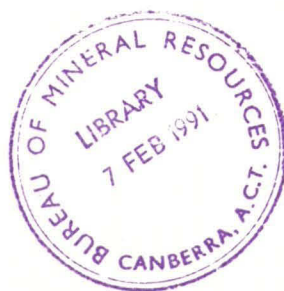




Report 301

First-order regional magnetic survey of Australia, for epoch 1990.0 1986-1989

compiled by A.P. Hitchman



Bureau of Mineral Resources, Geology and Geophysics

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Department of Primary Industries and Energy
Bureau of Mineral Resources, Geology and Geophysics

Report 301

First-Order Regional Magnetic Survey of Australia for Epoch 1990.0 1986-89

compiled by
A.P. Hitchman
Geophysical Observatories and Mapping Branch
BMR

Australian Government Publishing Service
Canberra

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SUMMARY

From 1986 to 1989 the BMR conducted fieldwork throughout Australia and its offshore island territories, PNG and other Pacific countries to collect first-order magnetic field data. This data will be used with observatory data to produce the epoch 1990.0 Australian Geomagnetic Reference Field model and charts.

This report details operational aspects of the reoccupation of the mainland and near offshore island stations. Separate reports on visits to the PNG and southwest Pacific stations are in preparation.

At each station variations in four components of the magnetic field were measured for about three days and were calibrated by frequent absolute observations. By comparing these variations with observatory data, values for the long-term quiet field at each station were determined.

Observed magnetic field values, preliminary mean hourly values and the adopted station values and secular variation for declination, horizontal intensity, vertical intensity and total intensity are given.

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1. INTRODUCTION

Fieldwork was carried out between 1986 and 1989 to gather first-order data for the production of the epoch 1990.0 geomagnetic reference field model and charts for the Australian and southwest Pacific region. To accomplish this each of the eighty or so magnetic stations throughout Australia and its territories were reoccupied. The network of stations is shown in Figure 1. During each occupation (lasting on average three or four days) temporal variations of the field were recorded and regular absolute observations made to an accuracy of better than five nanoTesla (or 0.5'). These data were used to obtain quiet values for each element of the magnetic field at the station and, by comparison with previous occupations, values for the secular variation.

The mainland stations were occupied by a small party using two four-wheel-drive vehicles during two field seasons. The first of these was in July-October 1986 and the second in March-September 1987. During March-April 1988 the Australian islands and territories were occupied using commercial flights. The Pacific stations and Papua New Guinea were visited in 1989. Information concerning the work carried out in the Pacific and PNG may be found in separate BMR records (Hitchman, Dennis). Appendix 1 shows the order of occupation of the stations and the party leaders for the survey.

The fieldwork was coordinated from Canberra and involved staff from Canberra as well as Mundaring Geophysical Observatory, together with fieldhands contracted in Canberra.

2. PREPARATIONS

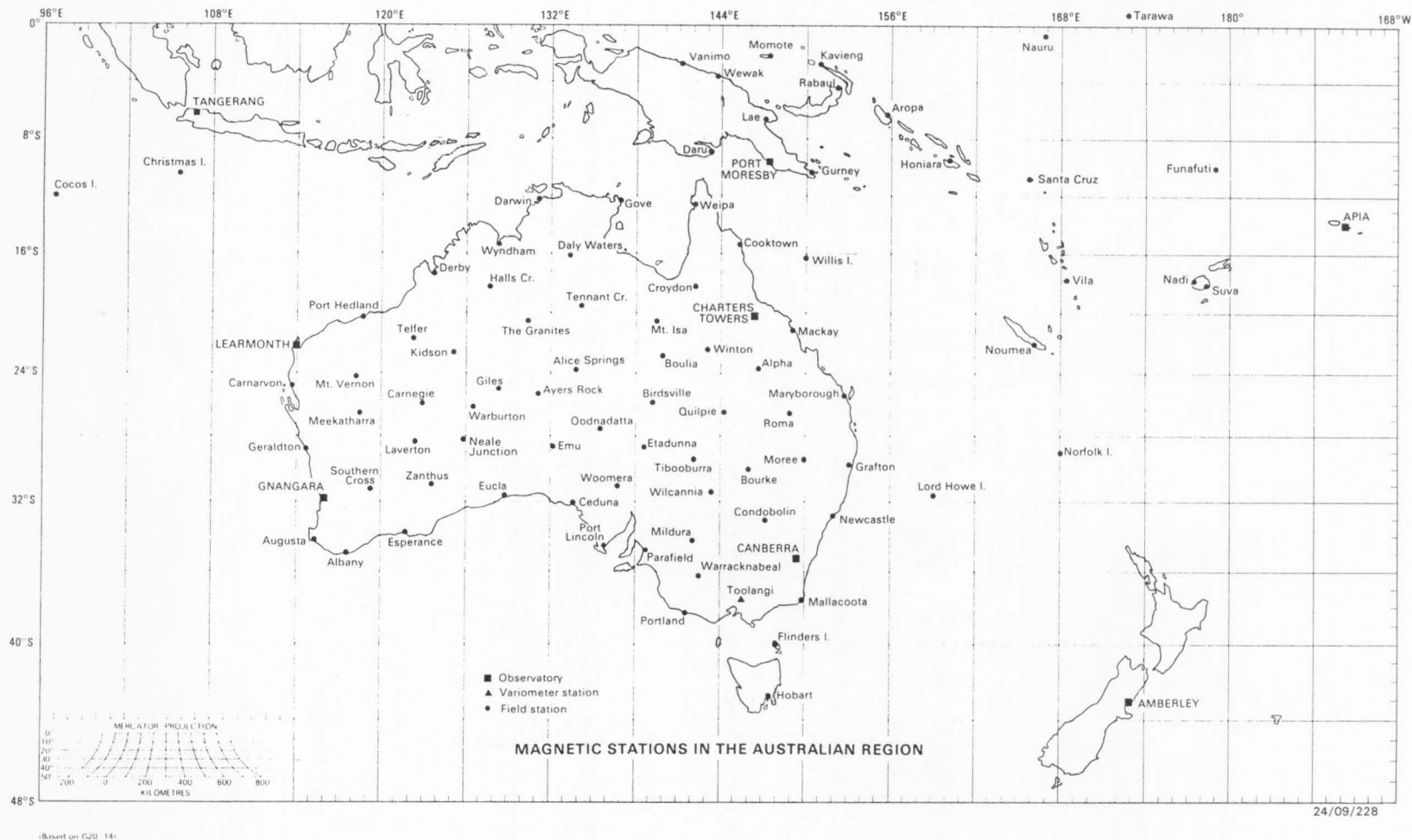
Prior to each fieldtrip letters of introduction were sent to the various authorities administering the station sites (usually airports). These bodies included the former Department of Aviation, local councils, station owner/managers, private companies and aboriginal councils. Appendix 2 lists the names and addresses of the contacts for each station.

Letters were sent to the appropriate authorities to inform them of our proposed plans, to seek approval to work at the station and to address the need for an isolated site with access to 240 V power to locate the recording equipment (sample in Appendix 3).

The equipment was thoroughly tested before departing for the field. The inventory of the recording, absolute and auxiliary equipment is contained in Appendix 4. Comparisons between the survey absolute instruments and standard instruments were made at the Canberra Magnetic Observatory (Table 3).

The BMR vehicles used as transport during the reoccupations were fitted with extra spare tyres, water tanks and long-range fuel tanks. Codan transceivers were also carried in the vehicles when the survey team traveled to remote areas.

Figure 1 Australian and Pacific first-order magnetic repeat stations



Where the fieldwork involved camping, equipment was drawn from the Departmental store in Canberra. Two generators were also drawn from the store. These were used to provide power for the recorders when local power was unavailable and for the camp-site at remote stations. The generators required servicing before the fieldwork.

A suite of programs was developed on the HP-71B calculator to process sunshots, rounds of angles and absolute observations.

Administrative preparations included drawing petty cash, field purchase orders, TA and petrol cards.

3. EQUIPMENT

A complete list of equipment used during the surveys is given in Appendix 4.

VARIOMETERS

An EDA FM-100B three-component fluxgate magnetometer measured the H, D, Z components of the magnetic field. To supplement this an Elsec 820 proton precession magnetometer recorded the total field (F), sampling it once each minute. Thus four elements of the field were recorded during each occupation. A Doric trendicator coupled with a Thermilinear YSI series 100 thermistor monitored the temperature inside the EDA head. This allowed the temperature coefficients of the fluxgate sensors to be determined and applied to the data.

The magnetic field variations and the temperature were recorded on paper on a W+W six-channel chart recorder. At stations accessed by aircraft a smaller, more portable Tigraph six-channel recorder was used instead of the W+W. A Dick Smith clock providing timemarks each hour was used for timing. Table 1 lists the magnetograph recordings made at each station.

The recorders were usually housed and transported in a vehicle-mounted cab for the land surveys. The vehicle was parked close to a power outlet at each station, a suitable distance from potential magnetic disturbances. After finding suitable sites for the sensors the equipment was then left to record for the duration of the occupation. At stations to which it was not possible to drive, the recorders were housed in whatever suitable secure shelter was available. This often included such places as anemometer huts, storerooms and sheds.

ABSOLUTE INSTRUMENTS

Absolute determinations of the field were made regularly throughout the occupation to calibrate the recording equipment. A Declination-Inclination magnetometer (DIM) and Proton Precession Magnetometer (PPM) were the primary absolute instruments used during fieldwork.

An Elsec 810 fluxgate sensor mounted on a Zeiss 20 non-magnetic theodolite constituted the DIM. At different times a Geometrics G816 PPM or an Elsec 770 PPM were used to measure F. Together, these instruments provide absolute values for D, I, F. From these elements the value of any of the other four magnetic elements can be

calculated. The field values measured at each station are listed in Table 2. Preliminary instrument corrections have been applied to the observed instrumental values.

Quartz Horizontal Magnetometers (QHMs) and Askania Declinometers were carried as reserve absolute instruments. The reliability of the DIM and PPMs, however, precluded the frequent use of these instruments.

Before and after each fieldtrip the absolute instruments were compared at the Canberra Magnetic Observatory to calibrate them against standard instruments kept there. Table 3 sets out the instrument differences and adopted corrections.

Shading of the DIM and PPM from the sun during absolute observations seems to be less critical than previously necessary for the QHM and Declinometer. Extreme heat can however damage the LCD displays in the DIM and PPM consoles.

The DIM theodolite was used to make sunshots to determine the azimuth of reference marks at each station. ASO and Natmap had upgraded most of the magnetic stations but sunshots were a useful verification of results. Table 4 lists the reference marks and true azimuths used in observations for the declination.

At each station field differences were measured between the primary, secondary and other existing stations. Historical stations were visited as time permitted. These had usually been installed by the Carnegie Institution of Washington earlier in the century. They are often contaminated now but some remain in reasonably good condition. Station differences are given in Table 5. Details of the latitude and longitude, and local meridian time for each station are in Table 6. Appendix 5 contains reports on the occupation of each station.

4. PERSONNEL AND LOGISTICS

The project leader for the survey was Andrew McEwin and party leaders were drawn from the Geomagnetism Section in Canberra and the Mundaring Geophysical Observatory. At various times throughout the 1986,7,8,9 field seasons this included Peter Gregson, Ed Paull, Vic Dent, Wendy Welsh, Rod Hutchinson, Stewart Dennis and Adrian Hitchman. During the occupation of most of the mainland stations John Hawke accompanied the party as fieldhand/mechanic. Uros Rokvic was fieldhand for the occupation of Norfolk Island and Lord Howe Island. Instructions for the party leader are set out in Appendix 6.

BMR vehicles were used during 1986/87 when the more accessible stations were visited. During the 1986 field season two Jeep J20 4x4 vehicles were used. One of these carried the demountable cab which housed the recording equipment, and the other was used as the support vehicle. Despite dismal forebodings about the reliability of these vehicles they proved to be largely trouble-free. The transport was upgraded for the 1987 season when a Mercedes Benz 911 4x4 8t vehicle with rear-mounted cab replaced the Jeep J20/demountable cab combination, and a Landrover 810 6x6 became the support vehicle. These vehicles were far newer than the aging Jeeps and vastly improved the presentation of the survey party. The Mercedes Benz cab was divided into two sections. In the front half a clean office area

housed the rack of recording equipment and a desk, and in the rear half was a workshop/storage area with facilities for carrying extra fuel in two 220 litre drums. This extra fuel capacity was essential when visiting remote stations.

By carefully timing the field work, adverse weather conditions were avoided as much as possible. Hence there were no delays on any of the legs due to bad weather, and the survey generally maintained the schedule.

Other means of transport were used for the less accessible or offshore stations. During 1986 a Department of Territories chartered boat was used to establish a first-order station at Ashmore Reef in the Timor Sea. The Department of Transport flights to Christmas and Cocos Islands provided transport to those stations in 1988. Commercial flights were used to occupy Flinders Island, Hobart, Norfolk Island, Lord Howe Island, Weipa, Gove and Darwin in 1988, as well as the Pacific islands (Hitchman 1990, Barton et al 1989) and PNG (Dennis & Hitchman) in 1989.

5. DATA REDUCTIONS

Absolute observations were used on-site to calibrate the magnetograms. Scale values (in nT/mm or $^{\circ}$ /mm) were determined for each magnetic field trace by graphing the observed value and the distance from a baseline, scaled from the magnetogram. From this data preliminary baseline values were derived:

$$\text{Baseline} = \text{Field value} - (\text{scale value} * \text{scaling})$$

The consistency of the baseline values reflects the quality of the data being recorded, and was used to monitor the adequacy of the occupation before the station was closed.

On returning to BMR, the absolute observations were recalculated and preliminary instrument corrections applied to give the field values listed in Table 2. The magnetograms were digitized at hourly intervals, the calculations reworked and temperature and preliminary instrument corrections applied to produce revised baselines and scale values for each trace. Preliminary mean hourly values were then derived from the digitized data combined with the magnetogram parameters. Table 7 lists the preliminary mean hourly values for all stations.

The data reduction was checked by plotting the values of the magnetic elements, derived from the absolute observations, onto the MHV plots.

The aim of each occupation of a first-order magnetic station is to describe as accurately as possible the long term quiet field at the station. Since the magnetic field is subject to activity of varying intensity which is superimposed on the quiet daily variation, some way of accounting for the 'non-quiet' magnetic activity must be found. The effect of short term disturbances is reduced by continuing the occupation until at least two magnetically quiet nights are recorded. It is the field around local midnight on a magnetically quiet night which most closely represents the value of the long-term quiet field (McEwin 1984). To remove any continuing long term disturbance such as

magnetic storms (which can depress H for weeks afterwards), a more representative mean value of the quiet field at a station is obtained by comparing the morphology of variations recorded at the station with several months of variations recorded at a suitably close magnetic observatory. This is possible since the form of variations of the magnetic field generally does not seem to change significantly over small distances (say 1000 km) at similar latitudes.

The final stage of the data reduction is to adopt a station value for each of the seven magnetic elements. This value is the best estimate possible for the long term quiet field at the station. Table 8 sets out the adopted values of the magnetic elements for the epoch of the station occupation, together with the secular variation.

6. REFERENCES

Barton, C.E., A.P. Hitchman, A.J. McEwin, 1989, First-order regional magnetic survey of Southwest Pacific islands, May-July 1985. Bureau of Mineral Resources Report, 289.

Dennis, S.D., A.P. Hitchman, First-order regional magnetic survey of PNG, May 1989. Bureau of Mineral Resources Report (in preparation).

Hitchman, A.P., 1990, First-order regional magnetic survey of Southwest Pacific islands, June-July 1989. Bureau of Mineral Resources Report (in preparation).

McEwin, A.J., 1984, First Order Magnetic Survey of Australia for Epoch 1980.0, March 1978 - July 1979, Operations Report. Bureau of Mineral Resources Record, 1984/15.

McEwin, A.J., First-order magnetic survey of Australia for Epoch 1985.0. Bureau of Mineral Resources Report (in preparation).

APPENDIX 1 Party leaders and station occupation order

Leg 1 A P Hitchman (23 Jun - 4 Jul 1986)

Condobolin Moree Bourke

Leg 2 A P Hitchman (21 - 31 Jul 1986)

Ashmore Reef

Leg 3 A P Hitchman (11 Aug - 16 Sep 1986)

Wilcannia	Tibooburra	Birdsville	Quilpie
Alpha	Winton	Boulia	

Leg 4 W D Welsh (11 Sep - 14 Oct 1986)

Mt Isa	Croydon	Cooktown	Mackay
Roma	Marborough	Grafton	

Leg 5 A P Hitchman (18 Mar - 2 May 1987)

Mildura	Etadunna	Woomera	Emu
Oodnadatta	Ayers Rock	Alice Springs	The Granites
Tennant Creek	Daly Waters		

Leg 6 P J Gregson (29 Apr - 22 May 1987)

Wyndham	Halls Creek	Derby	Port Hedland
Telfer			

Leg 7 E P Paull (19 May - 21 Jun 1987)

Carnarvon	Mount Vernon	Meekatharra	Geraldton
-----------	--------------	-------------	-----------

Leg 8 V F Dent (17 Jun - 25 Jul 1987)

Southern Cross	Laverton	Carnegie	Warburton
Zanthus	Esperence	Albany	Augusta

Leg 9 R A Hutchinson (22 Jul - 3 Sep 1987)

Eucla	Ceduna	Port Lincoln	Parafield
Warracknabeal	Portland	Toolangi	Mallacoota

Leg 10 A P Hitchman (7 Mar - 18 Apr 1988)

Flinders Island	Hobart	Norfolk Island	Lord Howe Island
Weipa	Gove	Darwin	

Leg 11 P J Gregson (3 - 16 May 1988)

Christmas Island Cocos Island

Leg 12 A P Hitchman, S D Dennis, S Scherl (10 - 14 April 1989)

Newcastle

APPENDIX 2 Station contacts

Albany

The Shire Clerk, Albany Shire Council, PO Box 809, Albany, WA 6330

Alice Springs

The Regional Director, Department of Aviation, 101 Currie Street,
Adelaide, SA 5000

cc. Airport Director

Alpha

The Shire Clerk (Mr R. Millis 1986), Jericho Shire Council, PO Box 11,
Alpha, Qld 4724

Ashmore Reef

The Assistant Director, Department of Territories, MLC Building, 81
Smith Street, Darwin, NT 5790

Augusta

The Honorary Secretary, Augusta Aero Club, Kudardup, WA 6289

Ayers Rock

For permission to set up equipment and access stations C,D,E at the
airport

The Senior Groundsman (Alan Wightman 1987), Connellen Airport, PO Box
44, Yulara, NT 5751

For permission to access station A within the Mutitjulu Aboriginal
community

The Park Superintendent (Chip Morgan 1987), Uluru National Park, PO
Box, Yulara, NT 5751

Birdsville

The Officer in Charge, Police Station, Birdsville, Qld 4482

Boulia

The Shire Clerk, Boulia Shire Council, Shire Offices, Boulia, Qld 4829

Bourke

The Shire Engineer, Bourke Shire Council, PO Box 21, Bourke, NSW 2840

Carnarvon

The Regional Director, Department of Aviation, Box X2212 GPO, Perth,
WA 6001

cc. Airport OIC

Carnegie

Mr Greg Linke, Carnegie Station, via Wiluna, WA 6646

Ceduna

The Regional Director, Department of Aviation, 101 Currie Street, Adelaide, SA 5000

cc. Airport OIC

Christmas Island

The Secretary, Department of the Arts, Sport, the Environment, Tourism and Territories, External Territories Division, 121 London Circuit, Canberra, ACT 2601

Attention The Director, Christmas Island Section

Cocos Island

The Secretary, Department of the Arts, Sport, the Environment, Tourism and Territories, External Territories Division, 121 London Circuit, Canberra, ACT 2601

Attention The Director, Cocos (Keeling) Islands Section

Condobolin

The Shire Engineer (Mr M. Preston 1986), Lachlan Shire Council, 62-64 Molong Street, Condobolin, NSW 2877

Cooktown

The Regional Director, Department of Aviation, PO Box 600, Fortitude Valley, Qld 4006

cc. Airport OIC

The Shire Clerk, Cook Shire, Charlotte Street, Cooktown, Qld 4871

Croydon

The Shire Clerk (Mr J.C. Torpy 1986), Croydon Shire Council, PO Box 6, Croydon, Qld 4871

Daly Waters

The Licencee, Daly Waters Pub, Daly Waters, NT 5760

Darwin

The Airport Director, Department of Aviation, Box 315 PO, Darwin, NT 5790

Derby

The Regional Director, Department of Aviation, Box X2212 GPO, Perth, WA 6001

cc. Airport OIC

Emu

The Assistant Secretary, Test Site Management Unit, Department of Primary Industries and Energy, GPO Box 858, Canberra, ACT 2601

The Security Officer (Bob Bauer 1987), Defence Support Centre Woomera, Department of Defence, GPO Box 2269, Adelaide, SA 5001

Esperance

The Shire Clerk (Mr R.T. Scoble 1987), Esperance Shire Council, PO Box 507, Esperance, WA 6450

Etadunna

The Manager, Etadunna Station, via Marree, SA 5733

Eucla

The Manager, Amber Motor Hotel, PMB 17, PO, Ceduna, SA 5690

Flinders Island

The Officer-in-Charge, Flinders Island Aerodrome, Flinders Island, Tas 7255

Geraldton

The Shire Clerk (Mr R.G. Bone 1987), Shire of Greenough, PO Box 21, Geraldton, WA 6530

Gove

The Site Manager, Nabalco Pty Ltd, PO Box 21, Nhulunbuy, NT 5797

Grafton

The Town Clerk (Mr J.A. Gaudry 1986), The Council of the City of Grafton, PO Box 24, Grafton, NSW 2460

Halls Creek

The Regional Director, Department of Aviation, Box X2212 GPO, Perth, WA 6001

cc. Airport OIC

Hobart

Operations Manager, Federated Airports Corporation, Hobart Airport, PO Box 400, Rosny Park, Tas 7018

Laverton

The Shire Clerk, Shire of Laverton, PO Box 51, Laverton, WA 6440

Lord Howe Island

The Administrative Officer, Administration Office, Lord Howe Island, NSW 2898

The Officer-in-Charge, Meteorological Office, Lord Howe Island, NSW 2898

Regional Director of Meteorology, Bureau of Meteorology, PO Box 413, Darlinghurst, NSW 2010

Mackay

The Regional Director, Department of Aviation, PO Box 600, Fortitude Valley, Qld 4006

cc. Airport OIC

The Town Clerk, Mackay City Council, PO Box 41, Mackay, Qld 4740

Mallacoota

The Regional Director, Department of Transport and Communications, Airways Branch, GPO Box 1733P, Melbourne, Vic 3001

Maryborough

The City Engineer, Maryborough City Council, PO Box 110, Maryborough, Qld 4650

Meekatharra

The Regional Director, Department of Aviation, Box X2212 GPO, Perth, WA 6001

cc. Airport OIC

Mildura

The Shire Engineer, Shire of Mildura, PO Box 366, Irymple, Vic 3498

Moree

The Shire Engineer, Moree Shire Council, PO Box 420, Moree, NSW 2400

Mount Isa

The Regional Director, Department of Aviation, PO Box 600, Fortitude Valley, Qld 4006

cc. Airport Director, Department of Aviation, PO Box 2332, Mount Isa, Qld 4825

Mount Vernon

The Manager, Mount Vernon Station, O.P.R., Meekatharra, WA 6642

Newcastle

Visits Coordinator, Airforce (Mr J. Siviour 1989), Department of Defence, Russell Offices, Canberra, ACT 2600

Norfolk Island

The Secretary, Department of the Arts, Sport, the Environment, Tourism and Territories, External Territories Division, 121 London Circuit, Canberra, ACT 2601

Attention Director, Norfolk Island Section,

The Administrative Officer, Administration Office, Norfolk Island, NSW 2899

The Officer-in-Charge, Meteorological Office, Norfolk Island, NSW 2899

Regional Director of Meteorology, Bureau of Meteorology, PO Box 413, Darlinghurst, NSW 2010

Oodnadatta

The Regional Director, Department of Aviation, 101 Currie Street, Adelaide, SA 5000

cc. Airport OIC

Parafield

The Regional Director, Department of Aviation, 101 Currie Street, Adelaide, SA 5000

cc. Airport OIC

Port Hedland

The Shire Clerk (Mr L.S. Rogers 1987), Port Hedland Shire, PO Box 152, Port Hedland, WA 6721

Port Lincoln

The Regional Director, Department of Aviation, 101 Currie Street, Adelaide, SA 5000

cc. Airport OIC

Portland

The Municipal Engineer, Portland Aerodrome Joint Committee, Municipal Offices, Portland, Vic 3305

Quilpie

The Shire Engineer, Quilpie Shire Council, PO Box 57, Quilpie, Qld 4480

Roma

The Town Clerk (Mr P.J. McKenzie 1986), Roma Town Council, PO Box 116, Roma, Qld 4455

Southern Cross

The Shire Clerk, Yilgarn Shire Council, PO Box 86, Southern Cross, WA 6426

Telfer

The Resident Manager, Telfer Project, Newmont Holdings Pty Ltd, Telfer, WA 6762

Tennant Creek

The Regional Director, Department of Aviation, 101 Currie Street, Adelaide, SA 5000

The Granites

The Site Officer (Robert Graham 1987), Central Land Council, PO Box 3321, Alice Springs, NT 5750

Tibooburra

The Director, National Parks and Wildlife Service, Tibooburra District Office, Tibooburra, NSW 2880

Toolangi

Mr Ron Biggs, PO, Toolangi, Vic 3777

Warburton

The Commissioner for Aboriginal Planning, Aboriginal Affairs Planning Authority, PO Box 628, West Perth, WA 6005

Warracknabeal

The Shire Engineer (Mr J.J. Thorburn 1987), Shire of Warracknabeal, PO Box 243, Warracknabeal, Vic 3393

Weipa

The Town Manager, Comalco Aluminium Limited, Weipa, Qld 4874

Wilcannia

The Shire Clerk (Mr Jack Baker 1986), The Council of the Shire of Central Darling, PO Box 165, Wilcannia, NSW 2836

Winton

The Shire Engineer, Winton Shire Council, PO Box 288, Winton, Qld 4735

Woomera

The Security Officer (Bob Bauer 1987), Defence Support Centre Woomera,
Department of Defence, GPO Box 2269, Adelaide, SA 5001

Wyndham

The Regional Director, Department of Aviation, Box X2212 GPO, Perth,
WA 6001

cc. Airport OIC

Zanthus

The District Engineer, Parkeston (Mr P.R. Staunton 1987), Australian
National Rail, PO Box 738, Kalgoorlie, WA 6430

85/984

28 January 1988

The Officer in Charge
Flinders Island Airport
Flinders Island Tas 7255

Dear Sir

FIRST-ORDER MAGNETIC SURVEY

This bureau is again carrying out survey work as part of its program to update the isomagnetic charts for the Australian region. As part of this work we propose to visit our magnetic station at Flinders Island.

Occupation of the station will involve three days continuous recording of the magnetic field together with regular absolute observations made at our brass markers whose locations are shown on the enclosed map. Similar work was carried out by us in 1979 and 1983.

We seek your assistance with the proposed visit. As in the past, we will require a secure shelter for our recorders with access to a 240 V 50 hz power outlet, in an area free of magnetic interference. We will also need access to our markers on the airfield.

The last time we visited the recorders were housed in one of the DOA buildings. This was a suitable arrangement and we would like to do the same again if it is convenient.

Our geophysicist, will travel by commercial aircraft and plans to arrive at Flinders Island on 7 March 1988.

Please advise either Adrian Hitchman (062-499321) or myself (062-499392) if this proposal presents any difficulty.

Yours faithfully

ANDREW J. McEWIN
Geomagnetism Section

APPENDIX 4 Equipment inventory

1. Recording Box 1

Tigraph chart recorder
calculator + power adapter
calculator manuals
leads/connectors
spare recorder paper
extension lead
radio
tape measure
level
PPM head + cable

2. Recording Box 2

EDA console and lead
Elsec 820 console
EDA head
clock
Doric
18 V power supply
EDA/Doric cable

3. Absolute Box

theodolite
DIM console
PPM and head
stopwatch
calculator
penciling board
observing fly
tent pegs (8)

4. Esky

spare PPM + head
QHM
circle
penciling board
forms
handbooks
multimeter
tool roll
tool box
jewelers screwdrivers
soldering iron and flux
hammer
spade
spikes short + long with collar
hacksaw
trowel
aluminium poles (7 pcs)
tent pegs (11)
compass
fly (for EDA head)
spare observing fly
station markers (4)
brass pipes (11)
Elsec head pole (3 pcs) + adapter
power distribution board
double adapter
rags
recorder leads
heat shrink
electronics spray cleaner
assorted ropes

5. Tripod Bag

DIM tripod
Askania tripod
observing shelter poles

APPENDIX 5 Station occupation reports

ALBANY C,D (18-21 July 1987) VFD

Contact: The Shire Clerk

Setting Up: The cab was set up to the southeast of the workshop, using power from the workshop. The heads were placed another 40m southeast of the cab.

Azimuth Mark: Wilyung Hill

Observations: Absolutes were made on both the current stations, using C as the main station, and on the historical station in Centennial Park. AM and PM sunshots were completed on station C, together with extended F surveys and rounds of angles on C, D and historical stations.

Equipment: No problems.

Station Upgrading: Stations C and D were upgraded to a concrete triangle surrounding the plaque and footpads.

ALICE SPRINGS C,E,F (11-14 April 1987) APH

Contact: Dept of Aviation, Airport Director

Setting up: The cab was parked about 15m west of the anemometer hut with the sensors to the west again of the cab. Power is available in the hut.

Azimuth mark: Microwave Tower to the west of the Gap.

Equipment: Everything worked OK.

Observations: Absolutes were recorded on station E, and differences to C and F were measured. Sunshots were made on E (AM and PM). Rounds of angles and extended F surveys were completed on C, E and F.

Station upgrading: Station C retains separate plaque and footpads, and stations E and F have been upgraded to have a concrete triangle incorporating the plaque and footpads.

ALPHA A,B (29-31 Aug 1986) APH

Contacts: Shire Clerk, Mr R. Millis
Airport Reporting Officer, Mr L.J (Jim) McDonnell

Setting Up: Power was available from the terminal building at the airport. The recording cab was placed 40m to the southeast of the terminal, just on the edge of the mown area. The sensors for the EDA and PPM were placed to the east of the cab, inside the unkept area.

Azimuth Mark: The old mark, the corner of the terminal building has been obscured by a new toilet block. Station B was used as the reference mark.

Equipment: All equipment functioned normally.

Observations: Routine observations plus 2 pages of AM and PM sunshots were made on station A.

ASHMORE REEF A,B
(24-27 July 1986) APH

Contact: The Assistant Director, Department of Territories, Darwin. Mr Andy Bartels was acting in this position.

Setting Up: The recording equipment was situated in a tent about 50 m north of the ONI camp. Power was provided by one of three 2kW generators run by the company. These were changed over every 8 hours to reduce the rate of wear and tear.

Azimuth Mark: Station B (A)
Station A (B)

Equipment: The Elsec 595 F base station did not function during the occupation. This was part of ongoing difficulties with the instrument. The entire occupation ended prematurely when the Tigraph recorder malfunctioned. Later inspection showed that the motor of the cooling fan had blown. This could not be repaired at the station.

Observations: Absolutes were made on the main station (A) and the secondary station (B). Sunshots (AM and PM) were taken on A, together with rounds of angles, F surveys on A and B.

Station Upgrading: Both stations A and B were established during this visit. They each have a concrete triangle which encloses the BMR plaque and the footpads.

AUGUSTA D,E
(22-25 July 1987) VFD,RH

Contact: The Honorary Secretary, Augusta Aero Club

Setting Up: The cab was set up using power from the hanger, 50m to the southwest. The EDA sensor was placed 40m to the west of the cab and the PPM head 70m west.

Azimuth Mark: NE corner of toilet block.

Equipment: All OK.

Observations: Absolute observations were completed on the two current stations (D and E), together with rounds of angles and extended F surveys. AM sunshots were made on station D.

Station Upgrading: Stations D and E were concreted.

AYERS ROCK A,C,D,E
(7-10 April 1987) APH

Contact: Senior Groundsman (Alan Wightman 1987)
Connellan Airport
PO Box 44
Yulara NT 5751
Ph. (089) 562020

and

The Park Superintendent
Uluru National Park
C/- Yulara PO
Yulara NT 5751

(for access to Station A within the Mutitjulu Aboriginal community)

Setting up: The cab was placed about 30m to the east of the groundsman's workshop in a small area bounded on all sides by roads. Power is available from the workshop. This was a satisfactory site with minimal disturbance from road traffic. The sensors were placed in a line to the west of the cab.

Azimuth Mark: The notch in the cliff at the east end of the Olgas.

Equipment: All OK.

Observations: Station C was occupied as the main station, and differences measured at A, D and E. AM and PM sunshots were made on C, and an extended F survey on C, D and E.

Station Upgrade: Stations C, D and E were concreted with a triangle to include plaque and footpads. Station A is a post only, and B is not locatable (reverted to bush).

BIRDSVILLE B,C
(21-23 Aug 1986) APH

Contact: At Birdsville the Police OIC (Bob Goad in 1986) was notified of the reoccupation.

Setting Up: The cab was setup alongside the fence to the east of the Police Station. The back of the Station may have been a marginally better spot but two Japanese researchers had set up some of their equipment there. The EDA and PPM sensors were located to the east of the cab. Power was available from the watch house building. This location incurred minor interference from occasional radio transmission but was otherwise quiet.

Azimuth Mark: Base of light structure on windsock.

Observations: Absolute observations and rounds of angles were made on both stations B and C, using B as the primary station.

Equipment: The Elsec base station remained inoperable throughout this occupation. The EDA functioned well.

BOULIA C,D
(05-09 Sept 1986) APH

Contact: The Shire Clerk of the Boulia Shire Council.

Setting Up: The cab was parked 40m to east of the terminal building, with power coming from a box near the north wall of the building. The sensors were placed to the southeast of the cab.

Azimuth Mark: Station D

Observations: Absolute observations were made using station C as the main station. Two pages of AM and PM sunshots were taken. Reoccupation of station B was not possible since the area has been built out with teacher accommodation.

Equipment: The Elsec 595 did not operate again. The first two days H, D and Z record was made void when it was discovered that the EDA head had slowly gone out of level. There was some trouble with the Geometrics absolute PPM due to faulty connections in the head cable.

BOURKE C,D
(1-2 July 1986) APH

Contact: A Shire Engineer, Mr Russell Deans was the contact with the Council, who run the airport. The airport caretaker was Mr Jim Bridges.

Setting Up: The equipment was housed in the demountable cab aboard the Jeep J20. The cab was situated in the scrub about 60 m northeast of the works compound. An extension lead was run to the compound to provide power for the instruments. This was a suitable site.

