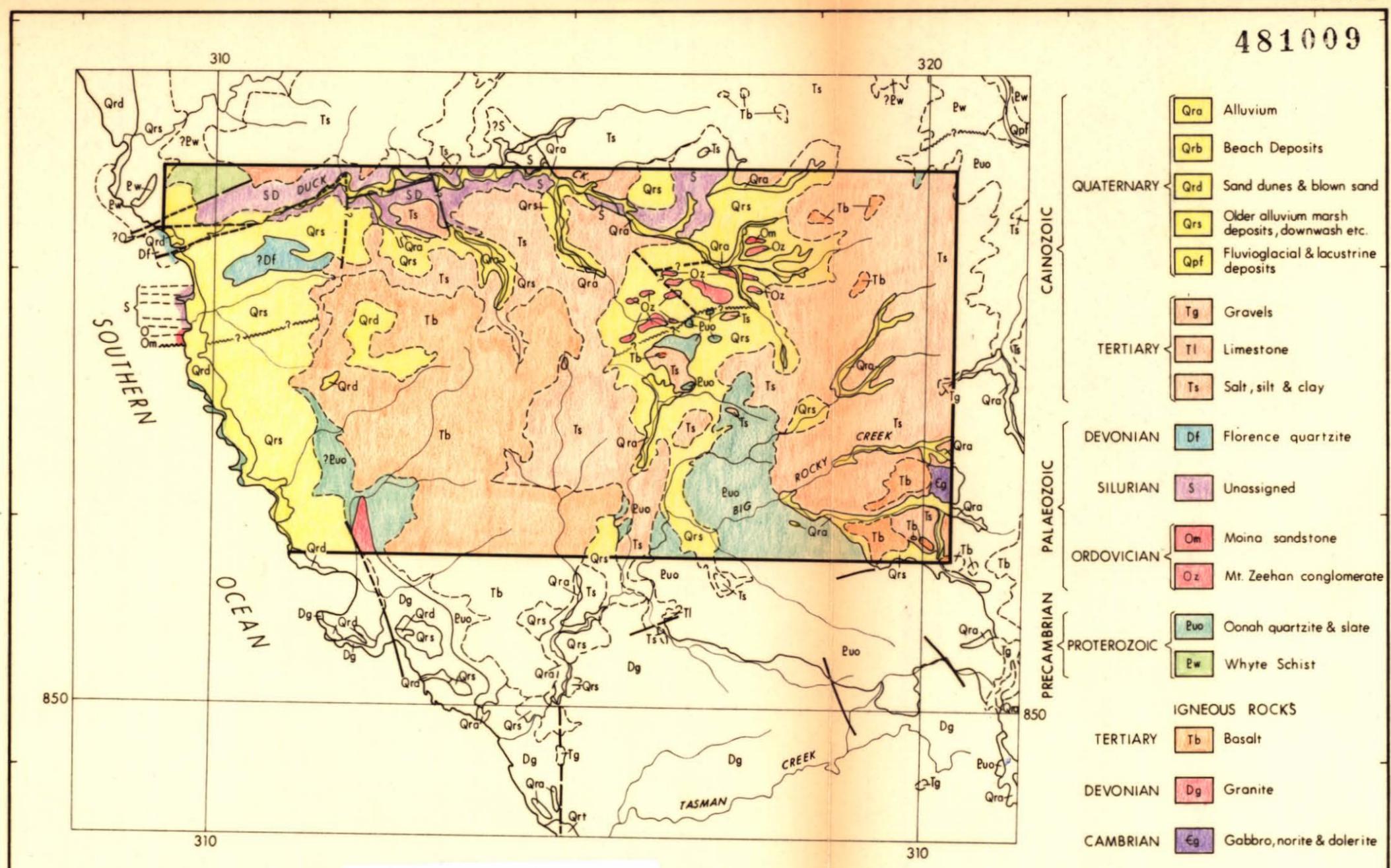


FIG. 2

AUSTRALIA AND NEW ZEALAND EXPLORATION COMPANY		
TOPOGRAPHICAL PLAN OF THE DUCK CREEK AREA		
Prepared by,	Drawn by,	
Scale, 1:100,000	Date, MAY '75	Proj. N ^o
Drawing N ^o	Report N ^o	Lib. N ^o

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- QUATERNARY**
 - Qra Alluvium
 - Qrb Beach Deposits
 - Qrd Sand dunes & blown sand
 - Qrs Older alluvium marsh deposits, downwash etc.
