

LIBRARY

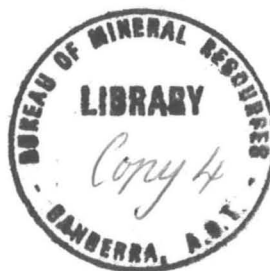
COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

053673

Record No. 1970/92



**TOOLANGI GEOPHYSICAL OBSERVATORY
ANNUAL REPORT 1968**

by

C.A. Van der Waal

**BMR
Record
1970/92
c.4**

The information contained in this report has been obtained by the Department of National Development as part of the policy of the Commonwealth Government to assist in the exploration and development of mineral resources. It may not be published in any form or used in a company prospectus or statement without the permission in writing of the Director, Bureau of Mineral Resources, Geology & Geophysics.





Record No. 1970/92

TOOLANGI GEOPHYSICAL OBSERVATORY
ANNUAL REPORT 1968

by

C.A. Van der Waal

CONTENTS

	Page
SUMMARY	
1. Introduction	1
2. Toolangi Magnetic Observatory	1
3. Toolangi & Melbourne Seismic Observatories	2
4. Antarctic Observations	3
5. References	4
Appendix 1 Staff movements and Visitors	5
Appendix 2 Instrument data	7
Appendix 3 Comparison observations at Toolangi	8
Appendix 4 Preliminary magnetic mean values	9

SUMMARY

Regular operation of a normal run magnetograph and short and long period seismographs was continued at Toolangi. An insensitive visual seismograph was operated in Melbourne.

The location of the office was changed in September from 203 Collins Street to 460 Bourke Street.

The Group was understaffed for most of the year and assistance had to be obtained from HQ to allow the basic programme to be maintained.

1. INTRODUCTION

A brief description of the Toolangi Geophysical Observatory is given in the Annual Report for 1962 (van der Waal, 1966).

Except for some minor break-downs the observatories were operating satisfactorily during the whole year, despite the continued shortage of staff. However, for special jobs assistance had to be obtained from Head Office staff.

In September the Office was moved from Wentworth House to 460 Bourke Street.

As a result of a request from Head Office in February, office accommodation was sought in the eastern suburbs. Suitable accommodation was found in Ringwood and a submission to lease these premises was sent to Canberra. However, in April, advice was received that it had not been approved, but that land to build a new office should be sought. The Department of Interior was approached to see whether suitable Commonwealth owned land was available. When advice was received that no such land was available the matter was referred to Head Office in December for further action.

The following applicants from BMR positions were interviewed:
G.R. Brown, Jan 4; B.F. Cameron, Apr 24; P.L. Harrison, Apr 30;
G. Pettifer, Oct 23; J.M. Robinson, Nov 15; A.R.D. Bower, Dec 29.

2. TOOLANGI MAGNETIC OBSERVATORY

Buildings and Grounds

Some repairs were done to the absolute hut in September and the buildings are in good condition.

The grounds were kept in good order, and grass and bracken were burned off to reduce fire risk.

Operation

Continuous recording with the La Cour magnetograph was maintained throughout the year. Control observations were done every week.

A BMR calibrator unit (MCO-1) was installed in October, enabling a better controlled current to be applied to the Helmholtz coils.

There was a small difference between the scale-value obtained by the old and new method. The corrections to be applied to the old scale values were:

for S_H :	+0.05	gammas per mm
S_D :	+0.02	minutes per mm
S_Z :	+0.06	gammas per mm

The control instruments for Antarctica and other stations and instruments used for other surveys were compared with the Toolangi instruments. A list of the comparisons is given in Appendix 3.

Analysis and distribution of results

The extraction of data from the magnetograms, the computation of control observations, and the adoption of preliminary monthly baseline, scale, and mean values, as well as the distribution of these data, were kept up to date. For 1968 the distribution shown in the Annual Report for 1967 (van der Waal, 1968) should include Dr P.N. Mayaud.

In Appendix 4 the preliminary monthly and annual mean values of the elements D, H, Z, F and I are tabulated.

The preliminary adoptions for 1967 were completed in January and the final adoptions later in the year.

The 1968 magnetogram parameters were regularly sent to Head Office for scaling and computing of preliminary values.

Miscellaneous

Messrs Manning and Fox, surveyors from Division of National Mapping, were shown how to operate a QHM and BMZ so that they could do observations during their survey at Prince Charles Mountains in Antarctica.

The method of employing Mr Biggs to change and process records at Toolangi has been changed, and from 1st January 1968, he has been employed on an annual contract basis.

Two fluxmeter bars were packed and despatched on loan to Dr W.D. Parkinson, University of Tasmania.

3. TOOLANGI AND MELBOURNE SEISMIC OBSERVATORY

Buildings and grounds

The buildings of the seismic observatory remained in good condition and no maintenance was required.

Undergrowth was burned off to reduce fire risk.

Operation

Except for some short interruptions, the seismographs operated continuously throughout the year.

The Helicorder in the office was dismantled and re-installed in the new office in September. During the year this seismograph required only replacement of a valve in the Helicorder amplifier and a light globe in the phototube amplifier. However, the synchronome clock providing the time marks broke down in September and was sent out for servicing. It also required a new suspension spring for the pendulum.

At Toolangi the "Nife" batteries were sent to the manufacturers for overhaul in June and returned in July.

The dryer and the dehumidifier broke down in July and were repaired.

A few power failures occurred at Toolangi and some record was lost during these periods.

Calibrators for the long-period instrument at Toolangi were installed in September and preliminary calibrations were made.

Six months long-period records were despatched to Lamont Geological Observatory in February and August. However, it has been agreed that the Bureau will supply the photographic paper in future and that the original seismograms will be retained. Microfilm copies will be sent to Lamont on request.