Azimuth Mark: RH NDB to northwest (C)
RH NDB to west (D)

Equipment: Heavy rain caused the Elsec 595 base station to fail early in the occupation. it could not be re-instated.

Observations: Absolutes and rounds of angles were made using station C as the primary station and D as the secondary station. No sunshots were possible due to the rainy conditions.

Station Upgrading: Both stations have plaque and footpads concreted in separate blocks. No upgrading was carried out during this visit due to the inclement weather.

CARNARVON D, E
(19-22 May 1987) PJG

Contact: DOA OIC Tony Belch
Groundsman Stan Todd

Setting Up: Cab parked beside security fence just to the north of the RFDS hanger. Power was taken from the hanger. The sensors placed to the north of the security fence.

Azimuth Mark: TDC Telecom mast

Observations: Absolutes were made on both stations D and E, using D as the primary station. Rounds of angles and extended F surveys on D and E. Sunshots (AM and PM) were made on station D.

Equipment: All OK.

Station Upgrading: Both stations D and E were upgraded to have the brass plaque and footpads incorporated in a concrete triangle.

CARNEGIE A,B
(26-29 June 1987) VFD

Contact: Greg and Virginia Linke, station owners.

Setting Up: The cab was set up about 50 m north of the old meat store, with the recording heads further to the north. Power was from the generator.

Azimuth Mark: TDC windmill to northeast (A and B)

Equipment: All equipment functioned properly.

Observations: Absolutes and rounds of angles were completed on both stations, and sunshots were made on A.

Station Upgrading: Both stations were concreted during this occupation, so that a concrete triangle incorporates the plaque and footpads.

CEDUNA D,E
(5-7 Aug 1987) RH

Contact: Airport OIC (Chris Stockhand 1987)

Setting Up: The cab was placed 80m southeast of the windsock, with the PPM head a further 50m southeast and the EDA head 30m east of the truck. Power was available from the windsock but is only available when the windsock lights are on. Hence the lights need to be lit for the duration of the occupation.

Azimuth Mark: Western windsock, base of light struts.

Equipment: All OK.

Observations: Absolute observations were made on both stations D and E, as were rounds of angles and extended F surveys. AM sunshots were made on D.

Station Upgrading: Both stations D and E were upgraded to have a concrete triangle incorporating the plaque and footpads.

CHRISTMAS ISLAND B,C
(04-09 May 1988) PJG

Contact: The Secretary
Dept of the Arts, Sport, the Environment, Tourism and
Territories

External Territories Division
121 London Circuit
Canberra ACT 2601
Attn. The Director
Christmas Island Section

Setting Up: The recorders were set up in the eastern-most shed of the refueling area, which is just north of the terminal. The sensors were placed to the north of the shed near a ditch.

Azimuth Mark: TDC windsock to north

Equipment: The equipment functioned without fault throughout the occupation. The DIM however showed about 40' difference in the VCN and VCS readings.

Observations: Absolutes, rounds of angles and extended F surveys were made on stations B (primary) and C (secondary).

Station Upgrading: Both stations B and C are BMR brass plaques set in concrete with concrete tripod pads. The historic station site is covered by a pile of rubble.

COCOS ISLAND A,D
(11-16 May 1988) PJG

Contact: The Secretary
Dept of the Arts, Sport, the Environment, Tourism and
Territories
External Territories Division
121 London Circuit
Canberra ACT 2601
Attn. The Director
Cocos Island Section

at Cocos Island

OIC Bureau of Meteorology to use office for equipment
OIC Dept Housing and Construction (Jim Buchanon) for airstrip
OIC DPIE quarantine station (Miles Cooper) for transport

Setting Up: The equipment was set up in the kitchen of the Met Bureau offices. The EDA and Elsec sensors were sited to the east of the office.

Azimuth Mark: TDC windsock

Equipment: No problems of great moment were experienced. As at Christmas Island the VCN and VCS readings on the DIM were well separated (by about 40').

Observations: Absolute observations, rounds of angles and extended F surveys were carried out using A as the main station and D as the secondary station. No sunshots were made.

CONDOBOLIN B,C,D
(23-25 June 1986) APH

Contact: The Shire Engineer, Mr Martin Preston was the contact for the stations on the airport and the one at the racecourse.

Setting Up: The cab was parked about 30 m to the south of the apron, and power taken from the terminal building. The sensors were sited south of the cab. This was a suitable site.

Azimuth Mark: Flagpole by Secretary's office at racecourse (B)
TDC windsock to north (C and D)

Equipment: No problems were experienced with equipment.

Observations: Absolute observations were made on stations B, C and D, using C as the primary station and D the secondary. Station B is at the racecourse and is not suitable as a primary station due to its distance from the other two stations at the airport. Rounds of angles were made on C and D. No sunshots could be made due to the overcast weather conditions.

Station Upgrading: Both stations at the airport (C and D) were upgraded so that a concrete triangle now encloses the brass plaque and footpads. Station B at the racecourse is simply a brass plaque in a concrete plug. It could be concreted in future, and footpads included.

COOKTOWN D,E
(22-24 Sept 1986) WDW

Contact: The Shire Engineer
Ph. (070) 695 444
A groundsman resides at the airport.

Setting up: The variometer equipment was set up behind the groundsman's residence. The cab was sited in the shade of the large gum tree, with the EDA and PPM sensors in a line to the southeast. A power lead was run from the airport workshop.

Azimuth Mark: Centre of Windsock pole.

Equipment: All worked well.

Station Upgrading: Stations D and E were upgraded to each include a triangular concrete pad, flush with the ground, enclosing the existing footpads and station marker.

Observations: Sunshots from station D, rounds of angles from stations D and E, station differences between D and E. Extended F surveys on D and E.

CROYDON B
(16-19 Sept 1986) WDW

Contact: Mr J.C. Torpy
Shire Clerk
Ph. Croydon 5

Setting up: The variometer equipment was set up to the southeast of the terminal building, north of the main runway. The EDA sensor was to the east and the generator was to the southwest of the cab. The magnetic station was on the opposite side of the runway.

Azimuth Mark: Centre of TV mast.

Equipment: All equipment worked well. A vapour lock, due to low fuel and high temperatures, stalled the generator but resulted in only 10 minutes data loss.

Auxiliary Station: Station C could not be found. Station D was erected where station C should have been. (D was possibly covered when the airstrip is graded, as it was on the edge of the gravel strip.)

Station Upgrading: Station B was upgraded to include a triangular concrete pad, flush with the ground, enclosing the existing foot pads and station marker, station D was created with a triangular pad as above.

Observations: Sunshots from station B, rounds of angles on stations B and D. Station difference between B and D. Extended F survey on station D

DALY WATERS B,C
(24-27 April 1987) APH

Contact: The Licensee
Daly Waters Pub
Daly Waters via Katherine
NT. 5780

Setting Up: The recording cab was parked about 50m west of the power house building, which is close to the magnetic stations. Power is available from there. The sensors were placed to the northwest of the cab.

Azimuth Mark: TDC of corner fence post.

Equipment: The H trace dropped to zero level on the W + W for no apparent reason. Subsequently it was found that the lead connecting the H channel on the W + W to the timemark box had a break in it.

Observations: Station B was used as the primary station and C as the secondary. AM and PM sunshots were made on B. Rounds of angles were made and extended F surveys were completed on B and C. Absolutes were done in the vicinity of the historic station, however it's location was very imprecise.

DARWIN E,F
(14-16 Apr 1988) APH

Contact: The Airport Director, Dept of Aviation is the contact. In 1988 Mr Bruno Santalucia held this office. He can arrange the necessary contacts with the DOA maintenance people.

Setting Up: The recording equipment was set up in the DOA maintenance compound as has been done in previous years. On this occasion the demountable building closest the second gate on the eastern fence was the specific location for the recorders. This building seems to be used as a workshop/storeroom and is air-conditioned. The sensors were

run out into the vacant area to the northeast of the demountable. Though this area is surrounded by a number of roads it is a reasonably quiet site. The compound is locked up at about 4.30 pm each day, opening again at 7.30 am. It is also locked during the weekends. The Airport Director has a key and should be willing to lend it for the duration of the occupation (provided we have a respectable looking geo).

Azimuth Mark: TDC tallest aerial on control tower

Observations: Station E was used as the primary station and F as the secondary. Absolutes, rounds of angles and extended F surveys were made on these. AM and PM sunshots were made on station E.

Station Upgrading: Both stations E and F were upgraded to a concrete triangle in which are set the plaque and footpads.

DERBY D,E
(05-07 May 1987) PJG

Contact: John Abbs, OIC Dept of Aviation
Ph. (091) 91 1122

Setting Up: Set up approximately 60m east of RFDS. hangar. Power from RFDS. hangar.

Azimuth mark: Radio 6DB Aerial.

Observations: 18 DIM and F on E, and 4 DIM and F on D. Rounds of angles and extended F surveys were made on stations D and E.

Station Upgrading: Both stations D and E have full triangular concreting with standard tripod settings. The historic station has been built over and is unoccupiable.

Note: In 1987 enquiries were being made by the local Shire to use the facilities at the newly finished RAAF base nearby. If this occurs the existing airfield south of the town, where the magnetic stations are located would be closed, and reverted to swamp.

EMU A,B,C
(30 March-01 April 1987) APH

Contact: The Assistant Secretary
Test Site Management Unit
Dept. of Primary Industries and Energy

and

Bob Bauer, Security Officer
Defence Support Centre, Woomera SA
(since it is necessary to travel through the Woomera
Prohibited Area enroute to Emu)

Setting Up: Truck was set up 100m south of station B with Elsec and EDA sensors to the west of the truck. Power was from the Petter generator.

Azimuth Mark: Station C.

Equipment: No Problems.

Observations: Station B was used as the main station, and stations A and C as secondary stations. Station A is too far away from B and C to be a useful primary station. Rounds of angles were not done due to the scarcity of permanent and re-identifiable reference marks. Sunshots were made on station B (AM and PM). Extended F surveys were completed at both B and C.

Station Upgrading: Stations B and C were upgraded to a concrete triangle which incorporates the plaque and footpads (standard dimensions). Station A has a plaque and footpads but no concrete (a cairn of rocks is erected over it).

ESPERANCE C,D
(14-17 July 1987) VFD

Contact: Shire Clerk, Esperance Shire Council
Airport Groundsman

Setting Up: Set up cab west of groundsman's house, using power from his garage. The heads were placed in the overgrown paddock southeast of his house.

Azimuth Mark: RH NDB tower

Equipment: All OK.

Observations: Absolutes were made on C (main) and D (secondary). Sunshots (AM and PM) completed on C, also extended F surveys and rounds of angles on C and D.

Station Upgrading: Both stations C and D were cemented to have concrete triangles surrounding the plaque and footpads.

ETADUNNA A,B,C
(23-25 March 1987) APH

Contact: The Station Manager
Via Marree PO or Pt. Augusta RFDS

Setting Up: About 100m north of station A there is a small rise with two water tanks and some trees on it. The cab was parked about 10m east of the tanks and was powered by the Honda generator. The EDA and PPM sensors were to the east and southeast of the cab. This site is only about 50m from the road (ie. the Birdsville Track).

Azimuth Mark: Base of the Lutheran Cross.

Equipment: The DIM was sometimes difficult to read in the breezy conditions. For four hours the Elsec PPM base station did not work. This followed a short time of running on inverter power, and was remedied by disconnecting and reconnecting the DATA lead at the front of the console and re-initiating the READ cycle.

Observations: Station B was used as the primary station, and differences measured at A and C. Station A, however, is contaminated by a star picket hammered flush with the ground. Sunshots (AM and PM)

were made on B, and extended F surveys on B and C. Rounds of angles were done on both B and C.

Station Upgrading: Both stations B and C had previously been concreted so that a cement triangle surrounded the plaque and footpads. Station A is contaminated by a star picket hammered flush with the ground.

EUCLA C,D
(1-3 Aug 1987) RH

Contact: Manager, Amber Motor Hotel
Ph 090-393468

Setting Up: Cab parked to the west of Cabin 16 of the motel, power being taken from the cabin. The EDA and PPM sensors were placed to the west again of the cab.

Azimuth Mark: Apex of terminal roof at airport

Equipment: All OK.

Observations: Absolutes were made on stations C and D, with C the main station. Rounds of angles and extended F surveys were completed on both stations. AM sunshots only were made on C.

Station Upgrading: Station C and D were concreted.

FLINDERS ISLAND B,C
(7-11 March 1988) APH

Contact: The Airport OIC Mr Arthur Withers
2IC Mr Dennis Gavin
Department of Aviation

Setting Up: The equipment was housed in the kitchen of the DOA main office building. The sensors were sited in the vacant block to the south of the office. This was a good location for the recorders, except for the presence of a fridge in the kitchen whose turning on and off caused spikes on the records.

Azimuth Mark: The base of the windsock to the southwest of the station.

Equipment: The recording equipment operated satisfactorily but the fluxgate element of the DIM needed attention. Internal wires needed reconnection - a delicate (and frustrating) soldering job.

Observations: Absolute observations were made on stations B and C, and on what seemed to be a duplicate station B. Rounds of angles and extended F surveys were done on B and C, sunshots (AM and PM) were made on B.

Station Upgrading: Stations B and C had recently been concreted so that the plaque and footpads were enclosed by a concrete triangle.

GERALDTON C,D
(3-6 June 1987) EPP

Contact: The Shire Clerk (Mr. R.G. Bone)
Shire of Greenough

Setting Up: The recording cab was placed about 20m north of the old Flight Service building, which is now almost derelict. It is used for the tinny club on Friday afternoons. Power is still available at the hut. The sensors were placed to the north of the cab.

Azimuth Mark: LH aerial atop communication tower.

Equipment: No problems.

Observations: Absolutes were done on stations C, D and B, using C as the primary station and D as the secondary. AM and PM sunshots were done on station C and PM sunshots only on B. Rounds of angles and extended F surveys were made on stations C and D.

Station Upgrading: Both station C and D were upgraded to include the plaque and footpads in a concrete triangle.

GOVE B,C
(11-13 Apr 1988) APH

Contact: Initial contact is with the Nabalco Site Manager, since Nabalco run the aerodrome. Mr Rennie Fritschy (089-875211) was the Site Manager in 1988. Subsequent contact is with the Met Bureau OIC, who was Mr Greg Brown (089-872477) in 1988.

Setting Up: The equipment was set up in the new Dynes (anemometer) hut which is about 100m west of the new Met office. The sensors were both located 30m to the south of the Dynes hut. This site proved a good one on this occasion but Greg Brown warned of water buffalo and dingoes which sometimes roam the area and which could conceivably disturb the sensors.

Azimuth Mark: TDC Met radar dome

Equipment: The equipment worked without major problems. On occasions during the occupation the Elsec 820 recording PPM gave erratic readings. This did not persist for more than an hour on any given occasion.

Observations: Absolute observations, rounds of angles and extended F surveys were made on stations B (primary) and C (secondary). AM and PM sunshots were also made on B.

Station Upgrading: No station upgrading was necessary during the 1988 occupation. Station B has plaque and footpads embedded in the bitumen of a disused road and station C had previously been upgraded to a concrete triangle incorporating the plaque and footpads. Station C is also marked by two vertical 3 inch pipes.

GRAFTON A,B
(12-14 Oct 1986) WDW

Contact: The Town Clerk (Mr J.A Gaudry 1986)
Grafton Shire
Ph. (066) 422 266

In 1986 the resident groundsman was Mr Harry Maker

Setting Up: Power was taken from the meter box next to the airport transformer. The cab was parked to the north of the meter box, with the EDA and PPM sensors to the north of the cab.

Azimuth Mark: Station B.

Equipment: All Equipment worked well.

Observations: Sunshots from station A, rounds of angles from stations A and B, station differences between A and B, extended PPM surveys from both stations A and B.

HALLS CREEK C,D,E
(02-04 May 1987) PJG

Contact: Stan Temlet
DOA Groundsman
Halls Creek
Ph. (091) 686 013

Setting Up: The cab was setup approximately 80m southwest of garage, to the west of the new windsock. Power was taken from the garage, running the lead under the culvert. A long extension lead (about 150m) is required to allow the equipment to be far enough away from traffic within the compound and on the taxiway.

Azimuth Mark: Anemometer.

Observations: 18 Sets DIM and F on station D, 4 sets DIM and F on station E. Rounds of angles stations and extended F surveys on D and E.

Station Upgrading: Stations D and E have been concreted to incorporate the plaque and footpads. A fence now runs almost over the top of station C. The historic station at old Halls Creek could not be found.

HOBART H
(11-15 March 1988) APH

Contact: The Airport Manager Mr Tom Griffiths
Federal Airports Corporation

Setting Up: The recording equipment was set up in the Anemometer Hut of the Bureau of Meteorology. The sensors were placed to the south of the building. This was a suitable site. Access to the site is via the perimeter road, to avoid crossing the runway. Initially the Safety Officer provides an escort to the site but soon one is allowed to find ones own way there.

Azimuth Mark: The support of the rotating light on the control tower.

Equipment: There were no problems.

Observations: Observations were only made on the newly installed station H since the two previous stations were unusable due to a big new perimeter fence running within 2m of them. A secondary station could not be installed at the time of the survey due to the lack of another plaque and footpads. On station H AM and PM sunshots were made, as were a round of angles and extended F survey.

Station Upgrading: Station H has a concrete triangle incorporating the plaque and footpads.

LAVERTON D,E
(22-25 June 1987) VFD

Contact:The Shire Clerk

Setting Up: Cab set up about 40m northeast of terminal building, with sensors further to the northeast.

Azimuth Mark: TDC LH NDB tower

Equipment: No equipment problems.

Observations: Absolute observations were made using D as the main station and E as the secondary station. AM and PM sunshots were made on D, extended F surveys and rounds of angles were made on D and E.

Station Upgrading: Station E was concreted to incorporate the plaque and footpads in a single triangle.

LORD HOWE ISLAND C,D,E
(24-27 March 1988) APH

Contact: Mr Jim Lacey, the manager/executive officer of the Lord Howe Island Board, was contacted regarding approval to work on the airport. The equipment was housed in the offices of the Bureau of Meteorology, and permission for this was obtained from Mr Ian Hutton, the Met. OIC.

Setting Up: The recording equipment was set up in the workshop at the Met. offices. These were situated about 5 km from the airport, on the western side of the island. The leads were run through an open window and the sensors placed just to the north of the building, inside the fence. This site has the sensors reasonably close to the building and observers cars which park there, however on the other side of the fence is a paddock in which cattle graze. It is recommended that sensors not be placed there. A new complex for the Met Bureau was being at the airport at the time of this survey, and should be finished before the next visit to the island. This will make an ideal site for the recording equipment.

Azimuth Mark: Windsock stump on Rabbit Island (C)
TDC anemometer mast (D and E)

Equipment: There were no problems with the equipment during this occupation.

Observations: Absolutes were made on the three stations using D as the primary, E as the secondary, with C the historic station. AM and PM sunshots were made on D, rounds of angles and extended F surveys on D and E.

Station Upgrading: Stations C, D and E had previously been upgraded so that a concrete triangle enclosed the plaque and footpads.

MACKAY C,B
(29 Sept-01 Oct 1986) WDW

Contact : The Town Clerk
Ph. (079) 572 741

Setting Up: Power was taken from the anemometer hut. The cab was parked north of the hut, the EDA and PPM sensors were sited in a line to the west of the cab.

Azimuth Mark: Centre of light support shaft, top of control tower.

Equipment: All equipment worked well.

Observations: Sunshots from station C, rounds of angles from stations C and B, station difference between C and B, Extended PPM surveys from both stations C and B.

Station Upgrading: Stations C and B were upgraded to each include a triangular concrete pad, flush with the ground, enclosed the existing footpads and station marker.

MALLACOOTA A,B
(1-3 Sep 1987) RH

Contact: Airport OIC

Setting Up: Truck set up 50m north of the work shed with the EDA head further to the north in the bush and the PPM head northeast.

Azimuth Mark: West windsock

Equipment: Difficulties with clock timing for no apparent reason. It continually picked up time.

Observations: Absolutes were only made on A, as was a round of angles. Extended F surveys were made on A and B.

Station Upgrading: No station upgrading was completed.

MARYBOROUGH C,D
(07-09 Oct 1986) WDW

Contacts: The City Engineer
Ph. (071) 212 431

Mr Bert Wex, Groundsman

Setting Up: Power was taken from the airport workshop. The cab was parked over the road, to the south of the workshop. The EDA and PPM sensors were sited in a line to the east of the cab.

Azimuth Mark: Top centre shaft supporting airport control light.

Equipment: The equipment worked well. Heavy rain shorted the terminals on the F variometer sensor, producing 4.5 hours of spurious data.

Observations: Sunshots from station C, rounds of angles from stations C and D, station difference between C and D, extended PPM survey from both stations C and D.

Station Upgrading: Stations C and D were upgraded to each include a triangular concrete pad, flush with the ground, enclosing the existing footpads and station marker.

MEEKATHARRA B,C
(28 March-2 June 1987) EPP

Contact: OIC Airport, Department of Aviation

Setting Up: The recording equipment was set up about 50m southwest of the Seismic Hut at the airport. Power was taken from the hut. The sensors for the fluxgate and PPM were placed to the south of the recording cab.

Azimuth Mark: NDB aerial tower

Equipment: Difficult to find quiet site for the PPM sensor due to the high degree of ground magnetization. Even at the optimum the tuning of the instrument was reduced from 9 to 6. All other equipment functioned without problems.

Observations: Station B used as primary station and C as secondary. AM and PM sunshots were made on B, extended F surveys and rounds of angles on both B and C.

Station Upgrading: Concrete triangles were laid at both stations, to contain the plaque and footpads.

MILDURA D,E
(18-21 March 1987) APH

Contact: Peter Drummy, Engineer
Mildura Shire Council

Les Iansen, Groundsman

Setting Up: The cab was parked 25m to the east of the anemometer hut at the airport. The EDA and Elsec sensors were both placed eastward of the cab. Power was taken from anemometer hut. This was a good site, being sufficiently distant from air traffic on the taxiways, and the Met people who sometimes drove to the nearby Met compound.

Azimuth Mark: TDC Windsock to the west.

Equipment: All worked well, except for the Elsec 770 (S/N 193) absolute PPM which would not give useful readings. It was replaced with a Geometrics G816 (S/N 1024) PPM.

Observations: Absolutes were done using D as the main station, with a station difference measured to E. Rounds of angles were recorded at D and E. Sunshots (AM only) were made on D. Extended F surveys were done for both stations. Two sets of absolutes were done on the historical station at an oval in town, though the exact location is imprecise.

Station Upgrading: Both station D and E were upgraded so that each have a BMR plaque and 3 footpads set in a concrete triangle flush with the ground.

MOREE F,G
(27-30 June 1986) APH

Contact: Permission to access the stations on the airport was obtained from Mr Bill Howard, the Deputy Shire Engineer. The caretaker at the airport was Mr Bob Hadfield.

Setting Up: The cab was parked at the edge of a ploughed field, about 50 m west of a power box at the edge of the apron. Power was taken from this box. The sensors were placed to the south of the cab in the cultivated area. This proved to be a suitable site.

Azimuth Mark: Beacon on silo to north (F and G)

Equipment: There were no difficulties with the equipment.

Observations: Station F was used as the primary station and G the secondary during the occupation. The site of an earlier station, D, could not be located. Absolutes and rounds of angles were made on both stations. No sunshots were possible due to the overcast conditions.

Station Upgrading: Both stations had previously been upgraded to a concrete triangle incorporating the plaque and footpads. Both of the slabs, however, were slightly unstable underfoot.

MT ISA A,B
(12-14 Sept 1986) APH,WDW

Contacts: Since the Dept of Aviation controls the airport, liaison was with the DOA Airport Director. His office is in the building near the control tower. An introductory letter was also sent to the DOA regional Director of Airports in Brisbane.

Setting Up: The cab was setup to the north of the control tower, about 40m east of the Anemometer hut. The EDA and ELSEC sensors were placed east of the cab.

Azimuth Mark: Station B.

Observations: Station A was occupied as the main station. Two pages of AM and PM sunshots were taken.

Equipment: A new Elsec 820 F base station was used to replace the Elsec 595 which was inoperative.

MT VERNON A,B
(23-27 May 1987) EPP

Contact: The Manager

Setting Up: The cab was set up about 100 m west of station A, just beside the track. Power was from the Petter generator.

Azimuth Mark: Station B

Equipment: Initial difficulties experienced nulling the Y channel of the EDA were inexplicably resolved. Due to a break in contact at the head the Doric malfunctioned briefly.

Observations: Together with absolutes on both stations, rounds of angles and extended F surveys were completed. Sunshots (AM and PM) were made on A.

Station Upgrading: Stations A and B were upgraded to incorporate the plaque and footpads in concrete.

NEWCASTLE A,B
(10-14 APRIL 1989) APH,SDD,SS

Contact: The Department of Defence contact in Canberra was the Visits Coordinator, Airforce, Mr John Siviour, (ph 655484, fax 655995) Russell Offices. He arranged the necessary clearances for the visit, and an on-site contact, Flt Lt Peter Young, an RAAF Air Traffic Controller.

Flt Lt Young met the survey party at the gate at Williamstown. He obtained security passes for the team, briefed us on movements around the base and escorted us to the station site. He had previously collected from the Meteorology office the key to the anemometer hut which houses the recorders.

Setting Up: As in previous visits the recording equipment was set up in the Bureau of Meteorology anemometer hut, located in the vicinity of the fire station/air traffic control complex. The sensors were placed to the east (ppm) and south (EDA) of the hut. The hut is an ideal location being relatively quiet, convenient and close to the magnetic stations.

Azimuth mark: Top RHS of watertower to the east.

Equipment: The equipment operated well, with the exception of the Elsec 820 ppm. This instrument, after much trouble-shooting, was returned to Canberra during the occupation. As a result no F variations could be recorded.

Observations: Absolute observations and rounds of angles were made on both stations A and B, using A as the primary station. Sunshots (PM only) were completed on A.

NORFOLK ISLAND B,C
(20-22 March 1988) APH

Contact: Official Secretary/Deputy Administrator, Norfolk Island
(Bill Campbell 1988)
via Director, Norfolk Island Branch, Dept ASETT (Jack
Nicholson 1988)

on Norfolk Is

Airport OIC (DOA) (Paul Le Grand 1988)
Met. Bureau OIC (Noel Stair 1988)

Setting Up: The equipment was set up in a storeroom towards the back of the Met bureau complex. The sensors were run through a window and placed in a vacant area to the west of the building. This proved a good site.

Azimuth Mark: TDC Mt Pitt DME tower.

Equipment: The equipment operated without problems throughout the occupation.

Observations: Station B was used as the primary station for making absolutes, and a station difference was measured at station C. Rounds of angles and extended F surveys were made on B and C, and AM and PM sunshots on B.

Station Upgrading: Station B had previously been set in a concrete triangle incorporating the plaque and footpads. Station C is the Airport Reference Point and does not have footpads or a concrete triangle.

OODNADATTA B,C
(03-05 April 1987) APH

Contact: Dept of Aviation, OIC Airport

The Dept. is considering whether to close the airport or turn it over to a local authority in the near future.

Setting Up: The recording cab was parked 50m west of the garage near the power house and terminal. There is a power point on the outside wall of the garage near the louvred window. The Elsec and EDA sensors were placed to the northwest and west of the cab.

Azimuth Mark: TDC of windsock by terminal.

Equipment: All worked well.

Observations: Station B was the primary station, and C the secondary. AM and PM sunshots were completed on B, as were rounds of angles and extended F surveys on B and C.

Station Upgrading: Concreting of stations B and C was completed so that each now have a triangle of concrete surrounding the plaque and footpads.

PARAFIELD A,B
(13-17 Aug 1987) RH

Contact: Airport Director

Setting Up: The cab was parked 50m west of the main windsock with power taken from a small shed to the southwest of the windsock. The PPM head was placed to the northwest and the EDA to the west of the truck.

Azimuth Mark: TDC chimney stack to north

Equipment: The fluxgate element of the DIM needed repair when one of the internal wires broke. A simple matter of soldering.

Observations: Station A was used as the main station and a station difference was measured at B. Extended F surveys were completed on A and B, and a round of angles on A. No sunshots were made.

Station Upgrading: Both stations A and B were upgraded by concreting a triangle to encompass the plaque and footpads.

PORT HEDLAND C,D,E
(09-11 May 1987) PJG

Contact: Airport owned by shire, Ph.(091) 722 488
DOA Leon Hodge A/g OIC, Ph.(091) 720 666
Met Bureau , Ph.(091) 721 080

Setting Up: Setup cab 10m north of Met office with sensors a further 20-30m north. Power from Met office.

Azimuth mark: Aerial (Met office)

Observations: 16 DIM and F on D, 4 DIM and F on E, 2 DIM and F on C (Golfcourse), rounds of angles stations D and E, extended F survey stations D and E, two pages AM sunshots station D.

Station Upgrading: Stations D and E have full concreting with standard tripod setting. At the golfcourse station C is intact and station D has only a plaque.

PORTLAND A,C,D,E
(22-25 Aug 1987) RH

Contact: Municipal Engineer

Setting Up: The cab was set up at the new (Cashmore) aerodrome, taking power from the pumphouse.

Azimuth Mark: Cape Bridgewater trig station

Equipment: The D and Z traces of the EDA shifted mysteriously on the W+W during the occupation. They returned, equally mysteriously, to their places later. No technical reason for this could be found.

Observations: Initially station C was chosen as the main station. This however is behind a mound of dirt at the business end of a rifle

range and is not an intrinsically safe place on weekends. During the occupation station D was replaced as the main station. Station differences were measured at E and A. Extended F surveys were made at D and E, and a round of angles on E. No sunshots were made due to inclement weather.

Station Upgrading: Stations D and E were upgraded to a concrete triangle incorporating the station marker and footpads. Station A is probably no longer occupiable since the area was undergoing excavation at the time of the occupation. Station C is reoccupiable though not ideal as a primary station.

PORT LINCOLN C,D
(10-12 Aug 1987) RH

Contact: Airport OIC

Setting Up: The cab was set up 50m south of the Aero Club, taking power from the clubhouse. The EDA sensor was placed to the south-southeast and the PPM sensor to the southeast.

Azimuth Mark: TDC nearest NDB tower

Equipment: All OK.

Observations: The primary station was C with a station difference measured at D. Rounds of angles were completed on C and D, as were extended F surveys. AM only sunshots were completed at C.

Station Upgrading: Both stations C and D have been concreted so that a cement triangle encompasses the plaque and footpads.

QUILPIE A,B
(25-27 Aug 1986) APH

Contacts: The Shire Engineer
Quilpie Shire Council

Airport Reporting Officer, Mr Bert Moore (1986)

Setting Up: Power to run the equipment is available from the terminal building. The cab was parked 50m south of the terminal building in low scrub. The EDA and Elsec sensors were placed to the west of the cab. This was a good site. However, the airport has a pilot activated lighting system, which approaching planes can activate on a certain radio frequency. When activation occurred, the area around the airport blacked out for about 1 minute. This caused the survey clock to reset and interrupted the recording briefly, but nothing more drastic.

Azimuth Mark: Base of light structure on windsock.

Observations: Station A was occupied as the main station. Two pages of AM and PM sunshots were made.

Equipment: The Elsec 595 commenced operation after some tinkering with the sensor, particularly the cable join. Replacement PPM's from Canberra arrived during the occupation. These were an Elsec 595

console as a new F base station, and a Geometrics G816 and Austral PPM as replacements for the Elsec 770 absolute PPM. After a comparison the Elsec 770 was returned to Canberra.

ROMA D,E
(03-05 Oct 1986) WDW

Contacts: The Town Clerk (Mr P.J McKenzie 1986)
Ph. (074) 221 266

Resident groundsman, Mr Elwyn Schefe

Setting Up: Power was taken from the terminal building. The cab was parked behind the small Caltex compound, with the EDA sensor to the southwest and the PPM sensor to the east.

Equipment: All equipment worked well.

Observations: Sunshots from station D, rounds of angles from stations D and E, station difference between D and E, extended F surveys from both stations D and E.

SOUTHERN CROSS B,C
(17-21 June 1987) VFD

Contact: The Shire Clerk (Ray Mangini 1987)
and Frank Fairless at the Gun Club

Setting Up: The recording cab was set up in the grounds of the Gun Club, about .5 km from the airport. It was parked about 40m south of the clubhouse and power was taken from a power pole by the house. The sensors were placed to the south again of the cab.

Azimuth Mark: TDC RH NDB

Equipment: No problems.

Observations: Absolutes were made on stations B and C, using B as the primary station. Rounds of angles and extended F surveys were completed on both stations. No sunshots were possible due to the overcast and rainy conditions prevailing at the time.

Station Upgrading: Both of the stations were upgraded to concrete triangles incorporating the plaque and footpads.

TELFER A,B
(12-15 May 1987) PJG

Contact: Resident Manager (Terry Moylan 1987)
Mine Site
Ph.(091) 761 000

Setting Up: Cab parked east of taxiway. Power was taken from the power box near the light pole used as a reference mark. A long power lead (about 150m) is needed at this station to move sensors away from interference.

Observations: 21 DIM and F on A, 4 DIM and F on B, rounds of angles on stations A and B, extended F survey stations A and B, sunshots on station A (two pages AM and PM).

Station Upgrading: Stations A and B have full concreting with standard tripod setting. The concrete used for A was not a good batch and may need to be replaced during the next occupation. The original, wider spaced footpads were left in-situ when the smaller, standard size ones were put in.

TENNANT CREEK C,D
(20-23 April 1987) APH

Contact: Dept of Aviation, Airport Director

Setting Up: The cab was parked 15m west of the Met Bureau's Anemometer Hut, which has a 240v power outlet. The sensors were placed to the west of the cab. This proved to be an excellent site.

Azimuth Mark: Station D.

Equipment: The equipment operated well, however, there were a number of power failures during the occupation. The inverters were being repaired at this station, hence there was no back-up power. This caused interruptions to recording when the power failed.

Observations: Absolutes were completed using C as the main station and D as the secondary station. AM sunshots only were done on C, rounds of angles were made at C and D, as were extended F surveys. An attempt was made to find the historical station but it was unlocatable, because the description given is inadequate.

Station Upgrading: The two stations were upgraded to a concrete triangle incorporating the plaque and footpads.

THE GRANITES C,D
(15-17 April 1987) APH

Contacts: Site Officer
Central Land Council
Alice Springs
and
The Exploration Manager
North Flinders Mines
The Granites NT

Setting Up: The cab was parked about 60m south of station C, on the opposite side of the airstrip, and the sensors sited south of the cab. Power was provided by the Petter generator. It should be noted that in 1987 there were two airstrips at the Granites. The newer one, made by North Flinders Mines, is used regularly. The second, older one on the opposite side of the highway (ie. the Tanami Track) is u/s, and is the site of the magnetic stations.

Azimuth Mark: Trig Point on rocky outcrop to the south (fenced sacred site)

Equipment: No problems.