 - Qpf Fluvioglacial & lacustrine deposits
- TERTIARY**
 - Tg Gravels
 - Tl Limestone
 - Ts Salt, silt & clay
- DEVONIAN**
 - Df Florence quartzite
- SILURIAN**
 - S Unassigned
- ORDOVICIAN**
 - Om Maina sandstone
 - Oz Mt. Zeehan conglomerate
- PROTEROZOIC**
 - Puo Onah quartzite & slate
 - Pw Whyte Schist
- IGNEOUS ROCKS**
 - Tertiary Tb Basalt
 - Devonian Dg Granite
 - Cambrian Eg Gabbro, norite & dolerite

5 cm

- Geological boundary - position accurate
- - - Geological boundary - position approximate
- ~~~~~ Angular unconformity
- Fault - position approximate
- ? - Fault - inferred
- - ? - Fault - inferred, concealed

0 1 2 3 Miles

Compiled by: Geological Survey of Tasmania

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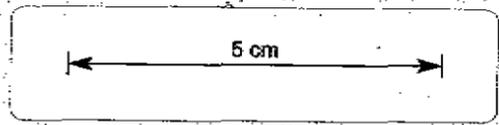
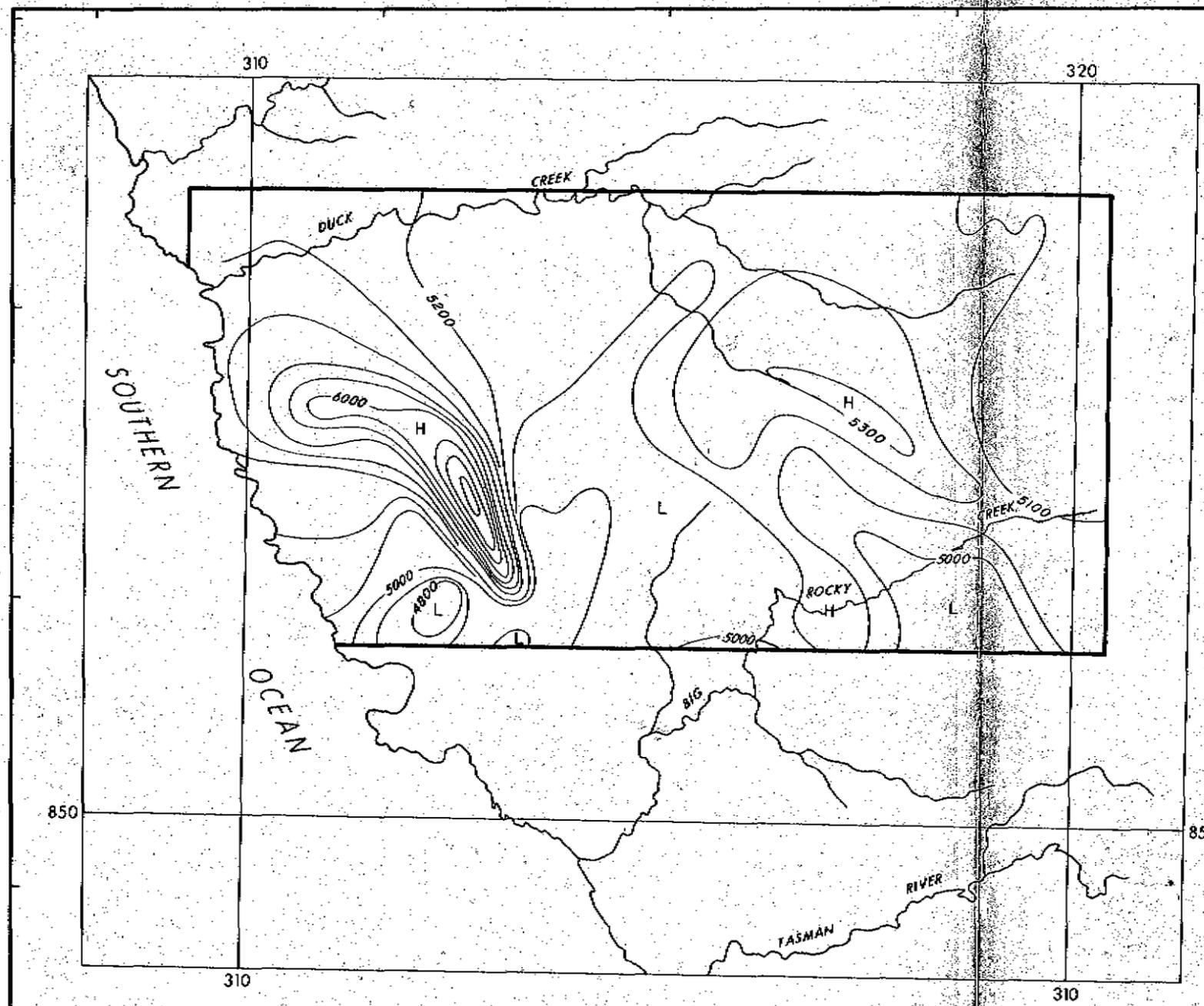
FIG. 3

GEOLOGY OF DUCK CREEK AREA

Prepared by,		Drawn by,	
Scale, 1" = 1 ml.	Date, MAY, 1975	Proj. N ^o	
Drawing N ^o	Report N ^o	Lib. N ^o	

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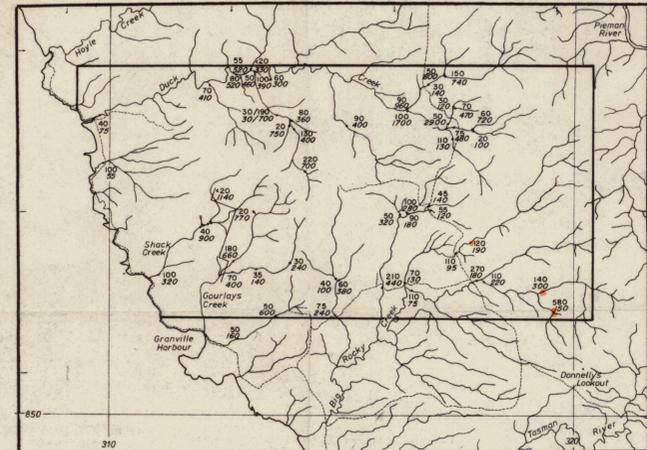


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FIG. 4

AEROMAGNETIC PLAN OF THE
DUCK CREEK AREA