Analysis and distribution of results

The analysis of earthquakes and the distribution of results were continued.

Final data were regularly sent to Head Office for punching and forwarding to I.S.C. Analysis for 1967 was completed in August.

The distribution list remained the same as for 1967 (van der Waal, 1968).

4. ANTARCTIC OBSERVATORIES

The observatories at Macquarie Island and Mawson continued to operate satisfactorily throughout the year. Results were received by telegram and distributed to the USCGS World Data Centre, Permanent Services, and other interested organizations. Magnetic K-indices and monthly mean values

were also published in the Geophysical Observatory Report by Head Office.

The distribution was the same as shown in Appendix 5 of the 1967 Annual Report (van der Waal, 1968).

5. REFERENCES

van der Waal, C.A., 1966 - Melbourne Observatory Group Annual Report, 1962. Bur. Min. Resour. Aust. Rec. 1966/173

van der Waal C.A., 1968 - Toolangi Geophysical Observatory Annual Report 1967. Bur. Min. Resour. Aust. Rec. 1968/135

APPENDIX 1

STAFF AND VISITORS 1968

NAME	DESIGNATION AND REMARKS
<u>Staff</u>	
C.A. van der Waal	Geophysicist Class 3
G.R. Small	Geophysicist Class 3 (A/g - relief OIC, Jul 19- Aug 6
C.H. van Erkelens	Senior Tech. Off. Grade 1
J.A. Major	Geophysicist Class 1 - relief duties Jun 24- Jul 19 Aug 22- Oct 1
D. Horne	Geophys. Assistant to Jan 5
B. Turner (Miss)	Computing Assistant to Jan 12
J. Gapes (Miss)	" " Jan 26- March 19
P.A. Thomas (Mrs)	" " from Jun 12
T. Lee	Vacation student from Dec 9
<u>Antarctic Officers</u>	
R.S. Smith	Geophysicist Class 1 Jan 2-5 (departed for Mawson Jan 5)
J.A. Major	Geophysicist Class 1 Oct 23- Nov 15 Dec 16- Dec 20 (departed for Mawson Dec 20)
K.F. McCue	Geophysicist Class 1 Oct 17- Nov 15 Nov 26- Nov 28 (departed for Macquarie Island Nov 28)
J.B. Connolly	Geophysicist Class 1 ex Macquarie Island Dec 15; to HQ Dec 17

NAME	DESIGNATION AND REMARKS		
<u>Visitors</u>			
P.M. McGregor	Geophysicist Class 4	HQ	Mar 15
V. Dent	Geophysicist Class 1	HQ	Apr 9
J. Cleary (Dr)	A.N.U.		Apr 24
J.C. Dooley	Geophysicist Class 5	HQ	Aug 12
L.S. Prior	Assistant Director (Geophysics)		Aug 14
D.M. Finlayson	Geophysicist Class 2	HQ	Oct 24-26
R.H.J. Thompson	Assistant Secretary	CO	Nov 14
J. Sullivan	Executive Officer	VRO	Nov 14

APPENDIX 2
INSTRUMENT DATA

(a) Magnetograph (La Cour normal-run, 15 mm/hr)

Component	Magnet N pole	Scale value	Standard deviation	
			SV	BLV
D	N	1.18 min/mm	0.01	0.1
H	W	4.5 gamma/mm	0.05	0.9
Z	N	4.4-4.9 gammas/mm	0.02	1.2

(b) Magnetometers

Element	Instrument	Correction
D	Askania decl. 640506	-0.5 minute
H	QHM 288	-20 gammas
	QHM 289	-23 gammas
	QHM 290	-24 gammas
Z	BMZ 119	+32 gammas

(c) Seismographs

System	Components	Free period		Magnification (maximum)
		Seismo (s)	Galvo (s)	
<u>Short period</u>	Benioff	1.0	0.2	180,000
60 mm/min	(N-S, E-W, Z)			
<u>Long period</u>	Sprengnether	15	90	2,100
30 mm/min	(N-S, E-W)			
	Columbia	15	90	2,100
	(Vertical)			
<u>Visual</u>	Willmore	1.0	Helicorder	Not known
39 mm/min	(Vertical)			

APPENDIX 3

Comparison Observations at Toolangi during 1968

Month

January	HTM 154, Decl. 506, 812.
March	QHM's 460, 461, 462 HTM 154 via baselines.
April	Decl. 320, HTM 154 via baselines.
May	HTM 154 via baselines.
June	QHM's 172, 174, 492; Decl. 333 Decl. 812. HTM 154 via baselines.
September	Decl. 812 via baselines.
October	Decl. 812 via baselines.
November	HTM 154; QHM's 172, 174, 460, 461, 462, 492, 494; Decl. 333, 812; BMZ 115, 221

APPENDIX 4

Preliminary mean values of magnetic elements

Month	D	H (gammas)	Z (gammas)	F (gammas)	I
January	10°36'.0E	22445	-56371	60675	68°17'.3
February	37.2	446	364	50669	68°17'.1
March	37.7	438	365	60667	68°17'.6
April	38.3	440	360	60663	68°17'.4
May	37.9	440	359	60662	68°17'.3
June	37.4	432	363	60663	68°17'.9
July	37.3	434	360	60661	68°17'.7
August	37.6	429	359	60658	68°18'.0
September	37.6	426	356	60654	68°18'.0
October	39.0	425	356	60654	68°18'.1
November	39.0	417	360	60654	68°18'.6
December	37.7	422	358	60654	68°18'.3
1968.5	10°37'.7E	22433	-56361	60661	68°17'.8