Observations: Absolutes were made on station C, and a difference measured to D. Rounds of angles and extended F surveys were completed on C and D. Sunshots (AM and PM) were made on C.

Station Upgrading: Stations C and D were concreted into triangles incorporating plaque and footpads to standard size.

TIBOOBURRA A
(16-18 Aug 1986) APH

Contacts: There is one main airport to the west of the township, as well as smaller strips at other locations. Permission to access our station at the main strip was obtained from the National Parks and Wildlife Service in Tibooburra. Michael Sharp, a ranger, was the contact.

Setting Up: There is no power at the airport so the Honda was used, although the NPAWS had a 2.8 KVA generator which they were willing to lend us. The cab was placed to the northeast of the terminal building in some scrub. The instrument sensors were sited to the north of the cab, and the generator to the south.

Azimuth Mark: Top centre of RH NDB tower.

Observations: Station A was occupied as the main station. There is no secondary station at Tibooburra. Two pages of AM and PM sunshots were made.

Equipment: The W + W continued to record thick H, D and Z traces from the EDA, though variations were faithfully recorded. The Elsec 595 gave only spurious readings and was switched off during the occupation. The Doric didn't operate on the first day but came on air after some tinkering.

TOOLANGI SM
(27-29 Aug 1987) RH

Contact: Ron Biggs 059-629233

Setting Up: The cab was parked to the southwest of the absolute hut, on the edge of the scrub. Power was taken from the hut. The EDA sensor was placed to the northeast of the truck in the scrub and the PPM sensor to the north-northeast at the edge of the scrub.

Azimuth Mark: East mark (EMK)

Equipment: Erratic readings were observed on the DIM and absolute PPM, perhaps due to electrical interference. Similar erratic fields were recorded on the F trace, though at different times.

Observations: Absolutes were made on pier SM only. Rounds of angles, sunshots and extended F surveys were not made.

WARBURTON A,B
(7-9 July 1987) VFD

Contact: Community Office
Warburton Community Inc

Setting Up: The cab was set up about 30 m north of the power pole near the fuel enclosure at the airport. Power was available at the pole. The sensors were placed to the north of the cab.

Azimuth Mark: TDC RH NDB tower.

Observations: Station A was used as the main station when doing absolutes, and B the secondary station. Extended F surveys and rounds of angles were made on both stations. AM and PM sunshots were made on A.

Equipment: Small problem with the Doric not lighting up.

Station Upgrading: Stations A and B were upgraded to a concrete triangle incorporating the plaque and footpads.

WARRACKNABEAL A,C,D
(18-20 Aug 1987) RH

Contact: The Shire Clerk

Setting Up: The truck was parked 50m north of the hanger, and southeast of the gun club. The EDA sensor was north of the truck and the PPM sensor northeast. Power was available at a power box outside the hanger.

Azimuth Mark: Apex of grain silo

Equipment: All OK.

Observations: Absolutes made at C (main) and D (secondary). Sunshots (AM) on C, extended F surveys and rounds of angles on C and D. Station A at the racecourse could not be located however two absolute observations were made in the close vicinity and the spot marked with an aluminium peg. Sunshots will need to be done here at the next opportunity (mark: TDC gatepost on fence to west).

Station Upgrading: Both stations C and D upgraded to a concrete triangle enclosing the station marker and footpads.

WEIPA B,C
(05-07 Apr 1988) APH

Contact: The airport is owned by Comalco, which runs everything around Weipa. Hence the initial contact is the Comalco Town Manager. He will then inform the DOA OIC of the airport, and subsequent correspondence will then be through him. Des Kennedy was DOA OIC in 1988.

Setting Up: As in previous years the powerhouse at the airport was used to house the recorders. They were set up in the southwest corner of the building with the EDA sensor about 30 m to the east and the Elsec sensor to the west about 30 m. The site for the EDA head was noisy with the activity that went on round the nearby freight shed. A better site for the EDA head would have been to the east of the powerhouse with the Elsec head.

Azimuth Mark: TDC Met radar dome.

Equipment: The equipment worked satisfactorily during the occupation except for the Elsec recording PPM. About 3/4 of the way through the occupation it ceased recording the field sensibly and began to give random field values.

Observations: Absolutes, rounds of angles and extended F surveys were made on stations B and C, using B as the main station. AM and PM sunshots were made on station B.

Station Upgrading: Both stations B and C had previously been upgraded so that a concrete triangle enclosed the plaque and footpads.

WILCANNIA D,E
(12-14 Aug 1986) APH

Contacts: The Airport is administered by the Council of the Shire of Central Darling. The Shire Engineer, Ken Courtis, was the contact. He provided a key to the gate at the airstrip and located the two stations.

Setting Up: The cab was setup about 150m to the southwest of the airport terminal, in the bushes. The sensors for the EDA and Elsec were placed to the west of the cab. There was no power at the airport so the Honda generator was used, without problems.

Azimuth Mark: Left edge of ladies toilet block.

Observations: Station D was occupied as the main station, and E as the secondary. No old stations were occupied despite thorough searching at the airport. Only two pages of PM sunshots were made, due to the overcast and rainy conditions.

Equipment: The Elsec 595 did not operate properly and could not be made to work, so no F variations were recorded. The absolute PPM also had an intermittent fault but useful observations were still able to be obtained. Arrangements were made for replacements to be sent to Tibooburra. Following a rain storm the EDA traces thickened somewhat.

WINTON A,B
(02-04 Sept 1986) APH

Contact: The Shire Clerk
Winton Shire Council

Airport Reporting Officer

Setting Up: The equipment was sited to the southwest of the terminal near a small water reservoir. A power box on the southern end of the terminal provided 240V. This box is locked, the reporting officer has a key.

Azimuth Mark: Top centre of RH NDB tower to the south.

Observations: Station B at the airport was occupied as the main station. A station difference was measured for station A at the racecourse. Two pages of AM and PM sunshots were made on B.

Equipment: The variometers and absolute equipment operated satisfactorily during the occupation.

Station Upgrading: Station B was concreted in a triangular shape incorporating the plaque and footpads. The ground is very loose at this station and does not support a concrete pad very well. Station A had previously been concreted in a triangle but has been cracked, perhaps after being run over by a heavy vehicle.

WOOMERA A,B
(26-29 March 1987) APH

Contact: Bob Bauer, Security Officer
Defence Support Centre
Woomera SA

Setting Up: The cab was placed about 20m ENE of the Receiver Hut (erroneously called the Transmitter Hut in our description) at G-range. Power is available from the hut. The sensors were put to the north of the cab.

Azimuth Mark: TDC of airport watertank.

Equipment: The paper jammed in the W + W overnight, due to carelessness, and the EDA sensor seemed to tilt a little on its spike during the occupation.

Observations: Station A at G-range was occupied as the primary station, and B at the airport the secondary. Both stations had rounds of angles, and extended F surveys taken. Sunshots were made on A (AM and PM).

Station Upgrading: Station A and B were both upgraded to have a concrete triangle incorporating plaque and footpads to standard size.

WYNDHAM C,D
(29 April-01 May 1987) PJG,APH

Contact: The Caretaker (Terry Gordon 1987)
Dept of Aviation

Setting Up: The recording cab was set up in the same spot as in 1983, ie. about 100m east of the DOA compound, just inside the airport boundary fence, to the north. The sensors were placed through the fence, to the north. Power was taken from a power point located on a pole about 30m east of the cab. This was a quiet site despite the closeness of the road into the terminal.

Azimuth Mark: TDC Windsock.

Equipment: All equipment OK.

Observations: Absolute observations were made using C as the main station and D as the secondary station. AM sunshots only were made on C. Rounds of angles and extended F surveys were completed on C and D.

Station Upgrading: Both stations C and D were concreted so that a concrete triangle now incorporates the plaque and footpads to the specified dimensions as per instructions.

ZANTHUS B,C
(11-13 July 1987) VFD

Contact: Australian National Railways Commission District Engineer (Parkeston) (Mr P.R. Staunton)

Setting Up: Power for the recorders was available from a hut 20m east of the guest house. The cab was set up 30m southeast of this hut with the sensors 40m southeast of the cab.

Azimuth Mark: Eastmost insulator on telegraph pole (NB **not** ASO mark)

Equipment: Only minor problem of Doric not functioning for first 4 hours.

Observations: Station B was the main station and C the secondary station. AM and PM sunshots were made on B, rounds of angles and extended F surveys on B and C.

Station Upgrading: Both stations B and C were upgraded to a concrete triangle incorporating the plaque and footpads.

APPENDIX 6 Guidelines for Party Leaders

Party Leader Instructions for 1989 survey

Each party leader should read and take note of the requirements set out in the attached Guidelines to party leaders, in addition please take note of the following points:

Each Party Leader:

1. Is responsible for the logistics of their leg - eg diesel dumps etc, station descriptions are with the truck.
2. Is responsible for advising the cooperating authorities at the first-order station of firm dates of arrival of survey. Initial approaches have been made to all stations by Geomag BMR - copy of form letters sent are attached.
3. Liaise with Outpost Radio to advise area and time of travel and to obtain the procedures for and the time table of radio traffic. The survey will have 2 Codan transceivers (call sign 8NTZ).
4. Petty Cash - to be advanced from Canberra separately for each leg and acquitted on return to base. Allow 3 weeks for processing and mailing of cheque.
5. Attendance Records/ Claim for Traveling Allowance (Form 12A). Each to start with the first day of a pay period and to contain only 1 pay period of 14 days, ie. if you start half way through a pay use the last half of the forms. Check instructions in the field manual for filling out with regard to AILOT, Sunday and Holiday Duty. NOTE. The fieldhand is not allowed to work on Sundays or Public Holidays. The party leader must ensure that these forms are correctly filled out before sending to BMR for checking and lodging. The fieldhand can work 15 hours overtime per week (on past experience it would be a very unusual week where this was not the case).
6. Fortnightly returns - see attached instructions. It is important that these are returned regularly every fortnight, especially the attendance record, TA claim and Field Purchase Orders.
7. Work at Stations.
 - normal reoccupation
 - upgrade the main and the auxiliary station to triangular concrete slabs (to include the tripod force-centering pads). This could be completed by the fieldhand, leaving the P/L free to continue with the reoccupation. Note the requirement in the attached instructions for station differences before and after such work (through baselines).
 - local F survey - see attached instructions. This could be completed by the fieldhand under party leader guidance.
 - reoccupation of old stations - it is important to connect the observations made at the auxiliary and past stations so that a continuous time series of observations for secular variation can be derived. The fieldhand could locate these stations while the P/L is doing absolutes etc. to save the P/L time looking for them.
 - report the status of stations i.e. occupiable, unoccupiable (and why), suspected contamination (what sort - ie fences, underground pipes, powerlines, buildings), not found - lack of reference marks, presence of concrete tripod locators etc.

Note: It is an inefficient use of the fieldhand's time for him to be

penciling or just hanging around when he could be doing the above jobs.

Andrew J McEwin
Manager Geomagnetism
9 March 1987

First-order magnetic survey (1990.0)

Project Supervisor	A.J. McEwin	(062) 49 93 92
Survey Contact	A.P. Hitchman	(062) 49 93 12

Guidelines for party leaders

1. Objective

The aim of the survey is to obtain values of the Earth's main field at each of the BMR first-order stations. By definition, these values are needed to an accuracy overall of better than 5 nT (0.5'), to provide reliable estimates of the secular change in the absence of magnetic disturbance. The stations are permanently marked so that reoccupation is possible over many tens of years. Some first-order survey sites have been in use for more than 80 years. Station markers consist of a brass plaque in a concrete plug flush with the ground. A station consists of two such markers separated by at least 100m. If one is destroyed or contaminated magnetically (eg construction of buildings, placement of fences nearby) the other enables continuity of observations and secular variation.

The majority of stations in Australia are situated on airfields, just outside the delimited area of the runway.

The attached copy of the survey schedule includes the stations which are to be occupied, subject to funds and satisfactory progress.

2. Basic procedure

Absolute measurements of the magnetic field are made at regular intervals over a 3-4 day period at first-order stations. During this time, continuous recordings of the field are made on a magnetograph installed in the vicinity of the first-order station. The main-field level is assumed to be approximated by the values at 00-03 hours local time on days free from external transient variations. Recordings over at least two successive nights provide this level; the records are calibrated to observatory standards at the beginning, during and at the end of the recording interval - of particular importance are the first and last calibrations of the day that bracket the night time recording. The records are reduced subsequently at headquarters to a station value.

3. Requirements for a first-order station

- Freedom from artificial magnetic fields(eg power lines, steel fences, metal objects, vehicles etc).
- Permanence. Stations need to be occupied at intervals of 3 to 5 years for many decades. They must therefore be located where

there is unlikely to be any changes in the environment that will cause artificial magnetic fields (eg construction of roads, car parks, buildings).

- Situated in a region of low magnetic field gradients (eg away from volcanic rocks). High local gradients make exact reoccupations difficult and can render PPM's inoperable. For the latter reason power lines need to be at least 50m away. Section 3 outlines how to test a site for magnetic suitability.
- Ready access by day and night, and at weekends for absolute measurements.
- Secondary (backup) station.
- Permanent reference marks of known true bearing, preferably well separated in azimuth.

4. Requirements for housing the magnetograph

- Shelter and security of operation for up to 4 days, mostly unattended. The equipment takes up approximately 2 square metres of floor space.
- Freedom from varying artificial magnetic fields during the occupation (eg vehicles). Artificial fields that remain constant for the duration of the visit are tolerable. With the instrument cab and the generator it would be a rare case where adequate isolation is not possible.
- Access to 240v 50Hz electric power (or portable generator).
- Ready access by day, night and weekend.
- Proximity to the first-order station, preferably not more than 500 metres away.

5. Methods and standards

Methods and standards of observations, recording, logging of operations, marking of records, and the like, are those applying at magnetic observatories. Lower standards are not acceptable. Observations are to be vetted as they are made, to pick up obvious errors and inconsistencies. **Preliminary calculations of observations should be made before a station is closed**, to assess the performance of the magnetograph and the adequacy of the observations. In particular, it must be noted that the QHM will give erroneous results if exposed to the sun, so the observing shelter must be used always. If there is any doubt about the accuracy of the azimuth, ensure that sufficient sun observations are made (see also 9 below). A station log is to be kept in a duplicate (carbon) book. This is to include the station occupation report. The top sheet is to be returned with the other station information to BMR fortnightly (Section 1).

6. Observing schedule

A typical schedule for the occupation of a station is:

- Day 1 am: set up recorder, magnetometers, theodolite, and make sunshots, round of angles of reference marks / local survey
pm: sunshots and set(s) of absolutes, obtain 1st nights record
- Day 2 am: set(s) of absolutes and sunshots
station differences / local survey?
pm: sunshots and set(s) of absolutes, obtain 2nd nights record

Day 3 am: set(s) of absolutes; pack up equipment
pm: drive towards next station (continue occupation if
necessary - see 5)

A set of absolutes is either FDHHDF or for the DIM 2 sets of FDIF (each DIM sheet gives 1 observation of D and I and 2 of F). Adequate sets of absolutes should be completed first thing in the morning and last thing at night to provide control either side of the nighttime quiet level. Note that with the upgrade of stations by ASO and Natmap and the provision of definite reference marks and azimuths the burden of sunshots has been reduced, and you will no longer be delayed by overcast weather and the inability to do sunshots. You are still required to complete rounds of angles of the reference marks and to do sunshots to check the azimuths.

Section 2 includes supplementary notes on procedures at stations.

7. Variations of survey schedule

The survey schedule was designed to take account of average climatic conditions, and may be varied locally to meet adverse circumstances (see 6 about advising changes).

It may be necessary to omit or prolong a station occupation because of magnetic storms or other unforeseen contingencies (e.g. major delays through equipment or vehicle breakdowns). Some of the factors to be considered in deciding how to proceed are:

- The survey schedule - needs to be adhered to fairly closely.
- Some stations have more weight than others, and it may be better to stay longer at the present station and omit a station later in the survey.
- The curvature of the isoporic lines in the region and the history of reoccupations. Where the curvature is negligible a station may be expendable; if its history is poor it may be non-expendable.
- The epoch of the magnetic storm. After day 1 of storm-time it may be adequate to proceed normally and to use magnetic observatory data to adjust the results. If the storm begins during day 1 it may be necessary to prolong the occupation.

All decisions to omit or prolong an occupation should be taken in consultation with HQ wherever practicable (most places).

8. Operations and administration

8.1 The survey is under the general control of the Project Supervisor.

- Routine operations and party support will be attended to by the Survey Contact.

8.2 The Party Leader is responsible for:

- maintaining standards and quality control
- on-the-job party management and progress of the survey
- advising authorities at the next station(s) of arrival dates
- making progress reports to HQ
- station occupation reports (Section 1).

Questions about deleting or prolonging occupations will be decided in consultation with the Survey Contact and Supervisor.

8.3 Reports are to be made as follows:

- Immediately: changes of route, station schedule, next effective mailing address, and undue delays. Telex or telephone contacts for each station are to be advised as soon as known.
- Weekly: by telegram, or reverse-charge phone call (through the switchboard 49 9111) - to be made late Wednesday or early Thursday. (NOTE the switchboard may not be staffed at lunchtime (and after 1700 EST). If the switch does not answer call direct).
- Fortnightly: written progress report, occupation report, observation forms, recordings and log sheets - all by registered mail (see Section 1).
- At end of survey: an operational report on the survey leg for inclusion in the comprehensive BMR record on the survey.

9. Establishment of new stations

Nearly all locations now have a main and a supplementary station. Those without a supplementary station should have one installed.

The recommended first-order station is a station marker, forced centred and flush in a triangular concrete slab that includes the tripod foot locators and is level with the ground surface. This provides good permanence, is easy to find and is difficult to damage with airport trucks and mowers etc. If time or materials are insufficient then the next acceptable solution is a station marker in a concrete plug and brass pipe foot locators in concrete plugs (the station marker must still be forced centred). The least acceptable situation is the marker in a concrete plug by itself. These have now been mostly upgraded. Occupation of this last station is assisted by establishing three level brass pipes as foot locators to force centre the marker before any observations are commenced. Force centering of the station marker is achieved by use of the Tribrach.

If there has been no pollution of the site (eg nearby construction), put the replacement station as close as the station description allows to its previous exact position. Otherwise select, in consultation with airport authorities, a new site which meets the specified requirements. The same applies to secondary stations, but consideration should be given to PSM's for this purpose (secondary stations need not be entirely non-magnetic because their values are adjusted to the main station). Section 3 outlines how to test a site for magnetic suitability.

The accompanying figure shows the layout of a station marker and its three tripod pads, with approximate distances between key points. Spacings are not critical but should not be varied too much as they suit the (fixed) Askania tripod.

The requirements which must be met are:

- Pad A must be magnetic north (~5deg) of the station marker
- S must be exactly at the forced centre of A, B and C
- The tops of the copper tube tripod locators in A, B, C must be in a horizontal plane (so the head of the magnetometer tripod will be near level).

The secondary station must be not less than 150m, and desirably not more than about 200m from the main station. There should be a clear line of sight between the two stations (it is intended they serve as reference marks for each other).

Equipment needed	Askania magnetometer tripod
	BMR station markers
	Tribrach
	Tape measure and spirit level
	Prismatic compass

New or replacement stations are to be established only as a last resort. The prime purpose of the survey is to obtain accurate secular change values and exact reoccupations of previous stations are paramount. Every effort is to be made to occupy the position of a previous station, by means of the station description if the marker has been lost or moved. The only reasons for starting a new station should be contamination by artificial fields or physical inability to reoccupy it (e.g. it's built out).

10. Station differences

A secondary station has been established at most places since the 1985.0 survey (see also 11), and a first-order difference is to be obtained between the two. At some places the difference between current and previous stations is not known. Attempts should be made to get accurate station differences between current and historical stations. Sunshots will be necessary to determine or check azimuths of reference marks, unless the Wild compass theodolite is used for D and the sun is used as the reference mark (time is required to 0.1 sec). If the question of priority arises, obtain first D, then F, then H.

11. Upgrading - Station marking/description/azimuths

The station is the + mark in a bronze plate (on top of a concrete block) labeled 'BMRGG MAGNETIC STATION'. To improve the permanency, concrete footpads were added to most stations during the last survey. The footpads are supposed to force-centre the magnetometers when using the Askania tripod. This should not be taken for granted, however, and the tribrach should be used to check the centering. Stations are being upgraded by Natmap and ASO. They are checking and adjusting the forced-centre, providing the secondary stations, and station descriptions and azimuths. Nevertheless, if there is any doubt about the azimuth of your reference mark (e.g. from a round-of-angles), make sunshots as given in 3 and 4. Station descriptions can never contain too much information and should be updated and improved continually and brought up to date. Rounds of **photographs**, sketches, distances and bearings from nearby, easily identifiable objects, and markings on airfield plans are some of the aids in finding a station.

For this survey stations should up upgraded to include a triangular concrete pad 5-7 cm thick flush with the ground to enclose the existing footpads and station marker. Care must be taken to ensure non-magnetic aggregate and sand is used and that the pads are not moved, unless the pads do not force centre the tripod - this should be check with the tribrach. Stations differences must be obtained before

and after the installation of the slab to determine any change in reference level (there shouldn't be). Any change in station level may also be detected through baselines by installing the concrete between sets of absolutes. Do this during the day, not after the final absolutes of the day.

12. Local Magnetic Gradients in the environs of the repeat stations.

It is important to know how the magnetic field varies in the immediate and near vicinity of the repeat station. A local F survey is to be made at all stations and auxiliary stations (Section 3).

13. Photographic record

A comprehensive photographic record of the survey is needed. Photos suitable for displays, slides, publicity, brochures, etc should be taken of all aspects of the survey. They should include stations, country traversed, vehicles, equipment, personnel. Film is cheap, so be liberal.

A.J. McEwin
Manager Geomagnetism
6 March 1987

Section 1

Fortnightly returns

A. Scientific

1. Progress report
2. Magnetic observations: absolutes, baseline values, scale values, sunshots, temperature coefficients
3. Magnetograph log
4. Magnetograms
5. Occupation report for each station: description of where the equipment was set up, problems (equipment and logistic), logistics, contacts, recommendations. Status of station: a summary of the station - how many stations are occupiable, whether they have triangular concrete slabs or just foot slabs.

B. Administrative

1. Attendance records
2. TA claims

3. Yellow copy of field purchase orders
4. FB14 - record of field purchases
5. Yellow copy of contract petrol purchases
6. FB14 - record of contract petrol purchases
7. Yellow copy of vehicle logs

Section 2

Supplementary notes to the 'Guidelines'

A. Use of the fluxgate-theodolite magnetometer

When the DIM-100 magnetometer is used for baseline-value determinations, the sequence of observations on the observation form is:

PPM-F1, DIM-D1, DIM-I1, DIM-I2, DIM-D2, PPM-F2.

The observations are to be made at a steady rate so that the mean time of F1/F2 is about the same as the time of I and D. This will allow the calculation of H and Z directly without recourse to the magnetograms. The baseline form is based on this procedure, but also provides for adjustments to F if necessary.

B. Use of auxiliary stations

Much time can be saved if auxiliary observing stations are used as follows:

a) PPM. Before setting up the DIM, QHM or declinometer on the primary station tripod, establish a nearby PPM station, and determine the F station-difference by rapidly alternating readings between the two tripods. Thereafter make the F observations on the auxiliary station and adjust the result to the primary station. Repeat the station-difference observations at the end.

b) Theodolite. Set it up over the permanent secondary station (where one exists) or over an auxiliary station 150m or more distant. It will serve as an excellent reference-mark if the telescope is aimed at the primary station; and if sunshots have to be made it is ready and thermally stabilised. (Not possible if the DIM is used for absolutes-as the theodolite of the DIM is used for sunshots).

c) Spirit levels. Spirit levels wander badly when exposed to direct sunlight. When leveling the theodolite, shade the level, otherwise a fruitless pursuit of a spurious datum will ensue.

Steps (a) and (b) minimise the assembly of instruments on the primary tripod, removal of the shelter, etc. Note, however, that **no instrument should be left unattended on a tripod** if there is a risk that it may be damaged by wind, rain, or other causes.

Section 3

Determination of local magnetic gradients at
first-order stations

It is important to know how the magnetic field varies in the immediate environs of the first-order station. This is determined by making closely spaced measurements with a proton precession magnetometer (PPM) which measures the absolute value of the total magnetic intensity (F).

For the 1990.0 reoccupations the survey is to be in all four cardinal directions, at 1 metre spacing to 5m, at 5m spacing to 25m, at 25m spacing to 100m, at 50m spacing to 250m. It may not be practical to complete each line, eg buildings, power lines etc. Indicate the presence of fences, underground cables etc.

Refer to form G96-439A, a fictional example is attached. The PPM sensor is placed over the station (X) at tripod height and read. Normally readings are first made at 5 m (~5 pace) intervals along the four cardinal lines at the same height. Readings at the station are repeated at the end of each line to allow for temporal changes in the field, if significant.

The form provides for 2 surveys. If the first (at 5 m intervals) shows large changes, the second is done at 1m intervals.

Similarly vertical surveys over the station are made.

New stations should not be established in places where the gradients exceed 5 nT/metre.

First-order Magnetic Station

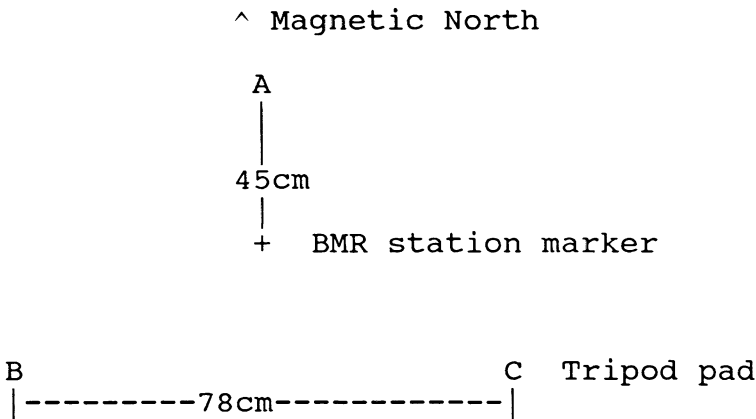


Table 1 Magnetograph recordings

Station	Start		End		Remarks
Albany	0141	18/07/87	0312	21/07/87	
Alice Springs	0528	11/04/87	0249	14/04/87	
Alpha	0110	29/08/86	0010	01/09/86	
Ashmore Reef	0536	24/07/86	1116	27/07/86	no F record
Augusta	0129	22/07/87	1700	24/07/87	
Ayers Rock	0657	07/04/87	0000	10/04/87	
Birdsville	0322	21/08/86	2344	23/08/86	no F record
Boulia	0136	08/09/86	2324	09/09/86	no F record
Bourke	0022	01/07/86	2330	02/07/86	only 6 hrs F
Carnarvon	0712	19/05/87	0100	22/05/87	
Carnegie	0910	26/06/87	0102	29/06/87	
Ceduna	0220	05/08/87	0250	07/08/87	
Christmas Is	0343	04/05/88	0218	09/05/88	
Cocos Is	0203	11/05/88	0623	16/05/88	
Condobolin	0636	23/06/86	2313	25/06/86	
Cooktown	0835	22/09/86	2349	24/09/86	
Croydon	0537	16/09/86	0040	19/09/86	
Daly Waters	0038	24/04/87	2306	26/04/87	
Darwin	0321	14/04/88	0300	16/04/88	
Derby	0023	06/05/87	2308	07/05/87	
Emu	0019	31/03/87	2316	01/04/87	
Esperance	0300	14/07/87	0145	17/07/87	
Etadunna	0753	23/03/87	2331	24/03/87	lost 4 hrs F
Eucla	0109	01/08/87	0051	04/08/87	
Flinders Is	0417	07/03/88	2242	09/03/88	
Geraldton	0336	03/06/87	0150	06/06/87	
Gove	0835	11/04/88	0117	13/04/88	lost 1 hr F
Grafton	2351	12/10/86	2355	14/10/86	
Halls Creek	0712	02/05/87	2335	04/05/87	lost 2 hrs F
Hobart	0558	11/03/88	0322	14/03/88	
Laverton	0810	22/06/87	0154	25/06/87	
Lord Howe Is	0011	25/03/88	2335	26/03/88	lost 2 hrs H,D
Mackay	0122	29/09/86	0700	01/10/86	
Mallacoota	0344	31/08/87	2334	03/09/87	
Maryborough	0504	07/10/86	0621	09/10/86	lost 4 hrs F 2 hrs T
Meekatharra	0304	28/05/87	0046	02/06/87	
Mildura	0540	18/03/87	2332	20/03/87	
Moree	0112	27/06/86	2142	29/06/86	
Mount Isa	2323	12/09/86	2340	14/09/86	lost 4 hrs F
Mount Vernon	0240	24/05/87	0105	27/05/87	
Newcastle	0014	11/04/89	2312	13/04/89	no F record
Norfolk Is	0459	20/03/88	2217	22/03/88	
Oodnadatta	0634	03/04/87	0051	05/04/87	
Parafield	0525	13/08/87	0600	17/08/87	
Port Hedland	0040	09/05/87	0800	11/05/87	
Portland	2331	21/08/87	0537	25/08/87	
Port Lincoln	0737	09/08/87	0041	12/08/87	
Quilpie	0041	25/08/86	2249	27/08/86	
Roma	2355	03/10/86	2351	05/10/86	
Southern Cross	0214	18/06/87	0108	21/06/87	
Telfer	0823	12/05/87	2320	14/05/87	
Tennant Creek	0511	20/04/87	0000	23/04/87	

The Granites	0913	15/04/87	2300	16/04/87	
Tibooburra	0655	16/08/86	0116	19/08/86	lost 23 hrs T
Toolangi	0320	27/08/87	2340	29/08/87	
Warburton	0051	07/07/87	0037	08/07/87	
Warracknabeal	0638	18/08/87	2336	20/08/87	
Weipa	0742	05/04/88	0326	07/04/88	lost 16 hrs F
Wilcannia	0847	12/08/86	2347	14/08/86	only 22 hrs F
Winton	0111	02/09/86	2304	04/09/86	
Woomera	2253	26/03/87	0110	29/03/87	
Wyndham	0427	29/04/87	0522	01/05/87	
Zanthus	0426	11/07/87	0135	13/07/87	lost 1 hr F 4 hrs T

Table 2 Field values

	UT	F nT	UT	D	I	UT	F nT
Albany C							
18 Jul 87	0228	60145.6	0236	-03 12.7 -69	6.1	0242	60142.6
	0249	60143.5	0256	-03 13.1 -69	6.4	0301	60146.7
	0307	60147.2	0314	-03 13.6 -69	6.6	0320	60147.8
	0844	60132.8	0851	-03 10.8 -69	6.2	0858	60134.2
	0903	60133.9	0910	-03 11.2 -69	6.1	0917	60135.8
19 Jul 87	0653	60136.9	0704	-03 10.3 -69	6.8	0711	60137.0
	0730	60135.5	0739	-03 10.0 -69	6.6	0746	60133.4
20 Jul 87	0020	60133.4	0027	-03 9.9 -69	5.6	0033	60137.4
	0041	60139.5	0047	-03 10.8 -69	5.5	0055	60139.3
	0143	60144.5	0149	-03 11.8 -69	5.7	0156	60146.4
	0237	60148.7	0243	-03 12.0 -69	5.9	0248	60148.8
	0254	60150.2	0260	-03 11.8 -69	5.9	0305	60151.0
	0729	60138.4	0738	-03 9.9 -69	6.8	0744	60140.0
	0748	60140.2	0756	-03 10.1 -69	6.6	0803	60140.5
	2358	60132.1	0004	-03 10.5 -69	5.4	0010	60132.2
21 Jul 87	0015	60132.5	0021	-03 10.8 -69	5.3	0027	60133.9
	0032	60134.8	0040	-03 10.8 -69	5.7	0046	60138.6
Albany D							
18 Jul 87	0517	60117.2	0517	-03 10.3 -69	6.5	0535	60115.3
	0540	60114.8	0549	-03 10.4 -69	6.8	0555	60115.5
	0743	60112.4	0751	-03 8.1 -69	6.8	0758	60112.9
	0803	60114.1	0810	-03 8.1 -69	6.6	0817	60114.6
20 Jul 87	0350	60137.7	0356	-03 9.8 -69	6.6	0402	60134.7
	0409	60133.9	0415	-03 9.5 -69	6.9	0420	60134.9
Alice Springs C							
14 Apr 87	0021	53775.0	0030	04 57.0 -56	11.2	0036	53773.4
	0038	53773.0	0046	04 57.4 -56	11.2	0053	53770.5
Alice Springs E							
11 Apr 87	0645	53781.2	0655	05 01.9 -56	12.3	0703	53782.5
	0705	53782.7	0713	05 01.9 -56	12.2	0722	53783.5
12 Apr 87	2354	53792.6	0003	04 56.1 -56	10.8	0010	53791.9
	0012	53792.1	0020	04 55.8 -56	10.8	0027	53790.8
	0749	53790.2	0758	05 01.2 -56	11.6	0805	53791.3
	0807	53791.3	0815	05 00.9 -56	11.5	0822	53792.5
13 Apr 87	2351	53797.5	0000	04 56.5 -56	10.1	0006	53796.7
	0011	53796.8	0021	04 55.9 -56	09.4	0029	53797.1
	0544	53786.7	0551	05 01.4 -56	11.1	0556	53787.3
	0558	53787.3	0605	05 01.3 -56	11.1	0610	53788.1
	0706	53792.1	0712	05 01.2 -56	11.1	0718	53793.5
	0720	53792.7	0726	05 01.2 -56	11.0	0732	53793.8
	2240	53793.2	2251	04 57.7 -56	11.6	2257	53793.2
	2259	53792.5	2307	04 57.2 -56	11.5	2314	53792.7
14 Apr 87	0209	53779.6	0218	05 00.2 -56	11.1	0224	53780.6
	0226	53780.3	0232	05 00.5 -56	11.0	0237	53781.6
Alice Springs F							
13 Apr 87	0216	53792.8	0227	04 57.6 -56	09.9	0235	53790.1
	0237	53790.3	0246	04 58.1 -56	10.2	0255	53789.6
	0441	53787.3	0450	05 00.3 -56	10.8	0455	53786.1