Prepared by,	Drawn by,	
Scale, 1" = 1 ml	Date, MAY, 1975	Proj. N ^o
Drawing N ^o	Report N ^o	Lib. N ^o

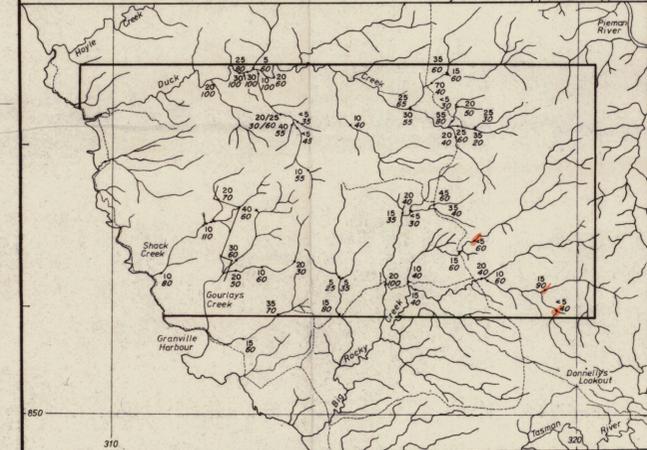


LEGEND

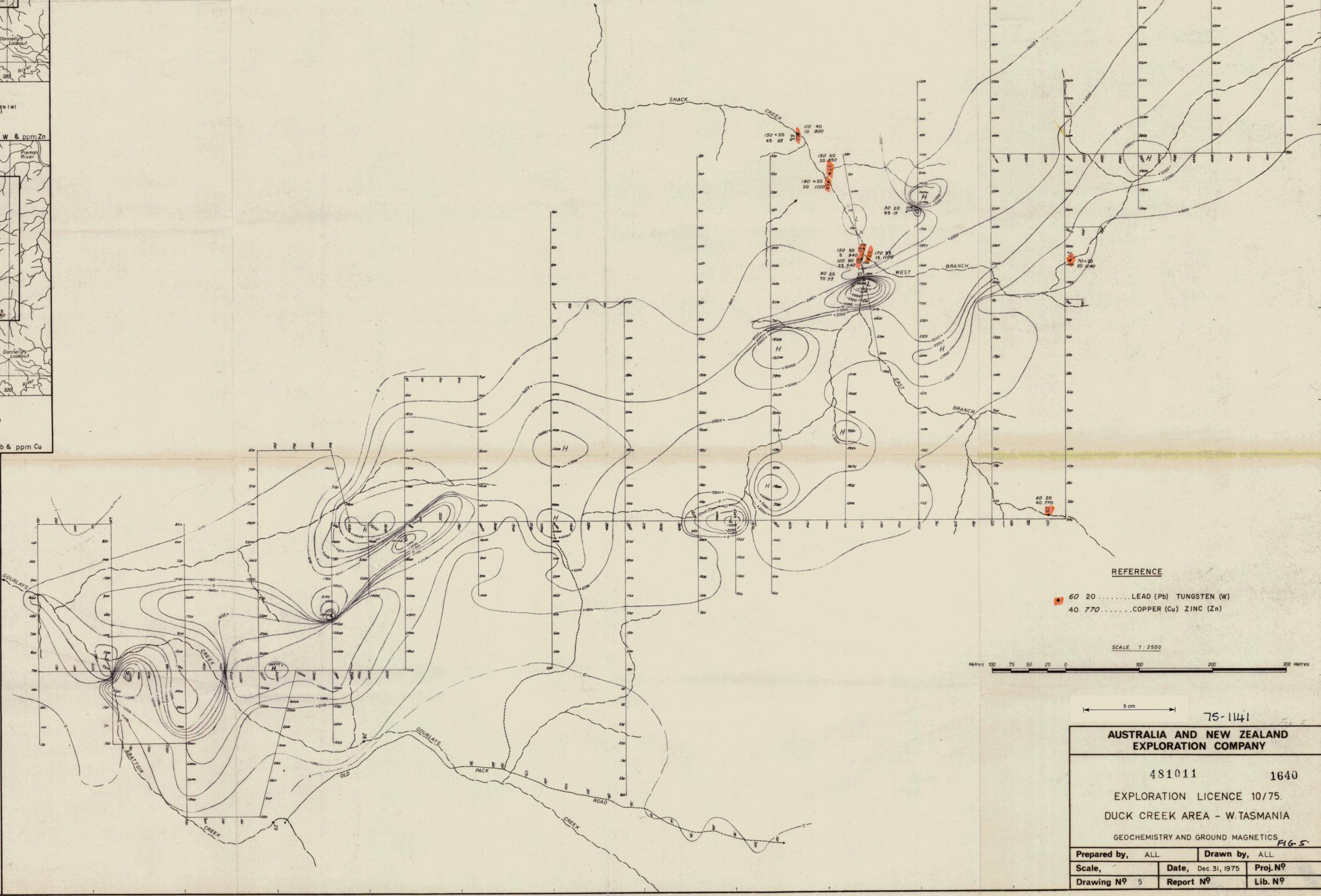
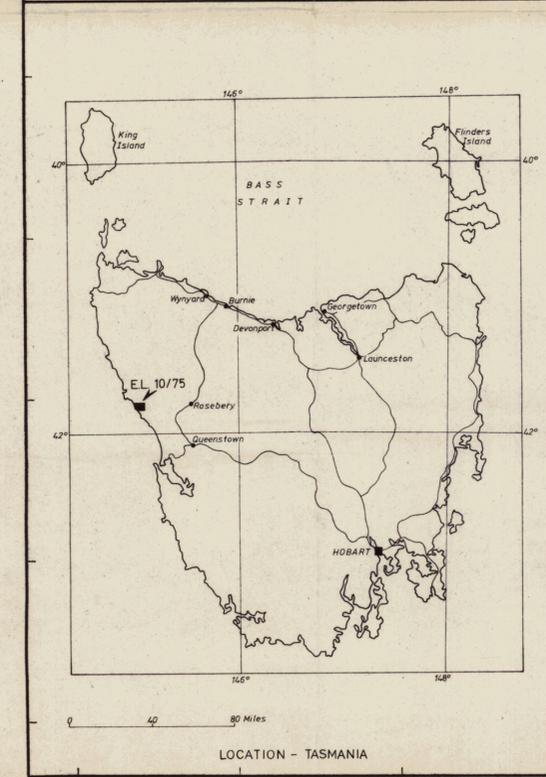
- Stream
- Road or track
- Grid line
- E.L. Boundary
- Stream sediment pan concentrate
- Rock sample
- Fluxgate magnetometer reading in gammas. Negative values to left of grid line, positive values to right.

All samples prefixed AL-DC

SCALE 1:63,360
 METRES 0 100 200 300 400 500
 0 1 2 3 Miles
GEOCHEMISTRY - TUNGSTEN & ZINC
 60 TUNGSTEN (W)