	0457	53787.0	0503	05	00.7	-56	11.0	0508	53786.1
Alpha A									
29 Aug 86	0245	52477.0	0300	08	40.4	-54	34.2	0308	52476.0
	0310	52476.0	0322	08	40.6	-54	34.4	0329	52473.0
	0639	52478.0	0651	08	42.9	-54	35.0	0658	52479.0
	0700	52480.0	0710	08	42.7	-54	36.0	0717	52483.0
	2244	52497.0	2302	08	39.1	-54	35.0	2311	52493.0
	2323	52489.0	2332	08	39.0	-54	35.4	2339	52490.0
30 Aug 86	0216	52490.0	0230	08	38.9	-54	34.7	0237	52491.0
	0239	52488.0	0249	08	39.3	-54	34.7	0256	52486.0
	0514	52466.0	0532	08	42.9	-54	36.1	0539	52472.0
	0541	52472.0	0551	08	43.3	-54	36.3	0558	52471.0
	2340	52473.0	2353	08	40.0	-54	37.4	2359	52460.0
31 Aug 86	0001	52459.0	0015	08	39.9	-54	38.3	0022	52449.0
	0543	52468.0	0555	08	43.8	-54	36.2	0602	52471.0
	0604	52472.0	0615	08	43.5	-54	36.5	0622	52473.0
	2240	52490.0	2254	08	39.6	-54	35.8	2301	52489.0
	2303	52489.0	2314	08	39.0	-54	35.8	2322	52488.0
Alpha B									
30 Aug 86	0313	52488.0	0328	08	40.3	-54	34.9	0336	52483.0
	0338	52484.0	0352	08	40.9	-54	35.5	0359	52474.0
Ashmore Reef A									
24 Jul 86	0615	47036.6	0644	02	13.9	-41	5.5	0655	47025.9
	0657	47026.2	0713	02	14.2	-41	6.1	0723	47020.4
25 Jul 86	0134	47055.0	0158	02	10.7	-41	5.8	0208	47056.7
	0210	47056.5	0227	02	10.4	-41	5.4	0243	47057.9
	0505	47035.3	0522	02	12.0	-41	6.4	0537	47031.4
	0539	47030.1	0554	02	12.5	-41	6.4	0605	47027.2
	0607	47027.0	0621	02	12.7	-41	6.4	0631	47024.9
26 Jul 86	0234	47030.8	0251	02	9.2	-41	7.9	0301	47020.1
	0303	47020.7	0322	02	9.1	-41	7.7	0334	47016.3
	0608	47003.3	0623	02	12.4	-41	8.0	0634	46999.0
	0636	46999.0	0650	02	12.8	-41	7.6	0658	47002.0
27 Jul 86	0107	47036.6	0123	02	10.1	-41	6.9	0131	47038.4
	0133	47038.9	0151	02	10.0	-41	6.5	0159	47038.7
	0617	46015.4	0632	02	13.0	-41	6.7	0648	47013.8
	0650	47013.2	0703	02	13.4	-41	7.0	0714	47002.3
	0716	47002.3	0730	02	13.5	-41	7.6	0738	47003.0
Ashmore Reef B									
26 Jul 86	0351	47012.3	0413	02	10.2	-41	8.7	0426	47007.9
	0428	47008.3	0442	02	10.2	-41	8.1	0450	47010.0
Augusta D									
22 Jul 87	0436	60396.6	0453	-04	46.1	-69	41.8	0505	60395.4
	0521	60391.8	0533	-04	44.7	-69	41.9	0543	60387.4
	0713	60396.5	0725	-04	42.5	-69	43.1	0735	60394.7
	0744	60394.4	0750	-04	42.4	-69	42.4	0758	60396.2
23 Jul 87	0201	60411.9	0221	-04	47.4	-69	41.3	0232	60412.9
	0254	60412.8	0306	-04	47.9	-69	41.2	0313	60410.3
	0319	60408.6	0330	-04	47.9	-69	41.4	0336	60406.5
	0747	60389.1	0757	-04	40.9	-69	41.6	0805	60393.8
	0811	60395.9	0826	-04	41.8	-69	41.4	0839	60404.1
24 Jul 87	0112	60409.2	0124	-04	47.2	-69	40.5	0133	60410.5
	0336	60404.1	0347	-04	47.4	-69	41.0	0357	60401.4

	0535	60396.2	0544	-04	46.4	-69	41.8	0551	60395.4
	0601	60394.6	0611	-04	45.9	-69	41.9	0618	60392.1
	0637	60388.7	0646	-04	44.7	-69	41.9	0653	60387.6
25 Jul 87	0055	60400.9	0104	-04	45.2	-69	39.6	0112	60402.6
	0121	60404.7	0130	-04	46.1	-69	39.6	0137	60407.2
Augusta E									
23 Jul 87	0432	59973.9	0442	-03	27.3	-69	13.6	0448	59970.4
	0639	59955.5	0648	-03	22.0	-69	14.0	0659	59955.8
	0853	59977.8	0859	-03	23.3	-69	13.0	0906	59979.8
	0911	59981.2	0921	-03	24.0	-69	12.9	0930	59983.1
24 Jul 87	0732	59962.0	0741	-03	23.3	-69	14.1	0748	59963.9
	0801	59964.8	0810	-03	23.2	-69	13.4	0816	59966.4
Ayers Rock C									
07 Apr 87	0756	54931.4	0804	04	17.5	-58	19.7	0809	54933.6
	0811	54934.0	0818	04	17.1	-58	19.5	0822	54936.4
	2346	54942.7	2357	04	11.8	-58	17.8	0005	54942.1
08 Apr 87	0007	54942.4	0016	04	11.9	-58	17.6	0024	54941.4
	0124	54937.5	0133	04	13.2	-58	17.1	0140	54935.0
	0142	54935.1	0151	04	13.9	-58	17.0	0158	54934.1
	0416	54935.1	0426	04	17.8	-58	16.5	0433	54935.0
	0435	54935.7	0442	04	18.1	-58	16.8	0447	54936.0
	0659	54933.7	0707	04	16.9	-58	18.7	0714	54935.0
	0716	54934.6	0724	04	16.6	-58	18.7	0729	54935.7
09 Apr 87	0014	54936.1	0023	04	12.8	-58	18.0	0030	54934.0
	0032	54933.6	0040	04	13.1	-58	18.0	0047	54932.7
	0714	54943.7	0725	04	15.9	-58	17.8	0732	54942.5
	0734	54942.6	0743	04	15.6	-58	18.3	0750	54942.7
	2307	54950.0	2315	04	13.1	-58	17.5	2322	54950.2
	2324	54950.2	2332	04	13.0	-58	17.3	2338	54950.0
Ayers Rock D									
09 Apr 87	0236	54967.9	0242	04	15.9	-58	18.4	0248	54969.2
	0250	54959.1	0255	04	16.0	-58	18.4	0300	54959.8
Ayers Rock E									
09 Apr 87	0324	54961.1	0330	04	15.1	-58	19.6	0335	54962.2
	0337	54962.1	0343	04	15.1	-58	19.5	0348	54962.7
Birdsville B									
21 Aug 86	0546	54553.0	0605	06	54.0	-57	57.0	0613	54555.0
	0615	54555.0	0629	06	54.2	-57	57.0	0636	54557.0
	2245	54574.0	2259	06	53.5	-57	56.6	2307	54571.0
	2309	54569.0	2320	06	52.6	-57	57.0	2327	54572.0
22 Aug 86	0042	54573.0	0058	06	51.0	-57	56.2	0107	54573.0
	0109	54573.0	0122	06	50.8	-57	56.2	0132	54570.0
	0502	54557.0	0517	06	53.9	-57	57.5	0526	54557.0
	0528	54557.0	0541	06	54.3	-57	57.4	0550	54558.0
	0552	54557.0	0606	06	54.5	-57	57.6	0614	54557.0
	0616	54557.0	0632	06	54.5	-57	57.3	0642	54562.0
	2304	54578.0	2321	06	51.7	-57	56.2	2328	54573.0
	2330	54572.0	2341	06	51.2	-57	56.3	2348	54571.0
23 Aug 86	0253	54561.0	0307	06	50.5	-57	56.9	0315	54561.0
	0317	54562.0	0329	06	50.7	-57	56.8	0336	54559.0
	0621	54549.0	0632	06	54.9	-57	59.4	0639	54546.0
	0641	54545.0	0653	06	54.1	-57	59.5	0715	54551.0
	2256	54573.0	2310	06	52.5	-57	56.8	2316	54571.0

	2318	54571.0	2330	06	52.4	-57	57.0	2337	54571.0
Birdsville C									
21 Aug 86	2343	54585.0	2359	06	50.0	-57	56.5		
22 Aug 86								0007	54586.0
	0009	54587.0	0022	06	49.4	-57	56.4	0031	54586.0
Boulia C									
08 Sept 86	0153	52444.0	0208	06	50.7	-54	12.4	0214	52441.0
	0216	52442.0	0226	06	50.9	-54	12.1	0233	52442.0
	0432	52441.0	0447	06	54.8	-54	11.7	0458	52435.0
	0500	52435.0	0514	06	55.2	-54	12.2	0521	52434.0
	0607	52436.0	0621	06	55.9	-54	13.4	0629	52436.0
	0631	52437.0	0642	06	55.9	-54	13.7	0650	52437.0
	2212	52454.0	2227	06	52.6	-54	12.7	2236	52454.0
	2238	52454.0	2249	06	52.1	-54	12.6	2256	52454.0
09 Sept 86	0042	52451.0	0057	06	51.0	-54	12.7	0105	52450.0
	0107	52450.0	0117	06	51.1	-54	12.7	0125	52450.0
	0503	52445.0	0515	06	55.0	-54	13.3	0547	52442.0
	0552	52441.0	0604	06	55.7	-54	14.0	0609	52440.0
	0611	52440.0	0621	06	55.4	-54	14.0	0628	52440.0
	2220	52464.0	2244	06	52.2	-54	12.2	2251	52464.0
	2253	52464.0	2304	06	51.8	-54	12.3	2310	52464.0
Boulia D									
08 Sept 86	0329	52428.0	0346	06	53.0	-54	11.1	0354	52428.0
	0357	52428.0	0411	06	53.7	-54	11.1	0419	52427.0
Bourke C									
01 July 86	0414	56289.0	0433	09	45.1	-61	45.1	0442	56291.0
	0444	56291.0	0500	09	45.2	-61	45.2	0510	56292.0
	0513	56292.0	0533	09	44.3	-61	45.2	0548	56296.0
	0550	56295.0	0608	09	43.5	-61	45.1	0622	56299.0
	2300	56308.0	2317	09	42.0	-61	43.2	2326	56309.0
	2329	56309.0	2342	09	41.7	-61	43.2	2351	56308.0
02 July 86	0232	56297.0	0250	09	41.9	-61	44.2	0302	56297.0
	0304	56297.0	0317	09	42.1	-61	44.3	0329	56297.0
	0528	56297.0	0543	09	44.6	-61	44.6	0550	56297.0
	0552	56297.0	0603	09	44.2	-61	44.4	0611	56298.0
	2231	56304.0	2245	09	42.7	-61	43.9	2253	56305.0
	2255	56306.0	2308	09	42.7	-61	44.2	2315	56300.0
Bourke D									
02 July 86	0113	56299.0	0126	09	41.5	-61	43.7	0133	56297.0
	0135	56297.0	0146	09	41.5	-61	43.8	0153	56297.0
Carnarvon D									
19 May 87	0754	54897.6	0809	-01	28.3	-59	47.8	0817	54902.0
	0821	54902.0	0843	-01	28.4	-59	47.8	0902	54910.0
	2334	54914.2	2352	-01	29.8	-59	47.2	0007	54919.0
20 May 87	0013	54919.5	0035	-01	30.6	-59	47.2	0048	54923.2
	0209	54922.0	0216	-01	32.4	-59	47.5	0223	54918.8
	0225	54918.7	0232	-01	32.9	-59	47.5	0240	54916.4
	0738	54896.4	0744	-01	28.4	-59	47.7	0751	54897.3
	0754	54896.7	0812	-01	28.3	-59	47.9	0719	54900.7
	2350	54916.2	2358	-01	30.2	-59	47.5	0006	54917.9
21 May 87	0011	54917.2	0026	-01	30.5	-59	47.5	0043	54920.0
	0213	54915.5	0226	-01	32.0	-59	47.6	0240	54911.0

	0242	54912.2	0250	-01	31.8	-59	47.5	0256	54909.3
	0318	54906.6	0328	-01	31.7	-59	47.3	0339	54903.8
	0341	54903.3	0351	-01	31.5	-59	47.4	0358	54901.1
	0635	54893.7	0647	-01	29.5	-59	48.2	0657	54893.9
	0703	54893.5	0710	-01	29.0	-59	48.2	0716	54893.9
	0754	54896.3	0811	-01	27.9	-59	48.3	0815	54899.1
	0818	54900.0	0824	-01	27.8	-59	48.4	0830	54903.1
22 May 87	0004	54920.9	0020	-01	30.3	-59	46.9	0029	54924.4
	0031	54924.2	0041	-01	30.7	-59	46.9	0049	54926.7
Carnarvon E									
20 May 87	0308	54924.5	0323	-01	32.9	-59	47.3	0337	54920.3
	0339	54919.8	0347	-01	32.2	-59	47.3	0354	54918.0
	0625	54906.3	0633	-01	30.2	-59	47.8	0640	54906.1
	0648	54905.7	0702	-01	29.6	-59	47.7	0713	54906.9
Carnegie A									
26 Jun 87	0934	55474.3	0947	01	51.9	-59	47.2	1001	55475.0
	2341	55484.3	2351	01	52.0	-59	46.2	2357	55483.7
27 Jun 87	0010	55485.3	0018	01	51.8	-59	45.4	0025	55486.1
	0034	55486.1	0041	01	51.5	-59	45.3	0048	55485.1
	0203	55483.9	0214	01	48.8	-59	45.5	0221	55482.3
	0240	55482.9	0246	01	48.8	-59	45.6	0253	55478.1
	0841	55470.8	0848	01	51.2	-59	46.6	0854	55474.1
	0858	55473.8	0905	01	51.4	-59	46.6	0913	55475.0
28 Jun 87	0118	55483.4	0128	01	49.2	-59	45.8	0136	55484.7
	0231	55482.1	0241	01	48.4	-59	45.5	0249	55482.0
	0650	55467.9	0659	01	52.5	-59	46.7	0707	55464.8
	0741	55470.2	0750	01	52.0	-59	46.7	0757	55473.0
	2339	55487.1	2346	01	51.3	-59	45.0	2352	55486.9
29 Jun 87	0028	55487.6	0035	01	50.4	-59	45.0	0041	55488.5
Carnegie B									
27 Jun 87	0402	55512.0	0413	01	50.3	-59	45.8	0423	55510.6
	0512	55508.6	0519	01	51.0	-59	46.3	0526	55509.0
	0703	55501.1	0710	01	52.4	-59	46.7	0717	55501.3
	0757	55504.2	0804	01	53.4	-59	46.8	0810	55505.3
29 Jun 87	0110	55523.4	0117	01	51.5	-59	45.1	0123	55521.9
	0127	55522.1	0134	01	51.0	-59	45.3	0140	55521.8
Ceduna D									
05 Aug 87	0532	58637.2	0541	05	18.9	-65	11.7	0551	58636.8
	0557	58636.6	0605	05	18.6	-65	11.9	0614	58635.7
	0622	58636.4	0629	05	18.9	-65	12.1	0639	58637.6
	0645	58637.9	0651	05	19.5	-65	12.1	0700	58640.8
06 Aug 87	0026	58650.7	0034	05	15.5	-65	10.8	0041	58650.2
	0048	58650.4	0056	05	15.2	-65	10.8	0102	58649.9
	0248	58645.7	0304	05	15.5	-65	11.2	0313	58644.0
	0321	58642.9	0328	05	15.9	-65	11.4	0334	58642.7
	0642	58641.6	0651	05	18.2	-65	11.4	0657	58642.4
	0703	58642.7	0710	05	18.7	-65	11.8	0716	58644.0
07 Aug 87	0104	58647.1	0111	05	15.4	-65	10.9	0117	58646.4
	0124	58646.2	0134	05	15.8	-65	11.2	0142	58645.4
Ceduna E									
06 Aug 87	0133	58716.6	0145	05	19.7	-65	14.2	0152	58715.9
	0204	58715.5	0213	05	20.0	-65	14.2	0219	58714.8
	0355	58707.4	0402	05	21.1	-65	15.1	0408	58707.8

	0413	58707.7	0420	05	21.6	-65	15.1	0427	58707.8
Christmas Island B									
04 May 88	0606	46352.6	0622	-00	40.0	-40	23.6	0633	46347.7
	0637	46347.5	0650	-00	40.4	-40	23.6	0700	46346.2
	0841	46346.6	0856	-00	37.9	-40	23.6	0905	46344.7
05 May 88	0150	46390.1	0156	-00	40.6	-40	22.3		
	0237	46397.6	0246	-00	42.3	-40	22.0	0255	46398.9
	0300	46399.3	0312	-00	42.3	-40	21.5	0322	46400.4
	0538	46391.2	0546	-00	40.3	-40	21.0	0554	46390.3
	0559	46390.8	0609	-00	39.9	-40	20.9	0616	46388.7
	0734	46381.5	0743	-00	39.1	-40	21.4	0750	46377.3
	0813	46370.7	0821	-00	38.7	-40	22.1	0828	46363.8
	0908	46356.8	0916	-00	38.1	-40	23.1	0923	46356.2
06 May 88	0130	46355.1	0138	-00	39.8	-40	25.2	0146	46351.2
	0223	46362.5	0231	-00	41.0	-40	24.9	0238	46364.9
	0347	46391.6	0354	-00	41.2	-40	23.5	0401	46392.2
	0806	46305.6	0814	-00	35.4	-40	28.4	0820	46268.9
07 May 88	0810	46345.2	0816	-00	39.4	-40	25.4	0823	46345.4
	0827	46343.7	0833	-00	39.1	-40	25.4	0840	46340.8
09 May 88	0042	46368.2	0049	-00	39.8	-40	24.5	0056	46368.7
	0101	46369.1	0109	-00	40.4	-40	24.4	0116	46369.2
	0140	46373.8	0148	-00	41.1	-40	23.9	0155	46375.5
Christmas Island C									
07 May 88	0056	46319.7	0104	-00	49.0	-40	25.4	0111	46321.6
	0114	46320.1	0126	-00	48.9	-40	25.3	0128	46322.6
	0132	46321.9	0140	-00	49.0	-40	24.9	0146	46323.0
Cocos Island A									
11 May 88	0252	47128.5	0303	-04	02.8	-44	49.0	0310	47128.1
	0314	47127.1	0322	-04	02.8	-44	48.8	0329	47127.7
	0424	47128.4	0431	-04	02.3	-44	48.5	0437	47127.6
	0440	47128.9	0446	-04	02.0	-44	48.6	0452	47127.7
	0840	47111.9	0850	-03	59.8	-44	50.6	0856	47111.3
	0900	47111.6	0907	-03	59.8	-44	50.6	0914	47111.5
12 May 88	0108	47124.0	0115	-04	01.9	-44	49.5	0122	47124.6
	0126	47125.0	0133	-04	02.2	-44	49.6	0140	47124.1
	0406	47131.3	0413	-04	03.2	-44	48.1	0419	47131.8
	0424	47132.6	0431	-04	02.7	-44	47.8	0437	47132.8
	0634	47129.0	0640	-04	01.8	-44	48.9	0646	47127.0
	0702	47126.5	0707	-04	01.4	-44	48.8	0714	47125.6
	0758	47124.3	0804	-04	00.4	-44	48.9	0811	47124.7
	0818	47123.4	0825	-04	00.1	-44	49.2	0830	47123.1
13 May 88	0643	47126.4	0650	-04	01.0	-44	48.6	0656	47126.8
	0700	47126.9	0705	-04	00.9	-44	48.6	0712	47126.1
	0844	47118.4	0850	-03	59.8	-44	49.4	0856	47118.3
	0904	47117.4	0910	-03	59.4	-44	49.4	0915	47116.8
14 May 88	0012	47131.5	0020	-04	00.9	-44	48.9		
	0344	47135.7	0350	-04	03.0	-44	48.3	0356	47135.5
16 May 88	0114	47145.0	0121	-04	01.3	-44	47.6	0126	47146.1
	0130	47146.5	0136	-04	01.5	-44	47.7	0142	47146.6
	0216	47147.3	0221	-04	02.6	-44	48.1	0226	47147.4
	0229	47147.3	0234	-04	03.0	-44	48.0	0240	47147.8
Cocos Island D									
14 May 88	0158	47127.4	0205	-04	01.5	-44	49.2	0212	47128.7
	0214	47128.6	0221	-04	01.9	-44	49.3	0226	47129.2

	0252	47129.2	0259	-04	02.2	-44	49.0	0306	47128.8
	0310	47128.8	0317	-04	02.3	-44	49.0	0322	47128.6
Cocos Island (Direction Island)									
13 May 88	0316	47463.4	0328			-44	39.6		
			0333			-44	39.6	0338	47464.7
Condobolin C									
23 June 86	0704	57892.0	0721	10	23.4	-64	25.0		
	2317	57891.0	2339	10	21.3	-64	24.1	2349	57891.0
	2352	57892.0							
24 June 86			0008	10	21.0	-64	24.2	0017	57891.0
	0242	57888.0	0309	10	23.2	-64	24.5	0319	57887.0
	0323	57887.0	0356	10	24.4	-64	24.5	0411	57887.0
	0550	57891.0	0611	10	24.9	-64	24.0	0619	57896.0
	0621	57897.0	0637	10	25.2	-64	24.3	0646	57895.0
	2204	57892.0	2227	10	22.2	-64	24.6	2236	57889.0
	2238	57889.0	2252	10	21.9	-64	24.8	2302	57891.0
25 June 86	0050	57883.0	0115	10	21.3	-64	25.4	0128	57883.0
	0556	57888.0	0620	10	23.9	-64	24.9	0632	57889.0
	0636	57890.0	0652	10	23.5	-64	24.6	0701	57891.0
	2200	57888.0	2216	10	22.6	-64	23.5	2224	57889.0
	2228	57889.0	2250	10	22.5	-64	23.4	2303	57889.0
Condobolin D									
24 June 86	0121	57945.0	0147	10	20.1	-64	23.2	0157	57944.0
	0159	57945.0	0220	10	20.5	-64	23.3	0230	57943.0
Conbobolin B									
23 June 86	2348	57947.0							
24 June 86			0007	10	23.1	-64	29.8	0016	57947.0
Cooktown D									
22 Sept 86	2300	47264.4	2314	06	48.6	-43	38.6	2322	47264.0
	2324	47262.2	2336	06	48.7	-43	38.8	2346	47260.0
23 Sept 86	0445	47212.3	0459	06	57.0	-43	41.9	0509	47198.7
	0511	47199.3	0525	06	56.9	-43	42.2	0535	47204.1
	0702	47218.0	0716	06	53.2	-43	42.2	0725	47226.3
	0728	47230.2	0742	06	53.5	-43	42.0	0751	47223.3
	2259	47241.1	2318	06	48.8	-43	41.0	2331	47238.6
	2334	47238.0	2353	06	48.9	-43	40.9	0005	47235.3
	0425	47253.3	0442	06	52.4	-43	39.8	0452	47243.9
24 Sept 86	0454	47242.6	0507	06	52.7	-43	40.3	0520	47240.6
	2230	47244.0	2247	06	51.6	-43	40.4	2259	47247.0
	2301	47246.7	2313	06	50.7	-43	40.1	2321	47248.4
Cooktown E									
23 Sept 86	0550	47227.3	0608	06	56.5	-43	43.8	0622	47201.1
	0624	47203.0	0640	06	54.1	-43	44.0	0652	47230.7
Croydon B									
	UT	F	UT	Dec	Inc			UT	F
16 Sept 86	0721	49406.0	0748	06	33.4	-48	00.1	0758	49406.0
	0800	49406.0	0813	06	33.0	-48	00.1	0822	49407.0
17 Sept 86	0051	49417.0	0106	06	31.5	-47	58.0	0117	49416.0
	0119	49415.0	0133	06	31.4	-47	58.0	0142	49418.0
	2320	49417.0	2333	06	30.4	-47	59.5	2342	49417.0
	2344	49417.0	2356	06	30.4	-47	59.4		

18 Sept 86	0425 49389.0	0439	06 34.5 -48 00.7	0005 49414.0
	0451 49381.0	0504	06 34.8 -48 00.7	0449 49381.0
	0637 49404.0	0650	06 33.6 -48 00.3	0513 49386.0
	0703 49407.0	0716	06 33.6 -47 59.9	0701 49407.0
	2228 49415.0	2244	06 30.4 -47 59.9	0725 49411.0
	2255 49412.0	2307	06 29.9 -47 59.9	2253 49412.0
				2317 49409.0
Croydon D				
18 Sept 86	0530 49385.0	0544	06 30.8 -48 00.0	0554 49394.0
	0556 49395.0	0612	06 30.3 -48 00.0	0620 49390.0
Daly Waters A				
26 Apr 87	0140 49066.9	0145	04 20.4 -46 07.4	0150 49066.2
	0152 49066.3	0157	04 20.6 -46 07.2	0201 49066.5
Daly Waters B				
24 Apr 87	0222 49066.1	0229	04 28.1 -46 04.5	0235 49067.8
	0237 49066.8	0244	04 28.6 -46 04.5	0249 49066.5
	0540 49046.0	0547	04 30.3 -46 06.6	0552 49041.8
	0554 49039.7	0601	04 30.0 -46 07.3	0607 49039.3
	0609 49039.3	0614	04 29.6 -46 07.3	0620 49040.8
	0622 49040.8	0628	04 29.8 -46 07.4	0633 49040.4
	2314 49065.3	2322	04 27.0 -46 06.1	2327 49063.2
	2329 49065.0	2335	04 26.7 -46 06.1	2340 49060.7
25 Apr 87	0239 49054.0	0245	04 28.3 -46 05.4	0251 49054.8
	0253 49054.9	0258	04 28.5 -46 05.4	0303 49056.1
	0514 49063.0	0520	04 30.3 -46 05.6	0526 49062.0
	0528 49061.8	0534	04 30.4 -46 05.8	0539 49059.7
	0541 49059.6	0547	04 30.5 -46 06.0	0552 49059.7
	0554 49060.7	0559	04 30.3 -46 06.3	0604 49059.4
	2257 49073.4	2305	04 26.6 -46 06.5	2312 49074.7
	2314 49074.6	2320	04 26.3 -46 06.5	2325 49075.6
26 Apr 87	0710 49056.6	0718	04 29.6 -46 06.3	0724 49057.2
	0726 49057.9	0733	04 29.6 -46 06.4	0740 49058.9
	2231 49076.0	2239	04 28.0 -46 05.6	2243 49077.3
	2245 49077.6	2250	04 27.9 -46 05.6	2254 49077.2
Daly Waters C				
25 Apr 87	0003 49067.7	0009	04 27.4 -46 05.5	0016 49067.7
	0018 49066.9	0024	04 27.4 -46 05.5	0029 49065.6
	0133 49058.1	0139	04 28.4 -46 05.0	0144 49057.7
	0146 49057.6	0152	04 28.6 -46 05.0	0157 49057.0
Darwin E				
14 Apr 88	0651 46406.0	0659	03 30.6 -40 38.8	0705 46404.7
	0706 46405.2	0715	03 30.6 -40 38.8	0721 46404.5
	0726 46404.5	0733	03 30.6 -40 38.9	0739 46401.2
	0741 46402.5	0748	03 30.6 -40 39.0	0754 46399.5
	2311 46412.1	2319	03 27.9 -40 39.6	2326 46413.4
	2328 46414.3	2335	03 27.4 -40 39.6	2342 46414.2
15 Apr 88	0234 46421.9	0242	03 29.1 -40 35.7	0249 46422.0
	0251 46422.0	0259	03 29.6 -40 35.6	0305 46423.3
	0724 46393.2	0732	03 30.3 -40 38.0	0737 46393.7
	0739 46393.9	0745	03 30.2 -40 38.0	0751 46393.6
	2310 46403.7	2317	03 27.6 -40 39.3	2323 46405.9
	2325 46406.1	2332	03 27.1 -40 39.3	2339 46407.8
16 Apr 88	0138 46418.9	0145	03 28.7 -40 36.6	0151 46420.0

	0153 46419.6	0203 03 29.1 -40 36.2	0209 46421.2
Darwin F			
15 Apr 88	0359 46623.1	0408 02 42.5 -40 23.6	0415 46620.2
	0417 46620.1	0426 02 42.6 -40 23.9	0433 46616.8
	0609 46590.2	0617 02 42.6 -40 24.8	0624 46588.9
	0626 46588.2	0633 02 42.7 -40 25.0	0640 46588.7
Derby E			
06 May 87	0046 50322.1	0056 02 23.7 -48 47.4	0102 50321.3
	0104 50321.3	0113 02 23.4 -48 47.3	0120 50321.4
	0222 50323.1	0234 02 23.1 -48 46.0	0243 50322.7
	0244 50322.9	0254 02 23.5 -48 46.7	0304 50325.7
	0401 50325.1	0409 02 25.0 -48 46.6	0416 50321.6
	0418 50321.0	0426 02 24.9 -48 46.8	0433 50320.0
	0821 50297.8	0828 02 26.2 -48 48.2	0836 50299.3
	0838 50299.1	0845 02 25.9 -48 48.3	0854 50300.7
	2352 50318.8	0002 02 24.7 -48 48.2	0008 50318.9
07 May 87	0010 50319.3	0017 02 24.6 -48 48.4	0023 50316.4
	0145 50313.5	0154 02 23.3 -48 47.2	0201 50310.6
	0203 50309.9	0210 02 22.6 -48 47.1	0217 50309.1
	0612 50280.1	0619 02 26.6 -48 47.9	0625 50277.5
	0627 50277.0	0633 02 26.6 -48 48.1	0639 50277.0
	0643 50277.1	0649 02 27.1 -48 48.5	0657 50276.4
	0659 50277.1	0705 02 27.3 -48 48.6	0712 50276.1
	2240 50311.9	2246 02 25.5 -48 47.6	2250 50313.3
	2253 50313.0	2058 02 25.4 -48 47.7	2304 50313.5
Derby D			
06 May 87	0603 50259.2	0612 02 22.3 -48 46.9	0619 50255.1
	0621 50254.4	0630 02 23.3 -48 47.0	0638 50253.2
	0730 50254.9	0740 02 24.3 -48 47.1	0747 50254.6
	0749 50254.7	0756 02 23.9 -48 47.1	0802 50256.5
Emu A			
01 Apr 87	0142 56525.5	0148 05 14.9 -61 51.9	0153 56523.0
	0155 56523.5	0201 05 15.3 -61 51.9	0206 56521.9
Emu B			
31 Mar 87	0121 56533.3	0128 04 50.2 -61 53.9	0134 56531.1
	0136 56530.0	0142 04 50.9 -61 53.8	0149 56530.4
	0413 56535.2	0422 04 56.0 -61 54.0	0430 56539.9
	0436 56537.4	0445 04 56.0 -61 53.8	0436 56537.4
	0609 56545.4	0616 04 55.3 -61 54.3	0621 56545.4
	0623 56546.4	0629 04 55.3 -61 54.3	0634 56547.3
	0833 56549.8	0838 04 54.3 -61 54.8	0843 56550.4
	0845 56551.5	0850 04 54.0 -61 54.8	0854 56552.0
	2339 56553.0	2347 04 50.8 -61 53.8	2354 56551.7
01 Apr 87	2356 56552.3	0003 04 50.7 -61 53.9	0010 56550.9
	0238 56536.0	0245 04 52.7 -61 54.1	0251 56534.2
	0253 56533.6	0258 04 53.1 -61 54.1	0303 56531.9
	0633 56545.5	0640 04 55.6 -61 55.6	0645 56543.0
	0648 56542.5	0653 04 55.2 -61 56.0	0659 56544.6
	2228 56556.2	2236 04 50.9 -61 54.3	2243 56556.7
	2245 56556.7	2253 04 50.9 -61 54.2	2300 56556.4
Emu C			
31 Mar 87	0649 56548.0	0655 04 55.0 -61 54.9	0700 56549.0

	0702	56547.9	0707	04	55.1	-61	54.8	0712	56548.7
	0752	56549.0	0757	04	54.2	-61	55.0	0802	56549.0
	0804	56547.1	0809	04	54.1	-61	55.0	0813	56549.8
Esperance C									
14 Jul 87	0806	60129.4	0812	-00	36.2	-67	49.3	0819	60130.9
	0823	60130.6	0830	-00	36.6	-67	49.2	0837	60131.6
	0840	60132.0	0846	-00	37.0	-67	49.2	0853	60132.9
15 Jul 87	0109	60140.8	0120	-00	38.6	-67	48.5	0129	60141.0
	0134	60142.1	0143	-00	39.0	-67	48.6	0150	60141.8
	0155	60141.0	0203	-00	40.9	-67	48.5	0212	60139.6
	0627	60115.8	0638	-00	34.3	-67	48.5	0646	60115.4
	0652	60117.6	0701	-00	33.7	-67	48.5	0709	60119.5
	0720	60117.5	0728	-00	34.2	-67	48.9	0735	60119.0
	0743	60123.9	0751	-00	34.8	-67	48.9	0758	60126.1
16 Jul 87	0503	60125.4	0511	-00	37.5	-67	51.1	0517	60124.8
	0525	60122.7	0532	-00	37.4	-67	51.0	0540	60124.7
	0631	60121.3	0639	-00	36.5	-67	51.0	0645	60121.7
	0714	60121.7	0722	-00	35.5	-67	50.8	0728	60125.8
	0734	60124.8	0741	-00	34.5	-67	51.1	0748	60122.5
17 Jul 87	0034	60131.5	0040	-00	38.5	-67	49.9	0047	60132.7
	0053	60133.0	0060	-00	37.5	-67	49.7	0106	60134.2
	0112	60134.1	0121	-00	38.0	-67	49.5	0127	60134.4
Esperance D									
14 Jul 87	0404	60016.8	0413	-00	35.7	-67	46.3	0421	60016.3
	0425	60016.2	0433	-00	35.5	-67	46.5	0442	60016.0
	0701	60014.2	0708	-00	33.7	-67	47.0	0714	60015.2
	0718	60015.4	0725	-00	33.7	-67	47.0	0732	60016.4
16 Jul 87	0831	60020.0	0839	-00	33.2	-67	48.8	0846	60019.8
	0850	60021.3	0859	-00	35.9	-67	48.6	0906	60021.6
Etadunna A									
24 Mar 87	0717	56416.0	0724	07	11.7	-61	09.9	0730	56417.0
	0731	56416.0	0736	07	11.3	-61	09.8	0742	56420.0
Etadunna B									
23 Mar 87	0842	56284.0	0850	07	08.3	-61	06.9	0855	56284.0
	0856	56283.0	0903	07	08.3	-61	07.1	0911	56280.0
	2301	56282.0	2314	07	04.3	-61	07.9	2324	56280.0
	2326	56279.0	2337	07	04.1	-61	08.0	2346	56279.0
24 Mar 87	0549	56278.0	0558	07	10.3	-61	07.4	0604	56278.0
	0605	56279.0	0611	07	10.1	-61	07.3	0616	56279.0
	0618	56279.0	0623	07	10.0	-61	07.2	0629	56281.0
	0630	56282.0	0636	07	09.9	-61	07.2	0642	56283.0
	0758	56288.0	0805	07	08.7	-61	06.4	0809	56289.0
	0810	56289.0	0815	07	08.4	-61	06.3	0820	56293.0
	2230	56286.0	2241	07	05.4	-61	06.9	2249	56286.0
	2251	56286.0	2259	07	04.8	-61	07.0	2301	56286.0
Etadunna C									
24 Mar 87	0312	56269.0	0326	07	09.1	-61	06.9	0335	56268.0
	0337	56269.0	0348	07	09.8	-61	06.9	0356	56271.0
Eucla C									
01 Aug 87	0216	58521.7	0226	04	7.6	-66	9.4	0234	58519.9
	0252	58519.0	0301	04	8.0	-66	9.7	0311	58520.6
	0528	58509.4	0538	04	10.5	-66	10.8	0549	58506.6

	0602	58509.8	0612	04	11.3	-66	10.3	0621	58509.3
02 Aug 87	0015	58532.6	0023	04	9.1	-66	9.0	0032	58532.5
	0046	58533.4	0054	04	9.2	-66	9.1	0101	58533.2
	0124	58533.9	0131	04	8.1	-66	9.3	0139	58534.5
	0146	58533.5	0154	04	7.7	-66	9.7	0201	58534.0
	0650	58518.0	0706	04	11.2	-66	9.7	0714	58521.1
	0733	58524.7	0746	04	11.0	-66	9.7	0754	58526.0
	0804	58527.2	0812	04	10.2	-66	9.5	0819	58529.9
03 Aug 87	0017	58530.9	0024	04	8.7	-66	8.9	0031	58531.0
	0038	58531.5	0045	04	8.5	-66	8.9	0051	58531.6
	0056	58531.5	0103	04	8.3	-66	9.0	0110	58530.3
	0746	58529.2	0752	04	11.1	-66	9.0	0758	58529.9
	0804	58530.5	0811	04	10.7	-66	8.9	0817	58531.2
	2249	58524.4	2257	04	8.9	-66	9.8	2304	58524.3
	2323	58523.6	2330	04	8.1	-66	9.7	2337	58523.5
	2344	58523.4	2351	04	7.9	-66	9.7	2359	58523.0
Eucla D									
02 Aug 87	0526	58677.8	0538	04	12.0	-66	15.4	0547	58676.5
	0604	58673.8	0614	04	12.2	-66	15.5	0621	58673.5
03 Aug 87	0307	58686.7	0314	04	10.4	-66	15.0	0321	58686.4
	0328	58686.5	0335	04	10.6	-66	15.0	0343	58685.6
Flinders Island B									
07 Mar 88	0524	61225.7	0536	13	38.4	-70	29.4	0544	61227.8
	0546	61227.5	0555	13	38.3	-70	29.3	0603	61227.5
	2153	61203.1	2212	13	26.2	-70	29.8	2222	61198.2
	2224	61199.0	2235	13	27.4	-70	30.1	2243	61209.7
08 Mar 88	0132	61215.8	0142	13	27.4	-70	31.8	0150	61214.9
	0152	61216.7	0202	13	29.3	-70	32.7	0209	61215.4
	0522	61234.9	0533	13	34.9	-70	31.4	0540	61238.3
	0542	61240.0	0550	13	35.8	-70	31.6	0557	61233.2
	2128	61208.5	2138	13	24.0	-70	30.8	2145	61209.8
	2148	61208.3	2155	13	22.1	-70	31.0	2201	61204.8
	2308	61207.3	2321	13	23.9	-70	30.4	2328	61208.3
	2330	61208.9	2339	13	25.0	-70	30.6	2346	61210.0
09 Mar 88	0221	61212.9	0233	13	30.9	-70	31.0	0239	61216.1
	0241	61216.3	0249	13	31.8	-70	31.0	0256	61216.3
	0511	61231.9	0519	13	38.3	-70	31.0	0526	61230.1
	0528	61228.8	0536	13	38.1	-70	31.9	0542	61228.9
	2135	61216.3	2144	13	26.1	-70	31.0	2151	61216.7
	2153	61218.0	2201	13	25.6	-70	31.0	2208	61216.3
Flinders Island B'									
09 Mar 88	0004	61206.1	0014	13	25.1	-70	31.7	0021	61207.8
	0023	61211.0	0032	13	25.0	-70	31.8	0039	61210.2
Flinders Island C									
08 Mar 88	0344	61217.8	0354	13	35.8	-70	30.9	0401	61219.3
	0403	61219.3	0413	13	35.4	-70	30.3	0419	61222.1
Geraldton B									
05 Jun 87	0656	56981.3	0701	-02	11.9	-63	44.6	0707	56982.5
	0713	56982.9	0717	-02	12.0	-63	44.6	0723	56983.9
Geraldton C									
03 Jun 87	0721	57039.9	0729	-02	12.9	-63	49.6	0737	57043.0

	0741	57044.3	0748	-02	12.9	-63	49.6	0755	57046.0
	0836	57051.2	0842	-02	13.4	-63	49.5	0850	57052.7
	0856	57053.1	0904	-02	13.7	-63	49.5	0911	57054.8
04 Jun 87	0023	57058.6	0032	-02	14.0	-63	48.8	0040	57059.9
	0045	57060.6	0054	-02	14.5	-63	49.0	0100	57062.1
	0308	57058.4	0316	-02	15.7	-63	49.0	0322	57056.0
	0327	57055.3	0334	-02	15.5	-63	49.0	0341	57053.8
	0449	57051.1	0455	-02	14.7	-63	49.3	0501	57050.9
	0505	57050.7	0511	-02	14.5	-63	49.2	0517	57049.7
	0816	57048.0	0821	-02	13.0	-63	49.0	0827	57049.8
	0831	57050.8	0836	-02	13.0	-63	49.0	0844	57051.1
05 Jun 87	0018	57054.1	0024	-02	13.6	-63	49.1	0031	57055.3
	0035	57056.0	0041	-02	14.0	-63	48.9	0047	57057.2
	0406	57048.5	0412	-02	14.9	-63	49.5	0418	57047.9
	0422	57046.7	0428	-02	14.9	-63	49.7	0433	57048.3
	0839	57053.7	0844	-02	13.3	-63	49.6	0849	57055.7
	0852	57056.0	0857	-02	13.5	-63	49.6	0901	57057.3
06 Jun 87	0031	57057.3	0041	-02	13.7	-63	48.6	0056	57062.6
	0100	57062.5	0110	-02	14.0	-63	48.5	0118	57066.2
Geraldton D									
04 Jun 87	0546	57063.6	0554	-02	17.7	-63	48.8	0600	57063.9
	0604	57063.5	0611	-02	17.5	-63	48.8	0617	57063.1
05 Jun 87	0157	57079.5	0205	-02	19.0	-63	48.9	0212	57079.8
	0219	57079.8	0225	-02	19.2	-63	49.0	0230	57080.3
Gove B									
11 Apr 88	0846	46025.8	0854	04	48.0	-40	06.2	0900	46023.8
	2144	46032.1	2154	04	44.9	-40	05.8	2201	46036.0
	2203	46036.6	2211	04	44.7	-40	05.6	2218	46039.3
12 Apr 88	0015	46071.6	0025	04	42.2	-40	04.8	0031	46071.9
	0033	46070.7	0040	04	42.6	-40	05.0	0047	46076.4
	0257	46072.1	0305	04	46.4	-40	04.9	0312	46069.3
	0314	46068.9	0321	04	46.4	-40	05.1	0327	46070.7
	0438	46070.7	0448	04	47.1	-40	05.3	0454	46066.6
	0456	46065.1	0504	04	47.4	-40	05.3	0511	46061.4
	0513	46060.1	0520	04	47.6	-40	05.4	0528	46056.1
	0729	46047.0	0736	04	48.1	-40	06.4	0742	46046.8
	0744	46046.7	0751	04	48.2	-40	06.4	0757	46044.0
	2213	46052.9	2220	04	45.8	-40	06.1	2226	46053.4
	2228	46056.2	2235	04	45.6	-40	06.2	2241	46055.7
Gove C									
12 Apr 88	0124	46278.7	0133	04	11.4	-40	13.9	0140	46281.6
	0142	46280.5	0150	04	12.0	-40	13.8	0158	46283.0
Grafton A									
13 Oct 86	0058	55131.0	0116	11	38.1	-60	15.1	0125	55135.0
	0127	55135.0	0138	11	38.8	-60	15.0	0145	55136.0
	0402	55147.0	0413	11	42.1	-60	14.0	0421	55149.0
	0423	55149.0	0433	11	42.0	-60	13.9	0440	55151.0
	0607	55152.0	0618	11	40.9	-60	14.2	0626	55149.0
	0628	55149.0	0638	11	40.4	-60	14.4	0645	55149.0
	2339	55098.0	2250	11	35.6	-60	16.5	2256	55097.0
	2258	55096.0	2307	11	34.8	-60	17.0	2314	55089.0
14 Oct 86	0032	55085.0	0044	11	36.1	-60	18.1	0051	55097.0
	0053	55098.0	0104	11	38.3	-60	19.3	0112	55096.0
	0459	55138.0	0509	11	45.2	-60	19.1	0516	55132.0

	0518	55128.0	0527	11	44.3	-60	18.8	0534	55127.0
	2305	55136.0	2315	11	35.0	-60	15.2	2321	55136.0
	2323	55135.0	2332	11	35.1	-60	15.2	2340	55134.0
Grafton B									
13 Oct 86	2333	55143.0	2347	11	32.5	-60	18.3	2355	55147.0
	2357	55147.0							
14 Oct 86			0008	11	32.4	-60	18.3	0015	55146.0
Halls Creek D									
02 May 87	0805	50539.1	0817	03	13.4	-49	53.1	0827	50542.7
	0828	50542.4	0836	03	5.4	-49	53.3	0844	50543.8
	2334	50565.0	2348	03	3.3	-49	51.4	2355	50563.8
03 May 87	0011	50565.2	0019	03	2.7	-49	51.6	0026	50565.5
	0152	50564.2	0211	03	2.2	-49	50.5	0219	50562.1
	0221	50561.8	0230	03	2.3	-49	50.5	0239	50560.2
	0302	50560.2	0312	03	2.7	-49	50.4	0321	50560.8
	0323	50560.9	0332	03	2.9	-49	50.3	0340	50562.5
	0733	50548.9	0745	03	5.9	-49	52.0	0753	50549.5
	0755	50549.5	0804	03	5.7	-49	45.9	0812	50550.4
	2341	50571.0	2351	02	56.2	-49	50.9	2359	50572.2
04 May 87	0001	50572.1	0010	03	2.3	-49	50.9	0018	50572.9
	0131	50566.7	0239	03	1.3	-49	50.8	0147	50565.2
	0149	50565.6	0156	03	1.2	-49	50.6	0203	50564.0
	0728	50540.5	0735	03	5.8	-49	53.3	0742	50541.4
	0744	50542.5	0751	03	5.9	-49	52.7	0759	50544.7
	2257	50569.1	2306	03	3.8	-49	50.9	2314	50572.5
	2316	50572.8	2324	03	3.2	-49	51.3	2332	50572.7
Halls Creek E									
03 May 87	0459	50617.2	0510	02	57.4	-49	31.2	0518	50612.8
	0520	50611.7	0527	02	58.4	-49	31.2	0535	50608.9
	0631	50607.7	0642	03	.3	-49	31.2	0649	50609.0
	0651	50610.5	0659	03	.4	-49	31.4	0707	50611.6
Hobart H									
11 Mar 88	0644	62377.6	0653	14	31.0	-72	53.0	0700	62376.0
	0702	62374.8	0710	14	29.5	-72	53.0	0716	62377.9
	2222	62362.0	2231	14	13.8	-72	51.2	2239	62362.7
	2241	62363.8	2250	14	14.3	-72	52.5	2258	62365.7
12 Mar 88	0141	62379.7	0150	14	29.9	-72	54.0	0157	62379.9
	0159	62379.5	0206	14	30.9	-72	53.9	0213	62375.2
	0544	62377.1	0553	14	35.3	-72	52.9	0601	62377.7
	0603	62376.8	0610	14	34.2	-72	53.0	0616	62377.7
	2244	62374.6	2252	14	23.3	-72	54.0	2259	62373.3
	2301	62372.4	2308	14	21.9	-72	54.1	2314	62369.7
13 Mar 88	0529	62372.6	0537	14	34.0	-72	52.5	0545	62372.1
	0547	62371.7	0554	14	33.8	-72	52.9	0600	62374.4
	2204	62375.2	2211	14	25.7	-72	53.8	2218	62373.3
	2220	62373.3	2228	14	25.3	-72	53.9	2235	62372.1
Laverton D									
22 Jun 87	0909	57011.3	0918	01	48.8	-62	55.9	0930	57011.7
23 Jun 87	0031	57015.5	0040	01	48.5	-62	55.3	0047	57014.7
	0054	57015.0	0102	01	48.0	-62	55.5	0110	57014.5
	0156	57017.6	0203	01	47.2	-62	55.7	0209	57017.4
	0214	57017.7	0221	01	47.1	-62	55.7	0228	57016.6
	0329	57007.7	0336	01	47.3	-62	56.0	0345	57005.9

	0805	57008.9	0813	01	49.6	-62	56.3	0819	57009.6
	0847	57011.6	0853	01	49.0	-62	56.1	0900	57012.3
24 Jun 87	0053	57016.2	0104	01	46.7	-62	54.9	0111	57014.7
	0139	57013.4	0149	01	46.3	-62	55.1	0156	57013.0
	0208	57012.8	0217	01	45.9	-62	55.1	0226	57012.0
	0825	57010.7	0834	01	49.4	-62	55.6	0842	57009.2
	0853	57011.4	0903	01	48.7	-62	55.4	0910	57012.4
25 Jun 87	0002	57014.6	0009	01	49.3	-62	54.5	0016	57014.6
	0024	57014.4	0030	01	48.5	-62	54.6	0037	57014.2
	0101	57014.0	0109	01	47.7	-62	54.4	0116	57012.6
Laverton E									
23 Jun 87	0604	57204.6	0612	01	38.0	-62	49.4	0619	57204.0
	0624	57204.2	0631	01	37.9	-62	49.5	0638	57203.6
24 Jun 87	0308	57203.0	0318	01	34.4	-62	48.0	0327	57202.6
	0540	57197.5	0550	01	37.8	-62	48.7	0557	57197.2
	0626	57196.0	0633	01	38.6	-62	48.6	0641	57196.5
Lord Howe Is C									
26 Mar 88	0132	55456.7	0140	15	26.7	-60	49.2	0145	55460.0
	0147	55461.0	0153	15	27.3	-60	49.3	0159	55460.9
Lord Howe Is D									
25 Mar 88	0339	55044.1	0348	14	53.3	-61	30.8	0355	55045.4
	0357	55045.9	0403	14	53.4	-61	30.9	0410	55047.0
	0541	55057.7	0548	14	52.5	-61	31.8	0554	55059.1
	0556	55059.7	0602	14	52.2	-61	32.0	0607	55060.0
	2254	55060.0	2303	14	46.3	-61	32.6	2312	55056.4
	2310	55055.5	2315	14	46.2	-61	32.7	2320	55053.8
26 Mar 88	0050	55030.5	0055	14	48.3	-61	33.8	0101	55029.1
	0103	55029.0	0109	14	48.7	-61	33.9	0115	55030.0
	0318	55034.0	0325	14	51.9	-61	33.1	0330	55033.8
	0332	55034.0	0337	14	52.2	-61	33.0	0343	55034.8
	0455	55040.2	0502	14	53.7	-61	33.3	0508	55036.8
	0510	55035.9	0516	14	53.2	-61	34.2	0512	55036.1
	0622	55049.7	0626	14	52.4	-61	34.4	0631	55050.1
	0633	55050.7	0637	14	52.1	-61	34.4	0641	55051.1
	2251	55024.2	2259	14	47.5	-61	37.8	2305	55029.4
	2307	55029.8	2312	14	47.2	-61	37.0	2318	55033.2
Lord Howe Is E									
25 Mar 88	0437	55161.9	0443	14	48.2	-61	32.8	0449	55164.1
	0451	55163.9	0458	14	48.0	-61	33.0	0503	55164.1
Mackay C									
29 Sept 86	0204	50642.0	0221	09	02.3	-51	03.2	0251	50638.0
	0253	50637.0	0308	09	03.1	-51	03.0	0316	50638.0
	0704	50649.0	0718	09	01.9	-51	03.8	0727	50647.0
	0729	50648.0	0745	09	02.1	-51	03.5	0753	50652.0
30 Sept 86	0151	50643.0	0209	09	00.9	-51	02.2	0218	50638.0
	0220	50637.0	0234	09	01.7	-51	02.1	0242	50636.0
	0633	50639.0	0649	09	02.9	-51	04.0	0658	50642.0
	0700	50642.0	0714	09	03.1	-51	03.6	0725	50646.0
	2223	50649.0	2239	08	59.1	-51	03.2	2249	50649.0
	2251	50649.0	2304	08	58.4	-51	03.2	2313	50648.0
01 Oct 86	0105	50644.0	0119	08	58.9	-51	02.3	0129	50643.0
	0131	50644.0	0146	09	00.0	-51	02.1	0154	50644.0

Mackay B									
30 Sept 86	2353	50635.0							
01 Oct 86			0007	08	54.4	-51	03.3	0016	50636.0
	0018	50636.0	0031	08	54.4	-51	03.1	0041	50636.0
Mallacoota A									
01 Sep 87	0543	59909.8	0554	14	59.8	-68	12.7	0602	59921.7
	0609	59918.5	0624	14	59.5	-68	10.8	0631	59914.7
02 Sep 87	0557	59911.2	0624	14	58.0	-68	10.3	0610	59912.5
	0614	59912.3	0620	14	58.0	-68	10.2	0625	59915.8
03 Sep 87	0023	59903.5	0034	14	54.0	-68	8.7	0040	59896.8
	0045	59898.6	0053	14	54.5	-68	8.7	0057	59900.3
	2214	59906.0	2227	14	54.5	-68	7.9	2234	59905.3
	2242	59904.3	2253	14	53.8	-68	8.0	2258	59904.1
	2304	59903.2	2312	14	53.6	-68	8.1	2317	59902.5
Maryborough C									
07 Oct 86	0548	52710.9	0605	11	4.5	-55	43.1	0615	52704.4
	0618	52703.8	0631	11	4.1	-55	43.2	0636	52702.6
	2245	52696.1	2258	10	58.4	-55	44.5	2306	52698.4
	2308	52698.4	2318	10	57.6	-55	44.4	2326	52701.2
08 Oct 86	0338	52725.0	0350	11	5.3	-55	42.0	0358	52731.9
	0400	52732.8	0414	11	5.8	-55	41.7	0423	52740.6
	0648	52720.1	0660	11	3.2	-55	42.9	0707	52718.8
	0709	52718.8	0720	11	2.8	-55	43.0	0727	52721.0
	2242	52710.6	2256	10	58.9	-55	43.6	2304	52707.3
	2306	52707.0	2317	10	58.6	-55	43.7	2325	52709.9
09 Oct 86	0226	52719.8	0240	11	3.7	-55	43.6	0247	52721.3
	0249	52721.1	0300	11	4.5	-55	43.5	0308	52723.7
Maryborough D									
09 Oct 86	2357	52881.6	0012	10	37.2	-55	46.3	0021	52882.6
	0117	52887.3	0138	10	39.4	-55	46.1	0152	52892.4
Meekatharra B									
28 May 87	0445	56263.2	0502	01	9.5	-61	34.4	0509	56260.8
	0514	56260.5	0522	01	9.6	-61	34.5	0528	56258.5
	0746	56253.0	0754	01	12.3	-61	35.5	0804	56254.9
	0810	56256.1	0818	01	12.5	-61	35.3	0825	56258.1
	0845	56261.1	0851	01	12.2	-61	35.3	0858	56263.0
	2343	56274.2	2354	01	11.9	-61	34.3	0002	56274.4
29 May 87	0008	56275.7	0016	01	11.7	-61	34.0	0023	56277.8
	0354	56251.2	0402	01	13.2	-61	36.1	0409	56254.3
	0447	56256.5	0456	01	12.6	-61	36.0	0502	56257.9
	0845	56255.5	0853	01	10.9	-61	37.9	0900	56252.5
	0904	56248.8	0911	01	11.8	-61	38.2	0918	56248.5
30 May 87	0048	56268.9	0056	01	9.6	-61	35.2	0104	56268.6
	0111	56268.7	0115	01	9.7	-61	35.1	0125	56268.2
	0857	56261.9	0904	01	11.1	-61	35.7	0910	56262.5
	0914	56262.8	0921	01	11.3	-61	35.9	0927	56262.3
31 May 87	0226	56277.5	0233	01	9.0	-61	33.8	0441	56277.9
	0252	56274.1	0258	01	9.2	-61	33.9	0305	56273.8
	0803	56263.1	0809	01	11.5	-61	35.3	0817	56263.8
	0821	56264.6	0857	01	12.0	-61	35.3	0833	56262.3
01 Jun 87	0138	56271.1	0148	01	9.6	-61	34.7	0159	56269.6
	0206	56269.4	0215	01	9.3	-61	34.7	0225	56270.9
	0807	56258.6	0816	01	11.5	-61	34.7	0825	56260.8
	0832	56261.6	0839	01	11.3	-61	34.6	0848	56264.3

	2347	56268.6	2353	01	10.5	-61	34.1	2359	56268.3
02 Jun 87	0003	56268.9	0008	01	10.8	-61	34.2	0013	56267.2
Meekatharra C									
30 May 87	0227	56201.0	0235	02	21.5	-62	3.4	0243	56200.7
	0247	56200.6	0255	02	21.6	-62	3.4	0303	56201.0
	0420	56203.1	0427	02	21.7	-62	3.5	0433	56202.6
	0440	56201.6	0446	02	21.8	-62	3.6	0452	56201.3
Mildura A									
20 Mar 87	0428	59009.0	0456	08	48.3	-66	08.8	0503	59015.0
	0505	59015.0	0517	08	48.2	-66	08.5	0526	59017.0
Mildura D									
18 Mar 87	0720	59081.0	0736	09	09.8	-66	12.5	0744	59081.0
	0746	59081.0	0801	09	09.5	-66	12.3	0809	59083.0
	2328	59082.0	2340	09	08.2	-66	12.8	2349	59083.0
	2351	59083.0							
19 Mar 87			0002	09	07.1	-66	12.3	0010	59082.0
	0232	59069.0	0241	09	09.9	-66	12.2	0250	59069.0
	0252	59068.0	0301	09	10.8	-66	12.1	0309	59067.0
	0653	59078.0	0700	09	09.8	-66	13.0	0706	59080.0
	0708	59080.0	0715	09	09.7	-66	13.0	0721	59080.0
	2321	59080.0	2332	09	04.9	-66	12.7	2342	59079.0
	2344	59079.0	2354	09	05.1	-66	12.7		
20 Mar 87								0004	59077.0
	0200	59063.0	0210	09	08.9	-66	13.0	0218	59064.0
	0220	59064.0	0229	09	09.9	-66	13.0	0237	59063.0
	0611	59082.0	0619	09	11.3	-66	12.9	0625	59081.0
	0627	59081.0	0633	09	10.9	-66	12.9	0640	59082.0
	2257	59086.0	2303	09	03.0	-66	12.4	2308	59084.0
	2310	59084.0	2316	09	02.9	-66	12.5	2321	59083.0
Mildura E									
19 Mar 87	0554	59063.0	0606	09	10.4	-66	13.3	0613	59064.0
	0615	59064.0	0626	09	10.0	-66	13.8	0633	59065.0
Moree F									
27 Jun 86	0507	55672.0	0532	10	43.5	-60	50.4	0540	55675.0
	0544	55676.0	0557	10	43.5	-60	50.4	0606	55676.0
	0623	55677.0	0645	10	43.0	-60	50.2	0657	55678.0
	0659	55678.0	0717	10	43.0	-60	50.2	0731	55678.0
	2206	55679.0	2232	10	44.8	-60	50.1	2241	55668.0
	2243	55699.0	2257	10	44.8	-60	50.9	2307	55664.0
28 Jun 86	0042	55660.0	0057	10	42.8	-60	51.4	0106	55658.0
	0107	55658.0	0122	10	42.6	-60	51.9	0130	55654.0
	0310	55653.0	0330	10	42.8	-60	53.1	0341	55651.0
	0343	55649.0	0359	10	43.5	-60	53.5	0410	55643.0
	0435	55645.0	0451	10	42.3	-60	53.1	0502	55653.0
	0505	55655.0	0521	10	43.3	-60	52.6	0531	55659.0
	0539	55659.0	0554	10	43.5	-60	52.9	0601	55658.0
	0603	55658.0	0615	10	41.4	-60	52.4	0623	55665.0
	2119	55681.0	2135	10	42.4	-60	49.8	2144	55685.0
	2146	55685.0	2159	10	42.5	-60	49.3	2209	55688.0
29 Jun 86	0528	55673.0	0548	10	43.0	-60	51.1	0559	55676.0
	0601	55676.0	0618	10	42.8	-60	50.7	0628	55676.0
	0632	55676.0	0645	10	42.3	-60	50.8	0653	55677.0
	2046	55679.0	2102	10	42.9	-60	50.0	2111	55681.0

	2113	55680.0	2126	10	42.9	-60	50.0	2135	55679.0
Moree G									
27 Jun 86	2319	55654.0	2341	10	44.5	-60	52.0	2353	55653.0
	2356	55653.0							
28 Jun 86			0017	10	43.5	-60	52.0	0028	55651.0
Mount Isa A									
12 Sept 86	0620	51084.0	0654	06	11.9	-51	42.0	0708	51093.0
	0714	51100.0	0729	06	08.8	-51	39.9	0735	51128.0
	2235	51174.0	2258	06	04.4	-51	35.0	2311	51175.0
13 Sept 86	0135	51160.0	0156	06	02.1	-51	35.9	0207	51157.0
	0209	51157.0	0225	06	02.9	-51	35.9	0236	51159.0
	0623	51168.0	0644	06	07.1	-51	34.1	0655	51177.0
	0657	51178.0	0712	06	07.6	-51	34.0	0722	51183.0
	2314	51190.0	2339	06	05.4	-51	34.0	2353	51186.0
	2355	51185.0							
14 Sept 86			0009	06	05.4	-51	34.3	0019	51181.0
	0147	51179.0	0203	06	03.2	-51	34.1	0213	51173.0
	0216	51172.0	0229	06	02.9	-51	33.9	0236	51173.0
	0545	51172.0	0603	06	07.6	-51	33.1	0615	51176.0
	0617	51177.0	0632	06	07.6	-51	32.9	0643	51182.0
	2238	51206.0	2253	06	04.7	-51	32.0	2302	51202.0
	2304	51203.0	2317	06	04.2	-51	32.3	2327	51199.0
Mount Isa B									
14 Sept 86	0032	51188.0	0046	06	03.5	-51	34.1	0057	51189.0
	0059	51188.0	0121	06	03.7	-51	33.6	0130	51189.0
Mount Vernon A									
24 May 87	0339	54469.0	0359	00	25.7	-58	24.5	0410	54461.2
	0421	54460.6	0434	00	26.1	-58	24.7	0445	54462.2
	0622	54466.0	0635	00	28.6	-58	24.5	0650	54464.7
	0652	54465.5	0704	00	29.1	-58	24.6	0712	54462.8
	0935	54467.7	0947	00	26.8	-58	25.7	0958	54463.4
25 May 87	0039	54492.0	0053	00	28.8	-58	22.9	0102	54491.4
	0104	54491.4	0115	00	28.4	-58	23.0	0122	54491.8
	0746	54439.8	0803	00	29.4	-58	28.5	0814	54432.4
	0819	54431.3	0828	00	28.8	-58	29.2	0837	54439.1
	0842	54440.4	0851	00	28.8	-58	28.6	0858	54443.2
	0908	54450.3	0917	00	27.5	-58	28.0	0924	54457.3
	2356	54486.8	0005	00	29.0	-58	23.9	0013	54489.2
26 May 87	0030	54490.0	0038	00	26.7	-58	23.9	0046	54490.5
	0204	54489.1	0211	00	25.0	-58	24.1	0218	54487.1
	0224	54485.9	0233	00	25.0	-58	24.2	0245	54484.0
	0352	54475.2	0359	00	25.7	-58	24.3	0407	54475.2
	0426	54473.5	0432	00	26.2	-58	24.4	0439	54475.0
	0641	54464.0	0648	00	28.4	-58	25.2	0655	54459.7
	0701	54460.1	0709	00	28.6	-58	24.9	0720	54463.4
27 May 87	2358	54476.8	0005	00	29.8	-58	23.7	0012	54479.4
	0022	54479.1	0029	00	29.9	-58	23.5	0036	54483.1
Mount Vernon B									
30 May 87	0248	54435.9	0300	00	23.3	-58	27.0	0309	54428.6
	0311	54428.7	0320	00	23.3	-58	27.6	0331	54421.5
	0601	54404.3	0611	00	23.1	-58	29.8	0619	54403.7
	0621	54404.5	0630	00	24.0	-58	29.7	0637	54402.3

Newcastle A

11 Apr 89	0102	57222.2	0146	12	17.5	-63	38.0	0209	57251.8
	0500	57250.6	0541	12	24.4	-63	37.6	0609	57251.7
	0612	57251.7	0620	12	23.5	-63	37.4	0626	57251.1
	0629	57251.9	0637	12	23.4	-63	37.1	0643	57253.4
	2359	57223.8							
12 Apr 89			0018	12	15.6	-63	37.1	0036	57227.2
	0039	57226.1	0154	12	16.0	-63	36.8	0108	57229.2
	0420	57238.6	0450	12	26.0	-63	37.4	0508	57245.9
	0514	57247.6	0531	12	25.4	-63	37.0	0547	57248.3
	0556	57248.9	0614	12	24.3	-63	36.4	0629	57245.8
	0631	57244.7	0648	12	23.4	-63	36.4	0703	57247.1
	2228	57239.2	2247	12	15.8	-63	35.6	2300	57238.5
	2302	57238.4	2317	12	16.8	-63	35.8	2328	57234.5
	2335	57234.6	2354	12	16.8	-63	35.7		
13 Apr 89								0012	57234.5
	0014	57234.6	0032	12	17.2	-63	36.0	0052	57236.1
	0055	57236.6	0103	12	17.3	-63	35.8	0112	57238.4
	0114	57238.6	0121	12	17.9	-63	35.8	0127	57240.1
	0246	57242.4	0301	12	21.1	-63	35.5	0312	57243.7
	0314	57244.2	0327	12	21.9	-63	35.4	0339	57246.7
	0342	57251.2	0359	12	23.0	-63	35.4	0414	57254.0
	0417	57254.9	0435	12	23.4	-63	35.7	0451	57252.8
	0453	57252.4	0501	12	23.2	-63	36.2	0507	57254.6
	0509	57255.5	0516	12	24.2	-63	35.9	0523	57264.9
	2217	57218.4	2225	12	14.9	-63	37.6	2232	57209.6
	2235	57213.7	2242	12	15.9	-63	37.4	2247	57218.2

Newcastle B

12 Apr 89	0138	57216.8	0146	12	14.0	-63	34.9	0151	57215.9
	0153	57215.8	0159	12	14.8	-63	35.0	0204	57216.2

Norfolk Island B

20 Mar 88	0558	52135.0	0607	15	22.8	-56	30.9	0614	52134.3
	0614	52134.1	0621	15	22.7	-56	31.0	0626	52134.0
	2223	52114.5	2231	15	17.7	-56	32.9	2237	52112.1
	2239	52112.3	2247	15	17.9	-56	32.8	2253	52109.9
21 Mar 88	0149	52103.5	0157	15	25.7	-56	31.0	0203	52104.7
	0205	52105.0	0212	15	25.8	-56	30.9	0218	52106.3
	0252	52112.0	0300	15	25.9	-56	30.5	0306	52114.7
	0308	52115.2	0316	15	25.8	-56	30.5	0323	52117.1
	0451	52125.9	0500	15	24.8	-56	31.0	0505	52126.8
	0507	52127.2	0513	15	24.5	-56	31.1	0518	52128.3
	2124	52139.1	2131	15	16.8	-56	31.3	2136	52134.0
	2138	52133.3	2145	15	16.6	-56	31.6	2150	52131.5
	2308	52117.9	2314	15	17.5	-56	31.4	2321	52115.3
	2323	52115.4	2329	15	18.1	-56	31.4	2335	52114.0
	0222	52112.3	0228	15	24.0	-56	30.6	0234	52114.0
	0236	52114.4	0241	15	24.3	-56	30.4	0247	52115.5
22 Mar 88	0300	52118.4	0306	15	24.4	-56	30.2	0312	52121.2
	0313	52120.8	0319	15	24.4	-56	30.1	0324	52123.4
	2130	52138.1	2136	15	17.8	-56	31.8	2142	52134.9
	2144	52135.2	2150	15	17.8	-56	31.8	2154	52133.8