 350 ZINC (Zn)
 Assay values in ppm W & ppm Zn



SCALE 1:63,360
 METRES 0 100 200 300 400 500
 0 1 2 3 Miles
GEOCHEMISTRY - LEAD & COPPER
 10 COPPER (Cu)
 40 LEAD (Pb)
 Assay values in ppm Pb & ppm Cu



REFERENCE

60 20 LEAD (Pb) TUNGSTEN (W)
 40 770 COPPER (Cu) ZINC (Zn)

SCALE 1:2500
 METRES 100 75 50 25 0 100 200 300

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AUSTRALIA AND NEW ZEALAND EXPLORATION COMPANY

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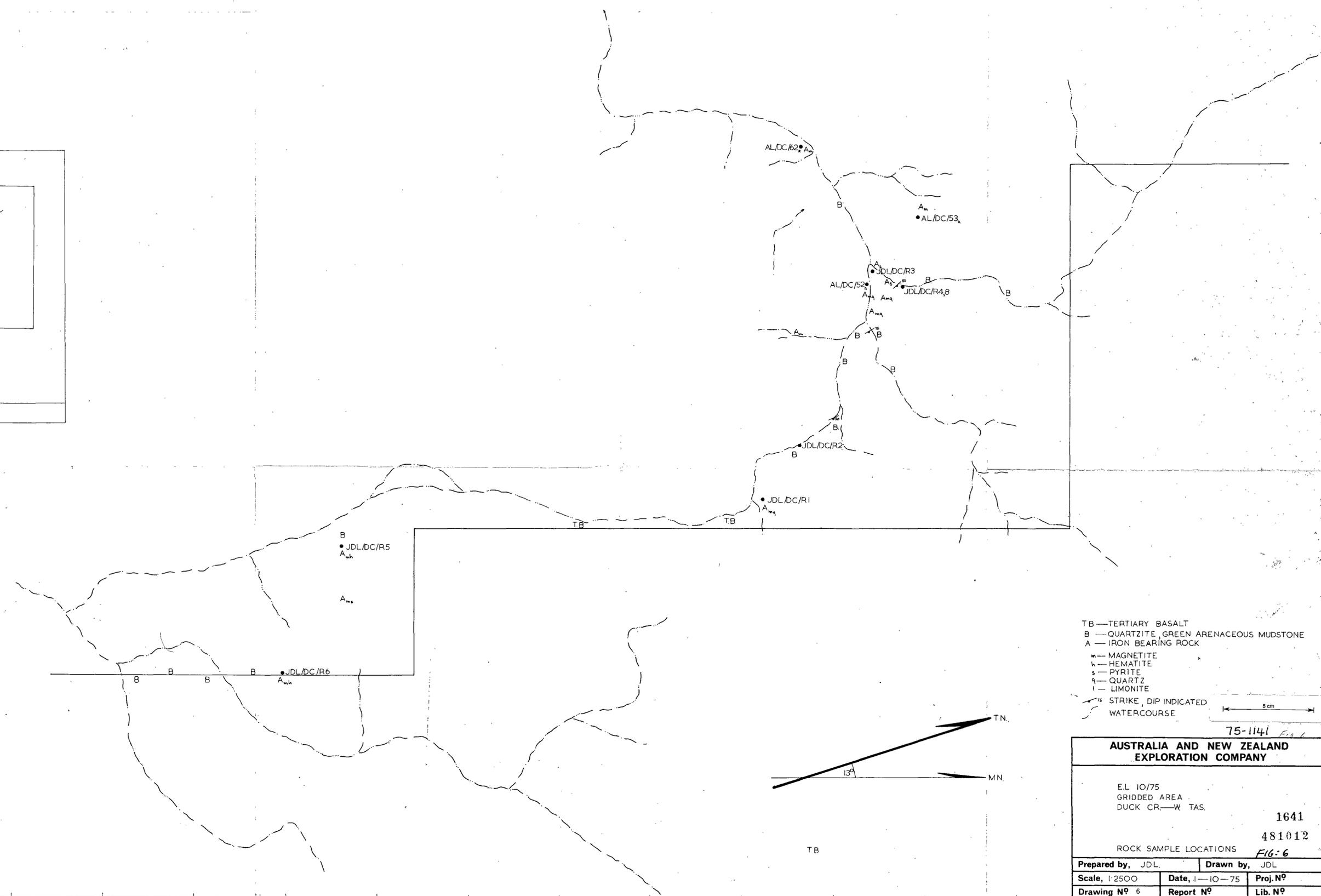
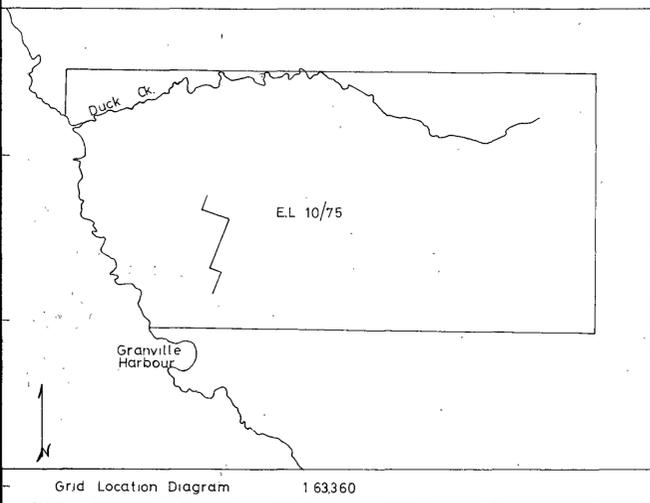
EXPLORATION LICENCE 10/75.

DUCK CREEK AREA - W. TASMANIA

GEOCHEMISTRY AND GROUND MAGNETICS

Prepared by, ALL	Drawn by, ALL
Scale,	Date, Dec 31, 1975
Drawing N ^o 5	Proj. N ^o
Report N ^o	Lib. N ^o

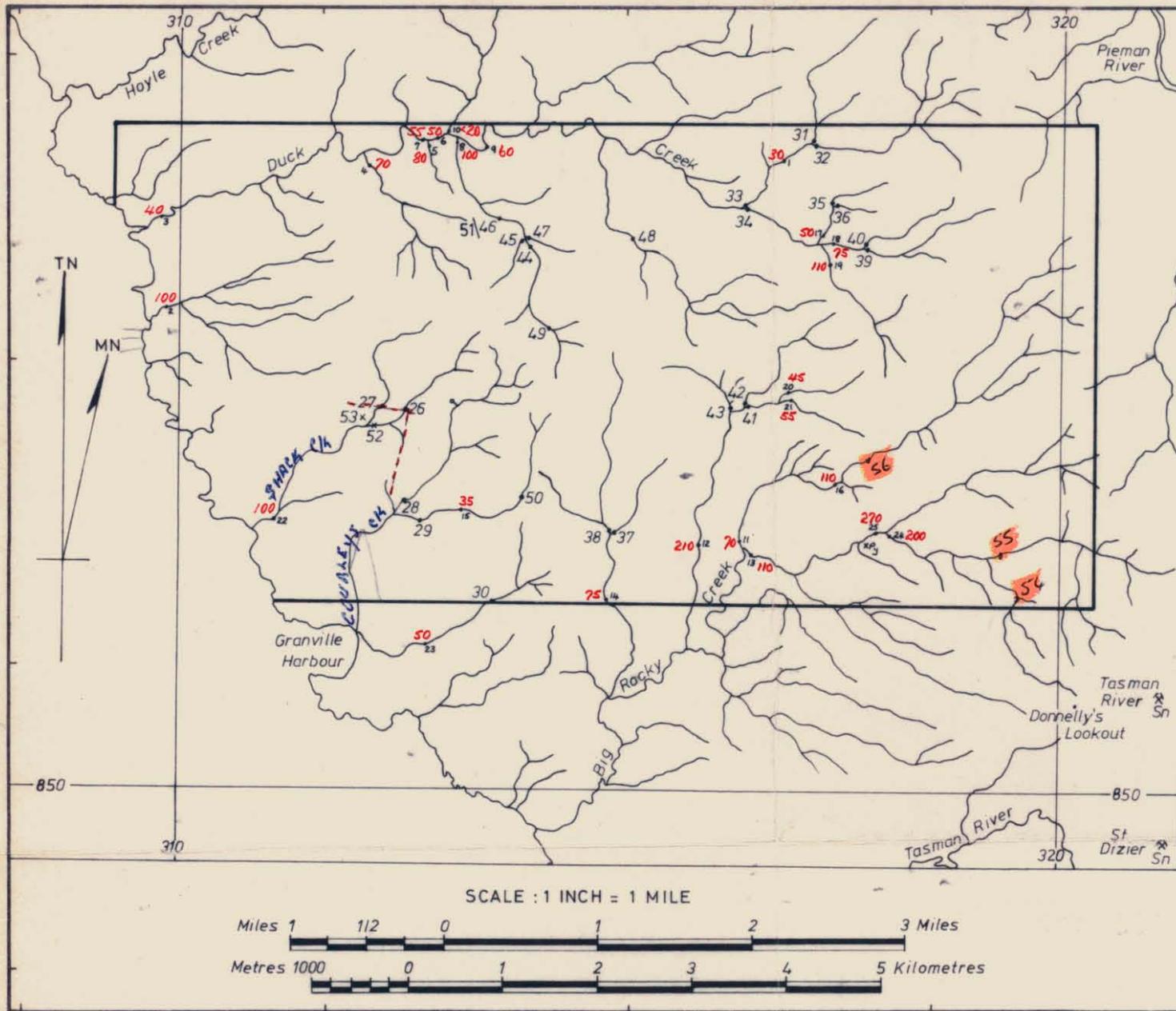
Sample Nos	W	Cu	Pb	Zn	Ni	Co	Rock Type	S _n	V
AL DC 52(R)	20	70	80	55	---	---	A-mi	---	---
53(R)	20	95	30	15	---	---	A-mi	---	---
63(R)	20	45	150	65	---	---	A-mi	---	---
JDL DC R 1	10	25	60	40	100	45	A-mq	30	20
R 2	5	110	60	50	110	30	A-ms	5	100
R 3	10	83	80	40	70	45	A-ms	10	20
R 4	10	35	60	55	55	40	A-gmh	3	10
R 5	5	25	40	35	30	15	A-lq	30	50
R 6	5	170	50	50	35	35	A-mh	50	10
R 8	10	660	70	40	45	35	A-s	10	20



TB — TERTIARY BASALT
 B — QUARTZITE GREEN ARENACEOUS MUDSTONE
 A — IRON BEARING ROCK
 m — MAGNETITE
 h — HEMATITE
 s — PYRITE
 q — QUARTZ
 l — LIMONITE
 * — STRIKE, DIP INDICATED
 WATERCOURSE

75-1141 Fig 6

AUSTRALIA AND NEW ZEALAND EXPLORATION COMPANY		
E.L. 10/75 GRIDDED AREA DUCK CR.—W. TAS.		