Norfolk land C

20 Mar 88	2317	52125.2	2325	15	29.9	-56	37.5	2331	52122.7
	2333	52122.4	2340	15	30.6	-56	37.2	2348	52121.2

Oodnadatta B									
03 Apr 87	0734	56071.5	0741	05	43.1	-60	13.0	0746	56071.5
	0748	56072.5	0754	05	43.2	-60	13.0	0759	56072.5
	2248	56069.3	2254	05	37.8	-60	13.0	2300	56067.7
	2302	56067.0	2307	05	37.6	-60	13.0	2313	56065.2
04 Apr 87	0155	56050.5	0202	05	40.1	-60	12.9	2313	56048.0
	0209	56050.0	0215	05	40.5	-60	13.0	0221	56049.2
	0527	56063.4	0534	05	46.0	-60	12.6	0540	56064.2
	0543	56061.6	0549	05	45.8	-60	12.9	0555	56062.1
	0615	56064.4	0621	05	45.4	-60	13.2	0628	56064.0
	0630	56069.5	0641	05	45.3	-60	12.5	0647	56068.9
	0802	56074.2	0808	05	43.5	-60	12.4	0813	56072.4
	0815	56073.3	0821	05	43.4	-60	12.6	0826	56072.5
	2346	56058.7	2358	05	38.0	-60	13.0	0826	56072.5
05 Apr 87	0012	56058.4	0025	05	38.4	-60	13.0	0034	56057.2
Oodnadatta C									
04 Apr 87	0258	56033.2	0304	05	44.4	-60	13.5	0309	56034.2
	0311	56034.6	0316	05	44.3	-60	13.4	0321	56046.5
	0402	56044.3	0408	05	46.8	-60	12.1	0415	56043.7
Parafield A									
13 Aug 87	0604	59777.1	0612	08	9.7	-67	23.0	0619	59778.8
	0624	59779.6	0630	08	8.8	-67	22.8	0635	59781.2
14 Aug 87	0056	59797.5	0106	08	4.6	-67	21.4	0112	59793.9
	0118	59791.7	0127	08	5.1	-67	22.2	0134	59792.3
	0139	59792.2	0149	08	5.0	-67	22.7	0156	59791.1
	0203	59789.9	0212	08	5.5	-67	23.3	0219	59789.1
15 Aug 87	0014	59796.3	0023	08	6.9	-67	20.9	0029	59796.2
	0038	59796.7	0047	08	6.6	-67	21.4	0054	59795.9
16 Aug 87	0104	59796.0	0114	08	6.5	-67	22.0	0120	59796.0
	0125	59795.3	0134	08	6.4	-67	22.6	0140	59791.2
	0508	59780.2	0515	08	8.5	-67	24.1	0522	59780.6
	0528	59780.2	0535	08	9.7	-67	24.0	0542	59779.4
	2332	59797.6	2342	08	6.9	-67	21.0	2348	59797.4
17 Aug 87	0258	59788.7	0306	08	4.4	-67	22.7	0312	59786.3
	0317	59784.6	0329	08	4.8	-67	22.6	0334	59781.7
Parafield B									
15 Aug 87	2308	59782.1	2316	08	13.9	-67	20.2	2323	59787.2
	2335	59787.1	2345	08	12.1	-67	20.7	2352	59789.8
16 Aug 87	0215	59786.6	0226	08	7.3	-67	22.3	0234	59782.0
	0241	59784.1	0251	08	7.0	-67	22.5	0259	59781.7
Port Hedland D									
09 May 87	0123	52341.4	0138	01	19.6	-53	29.0	0144	52344.9
	0147	52342.1	0156	01	18.7	-53	29.0	0204	52342.4
	0439	52329.3	0447	01	19.3	-53	28.8	0454	52325.0
	0456	52323.5	0503	01	19.2	-53	29.0	0509	52324.4
	0544	52318.5	0551	01	19.5	-53	28.9	0558	52317.3
	0600	52316.6	0607	01	19.9	-53	28.9	0613	52315.0
	0650	52310.0	0657	01	21.5	-53	28.4	0704	52310.9
	0706	52310.3	0713	01	21.9	-53	28.5	0720	52311.4
	2339	52334.1	2352	01	19.4	-53	29.1	2359	52337.7
10 May 87	0001	52338.3	0008	01	19.1	-53	29.1	0016	52341.1
	0741	52314.7	0752	01	22.1	-53	29.1	0759	52315.3
	0801	52315.6	0808	01	22.1	-53	29.2	0816	52314.9
	2335	52339.3	2342	01	20.4	-53	29.3	2348	52339.1

	2350	52338.7	2358	01	20.2	-53	29.3	0004	52342.2
11 May 87	0722	52317.7	0729	01	20.3	-53	29.6	0735	52317.1
	0737	52318.3	0743	01	20.6	-53	29.8	0750	52318.9
Port Hedland E									
11 May 87	0029	52350.7	0039	01	19.4	-53	30.3	0046	52350.9
	0047	52350.6	0056	01	19.3	-53	30.5	0103	52350.4
	0631	52324.1	0638	01	20.2	-53	30.3	0644	52322.2
	0646	52321.8	0652	01	20.5	-53	30.4	0658	52322.1
Port Hedland C									
11 May 87	0329	52340.0	0338	00	55.6	-53	30.5	0344	52340.2
	0346	52341.1	0352	00	55.6	-53	30.6	0359	52341.0
Portland A									
23 Aug 87	0150	61175.7	0157	10	20.8	-70	7.7	0202	61175.9
	0207	61176.6	0213	10	21.2	-70	7.6	0219	61178.2
Portland C									
24 Aug 87	0435	61200.6	0444	09	47.7	-69	59.6	0450	61199.6
	0500	61198.8	0509	09	48.0	-69	59.2	0515	61199.1
25 Aug 87	0018	61209.0	0024	09	39.8	-69	57.7	0030	61205.0
	0033	61204.6	0039	09	40.3	-69	58.1	0045	61210.6
	0049	61209.5	0054	09	39.9	-69	58.1	0059	61207.5
	0108	61206.8	0113	09	40.0	-69	58.3	0118	61205.4
Portland D									
22 Aug 87	0507	61188.2	0514	09	48.2	-69	59.1	0519	61189.3
	0525	61190.5	0530	09	48.6	-69	59.1	0536	61191.9
	2333	61194.1	2341	09	42.4	-69	57.2	2349	61193.0
23 Aug 87	2354	61192.3	0000	09	42.3	-69	57.4	0006	61190.8
24 Aug 87	0544	61190.8	0550	09	49.2	-69	58.4	0555	61191.7
	0600	61193.0	0605	09	49.0	-69	58.4	0611	61195.6
	0617	61195.9	0623	09	48.8	-69	58.3	0629	61196.3
	0635	61199.0	0641	09	48.2	-69	58.4	0647	61200.3
	2305	61187.3	2311	09	41.2	-69	56.8	2317	61184.4
	2328	61184.3	2333	09	41.7	-69	56.6	2339	61185.5
25 Aug 87	0454	61190.8	0459	09	47.5	-69	58.9	0504	61191.1
	0508	61190.8	0513	09	47.7	-69	58.7	0518	61193.3
	2255	61162.0	2301	09	49.2	-69	59.1	2306	61163.3
	2312	61165.4	2318	09	48.4	-69	59.6	2322	61168.8
Portland E									
24 Aug 87	0343	61244.1	0348	09	43.8	-69	59.8	0352	61243.7
	0358	61243.7	0403	09	44.3	-69	59.8	0408	61243.9
25 Aug 87	0157	61246.4	0203	09	38.8	-69	58.7	0208	61246.5
	0212	61246.0	0216	09	38.8	-69	58.6	0222	61245.5
Port Lincoln C									
10 Aug 87	0130	60256.4	0137	05	29.3	-67	23.0	0142	60255.1
	0211	60252.9	0217	05	28.8	-67	23.1	0224	60251.5
	0230	60250.2	0236	05	29.5	-67	22.9	0242	60248.8
	0643	60246.4	0649	05	36.1	-67	24.0	0656	60249.2
	0702	60250.9	0709	05	34.2	-67	23.8	0715	60253.7
	2319	60261.1	2326	05	31.9	-67	22.0	2332	60261.9
	2338	60262.4	2344	05	31.5	-67	22.0	2352	60262.3
11 Aug 87	2359	60262.6	0006	05	30.9	-67	22.1	0013	60262.9
	0628	60240.9	0638	05	35.3	-67	23.5	0646	60244.4
	0657	60247.1	0707	05	34.5	-67	23.5	0714	60252.3

	2319	60265.3	2327	05	31.4	-67	22.0	2333	60262.2
	2341	60263.8	2348	05	31.0	-67	22.2	2353	60264.5
12 Aug 87	2356	60265.3	0012	05	30.3	-67	22.6	0018	60267.1
Port Lincoln D									
09 Aug 87	0627	60121.9	0637	05	44.5	-67	20.6	0645	60123.9
	0653	60125.0	0704	05	44.7	-67	20.4	0712	60127.8
11 Aug 87	0110	60131.0	0130	05	40.6	-67	18.8	0135	60129.7
	0139	60129.4	0145	05	40.4	-67	19.2	0151	60128.3
	0456	60101.4	0505	05	44.0	-67	20.0	0513	60101.6
	0532	60102.4	0541	05	45.7	-67	19.9	0548	60104.7
Quilpie A									
25 Aug 86	0304	54483.0	0327	08	12.2	-58	16.2	0336	54478.0
	0338	54479.0	0354	08	12.3	-58	15.8	0402	54480.0
	0512	54488.0	0526	08	15.7	-58	15.1	0533	54491.0
	0535	54485.0	0545	08	15.5	-58	15.0	0551	54490.0
	0621	54493.0	0632	08	15.2	-58	14.9	0639	54494.0
	0641	54495.0	0650	08	15.3	-58	14.8	0700	54497.0
	2242	54512.0	2256	08	12.7	-58	13.0	2303	54513.0
	2305	54513.0	2317	08	12.3	-58	13.1	2324	54513.0
26 Aug 86	0039	54502.0	0053	08	11.2	-58	14.5	0101	54504.0
	0103	54503.0	0112	08	11.2	-58	15.0	0119	54502.0
	0511	54493.0	0526	08	14.4	-58	14.6	0533	54496.0
	0535	54495.0	0545	08	14.7	-58	14.8	0551	54495.0
	2304	54513.0	2319	08	11.6	-58	13.5	2327	54511.0
	2329	54511.0	2339	08	11.3	-58	13.5	2346	54509.0
27 Aug 86	0114	54505.0	0131	08	10.9	-58	13.5	0138	54500.0
	0140	54501.0	0149	08	10.8	-58	13.7	0155	54501.0
	0409	54504.0	0424	08	12.9	-58	13.9	0431	54498.0
	0433	54498.0	0450	08	13.6	-58	13.6	0456	54502.0
	0602	54506.0	0615	08	14.7	-58	13.7	0621	54507.0
	0623	54504.0	0633	08	14.8	-58	13.9	0639	54509.0
	2201	54517.0	2214	08	13.4	-58	13.2	2221	54512.0
	2223	54513.0	2234	08	13.0	-58	13.2	2240	54512.0
Quilpie B									
25 Aug 86	2334	54489.0	2352	08	11.8	-58	13.4		
26 Aug 86								0000	54483.0
	0002	54483.0	0020	08	11.6	-58	13.9	0028	54481.0
Roma D									
04 Oct 86	0033	53923.0	0049	09	31.8	-57	23.0	0059	53923.0
	0101	53923.0	0114	09	32.8	-57	23.0	0124	53922.0
	0531	53921.0	0547	09	36.2	-57	23.0	0557	53924.0
	0559	53926.0	0614	09	36.5	-57	23.0	0624	53926.0
	2318	53934.0	2332	09	32.1	-57	22.8	2341	53934.0
	2343	53934.0	2355	09	32.3	-57	23.0		
05 Oct 86								0004	53932.0
	0458	53932.0	0510	09	37.4	-57	23.0	0519	53936.0
	0521	53936.0	0532	09	37.1	-57	22.9	0541	53936.0
	0706	53933.0	0719	09	35.9	-57	23.1	0728	53931.0
	0730	53931.0	0742	09	35.7	-57	23.0	0750	53935.0
	2249	53934.0	2302	09	32.5	-57	23.5	2311	53933.0
	2313	53933.0	2329	09	32.6	-57	23.2	2337	53932.0
Roma E									
05 Oct 86	0610	53939.0	0623	09	36.0	-57	23.2	0632	53935.0

	0634	53935.0	0647	09	36.2	-57	23.3	0654	53937.0
Southern Cross B									
18 Jun 87	0421	58581.5	0430	-00	22.8	-65	38.7	0435	58579.9
	0445	58579.0	0455	-00	22.7	-65	38.9	0504	58577.3
	0640	58571.3	0647	-00	20.4	-65	39.8	0652	58572.4
	0700	58573.3	0710	-00	20.2	-65	39.6	0718	58574.9
	0848	58581.9	0855	-00	20.7	-65	39.0	0859	58582.3
	0907	58582.6	0915	-00	20.7	-65	38.7	0923	58583.6
19 Jun 87	0047	58587.5	0055	-00	21.7	-65	38.4	0101	58587.9
	0136	58589.0	0145	-00	22.2	-65	38.0	0153	58588.8
	0352	58570.3	0402	-00	22.6	-65	38.3	0409	58563.5
	0419	58560.5	0427	-00	20.9	-65	39.0	0435	58554.7
	0831	58575.5	0837	-00	19.9	-65	42.0	0841	58577.0
	0914	58573.1	0924	-00	18.5	-65	41.4	0933	58573.3
20 Jun 87	0045	58584.5	0057	-00	21.2	-65	38.2	0101	58585.1
	0111	58585.6	0118	-00	21.7	-65	38.3	0126	58586.5
	0558	58569.8	0606	-00	21.6	-65	39.1	0613	58568.7
	0621	58567.7	0628	-00	21.2	-65	39.2	0632	58567.6
	0840	58581.2	0851	-00	20.6	-65	39.2	0900	58582.5
	0904	58582.6	0915	-00	20.9	-65	39.0	0923	58583.2
21 Jun 87	0018	58578.7	0026	-00	19.4	-65	38.9	0033	58579.5
	0036	58579.9	0045	-00	20.5	-65	38.6	0051	58581.9
Southern Cross C									
19 Jun 87	0637	58648.8	0646	-00	18.8	-65	42.5	0651	58650.2
	0657	58650.7	0708	-00	19.0	-65	42.6	0718	58653.1
20 Jun 87	0224	58670.5	0230	-00	23.2	-65	40.8	0234	58670.4
	0241	58669.6	0249	-00	23.4	-65	40.7	0257	58669.3
Telfer A									
12 May 87	0828	52884.3	0837	01	47.5	-54	45.8	0844	52886.9
	2249	52899.7	2258	01	46.9	-54	45.5	2304	52901.9
	2315	52904.9	2322	01	47.1	-54	44.2	2329	52907.0
13 May 87	0158	52909.5	0208	01	58.7	-54	43.4	0216	52907.1
	0218	52907.3	0225	01	43.6	-54	43.3	0232	52906.5
	0617	52888.8	0627	01	44.5	-54	44.9	0634	52887.6
	0635	52888.0	0646	01	44.6	-54	45.4	0652	52887.1
	0736	52884.6	0743	01	45.8	-54	45.4	0748	52883.5
	0751	52883.7	0757	01	46.0	-54	45.3	0803	52884.8
	2313	52897.2	2320	01	47.0	-54	44.8	2327	52898.4
	2329	52899.7	2336	01	47.0	-54	44.7	2342	52900.9
14 May 87	0045	52901.6	0051	01	45.4	-54	44.9	0057	52902.4
	0059	52901.9	0106	01	45.2	-54	44.8	0113	52903.6
	0148	52901.1	0156	01	44.8	-54	44.7	0202	52901.9
	0204	52901.6	0211	01	45.6	-54	44.6	0217	52899.6
	0557	52880.0	0604	01	44.0	-54	46.0	0610	52877.9
	0613	52877.4	0619	01	44.4	-54	46.1	0625	52875.0
	0649	52871.7	0657	01	45.8	-54	45.6	0704	52870.9
	0706	52870.5	0713	01	46.3	-54	46.0	0718	52870.7
	2248	52892.9	2254	01	46.0	-54	45.1	2300	52894.4
	2302	52894.6	2307	01	46.0	-54	45.0	2312	52895.4
Telfer B									
13 May 87	0259	52929.0	0306	02	7.4	-54	55.1	0312	52926.9
	0314	52927.1	0320	02	7.2	-54	55.2	0326	52926.8
	0524	52917.8	0533	02	7.6	-54	56.3	0539	52915.7
	0541	52914.2	0552	02	7.7	-54	56.5	0558	52911.6

Tennant Creek C

20 Apr 87	0557 51014.9	0605 04 41.4 -50 47.6	0611 51019.6
	0613 51019.0	0619 04 41.6 -50 47.7	0625 51019.1
21 Apr 87	0541 51026.3	0550 04 41.5 -50 46.0	0556 51026.6
	0558 51026.4	0604 04 41.6 -50 46.1	0610 51024.7
	0745 51036.6	0752 04 42.1 -50 46.1	0757 51037.5
	0759 51037.4	0805 04 41.6 -50 46.3	0811 51039.8
	2322 51055.4	2341 04 38.2 -50 45.0	2347 51055.5
	2349 51055.3	2356 04 37.9 -50 45.0	0001 51056.4
22 Apr 87	0523 51042.4	0531 04 40.5 -50 45.2	0537 51041.7
	0539 51041.5	0546 04 40.9 -50 45.3	0552 51039.8
	0835 51048.1	0841 04 41.0 -50 45.3	0846 51049.6
	0848 51049.6	0906 04 40.7 -50 45.5	0912 51051.9
	2233 51062.0	2241 04 39.5 -50 44.6	2248 51062.5
	2250 51062.3	2257 04 39.0 -50 44.7	2304 51062.4

Tennant Creek D

22 Apr 87	0614 51001.4	0622 04 42.5 -50 45.7	0627 51002.3
	0629 51002.1	0635 04 42.6 -50 45.8	0641 51001.8

The Granites C

15 Apr 87	0925 52360.8	0935 03 33.0 -52 50.4	0943 52358.4
	2339 52359.7	2350 03 29.8 -52 50.8	2358 52358.0
16 Apr 87	0000 52357.9	0010 03 29.4 -52 50.9	0018 52354.9
	0210 52336.0	0218 03 30.9 -52 49.4	0226 52337.1
	0228 52335.4	0237 03 31.5 -52 49.1	0244 52336.6
	0352 52347.2	0400 03 34.0 -52 48.6	0406 52348.0
	0408 52347.0	0414 03 34.1 -52 48.7	0420 52347.8
	0527 52350.1	0537 03 34.8 -52 49.7	0545 52348.8
	0547 52348.2	0555 03 35.0 -52 49.7	0602 52351.2
	0750 52350.9	0757 03 34.8 -52 50.3	0803 52353.8
	0805 52353.0	0812 03 34.8 -52 50.0	0818 52354.8
	2210 52362.8	2219 03 32.2 -52 50.2	2225 52364.6
	2227 52365.0	2234 03 31.9 -52 50.2	2241 52365.7

The Granites D

16 Apr 87	0645 52653.3	0654 03 59.4 -52 31.2	0700 52653.4
	0702 52654.0	0709 03 59.4 -52 31.3	0715 52654.2

Tibooburra A

16 Aug 86	0717 56524.0	0732 08 27.5 -61 35.5	0739 56524.0
17 Aug 86	0012 56527.0	0031 08 22.9 -61 33.9	0038 56524.0
	0040 56524.0	0055 08 22.9 -61 34.0	0103 56522.0
	0547 56514.0	0604 08 28.9 -61 35.1	0018 56518.0
	0620 56518.0	0633 08 28.7 -61 35.2	0642 56520.0
	2310 56537.0	2327 08 25.0 -61 33.8	2334 56537.0
	2336 56537.0	2350 08 24.6 -61 33.9	2358 56536.0
18 Aug 86	0302 56515.0	0320 08 25.3 -61 35.1	0329 56514.0
	0331 56514.0	0344 08 26.4 -61 35.0	0351 56513.0
	0630 56522.0	0641 08 28.8 -61 35.1	0651 56523.0
	2306 56535.0	2320 08 24.4 -61 34.5	2346 56534.0
	2348 56534.0		
19 Aug 86		0002 08 23.8 -61 34.6	0009 56533.0

Toolangi SM

27 Aug 87	0448 60307.9	0457 11 31.7 -68 44.3	0508 60309.1
	0623 60311.2	0631 11 31.9 -68 44.7	0636 60311.5

28 Aug 87	2348	60307.2	2359	11	23.6	-68	42.7	0004	60307.5
	0008	60307.5	0017	11	23.3	-68	42.8	0021	60307.2
	0026	60306.7	0030	11	23.7	-68	42.8	0036	60306.4
	0603	60308.3	0611	11	31.3	-68	42.7	0619	60309.1
	0630	60309.2	0641	11	31.0	-68	42.8	0647	60308.1
	0651	60308.7	0656	11	30.7	-68	42.8	0701	60309.0
	2220	60301.5	2229	11	29.1	-68	42.7	2237	60300.9
29 Aug 87	2242	60300.5	2249	11	28.6	-68	43.6	2257	60298.4
	0655	60304.1	0660	11	30.0	-68	43.7	0704	60305.0
	0720	60307.1	0733	11	29.2	-68	43.1	0743	60308.3
	2259	60307.4	2305	11	27.4	-68	42.3	2312	60306.7
	2319	60307.9	2326	11	27.0	-68	42.1	2331	60306.0
Warburton A									
07 Jul 87	0134	56050.8	0145	03	4.8	-59	58.5	0152	56048.9
	0220	56047.4	0227	03	4.6	-59	58.4	0233	56045.5
	0330	56041.1	0337	03	4.7	-59	58.4	0345	56040.0
	0819	56051.1	0826	03	6.9	-59	58.9	0832	56051.3
	0837	56051.3	0843	03	6.6	-59	58.9	0850	56051.5
	2346	56056.5	2354	03	6.1	-59	57.8	0001	56056.6
	0007	56056.7	0014	03	5.5	-59	57.7	0022	56057.0
	0036	56056.8	0044	03	5.1	-59	57.7	0051	56056.8
	0216	56058.3	0225	03	4.5	-59	57.2	0232	56054.7
	0244	56054.2	0253	03	4.4	-59	57.6	0301	56052.4
	0307	56051.4	0314	03	4.7	-59	57.7	0323	56049.9
	0525	56043.5	0533	03	6.9	-59	58.9	0540	56041.1
	0546	56040.4	0553	03	7.5	-59	58.9	0601	56038.7
	0654	56035.3	0701	03	7.8	-59	59.4	0706	56036.6
	0711	56037.1	0716	03	8.0	-59	59.4	0722	56037.9
	2315	56053.3	2321	03	6.2	-59	57.9	2328	56055.6
	08 Jul 87	2333	56056.3	2339	03	6.1	-59	57.9	2345
2352		56056.0	2358	03	5.5	-59	58.0	0005	56056.7
Warburton B									
07 Jul 87	0518	56212.9	0525	03	8.5	-60	12.9	0533	56213.6
	0539	56213.0	0546	03	8.8	-60	12.9	0552	56213.6
	0716	56218.3	0724	03	8.3	-60	13.2	0730	56220.3
	0734	56220.3	0741	03	8.1	-60	13.2	0747	56221.6
08 Jul 87	0802	56217.1	0809	03	8.0	-60	13.3	0815	56220.8
	0820	56221.1	0827	03	7.7	-60	13.2	0833	56222.1
	0844	56222.8	0850	03	7.2	-60	13.1	0855	56223.0
Warracknabeal A									
20 Aug 87	0334	60044.5	0340	07	50.4	-67	58.5	0345	60043.8
	0351	60044.1	0357	07	52.0	-67	58.5	0345	60043.2
Warracknabeal C									
18 Aug 87	0711	60110.6	0717	10	1.5	-68	4.1	0722	60111.9
	0727	60112.2	0733	10	1.6	-68	4.1	0739	60112.1
	2244	60113.1	2255	09	58.5	-68	2.6	2303	60112.6
	2319	60112.8	2326	09	58.1	-68	2.8	2333	60112.3
19 Aug 87	0232	60095.8	0243	09	58.2	-68	4.7	0249	60096.4
	0256	60096.4	0304	09	58.9	-68	4.8	0309	60095.6
	0717	60106.5	0723	10	2.8	-68	4.3	0728	60107.3
	0757	60107.9	0803	10	1.1	-68	4.4	0809	60108.0
	2344	60110.3	2351	09	57.6	-68	2.7	2356	60110.3
20 Aug 87	0002	60110.6	0009	09	57.3	-68	2.7	0014	60109.8
	0520	60098.9	0525	10	2.5	-68	4.0	0529	60101.1

	0535	60101.8	0539	10	2.8	-68	4.2	0544	60101.8
	2245	60111.4	2250	09	58.3	-68	2.6	2255	60111.1
	2302	60111.2	2308	09	57.5	-68	2.7	2313	60110.8
Warracknabeal D									
19 Aug 87	0116	60111.5	0126	09	54.6	-68	3.9	0132	60109.6
	0142	60107.4	0148	09	56.9	-68	4.2	0153	60106.2
	0631	60110.8	0636	10	2.0	-68	4.9	0642	60110.0
	0646	60110.4	0652	10	1.9	-68	4.7	0658	60112.7
Weipa B									
05 Apr 88	0818	46592.4	0826	05	43.4	-40	19.4	0832	46595.9
	2339	46613.5	2348	05	40.6	-40	18.6	2356	46607.7
06 Apr 88	2358	46606.4	0007	05	41.0	-40	18.5	0014	46605.6
	0148	46597.6	0157	05	42.9	-40	18.1	0204	46593.6
	0206	46592.8	0215	05	43.5	-40	18.5	0220	46588.4
	0533	46555.6	0541	05	46.3	-40	20.5	0548	46556.0
	0550	46556.8	0558	05	46.3	-40	20.4	0605	46561.5
	0731	46558.9	0738	05	44.0	-40	21.4	0744	46563.6
	0746	46564.8	0753	05	43.7	-40	21.0	0759	46573.5
	2319	46606.0	2328	05	38.1	-40	17.9	2334	46607.7
	2336	46606.8	2344	05	38.1	-40	17.6	2351	46604.8
07 Apr 88	0200	46623.2	0208	05	40.3	-40	15.7	0214	46626.1
	0216	46625.9	0223	05	40.8	-40	15.6	0229	46625.8
Weipa C									
06 Apr 88	0638	46568.2	0648	05	43.6	-40	24.0	0655	46565.0
	0657	46563.7	0705	05	43.1	-40	24.5	0712	46560.2
Wilcannia D									
13 Aug 86	0002	57443.0	0038	09	08.2	-63	31.1	0048	57440.0
	0117	57439.0	0143	09	08.9	-63	31.2	0201	57437.0
	0429	57435.0	0513	09	15.2	-63	30.9		
			0717	09	11.8	-63	30.7		
			0804	09	11.2	-63	31.4		
	2245	57456.0	2301	09	08.7	-63	30.1	2309	57454.0
	2311	57454.0	2324	09	08.2	-63	30.1	2331	57453.0
14 Aug 86	0129	57445.0	0144	09	07.4	-63	30.9	0155	57442.0
	0157	57441.0	0211	09	07.8	-63	31.0	0219	57440.0
	0627	57449.0	0640	09	12.7	-63	30.5	0647	57449.0
	0649	57451.0	0659	09	12.6	-63	30.4	0707	57452.0
	2235	57454.0	2253	09	10.4	-63	29.8	2301	57454.0
	2303	57454.0	2312	09	10.2	-63	29.7	2319	57453.0
Wilcannia E									
13 Aug 86	2349	57451.0							
14 Aug 86			0004	09	07.9	-63	30.1	0012	57449.0
	0014	57449.0	0026	09	08.0	-63	30.3	0033	57445.0
Winton A									
03 Sep 86	0036	51852.0	0354	07	28.5	-53	23.2	0402	51847.0
	0404	51846.0	0417	07	28.8	-53	23.4	0449	51845.0
Winton B									
02 Sep 86	0535	51800.0	0557	07	30.3	-53	22.6	0605	51811.0
	0607	51813.0	0621	07	30.9	-53	22.2	0629	51815.0
	2251	51836.0	2309	07	27.6	-53	21.0	2319	51835.0
	2321	51835.0	2334	07	27.5	-53	21.1	2342	51834.0

03 Sep 86	0143 51831.0	0200 07 27.2 -53 20.8	0207 51830.0
	0209 51829.0	0224 07 27.4 -53 20.9	0231 51830.0
	0557 51821.0	0611 07 32.2 -53 21.1	0618 51820.0
	0620 51820.0	0632 07 32.1 -53 21.1	0640 51821.0
	2329 51845.0	2342 07 26.8 -53 20.7	2350 51843.0
	2352 51842.0		
04 Sep 86		0003 07 26.3 -53 20.7	0010 51838.0
	0101 51837.0	0113 07 24.9 -53 20.5	0120 51834.0
	0122 51834.0	0133 07 24.6 -53 20.6	0140 51832.0
	0338 51807.0	0354 07 27.9 -53 21.3	0401 51802.0
	0403 51802.0	0415 07 28.9 -53 21.4	0421 51801.0
	0534 51803.0	0546 07 31.4 -53 21.4	0553 51808.0
	0555 51808.0	0608 07 31.6 -53 21.3	0615 51814.0
	2209 51851.0	2222 07 28.9 -53 20.2	2228 51851.0
	2230 51851.0	2240 07 28.4 -53 20.5	2247 51849.0
Woomera A			
26 Mar 87	0828 57761.0	0836 06 33.2 -63 57.1	0842 57758.0
	0844 57758.0	0850 06 33.1 -63 57.1	0855 57763.0
	2329 57767.0	2339 06 28.3 -63 55.0	2344 57769.0
	2346 57768.0	2352 06 28.2 -63 55.0	2357 57768.0
27 Mar 87	0030 57766.0	0036 06 27.8 -63 55.1	0042 57763.0
	0044 57762.0	0051 06 27.7 -63 55.1	0057 57767.0
	0506 57759.0	0517 06 35.8 -63 56.2	0525 57758.0
	0527 57760.0	0537 06 35.3 -63 55.9	0545 57761.0
	0651 57768.0	0657 06 33.4 -63 55.3	0703 57769.0
	0705 57764.0	0711 06 33.4 -63 54.9	0717 57768.0
	2334 57761.0	2344 06 28.1 -63 55.4	2352 57761.0
	2354 57760.0		
28 Mar 87		0002 06 28.0 -63 55.1	0010 57759.0
	0531 57760.0	0539 06 32.6 -63 55.8	0546 57762.0
	0548 57762.0	0554 06 32.5 -63 55.6	0600 57763.0
29 Mar 87	0023 57762.0	0036 06 26.8 -63 55.6	0044 57756.0
	0046 57755.0	0054 06 27.4 -63 55.4	0100 57754.0
Woomera B			
28 Mar 87	0209 57910.0	0216 06 20.0 -63 55.0	0222 57910.0
	0224 57909.0	0230 06 20.4 -63 55.6	0237 57910.0
	0337 57919.0	0344 06 21.0 -63 54.4	0351 57921.0
	0353 57922.0	0400 06 20.8 -63 54.5	0407 57922.0
Wyndham C			
29 Apr 87	0705 48921.8	0715 03 00.2 -45 47.6	0721 48922.3
	0724 48921.9	0739 03 00.1 -45 48.0	0753 48920.4
	2339 48942.5	2354 02 58.1 -45 48.1	0006 48941.7
30 Apr 87	0010 48941.5	0025 02 58.0 -45 48.3	0035 48940.5
	0200 48931.5	0214 02 58.4 -45 46.7	0225 48933.4
	0227 48933.7	0237 02 58.6 -45 46.6	0225 48934.2
	0449 48939.8	0457 02 59.4 -45 46.8	0507 48938.6
	0509 48937.6	0515 02 59.5 -45 46.6	0521 48933.8
	0653 48922.9	0702 03 01.2 -45 47.4	0711 48920.9
	0713 48922.1	0719 03 00.7 -45 47.5	0725 48922.1
	0749 48919.3	0759 03 00.6 -45 47.7	0809 48919.9
	0811 48919.4	0817 03 00.4 -45 47.7	0822 48920.8
	2301 48940.4	2311 02 59.3 -45 47.3	2319 48944.4
	2321 48944.7	2330 02 59.0 -45 47.2	2338 48944.6
01 May 87	0310 48936.1	0319 02 57.2 -45 46.0	0327 48934.1
	0329 48934.9	0334 02 57.4 -45 45.7	0340 48932.7

Wyndham D

01 May 87

0039	48868.3	0045	03	06.2	-45	36.9	0051	48866.2
0053	48866.5	0101	03	05.6	-45	37.0	0111	48865.8
0219	48862.9	0225	03	05.2	-45	36.3	0200	48863.3
0233	48864.1	0242	03	05.1	-45	36.1	0250	48862.3

Zanthus B

11 Jul 87

0542	58273.0	0551	01	16.1	-65	8.8	0558	58273.8
0609	58274.7	0616	01	16.5	-65	9.0	0623	58273.8
0707	58271.4	0713	01	17.7	-65	10.0	0721	58271.2
0727	58271.8	0733	01	17.4	-65	10.0	0739	58273.9

12 Jul 87

0054	58285.2	0101	01	14.5	-65	7.4	0107	58286.2
0115	58286.5	0121	01	14.4	-65	7.5	0128	58286.7
0149	58286.4	0157	01	14.1	-65	7.7	0203	58285.6
0207	58285.1	0213	01	14.0	-65	7.9	0220	58283.3
0546	58273.9	0552	01	16.3	-65	9.1	0558	58273.4
0617	58274.6	0624	01	16.4	-65	9.1	0630	58275.6
0643	58277.0	0650	01	16.4	-65	9.2	0656	58278.0
0709	58279.9	0716	01	16.4	-65	9.0	0722	58280.6
2350	58283.9	2359	01	15.8	-65	7.8	0005	58284.9

13 Jul 87

0016	58285.5	0023	01	14.9	-65	7.8	0029	58285.8
0031	58285.8	0039	01	14.8	-65	7.8	0045	58285.8

Zanthus C

11 Jul 87

0805	58309.7	0812	01	16.8	-65	9.1	0818	58311.4
0823	58312.4	0829	01	16.6	-65	9.1	0835	58313.5

12 Jul 87

0327	58315.2	0333	01	13.9	-65	8.0	0339	58316.3
0343	58316.2	0349	01	14.3	-65	8.1	0355	58316.5

Table 3 **Instrument comparisons and adopted corrections**

<u>Station</u>	<u>Date</u>	<u>Instrument A</u>	<u>Instrument B</u>	<u>A-B</u>	
<u>Declination Inclination Magnetometer</u>					
Canberra	29/5/86	Ruska 4813	308887/202 `D`	-0.1`	
		PVM/X/A	308887/202 `I`	0.0`	
	6/11/86	Ruska 4813	308887/202 `D`	-0.7`	
		PVM/X/A	308887/202 `I`	-0.3`	
	23/2/87	Ruska 4813	308887/202 `D`	0.2`	
		QHM 461/MNS2.3	308887/202 `I`	0.1`	
	11/2/88	Ruska 4813	308887/202 `D`	0.0`	
		QHM 461/MNS2.3	308887/202 `I`	0.2`	
	27/5/88	Ruska 4813	308887/202 `D`	-0.2`	
		QHM 461/MNS2.3	308887/202 `I`	0.1`	
	5/4/89	Ruska 4813	312714/208 `D`	0.1`	
		QHM 461/MNS2.3	312714/208 `I`	0.2`	
	7/8/89	Ruska 4813	312714/208 `D`	-0.2`	
		QHM 461/MNS2.3	312714/208 `I`	0.3`	
<u>Proton Precession Magnetometer</u>					
Canberra	16/6/86	MNS2.3	E770/193	-1.3nT	
	6/11/86	MNS2.3	G816/1024	2.3nT	
	6/3/87	MNS2.3	G816/1024	2.1nT	
		MNS2.3	E770/193	-2.7nT	
	11/2/88	MNS2.3	G816/1024	2.3nT	
	25/2/88	MNS2.3	G816/1025	-2.1nT	
	27/5/88	MNS2.3	G816/1024	3.3nT	
	5/4/89	MNS2.3	E770/193	-0.5nT	
	2/6/89	MNS2.3	G816/1024	1.7nT	
	7/8/89	MNS2.3	G816/1024	0.0nT	
		MNS2.3	G816/1025	-3.6nT	
	11/9/89	MNS2.3	E770/193	-0.8nT	
<u>Quartz Horizontal Magnetometer</u>					
Canberra	16/6/86	461	288	nT	nT/H
		462	288	-26.6	-0.00112
	24/2/87	461	288	-26.6	-0.00112
		462	288	-28.6	-0.00121
	26/2/87	461	173	-29.9	-0.00126
		462	173	-8.0	-0.00034
	28/9/87	461	173	-4.5	-0.00019
		462	173	-5.8	-0.00024
	25/2/88	461	288	-6.8	-0.00029
				-29.5	-0.00124
<u>Declinometer</u>					
Canberra	25/9/86	Ruska 4813	640505	-0.4`	
	6/3/87	Ruska 4813	640505	-0.6`	
	25/2/88	Ruska 4813	QHM 288	-1°	02.8`