		1641
		481012
ROCK SAMPLE LOCATIONS FIG-6		
Prepared by, JDL.	Drawn by, JDL	
Scale, 1:2500	Date, 1-10-75	Proj. N ^o
Drawing N ^o 6	Report N ^o	Lib. N ^o



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AUSTRALIA AND NEW ZEALAND
EXPLORATION COMPANY

GEOCHEMISTRY
AND
GRID LOCATION

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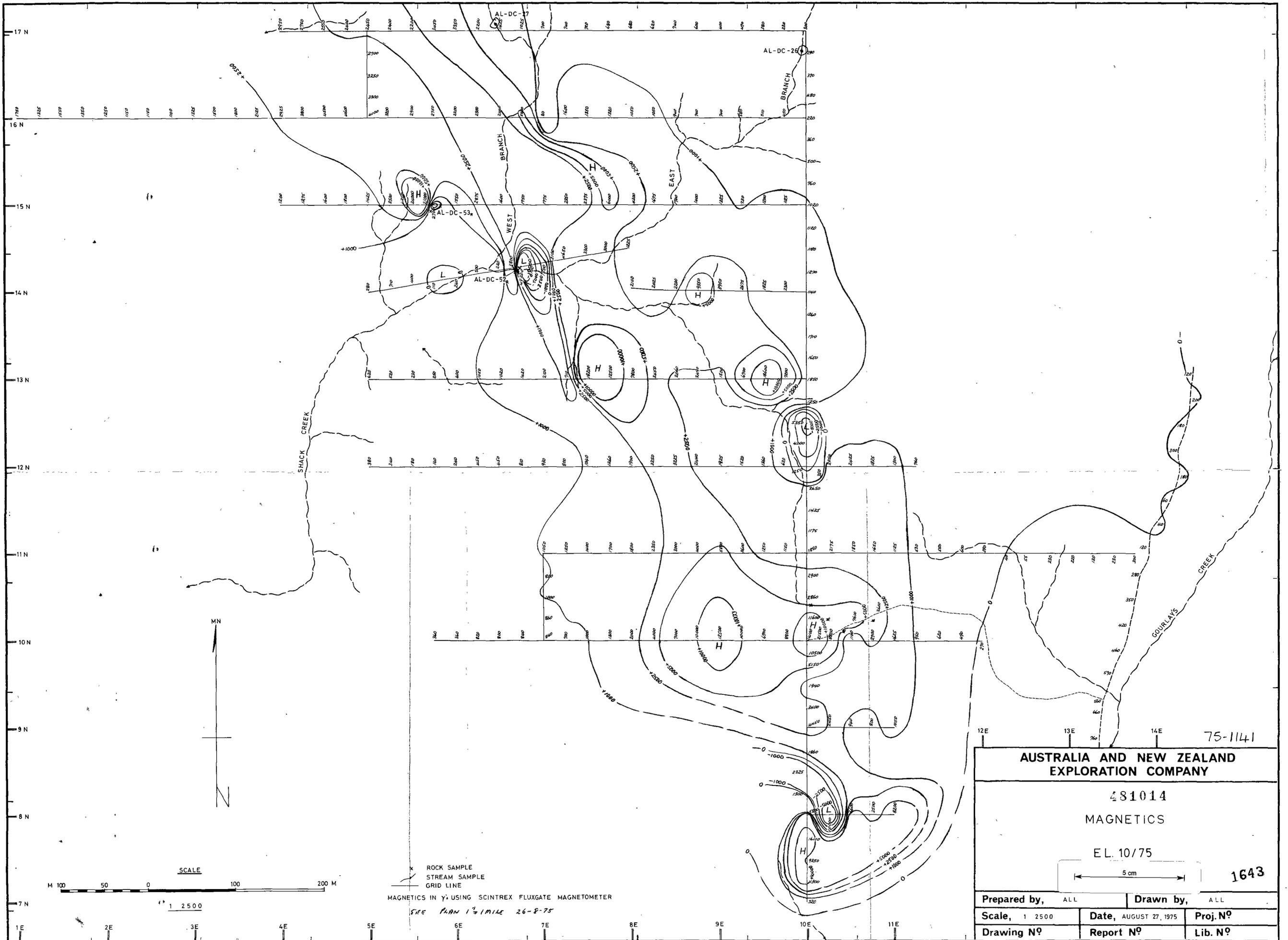
E.L. 10/75

Prepared by, A.L.L.	Drawn by, A.L.L.
Scale, 1" = 1 mile	Date, Aug. 26, 1975
Drawing N°	Report N°
	Proj. N°
	Lib. N°

- ALL SAMPLES HAVE PREFIX -
AL-DC
- *52 Rock sample
 - 26 Stream sediment, panned concentrate sample.
 - 25 July '75 sample and assay value in p.p.m
 - - - Grid line
 - * Abandoned mine
 - Sn Tin
 - Py Pyrite

Fig 7

5 cm



75-1141

AUSTRALIA AND NEW ZEALAND EXPLORATION COMPANY				
481014 MAGNETICS				
EL. 10/75				
5 cm				
1643				
Prepared by,	ALL	Drawn by,		
Scale,	1 2500	Date,	AUGUST 27, 1975	Proj. N ^o
Drawing N ^o		Report N ^o		Lib. N ^o

Fig. 8

Sample Nos.	W	Cu	Pb	Zn	Ni	Co	Rock Type
AL DC 52(R)	20	70	80	55	—	—	A-ml
53(R)	20	95	30	15	—	—	A-ml
63(R)	20	45	150	65	—	—	A-ml
JDL DC R1	10	25	60	40	100	45	A-mq
R2	5	110	60	50	110	30	A-ms
R3	10	83	80	40	70	45	A-ms
R4	10	35	60	55	55	40	A-qmh
R5	5	25	40	35	30	15	A-lq
R6	5	170	50	50	50	35	A-mh
R8	10	660	70	40	45	35	A-s

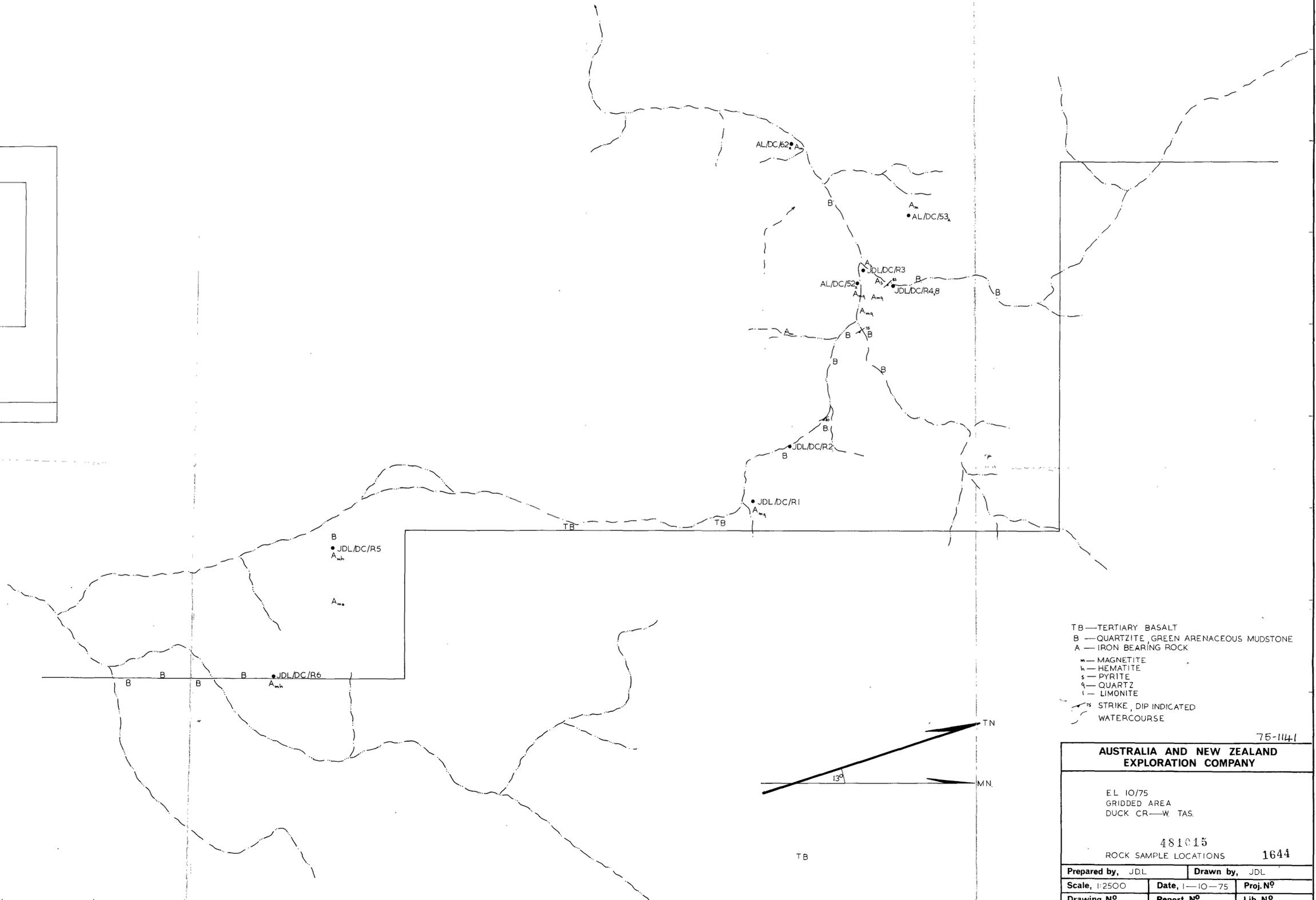
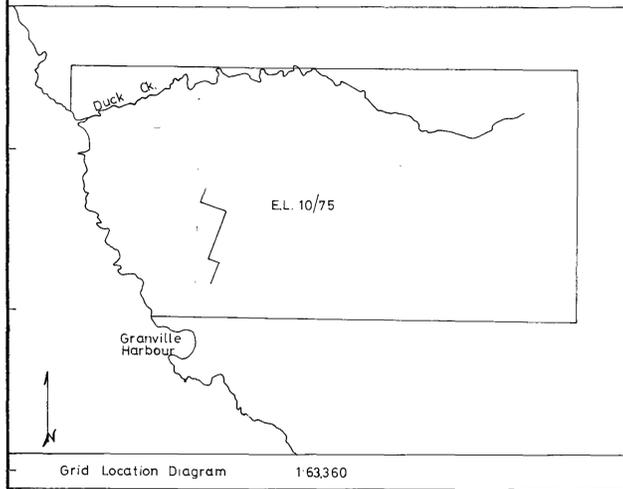


Fig. 9