Table 3 (cont.) Adopted corrections

Declination

Ds = DIM 308887/202 - 0.4'
Ds = DIM 312714/208 - 0.4'
Ds = Dec 640505 - 0.8'
Ds = QHM 288 - 1 02.5'

Inclination

Is = DIM 308887/202 - 0.2'
Is = DIM 312714/208 - 0.0'

Total Intensity

Fs = E770/193 - 1.3 nT
Fs = G816/1024 + 2.0 nT
Fs = G816/1025 - 2.9 nT

Horizontal Intensity

Hs = QHM 288 - 0.00133H (6/86)
Hs = QHM 288 - 0.00136H (2/87)
Hs = QHM 288 - 0.00140H (2/88)
Hs = QHM 173 - 0.00038H (87)

Table 4 **Reference marks and azimuths**

Albany C		
Station D		18° 45' 46"
Mt Wilyung	(RM)	79° 00' 21"
Monument		142° 00' 54"
Windsock		354° 15' 15"
Albany D		
Mt Wilyung	(RM)	81° 14' 19"
Monument		142° 50' 56"
Station C		198° 45' 23"
Windsock		350° 17' 33"
Alice Springs C		
TDC Northern NDB		265° 44' 55"
Microwave tower	(RM)	332° 55' 07"
Alice Springs E		
TDC light pole to right of terminal		18° 37' 30"
Station E		34° 53' 06"
Microwave tower	(RM)	335° 15' 15"
Alice Springs F		
TDC light pole to right of terminal		18° 37' 30"
Station E		34° 53' 06"
Microwave tower	(RM)	335° 15' 15"
Alpha A		
RH edge of toilet block		23° 52' 21"
Station B	(RM)	211° 43' 18"
Alpha B		
RH edge of toilet block		29° 03' 00"
Station A	(RM)	31° 43' 18"
Ashmore Reef A		
Station B	(RM)	38° 35' 17"
AWS mounting		312° 09' 41"
Ashmore Reef B		
Station A	(RM)	218° 35' 16"
AWS mounting		312° 09' 41"
Augusta D		
Base of windsock		42° 48' 31"
NW corner of hanger (base)		62° 41' 00"
SW corner of hanger		72° 58' 58"
NE corner of toilet	(RM)	78° 13' 57"
Station E		357° 33' 27"
Augusta E		
NW corner of hanger		142° 12' 01"
SW corner of hanger	(RM)	143° 40' 35"
Base of windsock		147° 43' 42"
NW corner of fuel shed		151° 47' 21"
Station D		177° 33' 27"

Ayers Rock C		
Vert Edge 2nd from E end Olgas	(RM)	238° 24' 18"
W light pole in front of terminal		254° 50' 43"
LH NDB		344° 25' 19"
RH NDB		344° 59' 39"
E light pole in front of terminal		225° 05' 43"
Birdsville B		
RH NDB to northeast		49° 25' 50"
Station C		356° 29' 25"
Windsock	(RM)	356° 30' 55"
Birdsville C		
RH NDB to east		85° 31' 30"
Station B		176° 29' 25"
Windsock	(RM)	356° 33' 34"
Boulia C		
Station D	(RM)	31° 45' 35"
Windsock (base of light structure)		33° 16' 32"
RH edge of water tank		79° 16' 18"
TDC RH NDB tower		105° 03' 37"
Boulia D		
SW bolt at base of windsock		41° 30' 33"
RH edge of water tank		106° 54' 28"
TDC RH NDB tower		124° 12' 05"
Station C	(RM)	211° 45' 35"
Bourke C		
Station D		30° 56' 04"
Gauge on left tank		168° 16' 15"
Centre pole of group of three(TDC)		226° 27' 07"
TDC RH NDB to northwest	(RM)	348° 13' 02"
Bourke D		
Station C		210° 56' 05"
TDC radio mast to southwest		245° 54' 40"
TDC RH NDB	(RM)	317° 58' 08"
Carnarvon D		
Radio mast		23° 47' 35"
Radio Aust mast		114° 44' 09"
Telecom mast	(RM)	248° 51' 43"
Station E		357° 48' 20"
Carnarvon E		
Radio mast		27° 47' 20"
Radio Aust mast		116° 05' 31"
Station D		117° 48' 26"
Telecom mast	(RM)	239° 51' 11"
Carnegie A		
Trig station on hill		30° 34' 35"
Station B		36° 54' 23"
TDC windmill	(RM)	52° 19' 03"
Old windsock	(RM)	272° 40' 46"

Metal pipe in ground	339° 16' 57"
Carnegie B	
TDC windmill	(RM) 57° 24' 18"
Station A	216° 54' 04"
Old windsock	239° 07' 25"
Metal pipe in ground	303° 39' 46"
Ceduna D	
LH aerial to northeast	73° 33' 23"
Base of windsock	95° 46' 30"
East tower of grain silo	251° 17' 42"
Windsock near terminal	(RM) 306° 21' 48"
Station E	334° 53' 33"
Ceduna E	
LH NDB tower	78° 47' 02"
Windsock	108° 24' 05"
Station D	154° 53' 33"
SE corner grain silo	249° 53' 09"
Windsock near hanger	(RM) 301° 17' 50"
Christmas Island B	
Windsock (TDC)	(RM) 13° 01' 57"
Station C	79° 11' 08"
Windsock	165° 17' 04"
Floodlight (TDC)	198° 11' 20"
Christmas Island C	
Windsock (TDC)	(RM) 183° 17' 28"
Floodlight (TDC)	224° 51' 04"
Station B	259° 10' 50"
Cocos Island A	
Station D	61° 17' 55"
Compass Locator Aerial	330° 47' 34"
TDC windsock	(RM) 342° 47' 39"
TDC anemometer	345° 12' 01"
Cocos Island D	
Station A	241° 17' 52"
TDC DME tower	316° 24' 06"
Compass locator aerial	(RM) 327° 25' 11"
Condobolin C	
Station D	14° 30' 02"
Windsock to south	178° 00' 34"
Windsock to north	(RM) 344° 01' 57"
Condobolin D	
Windsock to south	188° 10' 33"
Station C	194° 30' 02"
Windsock to northwest	(RM) 306° 56' 40"
Cooktown D	
Tree on hill	62° 13' 14"
Station E	75° 30' 59"
TV antenna	211° 26' 17"

Fence corner		293° 57' 27"
LHS Connors Knob		299° 48' 42"
Windsock	(RM)	335° 55' 00"
Croydon B		
Station D		51° 35' 40"
Small white gum tree (centre of trunk)		179° 16' 40"
Yellow windsock		316° 12' 41"
Terminal vent		331° 15' 23"
TV mast	(RM)	341° 18' 08"
Croydon D		
Station B	(RM)	231° 31' 19"
White windsock		252° 02' 26"
Yellow windsock		296° 51' 51"
Terminal vent		311° 11' 45"
TV mast		336° 31' 38"
Daly Waters B		
RM east spike		103° 41' 05"
TDC corner fence-post	(RM)	234° 41' 55"
Bottom LHE powerhouse		338° 19' 31"
Daly Waters C		
RM east spike		90° 07' 55"
RHE powerstation accomodation quarters		168° 17' 58"
TDC airport watertower	(RM)	283° 40' 15"
Darwin E		
TDC top aerial of control tower	(RM)	55° 13' 38"
TDC ABC aerial		231° 46' 36"
Microwave tower aerial		279° 39' 39"
Station F		350° 53' 02"
Darwin F		
TDC top aerial of control tower	(RM)	69° 23' 52"
Station E		170° 52' 48"
TDC ABC aerial		226° 45' 14"
Microwave tower aerial		260° 47' 42"
Derby D		
Radio 6DB aerial	(RM)	17° 09' 29"
Station E		89° 01' 14"
Windsock		189° 38' 40"
Remote receiver aerial		194° 41' 16"
Derby E		
Radio 6DB aerial	(RM)	13° 19' 38"
Remote receiver aerial		202° 34' 27"
Windsock		206° 44' 11"
Station D		269° 02' 07"
Emu B		
Station C	(RM)	299° 24' 05"
Emu C		
Station B	(RM)	119° 24' 05"

Esperance C	
TDC DME	9° 14' 28"
Windsock	67° 52' 18"
TDC RH NDB	(RM) 123° 17' 17"
Station D	291° 16' 48"
Esperance D	
TDC DME	30° 15' 22"
RH edge of hangar	71° 12' 49"
Windsock	77° 55' 04"
TDC RH NDB	(RM) 119° 49' 16"
Etadunna B	
Station C	128° 54' 59"
House gable	208° 02' 21"
Station A	208° 25' 14"
Base of Lutheran cross	(RM) 244° 06' 44"
Top LHE of RH watertank	264° 51' 27"
Etadunna C	
Base of Lutheran cross	263° 18' 48"
Station A	269° 07' 28"
Top LH edge of RH watertank	292° 01' 20"
Station B	(RM) 308° 54' 59"
Eucla C	
Apex of hanger	(RM) 174° 49' 12"
Eastern aerial of Telecom tower	270° 11' 58"
RH brace, base of cross	303° 03' 07"
Eastern post of fence round cross	314° 32' 23"
Station D	332° 29' 45"
SW edge water tank near cabin 16	355° 00' 28"
Eucla D	
Station C	152° 29' 45"
Eastern brace, base of cross	(RM) 156° 55' 05"
Eastern aerial of Telecom tower	268° 47' 50"
Flinders Island B	
Peak on hill, Strezelecki Range	139° 08' 00"
Base of windsock to south	(RM) 143° 52' 42"
Station C	236° 36' 27"
Station B'	258° 52' 31"
Flinders Island B'	
Station B	78° 52' 31"
Base of windsock	(RM) 139° 52' 32"
Station C	231° 03' 20"
Flinders Island C	
Station B'	51° 04' 35"
Station B	56° 36' 27"
Wind generator on hill	119° 04' 54"
Windsock to east	(RM) 123° 10' 31"
Geraldton C	
Windmill	95° 01' 52"
Chimney	194° 33' 18"

Station D	304° 04' 59"
Communications tower	(RM) 347° 35' 26"
Geraldton D	
Communications tower	(RM) 2° 35' 17"
Windmill	100° 44' 28"
Station C	124° 04' 53"
Chimney	192° 02' 34"
Gove B	
TDC LH NDB	39° 47' 52"
TDC anemometer mast	50° 00' 06"
Station C	108° 07' 44"
TDC Met radar dome	(RM) 220° 09' 56"
Gove C	
TDC anemometer mast	12° 12' 25"
TDC LH NDB	16° 40' 36"
TDC Met radar dome	(RM) 264° 58' 50"
Station B	288° 08' 04"
Grafton A	
Windsock to north	17° 56' 30"
Station B	(RM) 22° 14' 59"
Tower on hill	25° 04' 37"
Windsock to south	172° 29' 09"
Grafton B	
Windsock to north	16° 55' 35"
Windsock to south	191° 35' 17"
Station A	(RM) 202° 14' 59"
Halls Creek D	
Station E	236° 52' 11"
Anemometer	(RM) 317° 04' 42"
RH NDB mast	346° 50' 01"
Halls Creek E	
RH NDB mast	16° 02' 11"
Station D	56° 52' 11"
Anemometer	(RM) 342° 06' 40"
Hobart H	
Base of windsock to east	155° 04' 00"
Microwave tower on hill behind terminal	237° 30' 51"
Rotating light support on tower	(RM) 252° 39' 02"
Station G	312° 35' 32"
Laverton D	
Water tower (LH upright)	236° 15' 39"
Station E	274° 05' 38"
LH NDB	(RM) 282° 39' 20"
RH NDB	287° 22' 42"
Laverton E	
Station D	94° 05' 11"
Water tower (LH upright)	233° 38' 26"

Aerial mast	243° 32' 10"
LH NDB	(RM) 288° 42' 02"
Lord Howe Island C	
Windsock stump, Rabbit Island	(RM) 184° 29' 51"
Lord Howe Island D	
Station E	18° 49' 28"
Windsock base	24° 19' 59"
SW corner DME building	128° 14' 48"
Gable of terminal	304° 38' 23"
TDC anemometer mast	(RM) 340° 44' 42"
Lord Howe Island E	
SW corner DME building	175° 25' 34"
Windsock base	188° 18' 19"
Station D	198° 49' 13"
Middle terminal gable	231° 03' 03"
TDC anemometer mast	(RM) 297° 55' 50"
Mackay B	
TDC VOR beacon	182° 14' 41"
Light support shaft	
atop control tower	(RM) 239° 19' 06"
Station C	315° 25' 50"
Near windsock	
(where pole meets support)	325° 38' 40"
TDC microwave tower to NW	348° 16' 23"
Mackay C	
Station B	135° 25' 50"
TDC VOR beacon	176° 05' 28"
Light support shaft	
atop control tower	(RM) 227° 21' 03"
Near windsock (as above)	332° 32' 37"
TDC microwave tower	349° 12' 43"
Mallacoota A	
TDC of DME	6° 31' 58"
Base of windsock to east	172° 03' 53"
Windsock to west	(RM) 276° 32' 44"
Station B	285° 49' 58"
Maryborough C	
Top centre shaft of control light	(RM) 15° 44' 51"
New windsock	48° 57' 25"
Station D	87° 25' 45"
Gable of red roof house to SE	159° 41' 33"
Maryborough D	
Windsock (base of lights)	31° 34' 04"
Near gable red roof house to SW	191° 00' 47"
Station C	267° 25' 45"
Top centre shaft control light	(RM) 331° 10' 53"
Meekatharra B	
Windsock	38° 24' 54"
Station C	216° 25' 36"

NDB tower	(RM)	254°	52′	23″
Light tower		311°	14′	47″
Meekatharra C				
Station B		36°	24′	51″
Windsock		37°	57′	17″
NDB tower	(RM)	263°	36′	53″
Light tower		334°	04′	57″
Mildura D				
LH edge of water tower		57°	37′	57″
Windsock to east (base of lights)		72°	41′	03″
TDC anemometer pole		137°	21′	36″
Windsock to west (TDC)	(RM)	277°	15′	48″
Station E		359°	54′	33″
Mildura E				
LH edge of water tower		58°	42′	26″
Windsock to east (as above)		91°	55′	55″
TDC anemometer pole		155°	45′	14″
Station D		179°	54′	33″
Windsock to west (TDC)	(RM)	261°	33′	13″
Moree F				
Beacon light on silo	(RM)	00°	29′	42″
Station G		198°	26′	16″
Windsock to south		206°	16′	32″
LH edge of fuel tank		336°	38′	57″
Moree G				
Beacon light on silo	(RM)	2°	09′	21″
Station F		18°	26′	15″
Windsock to south		207°	51′	47″
Mount Isa A				
Station B	(RM)	34°	11′	22″
Fire hose pole		132°	16′	50″
Windsock near anemometer hut		182°	27′	23″
Tallest mine chimney (centre of protusion atop it)		186°	18′	23″
Yellow cone radar		251°	00′	28″
Trig point		260°	19′	03″
Windsock		344°	01′	21″
Mount Isa B				
TDC aerial mast		60°	20′	13″
Microwave tower (middle strut)		130°	04′	57″
Tallest mine chimney (as above)		187°	04′	28″
Windsock (base of lights)		203°	04′	32″
Station A	(RM)	214°	11′	22″
Yellow cone radar		239°	11′	53″
Trig point		256°	56′	15″
Mount Vernon A				
Cliff edge		46°	27′	02″
Telecom mast		139°	55′	22″
Aerial near house		214°	38′	06″
Station B	(RM)	348°	55′	08″

Mount Vernon B	
Cliff edge	47° 34' 03"
Telecom mast	155° 47' 01"
Station A	(RM) 168° 55' 08"
Aerial near house	178° 28' 50"
Newcastle A	
Station B	64° 21' 00"
Top RHE watertower	(RM) 106° 24' 15"
TDC NDB aerial	217° 48' 12"
TDC lightpole	300° 06' 03"
Newcastle B	
Top RHE watertower	(RM) 110° 35' 27"
TDC NDB aerial	219° 56' 29"
Station A	244° 21' 00"
TDC lightpole	283° 29' 28"
Norfolk Island B	
Station C (ARP)	248° 14' 34"
Mt Pitt DME tower	(RM) 350° 37' 23"
Mt Pitt beacon	351° 35' 37"
Norfolk Island C	
Station B	68° 14' 40"
Mt Pitt DME tower	(RM) 357° 42' 49"
Mt Pitt beacon	358° 32' 10"
Oodnadatta B	
TDC tank at racecourse	119° 03' 52"
Base of windsock to south	225° 26' 52"
TDC windsock near terminal	(RM) 303° 35' 24"
Oodnadatta C	
Cairn on hill	006° 40' 37"
TDC windsock near terminal	143° 56' 57"
Base of windsock to south	(RM) 151° 45' 36"
Parafield A	
Base of windsock to east	122° 34' 11"
Station B	171° 32' 04"
Base of light structure of windsock	241° 19' 43"
TDC Torrens Is. chimney	261° 28' 00"
TDC Bridgestone chimney	'83 (RM) 357° 15' 33"
Parafield B	
Bridgestone chimney	'83 (RM) 356° 32' 24"
Port Hedland D	
Lightpole	181° 37' 43"
Aerial	261° 00' 20"
Windsock	310° 10' 49"
Met aerial	(RM) 349° 01' 04"
Port Hedland E	
Lightpole	181° 37' 43"
Aerial	261° 00' 20"

Windsock	310° 10' 49"
Met aerial	(RM) 349° 01' 04"
Portland A (1936)	
Steeple on RC church	(RM) 189° 55' 12"
Portland C	
Mt Clay radio tower	62° 46' 25"
Station D	92° 25' 51"
Station E	185° 57' 43"
LH edge tank on skyline	185° 58' 28"
Cape Bridgewater trig	(RM) 212° 52' 31"
Portland D	
Mt Clay radio tower	62° 33' 51"
LH edge tank on skyline	189° 36' 06"
Cape Bridgewater trig	(RM) 213° 42' 21"
Station E	218° 50' 41"
Station C	172° 25' 51"
Portland E	
Station C	5° 57' 43"
Station D	38° 50' 41"
LH edge tank on skyline	185° 58' 36"
Cape Bridgewater trig	(RM) 213° 32' 35"
Port Lincoln C	
Northern-most NDB	83 20° 10' 14"
Southern-most NDB	(RM) 20° 43' 21"
Station D	64° 57' 42"
Flinders monument	162° 52' 15"
Benchmark to west	256° 48' 39"
Port Lincoln D	
SE corner of barn	81° 17' 18"
Flinders monument	163° 18' 41"
Eastern end of grain silo at port	182° 02' 43"
Station C	244° 57' 42"
TDC closest (southern-most) NDB	(RM) 349° 21' 24"
Quilpie A	
Station B	014° 17' 52"
RH edge of fuel tank to east	093° 16' 56"
LH upright railing round beacon tower	307° 26' 21"
Base light structure on windsock	(RM) 324° 14' 32"
Quilpie B	
Station A	194° 17' 52"
Middle upright railing round beacon*	260° 36' 36"
Windsock (base of light structure) (RM)	287° 23' 18"
*Same upright used in station A round of angles. At station B it is seen as one of the middle uprights.	
Roma D	
TDC RH vent on terminal	082° 21' 11"

Tower on hill	113° 31' 04"
LHS water tower in town	175° 56' 33"
TDC RH chimney at hospital	(RM) 183° 32' 24"
Station E	196° 41' 13"
Roma E	
Station D	016° 46' 13"
TDC RH vent on terminal	048° 09' 51"
Tower on hill	111° 41' 40"
LHS water tower in town	174° 11' 12"
TDC RH chimney at hospital	(RM) 182° 13' 28"
Southern Cross B	
Station C	136° 13' 58"
Apex of new shed	226° 38' 27"
TDC Silo	293° 48' 42"
RH NDB tower	(RM) 354° 21' 48"
Southern Cross C	
Apex of new shed	236° 37' 12"
TDC Silo	294° 32' 45"
Station B	316° 14' 16"
RH NDB tower	(RM) 345° 35' 45"
Telfer A	
House Vent	087° 49' 30"
Station B	121° 59' 06"
Cairn Trig Point	234° 50' 31"
Light Pole	(RM) 358° 14' 56"
Telfer B	
House Vent	(RM) 087° 49' 30"
Cairn Trig Point	239° 50' 38"
Station A	301° 59' 32"
Tennant Creek C	
Trig station	012° 26' 18"
RH Edge of Squat Tank	164° 29' 25"
Station D	(RM) 335° 23' 39"
Windsock Base of Lights	343° 28' 52"
Tennant Creek D	
Trig station	014° 34' 43"
Station C	(RM) 155° 23' 39"
RH Edge of Squat Tank	161° 51' 56"
Windsock Base of Lights	351° 11' 29"
The Granites C	
Station D	085° 08' 41"
Windmill	120° 50' 45"
Trig Point	(RM) 188° 38' 57"
The Granites D	
Windmill	165° 06' 18"
Trig Point	(RM) 200° 37' 39"
Station C	265° 08' 49"

Tibooburra A (1983)			
TDC RH NDB	(RM)	7° 14'	40"
Toolangi SM			
East mark (EMK)	(RM)	92° 17'	03"
Warburton A			
Top insulator, 7th telegraph pole		89° 24'	09"
Station B		191° 02'	00"
Radio aerial (which one ?)		241° 57'	02"
TDC RH NDB	(RM)	325° 59'	21"
Warburton B			
Station A		11° 02'	09"
Top insulator, 7th telegraph pole		55° 09'	15"
Radio aerial		318° 14'	57"
TDC RH NDB	(RM)	344° 27'	52"
Warracknabeal C			
South edge of tank		88° 08'	28"
Base of windsock		106° 39'	30"
Station D		224° 16'	13"
Base of lights on windsock		274° 57'	42"
Grain silo	(RM)	347° 25'	42"
Warracknabeal D			
Station C		44° 16'	13"
Windsock		85° 54'	17"
SW edge of chimney on homestead		155° 38'	02"
Southern apex of hanger		307° 53'	52"
Grain silo	(RM)	348° 33'	38"
Weipa B			
Flight Services building gable		174° 16'	35"
Base lightpole by windsock		205° 34'	45"
Station C		237° 28'	17"
TDC VOR beacon		340° 44'	15"
TDC Met radar dome	(RM)	352° 47'	00"
Weipa C			
TDC Met radar dome	(RM)	2° 23'	24"
Station B		57° 28'	20"
Top LH corner of powerhouse		177° 29'	17"
Wilcannia D			
LH edge of Ladies Toilet Block	(RM)	032° 29'	31"
Station E		036° 34'	13"
LH edge of Water Tank		184° 37'	30"
Wilcannia E			
Station D		216° 34'	13"
RH edge of Ladies Toilet Block	(RM)	223° 05'	17"
Winton A			
Closest corner of Brick Entrance		000° 30'	40"
TDC Water Tower Beacon	(RM)	293° 00'	46"

Winton B		
Base of Light Structure on Windsock		029° 42' 46"
RH (Southern) NDB	(RM)	183° 18' 23"
Water Tower Beacon		240° 32' 06"
Woomera A		
TDC North-Most Receiver Mast		052° 21' 00"
LH edge of Control Tower		155° 43' 39"
TDC Airport Water Tower	(RM)	160° 37' 00"
TDC Northwesterly Mast		352° 46' 19"
Woomera B		
Piersons Trig	(83)	027° 25' 29"
Base of Windsock to South		195° 49' 54"
TDC water Tower	(RM)	314° 16' 52"
TDC Control Tower		348° 35' 35"
Wyndham C		
TDC Windsock	(RM)	155° 43' 58"
TDC LH NDB Tower		160° 16' 45"
Station D		192° 32' 19"
Cliff Face		230° 51' 44"
Wyndham D		
Station C		012° 32' 58"
TDC Windsock		140° 01' 10"
TDC LH Windsock	(RM)	149° 33' 00"
Cliff Face		231° 09' 41"
Zanthus B		
Western edge of western tank		1° 35' 26"
East insulator on telegraph pole	(RM)	4° 51' 12"
Mark on windsock		230° 18' 24"
Station C		328° 44' 02"
Zanthus C		
Station B	(RM)	148° 44' 02"
Mark on windsock		156° 12' 55"
Aerial		346° 43' 29"

Table 5 Station Differences

Station 1	Station 2	Station 1 - 2			
		D	H nT	Z nT	F nT
Albany C	Albany D	2.2	8	14	15
Alice Springs C	Alice Springs E	0.0	-1	-11	-4
Alice Springs E	Alice Springs F	0.6	9	-3	0
Alpha A	Alpha B	0.2	1	-3	-1
Ashmore Reef A	Ashmore Reef B	-0.3	3	-2	
Augusta D	Augusta E	-79.6	-313	574	427
Ayers Rock A	Ayers Rock C		-137	181	78
Ayers Rock C	Ayers Rock D	-0.6	7	-26	-19
Ayers Rock C	Ayers Rock E	5.0	27	-39	-17
Birdsville B	Birdsville C	3.2	-2	-13	
Boulia C	Boulia D	0.9	0	15	
Bourke C	Bourke D	-0.2	2	3	
Carnarvon D	Carnarvon E	0.7	-9	-10	-14
Carnegie A	Carnegie B	-1.5	-30	-16	-35
Ceduna D	Ceduna E	-4.6	26	-85	-68
Christmas Is B	Christmas Is C	8.1	-9	31	12
Cocos Is A	Cocos Is D	0.2	10	-1	5
Cocos Is A	Direction Is		-319	-146	-332
Condobolin B	Condobolin C	1.3	-44	-14	63
Condobolin C	Condobolin D	1.2	-48	-40	-53
Cooktown D	Cooktown E	0.4	-10	-21	-19
Croydon B	Croydon D	4.0	6	10	13
Daly Waters A	Daly Waters B	-5.0	-14	16	1
Daly Waters B	Daly Waters C	-1.5	6	14	20
Darwin E +	Darwin E *	0.0	0	6	1
Darwin E *	Darwin F +	47.5	-263	0	-197
Darwin E *	Darwin F *	47.0	-261	6	-190
Derby D	Derby E	-2.5	-12	-38	-38
Emu A	Emu B	23.5	28	-38	-19
Emu B	Emu C	-0.1	3	-3	-1
Esperance C	Esperance D	-2.1	-7	119	109
Etadunna A	Etadunna B	2.2	-18	139	130
Etadunna B	Etadunna C	0.2	0	7	2
Eucla C	Eucla D	-2.5	20	-184	-161
Flinders Is B	Flinders Is B	0.6	3	2	3
Flinders Is B	Flinders Is C	-1.5	-10	-2	-2
Geraldton B	Geraldton C	-1.8	49	7	39
Geraldton C	Geraldton D	-3.6	-10	-14	-16
Gove B	Gove C	33.0	-82	225	-7
Grafton A	Grafton B	-2.9	-12	-53	-53
Halls Creek D	Halls Creek E	6.0	31	143	66
Laverton D	Laverton E	11.7	-92	123	201
Lord Howe Is C	Lord Howe Is D	37.4	830	34	427
Lord Howe Is D	Lord Howe Is E	5.4	-33	-109	-111
Mackay B	Mackay C	-3.5	-8	-3	-9
Maryborough C	Maryborough D	-21.8	31	-256	23
Meekatharra B	Meekatharra C	-72.3	440	36	62
Mildura A	Mildura D	-24.0	39	16	-59
Mildura D	Mildura E	0.4	12	4	8
Moree F	Moree G	0.0	12	5	9
Mount Isa A	Mount Isa B	0.8	-5	-4	-5

Mount Vernon A	Mount Vernon B	4.0	60	14	45
Newcastle A	Newcastle B	2.8	-9	19	
Norfolk Is B	Norfolk Is C	-11.2	51	-52	-10
Oodnadatta B	Oodnadatta C	-1.5	10	11	12
Parafield A	Parafield B	-2.2	-8	14	8
Port Hedland C	Port Hedland D	-23.3	-8	16	11
Port Hedland D	Port Hedland E	-0.4	9	-12	-6
Portland A	Portland D	38.6	-168	48	-11
Portland C	Portland D	-0.7	-3	17	18
Portland D	Portland E	2.0	-13	59	-62
Port Lincoln C	Port Lincoln D	-10.7	-15	147	128
Quilpie A	Quilpie B	0.4	8	21	26
Roma D	Roma E	-0.2	2	-10	-4
Southern Cross B	Southern Cross C	0.3	7	6	87
Telfer A	Telfer B	-23.2	132	-119	-22
Tennant Creek C	Tennant Creek D	-1.2	25	27	35
The Granites C	The Granites D	-24.4	-14	-70	-3
Warburton A	Warburton B	-0.6	115	-271	-173
Warracknabeal A	Warracknabeal C	?	68	-87	-52
Warracknabeal C	Warracknabeal D	0.7	0	-9	-9
Weipa B	Weipa C	1.9	28	-55	4
Wilcannia D	Wilcannia E	0.0	-2	1	
Winton A	Winton B	-0.9	-12	51	32
Woomera A	Woomera B	10.1	21	-33	42
Wyndham C	Wyndham D	-7.0	-52	155	76
Zanthus B	Zanthus C	0.5	-21	-31	-35

+ before concreting

* after concreting

Table 6 Station Details

Station	Latitude # ' "			Longitude # ' "			Elevation metres	Local Meridian Time (UT)	Station Priority
Albany C	-34	57	06	117	48	19	67 *	0409	P
D	-34	57	01	117	48	21	68 *		S
Alice Springs C	-23	47	47	133	53	43	560 #		H
E	-23	48	29	133	53	57	540 *	0304	P
F	-23	48	33	133	53	53	540 *		S
Alpha A	-23	39	09	146	35	10	420 #	0214	P
B	-23	39	14	146	35	07	420 #		S
Ashmore Reef A	-12	14	47	122	58	07	2 #	0348	P
B	-12	14	44	122	58	07	2 #		S
Augusta D	-34	19	51	115	09	20	30 *	0419	P
E	-34	19	45	115	09	20	30 *		S
Ayers Rock A	-25	20.9		131	03.7		519 #		H
C	-25	11	26	130	58	42	494 *	0316	P
D	-25	10	50	130	57	55	490 *		S
E	-25	10	54	130	57	50	490 *		S
Birdsville B	-25	54	05	139	20	55	55 #	0243	P
C	-25	53	56	139	20	56	55 #		S
Boulia C	-22	54	55	139	53	54	163 *	0240	P
D	-22	54	48	139	53	59	162 *		S
Bourke C	-30	03.1		145	57.1		117 #	0216	P
D	-30	02.9		145	57.2		117 #		S
Carnarvon D	-24	53	01	113	39	50	2 *	0425	P
E	-24	52	56	113	39	50	2 *		S
Carnegie A	-25	48	12	122	56	50	452 *	0348	P
B	-25	48	07	122	56	54	452 *		S
Ceduna D	-32	07	55	133	42	30	20 *	0305	P
E	-32	07	50	133	42	27	20 *		S
Christmas Is B	-10	26	59	105	41	22	262 *	0457	P
C	-10	26	57	105	41	28	264 *		S
Cocos Is A	-12	12	00	96	50	15	3 *	0533	P
C	-12	12	00	96	50	14	2 #		S
D	-12	11	57	96	50	22	1 *		S
Condobolin B	-33	06.0		147	08.1		217 #		H
C	-33	04	23	147	12	37	217 #	0211	P
D	-33	04	16	147	12	39	217 #		S
Cooktown D	-15	26	46	145	11	15	5 *	0219	P
E	-15	26	45	145	11	21	5 *		S
Croydon B	-18	12.9		142	15.2		115 *	0231	P
C	-18	12.8		142	15.3		117 *		S
Daly Waters B	-16	16	17	133	20	48	211 *	0307	P
C	-16	16	13	133	20	51	211 *		S
Darwin E	-12	25	23	130	52	15	29 *	0317	P
F	-12	25	18	130	52	14	30 *		S
Derby D	-17	22	12	123	39	50	6 *	0345	S
E	-17	22	12	123	39	54	6 *		P
Emu A	-28	38	22	132	11	33	265 #		H
B	-28	37	58	132	12	07	257 *	0311	P
C	-28	37	56	132	12	04	258 *		S
Esperance C	-33	41	10	121	49	17	137 *	0353	P
D	-33	41	08	121	49	11	136 *		S
Etadunna A	-28	43.1		138	38.0		20 #		H
B	-28	42	54	138	38	01	25 #	0245	P
C	-28	43	00	138	38	09	26 #		S

Eucla C	-31	40.9	128	52.8	5	#	0324	P
D								S
E								S
Flinders Is B	-40	05 27	147	59 28	8	*	0208	P
B1	-40	05 27	147	59 28	8	*		S
C	-40	05 34	147	59 16	4	*		S
Geraldton B	-28	47 00	114	37 42	30	#		S
C	-28	47 59	114	42 09	31	*	0421	H
D	-28	47 56	114	42 05	32	*		P
Gove A	-12	22.6	136	44.4	50	#		S
B	-12	16 32	136	49 10	50	#	0253	H
C	-12	16 34	136	49 17	50	#		P
Grafton A	-29	45 38	153	01 41	27	*	0148	S
B	-29	45 30	153	01 44	25	*		P
Halls Creek D	-18	14 02	127	39 58	409	*	0329	S
E	-18	14 06	127	39 51	412	*		P
Heard Is A	-53	01 52	73	01 56	4	#	0708	S
Hobart H	-42	49	147	30	5	*	0210	P
Laverton D	-28	36 53	122	25 35	463	*	0350	P
E	-28	36 53	122	25 26	462	*		S
Lord Howe Is C	-31	31 35	159	03 33	4	#		H
D	-31	32 35	159	04 43	2	#	0124	P
E	-31	32 27	159	04 46	4	#		S
Mackay B	-21	10 05	149	10 48	4	*	0203	P
C	-21	10 00	149	10 44	4	*		S
Mallacoota A	-37	36 06	149	43 00	24	*	0201	P
B	-37	36 03	149	43 21	29	*		S
Maryborough C	-25	31 25	152	42 44	10	*	0149	P
D					11	*		S
Meekatharra B	-26	36 52	118	32 50	518	*	0406	P
C	-26	36 56	118	32 47	519	*		S
Mildura A	-34	11.4	142	10.0				H
D	-34	13 51	142	05 03	51	*	0232	P
E	-34	13 45	142	05 03	50	*		S
Moree F	-29	29 49	149	50 46	230	#	0201	P
G	-29	29 55	149	50 44	230	#		S
Mount Isa A	-20	40 01	139	29 23	339	*	0242	P
B	-20	39 49	139	29 22	339	*		S
Mount Vernon A	-24	13 44	118	14 21	402	*	0407	P
B	-24	13 39	118	14 20	403	*		S
Newcastle A	-32	47 45	151	50 09	7	*	0153	P
B	-32	47 44	151	50 13	6	*		S
Norfolk Is B	-29	02 35	167	56 27	112	*	0048	P
C	-29	02 39	167	56 14	107	*		S
Oodnadatta B	-27	33.6	135	27.2	113	#	0258	P
C	-27	33 28	135	26 16	113	*		S
D	-27	33 27	135	26 11	113	*		S
Parafield A	-34	47 30	138	38 28	15	*	0245	P
B	-34	47 38	138	38 30	16	*		S
Port Hedland B	-20	18 48	118	37 05	4	*		H
C	-20	18 53	118	37 01	4	*		H
D	-20	22 26	118	37 51	6	*	0405	P
E	-20	22 32	118	37 52	6	*		S
Portland C	-38	18 49	141	28 03	93	#		S
D	-38	18 49	141	28 09	93	#	0234	P
E	-38	18 57	141	28 02	80	*		S
Port Lincoln C	-34	36 31	135	52 14	5	*	0257	P
D	-34	36 29	135	52 20	7	*		S
Quilpie A	-26	36 54	144	15 27	215	#	0223	P
B	-26	36 48	144	15 29	215	#		S

Roma D	-26 32 36	148 46 44	308 #	0205	P
E	-26 32 44	148 46 10	308 #		S
Southern Cross B	-31 14 20	119 21 19	348 *	0403	P
C	-31 14 24	119 21 24	349 *		S
Telfer A	-21 42 47	122 13 29	293 *	0351	P
B	-21 42 50	122 13 35	293 *		S
Tennant Creek C	-19 38 35	134 10 54	376 *	0303	P
D	-19 38 30	134 10 51	376 *		S
The Granites C	-20 33 38	130 21 16	380 #	0319	P
D	-20 33 37	130 21 26	380 #		S
Tibooburra A	-29 26.9	142 03.2	174 *	0232	P
Toolangi SM	-37 32	145 28	457	0218	P
Warburton A	-26 08 02	126 34 55	458 *	0334	P
B	-26 08 17	126 34 52	459 *		S
Warracknabeal C	-36 19 22	142 25 05	118 *	0230	P
D	-36 19 26	142 24 59	120 *		S
Weipa B	-12 40 46	141 55 23	18 *	0232	P
C	-12 40 49	141 55 17	18 *		S
Wilcannia D	-31 31 23	143 22 57	94 *	0226	P
E	-31 31 17	143 23 03	94 *		S
Winton A	-22 23.9	143 03.5	180 *		S
B	-22 22.0	143 04.9	192 *	0228	P
Woomera A	-31 06 03	136 46 52	195 #	0253	P
B	-31 09 24	136 48 32	167 *		S
Wyndham C	-15 30 18	128 08 54	4 *	0327	P
D	-15 30 24	128 08 52	4 *		S
Zanthus B	-31 02 18	123 34 05	267 *	0346	P
C	-31 02 13	123 34 02	266 *		S

P = Primary Station

S = Secondary station

H = Historical Station

* Elevations derived by AUSLIG (Natmap & ASO)

Estimated elevations

Table 7 Preliminary Mean Hourly Values

		DECLINATION EAST																											
June 1986		MEAN HOURLY VALUES																								PRELIMINARY			
	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1	D																												
2																													
3																													
4																													
5	Q																												
6																													
7	D																												
8																													
9																													
10	D																												
11																													
12																													
13																													
14																													
15	Q																												
16																													
17																													
18																													
19																													
20																													
21																													
22		Condobolin											10 Deg +tabular values in 0.1min																
23	Q									222	223	222	220	221	222	224	226	230	233	235	233	234	232	230	225	219			
24		211	215	222	237	246	252	252	241	237	231	223	221	218	220	219	219	220	225	229	231	229	227	222	219	228			
25	Q	221	222	228	236	241	242	238	231	226	225	224	224	225	226	225	226	231	232	233	233	232	233	233					
26	Q	Moree											10 Deg +tabular values in 0.1min																
27	D		411	418	424	435	435	431	427	419	419	414	414	408	405	403	419	422	439	443	435	443	452	447	448				
28	D	437	426	424	434	429	433	420	416	416	415	414	415	414	411	414	419	419	424	424	428	430	427	425	417	422			
29		411	410	414	420	428	430	427	422	417	415	413	411	407	412	422	413	419	430	428	425	427	431						
30																													

DECLINATION EAST

July 1986

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		Bourke										9 Deg +tabular values in 0.1min														
1		409	411	418	429	444	440	434	427	424	422	421	421	421	422	423	425	427	429	428	430	426	426	424	416	425
2	D	415	415	415	419	427	436	433	423	421	416	420	416	412	408	414	418	420	425	425	425	422	418	417	415	420
3																										
4																										
5																										
6																										
7	Q																									
8																										
9																										
10																										
11	Q																									
12																										
13																										
14	Q																									
15	Q																									
16																										
17																										
18																										
19																										
20	Q																									
21																										
22																										
23		Ashmore Reef										2 Deg +tabular values in 0.1min														
24								139	141	136	132	125	121	116	110	108	112	111	112	116	125	125	127	132	130	
25	D	126	120	102	99	96	113	126	125	126	121	122	118	120	118	118	120	121	122	128	127	129	136	144	154	122
26	D	120	93	92	95	96	109	122	132	126	124	119	118	106	116	115	114	114	115	120	123	128	127	129	127	116
27	D	114	98	97	90	102	109	129	138	124	98	128														
28																										
29	D																									
30																										
31																										

		DECLINATION EAST																											
August 1986		MEAN HOURLY VALUES																								PRELIMINARY			
	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1																													
2	Q																												
3																													
4																													
5																													
6																													
7	Q																												
8																													
9																													
10																													
11		Wilcannia									9 Deg +tabular values in 0.1min																		
12											102	101	104	104	107	108	109	111	117	121	118	118	114	107	92				
13		88	92	116	141	151	150	131	113	111	92	79	102	84	100	101	105	118	114	116	113	112	110	96	85	109			
14		78	72	82	104	124	135	129	118	110	108	104	103	102	102	105	110	113	113	113	116	118	128	115	107	109			
15																													
16	Q	Tibooburra									8 Deg +tabular values in 0.1min																		
17		233	237	244	261	278	291	290	276	263	262	260	256	255	255	260	259	261	265	266	267	267	268	263	252	262			
18	Q	244	234	235	260	286	295	291	274	264	262	257	255	257	258	260	261	262	262	259	258	260	262	255	245	261			
19	Q																												
20																													
21		Birdsville									6 Deg +tabular values in 0.1min																		
22	D				533	540	552	556	555	551	531	536	538	513	522	527	525	533	540	534	538	538	537	539	534				
23	D	527	518	519	528	530	542	542	535	499	531	524	521	493	503	522	519	525	529	526	537	536	536	521	515	524			
24	D	511	505	505	510	522	530	539	535	531	515	513	511	512	512	515	531	537	530	529	533	529	526	524	519	522			
25		Quilpie									8 Deg +tabular values in 0.1min																		
26		114	111	122	144	158	151	146	120	129	124	120	122	123	122	127	130	132	139	143	144	142	136	125					
27		120	117	118	128	135	145	148	144	137	128	126	126	124	104	90	123	131	134	135	136	138	138	129	117	128			
28		110	108	114	122	133	144	148	146	120	129	129	120	122	116	122	128	132	138	136	135	139	143	134					
29		Alpha									8 Deg +tabular values in 0.1min																		
30	D	394	400	415	432	435	434	422	408	407	404	398	410	406	403	405	421	422	422	422	420	413	401	390					
31	D	393	385	394	411	422	430	423	404	421	416	403	405	404	408	415	418	423	421	424	434	448	450	419	403	416			
32		398	397	405	421	431	438	435	428	420	412	412	412	407	399	407	420	419	422	422	421	429	427	408	395	416			

		DECLINATION EAST																																
September 1986		MEAN HOURLY VALUES																								PRELIMINARY								
	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24								
1		Winton											7 Deg +tabular values in 0.1min																					
2			287	291		308	325	326		320	319	307		294	292	298		294	290	295		305	303	303		305	303	304		302	293	284		
3			278	276	280		291	306	318		318	314	302		295	293	290		292	293	293		294	292	297		298	297	299		298	291	277	295
4			256	248	250		269	293	307		309	302	293		290	289	288		286	286	287		289	290	290		294	295	295		294	284		
5																																		
6																																		
7	Q	Boulia											6 Deg +tabular values in 0.1min																					
8	Q				515		532	548	559		560	548	540		532	531	530		529	528	528		529	530	533		533	536	533		532	527	517	
9			512	513	519		532	544	553		551	546	539		531	525	524		523	526	530		531	531	532		533	533	532		532	524		
10	Q																																	
11																																		
12	D	Mt Isa											6 Deg +tabular values in 0.1min																					
13			31	23	31		41	54	67		73	74	55		43	51	39		49	47	50		50	50	52		57	57	57		61	65	52	51
14			44	39	34		49	60	71		74	68	59		54	52	53		54	53	54		55	56	57		59	54	59		61	54	46	55
15		Croydon											6 Deg +tabular values in 0.1min																					
16											339	329	322		321	319	319		319	319	321		321	321	322		321	322	325		327	316	312	
17			319	316	316		324	335	342		342	332	323		319	318	317		319	319	321		320	324	324		322	320	325		316	304	302	322
18			298	306	316		327	341	348		340	328	320		316	317	316		319	316	318		321	323	330		337	334	328		319	306	298	322
19																																		
20																																		
21		Cooktown											6 Deg +tabular values in 0.1min																					
22	Q														527	524	524		524	525	525		526	527	528		528	528	524		509	497	490	
23	D		494	509	529		553	568	569		549	535	531		525	518	508		516	513	518		518	521	528		535	531	527		518	498	490	525
24	D		497	503	513		522	522	525		525	528	526		520	513	512		518	517	518		518	523	522		525	528	527		523	514	505	519
25	D																																	
26	D																																	
27																																		
28		Mackay											8 Deg +tabular values in 0.1min																					
29			595	612		631	639	634		629	620	617		612	615	614		612	613	614		615	616	622		624	619	610		596	588	578		
30	Q		579	592	612		630	640	637		630	625	618		615	611	609		608	614	615		615	617	617		616	616	610		599	589	582	612

DECLINATION EAST

October 1986										MEAN HOURLY VALUES														PRELIMINARY				
	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
		Mackay										8 Deg +tabular values in 0.1min																
1		580	591	611	625	632	628	625																				
2	D																											
3		Roma										9 Deg +tabular values in 0.1min																
4		318	328	334	346	357	360	357	348	341	338	337	336	335	331	334	335	335	338	343	337	332	325	319	316	337		
5	D	329	341	356	369	376	367	358	356	350	343	338	314	303	323	331	332	340	350	341	340	338	333	327	327	341		
6		Maryborough										10 Deg +tabular values in 0.1min																
7						640		632	625	622	615	619	617	616	615	617	618	616	617	617	612	602	592	586	584			
8		595	614	639	654	658	649	637	628	621	618	611	607	609	611	614	619	614	620	620	618	609	602	593	585	619		
9		594	613	635	654	662	653																					
10	Q																											
11	Q	Grafton										11 Deg +tabular values in 0.1min																
12	Q	360	385	407	422	424	419	408	401	394	384	383	377	374	376	382	381	381	381	394	438	452	395	364	350	393		
13	D	369	390	412	438	443	448	429	409	376	370	362	355	352	359	375	382	381	380	384	382	376	368	355	350	385		
14	D																											
15																												
16																												
17																												
18																												
19	D																											
20																												
21																												
22																												
23																												
24	Q																											
25																												
26	Q																											
27																												
28																												
29																												
30																												
31																												

		DECLINATION EAST																											
March 1987		MEAN HOURLY VALUES																								PRELIMINARY			
	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1																													
2	Q																												
3																													
4																													
5	D																												
6																													
7	D																												
8																													
9																													
10																													
11																													
12																													
13																													
14																													
15																													
16																													
17		Mildura							9 Deg +tabular values in 0.1min																				
18								108	96	87	84	82	80	79	78	76	71	67	65	64	65	64	54	61	76				
19		64	72	94	107	118	112	102	90	76	75	74	57	69	76	78	77	74	76	72	69	71	69	60	53	79			
20	Q	54	74	104	117	125	121	111	95	88	88	85	82	77	73	78	79	79	77	77	73	70	61	44	29	82			
21	D																												
22	D	Etadunna							7 Deg +tabular values in 0.1min																				
23										87	82	77	75	71	70	67	67	67	67	67	65	63	59	51	44				
24	Q	44	52	72	93	106	105	97	89	80	74	71	69	68	69	68	69	67	67	67	66	65	63	53	48	72			
25																													
26		Woomera							6 Deg +tabular values in 0.1min																				
27	D	286	292	311	344	360	351	333	329	316	313	313	257	279	290	297	283	299	307	306	299	291	292	289	279	305			
28		277	290	305	311	318	319	317	316	313	301	300	302	298	293	292	293	293	290	289	281	282	277	267	258	295			
29		258																											
30	Q																												
31		Emu							4 Deg +tabular values in 0.1min																				
	Q	492	506	526	544	555	557	554	548	542	533	528	525	518	522	522	522	522	520	519	519	517	513	508	507	526			

		DECLINATION EAST																								
May 1987		MEAN HOURLY VALUES																						PRELIMINARY		
	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1		Halls Creek										3 Deg +tabular values in 0.1min														
2									96	89	90	82	80	72	73	73	74	77	78	76	76	76	77	78	68	
3		59	58	60	65	68	78	92	95	83	75	68	70	64	63	37	46	45	45	48	54	68	70	71	62	64
4		48	43	45	50	59	73	90	89	77	69	66	63	61	60	59	59	62	65	66	66	67	68	69	64	64
5		Derby										2 Deg +tabular values in 0.1min														
6		237	232	233	241	243	248	257	262	261	255	251	250	249	249	250	251	255	255	255	254	255	258	267	253	251
7		243	234	237	246	248	254	263	272	271	261	258	253	251	247	249	252	255	257	258	259	259	261	261		
8		Port Hedland										1 Deg +tabular values in 0.1min														
9			186	186	191	193	195	204	214	214	207	202	200	198	196	196	195	197	197	199	199	199	200	202	202	
10		190	178	176	179	182	189	201	214	214	205	201	198	197	185	185	194	194	196	197	199	201	201	204	204	195
11		195	187	185	187	188	189	195	204				191													
12	Q	Telfer										1 Deg +tabular values in 0.1min														
13		448	444	442	442	441	442	451	460	462	457	455	452	452	451	452	452	454	456	457	461	458	458	463	462	453
14		450	445	442	444	446	447	456	464	466	456	454	454	455	452	452	450	451	453	450	451	450	451	457		
15																										
16																										
17	Q	Carnarvon										-1 Deg -tabular values in 0.1min														
18	Q																									
19	Q							263	267	277	287	291	294	295	296	297	297	293	294	294	295	295	292	289		
20		298	315	323	320	312	304	296	285	285	292	298	303	306	307	307	306	308	303	302	301	302	297	304	301	303
21	Q	305	314	321	318	313	307	296	286	284	296	303	306	308	311	308	307	307	306	303	301	301	302	302	299	304
22																										
23		Mt Vernon										0 Deg +tabular values in 0.1min														
24	D				253	259	270	283	288	282	270	277	269	267	267	265	266	257	260	261	269	283	288	309	310	
25	D	292	287	279	272	271	275	277	288	280	266	258	267	264	262	262	266	270	272	274	276	277	276	278	281	274
26		271	257	252	256	260	265	276	284	288	282	278	284	278	271	268	261	257	259	262	266	274	270	281	295	271
27	D	Meekatharra										1 Deg +tabular values in 0.1min														
28					94	95	97	107	120	125	115	107	100	97	97	94	99	103	106	110	114	121	106	118	132	
29	D	123	113	101	115	125	114	118	128	106	82	122	107	79	58	63	78	85	86	92	92	94	95	98	101	99
30		94	91	93	94	94	93	101	110	111	105	99	94	91	71	83	87	92	85	94	91	83	85	92	104	93
31	D	105	95	86	85	84	86	84	97	105	86	73	69	71	73	73	70	69	69	87	79	72	81	90	99	83

111

UT

10 11 12 13 14

23 24

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24								
1		Meekatharra							1 Deg +tabular values in 0.1min																									
		97	88	83		84	82	83		92	102	105		99	97	97		98	88	85		82	84	87		94	99	110		108	108	105		94
2		Geraldton							-2 Deg -tabular values in 0.1min																									
3						151	143		136	132	134		140	141	142		145	146	144		144	143	142		140	140	135		136	140	135			
4		140	148	152		153	150	149		142	135	133		142	145	148		147	155	156		151	147	146		142	138	136		136	138	135		144
5		138	149	156		161	154	149		141	139	138		146	147	147		152	151	152		155	160	153		144	142	139		138	135	130		147
6	D																																	
7	D																																	
8	Q																																	
9	Q																																	
10																																		
11																																		
12	D																																	
13																																		
14																																		
15																																		
16																																		
17		Southern Cross							0 Deg -tabular values in 0.1min																									
18				315		286	266	252		231	210	206		211	213	216		219	217	217		217	214	213		212	210	211		211	210	212		
19	D	216	222	235		229	216	206		192	192	205		194	215	231		250	233	225		222	219	217		216	214	212		207	179	195		214
20		208	220	227		231	226	223		211	199	202		211	211	215		219	226	231		239	229	233		221	223	212		217	214	195		218
21		Laverton							1 Deg +tabular values in 0.1min																									
22	Q									470				473	475	475		474	475	476		478	480	484		489	491	490		486	489	494		
23	Q	490	477	472		471	478	490		497	498	492		485	481	480		479	478	478		480	482	485		487	492	489		490	492	491		485
24		472																																

DECLINATION EAST

July 1987

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24									
1	Q			/																															
2	Q																																		
3																																			
4																																			
5																																			
6	Q	Warburton										3 Deg +tabular values in 0.1min																							
7	Q		50	50		50	66	82		84	75	64		58	59	58		57	57	59		60	55	60		64	67	69		67	68	65			
8			52	46	40		46	57	67		73	75	65		60	59	59		52	53	53		53	61	64		62	65	63		58	67	67		59
9																																			
10		Zanthus										1 Deg +tabular values in 0.1min																							
11							154	160		168	175	167		150	147	145		144	135	136		137	136	143		150	150	150		150	154	160			
12			146	141	140		145	154	153		160	157	154		142	146	141		137	133	137		141	145	148		151	150	153		155	162	163		148
13			148	135																															
		Esperence										-0 Deg -tabular values in 0.1min																							
14						393	381	367		359	359	366		377	380	380		380	380	378		378	372	372		370	366	370		369	367	368			
15	D		376	390	398		396	383	368		350	344	361		373	375	371		376	390	417		408	400	370		379	377	379		357	320	326		374
16	D		355	380	386		386	388	375		370	354	364		396	375	379		382	383	392		392	364	381		386	383	374		372	362	348		376
17			372	380																															
		Albany										-3 Deg -tabular values in 0.1min																							
18				129		133	132	125		122	116	110		113	114	123		125	117	119		118	113	112		110	106	96		104	107	108			
19			109	112	116		115	115	112		110	108	105		107	109	112		112	116	118		114	113	112		109	108	107		100	100	99		110
20			102	109	110		114	115	112		108	109	108		108	109	110		112	114	113		114	111	107		113	109	108		104	97	102		109
21			105	112	116																														
		Augusta										-4 Deg -tabular values in 0.1min																							
22				466		477	472	462		467	448	432		432	436	439		444	445	446		444	444	442		442	439	423		424	430	425			
23			423	440	460		469	478	465		442	418	411		421	425	431		435	439	448		452	450	444		438	439	435		419	420	420		438
24			423	437	449		456	461	469		458	444	432		432	431	431		434	436	438		437	424											
25	D																																		
26	Q																																		
27																																			
28	D																																		
29	D																																		
30																																			
31																																			

DECLINATION EAST

August 1987

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24								
		Eucla																																
		4 Deg +tabular values in 0.1min																																
1		67	70		77	87	97		111	115	104		90	94	92		89	87	87		87	93	97		96	98	94		91	97	99			
2	Q	94	79	74		79	85	96		104	106	99		91	90	89		86	89	89		90	92	96		99	96	91		94	102	99		92
3		90	84	80		82	91	100		114	114	103		102	108	113		88	67	50		42	61	73		86	86	93		87	90	87		87
4																																		
		Ceduna																																
		5 Deg +tabular values in 0.1min																																
5		161		166	172	182		189	183	175		180	188	165		167	161	139		154	162	167		167	167	170		166	166	161				
6		155	151	155		161	171	180		184	182	174		174	165	154		160	156	147		139	153	155		162	168	169		165	167	162		163
7	Q	158	160	168																														
8		Port Lincoln																																
		5 Deg +tabular values in 0.1min																																
9										321		321	318	311		307	281	289		289	305	314		314	313	313		321	325	316				
10	Q	301	293	287		294	313	336		347	337	318		315	314	312		311	311	311		313	313	322		310	314	316		320	328	318		315
11		306	297	293		300	314	341		350	334	317		312	311	313		311	312	313		313	317	313		319	313	316		325	330	314		316
12		Parafield																																
		8 Deg +tabular values in 0.1min																																
13	D						81		83	90	-32		74	72	63		54	60	63		65	66	70		76	74	79		108	93	80			
14		54	46	53		55	66	74		99	88	79		70	73	67		62	40	57		45	76	71		69	109	100		98	107	87		73
15		70	57	48		56	75	82		100	78	33		59	43	46		59	63	76		70	64	65		69	93	76		123	123	108		72
16		74	61	46		55	70	92		94	82	71		43	69	63		64	56	62		61	68	67		65	78	74		94	87	75		70
17		57	45	44		46	68	84																										
18		Warracknabeal																																
		9 Deg +tabular values in 0.1min																																
18	Q									612	600		594	599	596		596	594	593		592	590	592		602	603	604		612	594	582			
19		579	576	579		604	632	642		630	623	607		603	596	591		585	560	561		577	587	591		596	601	597		603	595	583		596
20		569	568	568		585	610	623		619	610	599		593	575	579		576	558	569		587	595	594		598	607	602		603	588	576		590
21		Portland																																
		9 Deg +tabular values in 0.1min																																
22		409	401	405		425	464	488		487	472	458		459	457	449		445	441	435		436	445	435		434	447	454		443	437	426		444
23		423	423	424		448	466	478		487	476	447		449	457	433		423	423	406		409	399	397		424	450	450		456	443	435		439
24		426	420	432		453	473	487		482	464	449		444	444	438		398	399	412		428	435	461		457	457	445		438	425	413		441
25	D	412	405	410		426	448	461																										
26	D	Toolangi																																
		11 Deg +tabular values in 0.1min																																
27	D					286	298	311		309	287	243		234	262	247		237	230	257		252	240	243		267	300	288		270	256	237		
28		234	244	258		280	296	310		313	301	289		288	271	253		269	269	269		257	249	252		283	296	305		305	292	279		278
29		260	252	271		295	309	314		307	296	287		281	279	273		272	276	279		280	263	255		294	311	292		286	285	265		283
30																																		
		Mallacoota																																
		13 Deg +tabular values in 0.1min																																
31	D					221	223			238	206	171		187	172	156		144	151	113		153	186	150		148	172	165		155	144	142		

DECLINATION EAST

September 1987

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		Mallacoota				13 Deg +tabular values in 0.1min																				
1	D	145	161	191	209	210	208	202	200	188	162	143	155	125	100	129	153	126	144	177	172	159	157	160	153	164
2		153	158	173	185	199	195	182	171	149	169	160	158	146	141	160	159	162	170	170	171	168	155	141	137	164
3	Q	143	155	170	186	199	197	180	164	170	171	168	166	166	164	164	167	169	169	169	168	170	163	149	138	168
4	Q																									
5	Q																									
6																										
7																										
8																										
9																										
10	D																									
11	D																									
12																										
13																										
14																										
15																										
16																										
17																										
18	Q																									
19	Q																									
20																										
21																										
22																										
23																										
24																										
25	D																									
26																										
27																										
28																										
29																										
30	D																									

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PRELIMINARY

[illegible]

DECLINATION EAST

April 1988

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1																										
2																										
3	D																									
4	D	Weipa									5 Deg +tabular values in 0.1min															
5	D									432	433	433	430	429	429	429	430	431	432	433	435	439	437	418	409	
6	D	414	425	456	462	468	479	474	455	441	443	432	411	430	433	431	430	428	433	427	438	435	424	408	401	437
7		390	399	412																						
8																										
9																										
10		Gove									4 Deg +tabular values in 0.1min															
11											481	474	470	467	467	464	460	463	469	468	467	463	467	450	435	
12		425	439	462	467	470	472	477	477	474	467	465	453	457	451	455	457	459	468	466	462	457	460	449	433	459
13		432																								
14		Darwin									3 Deg +tabular values in 0.1min															
15	Q	262	267	281	292	296	293	295	298	299	298	299	300	295	295	297	298	295	294	295	292	289	291	286	276	
16	Q	270	282	297																						
17	Q																									
18																										
19																										
20																										
21																										
22	D																									
23																										
24																										
25	Q																									
26	Q																									
27																										
28																										
29																										
30																										

DECLINATION WEST

May 1988

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1																										
2																										
3		Christmas Is									0 Deg +tabular values in 0.1min															
4						500	510	515	525	534	532	527	521	519	512	511	512	514	512	515	514	518	513	514	518	
5	D	506	491	478	487	508	515	519	530	536	542	542	540	528	520	519	519	521	519	514	512	513	511	506	503	516
6	D	522	521	512	508	519	531	523	558	565	565	540	520	496	498	498	485	508	509	513	514	516	524	519	514	520
7		512	508	505	505	506	507	508	518	530	535	529	525	523	515	517	515	517	519	521	523	519	518	520	530	518
8	D	524	511	505	507	507	508	514	524	534	535	530	525	521	518	519	514	513	513	517	523	528	528	528	537	520
9		527	512																							
10		Cocos Is									4 Deg +tabular values in 0.1min															
11				116	136	142	148	156	160	163	166	160	153	152	150	146	146	147	148	153	155	152	150	154	150	
12	Q	154	147	137	136	140	145	150	159	169	175	170	161	155	149	148	145	148	150	151	154	154	152	156	157	153
13	Q	161	153	142	138	144	151	159	158	162	169	163	151	151	150	148	143	144	142	149	149	149	150	151	152	151
14	Q	157	152	142	138	142	147	153	153	156	160	161	156	151	150	147	145	145	145	147	149	150	150	149	152	150
15		155	146	133	124	128	134	133	145	154	161	155	148	145	144	143	140	140	143	144	149	146	150	153	152	144
16		156	150	136	130	133	138																			
17	D																									
18	D																									
19																										
20																										
21																										
22																										
23																										
24																										
25																										
26																										
27	Q																									
28	Q																									
29																										
30																										
31																										

DECLINATION EAST

April 1989

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	D																									
2																										
3																										
4	D																									
5	D																									
6																										
7																										
8																										
9																										
10	Q																									
		Newcastle									12 Deg +tabular values in 0.1min															
11		133	153	189	221	235	226	221	220	220	217	205	211	211	211	218	223	224	216	215	215	205	188	167	157	204
12	Q	156	165	185	213	232	237	230	224	225	221	218	214	209	206	204	203	203	204	208	209	208	197	182	174	205
13		175	192	214	239	245	249	226	209	213	184	184	178	174	166	159	167	173	177	182	192	178	162	150		
14																										
15																										
16																										
17																										
18																										
19	Q																									
20																										
21	Q																									
22	Q																									
23																										
24																										
25																										
26	D																									
27	D																									
28																										
29																										
30																										

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	D																										
2																											
3																											
4																											
5	Q																										
6																											
7	D																										
8																											
9																											
10	D																										
11																											
12																											
13																											
14																											
15	Q																										
16																											
17																											
18																											
19																											
20																											
21																											
22		Condobolin									57000. +tabular values in nT.																
23	Q									889 886	886 887 890	890 891 891	891 892 891	891 892 891	891 892 891	891 892 891	891 892 891	891 892 891	891 892 891	891 892 891	891 892 891	891 892 891	891 892 891	891 892 891	891 892 891	891 892 891	
24		889 888 886	884 884 888	894 892 890	891 888 886	888 889 886	885 885 887	888 888 890	890 886 886	888																	888
25	Q	885 884 881	881 887 891	893 891 888	888 890 890	890 892 891	893 893 892	892 892 892	894 893																		
26	Q	Moree									55000. +tabular values in nT.																
27	D	676 675	671 672 673	677 677 678	677 677 678	679 674 669	676 681 684	695 686 676	677 670 662																		
28	D	662 654 654	651 644 6																								

TOTAL INTENSITY

July 1986

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		Bourke					56000. +tabular values in nT.																			
1		294	286	281		284	284	291																		
2	D																									
3																										
4																										
5																										
6																										
7	Q																									
8																										
9																										
10																										
11	Q																									
12																										
13																										
14	Q																									
15	Q																									
16																										
17																										
18																										
19																										
20	Q																									
21																										
22																										
23																										
24																										
25	D																									
26	D																									
27	D																									
28																										
29	D																									
30																										
31																										

		TOTAL INTENSITY																											
August 1986		MEAN HOURLY VALUES																								PRELIMINARY			
	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1																													
2	Q																												
3																													
4																													
5																													
6																													
7	Q																												
8																													
9																													
10																													
11		Wilcannia										57000. +tabular values in nT.																	
12											439	439	441	442	442	442	441	441	441	441	441	442	442	442	441				
13		440	439	437	434	434	437	440																					
14		440	439	437	434	434	437	440																					
15																													
16	Q																												
17																													
18	Q																												
19	Q																												
20																													
21	D																												
22	D																												
23	D																												
24		Quilpie										54000. +tabular values in nT.																	
25			483	480	482	489	492	498	505	504	505	509	507	507	506	507	509	510	511	510	512	513	513	512					
26		507	506	508	503	497	498	498	503	504	508	509	507	506	509	505	504	508	510	511	511	512	513	513	510	507			
27		508	503	501	501	500	507	508	505	503	504	506	509	518	516	507	508	507	509	510	511	511	514	512					
28																													
29	D	480	478	474	473	472	481	485	486	484	481	472	489	496	493	488	479	482	484	488	489	493	497	491					
30	D	498	501	491	476	461	465	471	474	485	486	489	485	492	492	484	487	487	490	491	496	486	496	488	474	485			
31		456	462	447	448	462	471	476	485	485	486	486	484	481	482	482	487	490	491	492	492	494	494	492	489	480			

TOTAL INTENSITY

September 1986

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1		Winton										51000. +tabular values in nT.																	
2			828	830		822	815	811		818	829	833		833	835	832		832	837	834		833	836	836		838	838	834	
3			834	833	830		822	816	819		823	828	835		835	833	835		834	834	835		836	835	838		840	841	840
4			838	832	823		812	806	809		819	827	830		834	835	835		838	837	838		837	837	841		840	844	843
5																													
6																													
7	Q																												
8	Q																												
9																													
10	Q																												
11																													
12	D	Mt Isa										51000. +tabular values in nT.																	
13							162	167		172	179	179		184	182	194		185	180	184		188	190	190		189	192	190	
14			180	179	174		172	166	167		176	181	187		189	191	191		190	190	189		188	190	195		200	196	202
15																													
16			Croydon										49000. +tabular values in nT.																
17			413	416	417		413	412	401		395	396	405		409	408	408		406	403	405		405	407	410		411	416	423
18			408	406	409		405	388	396		404	410	409		406	405	409		411	409	409		412	408	413		412	415	414
19																													
20																													
21			Cooktown										47000. +tabular values in nT.																
22	Q																												
23	D		248	243	231		227	207	200		195	225	225		230	229	226		234	243	235		249	258	238		245	245	244
24	D		232	228	238		251	245	226		223	215	210		235	244	241		239	246	246		242	242	242		245	246	251
25	D																												
26																													
27																													
28			Mackay										50000. +tabular values in nT.																
29			638	633		638	645	644		645	646	648		648	648	648		648	648	648		654	654	654		656	656	654	
30	Q		647	642	637		635	636	635		638	643	646		647	644	641		644	647	649		650	649	650		650	651	652

		TOTAL INTENSITY																											
October 1986		MEAN HOURLY VALUES																								PRELIMINARY			
	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
		Mackay																								50000. +tabular values in nT.			
1		644	641	641	643	646	649	652																					
2	D																												
3		Roma																								53000. +tabular values in nT.			
4		927	924	922	919	918	920	924	925	925	926	929	931	929	929	928	931	931	931	933	935	935	937	934	930	928			
5	D	927	925	925	929	928	932	931	932	930	930	927	920	925	920	926	928	929	935	933	929	927	930	931	931	928			
6		Maryborough																								52000. +tabular values in nT.			
7							716	709	704	704	708	711	712	712	713	713	713	710	710	712	711	708	702	699	696				
8		697	699	709	725	737	731	722	712	710	709	716	719	716	718					713	713	714	711	708	708				
9		705	710	719	722	723	719																						
10	Q																												
11	Q	Grafton																								55000. +tabular values in nT.			
12	Q	124	131	140	146	149	153	150	149	146	141	142	141	142	144	154	153	152	152	157	187	185	143	103	93	145			
13	D	90	98	105	116	124	130	119	131	117	126	123	127	141	136	134	139	137	136	141	142	141	141	139	136	128			
14	D																												
15																													
16																													
17																													
18																													
19	D																												
20																													
21																													
22																													
23																													
24	Q																												
25																													
26	Q																												
27																													
28																													
29																													
30																													
31																													

		TOTAL INTENSITY																								
October 1986		MEAN HOURLY VALUES																						PRELIMINARY		
	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		Mackay											50000. +tabular values in nT.													
1		644	641	641	643	646	649	652																		
2	D																									
3		Roma											53000. +tabular values in nT.													
4		927	924	922	919	918	920	924	925	925	926	929	931	929	929	928	931	931	931	933	935	935	937	934	930	928
5	D	927	925	925	929	928	932	931	932	930	930	927	920	925	920	926	928	929	935	933	929	927	930	931	931	928
6		Maryborough											52000. +tabular values in nT.													
7						716		709	704	704	708	711	712	712	713	713	713	710	710	712	711	708	702	699	696	
8		697	699	709	725	737	731	722	712	710	709	716	719	716	718					713	713	714	711	708	708	
9		705	710	719	722	723	719																			
10	Q																									
11	Q	Grafton											55000. +tabular values in nT.													
12	Q	124	131	140	146	149	153	150	149	146	141	142	141	142	144	154	153	152	152	157	187	185	143	103	93	145
13	D	90	98	105	116	124	130	119	131	117	126	123	127	141	136	134	139	137	136	141	142	141	141	139	136	128
14	D																									
15																										
16																										
17																										
18																										
19	D																									
20																										
21																										
22																										
23																										
24	Q																									
25																										
26	Q																									
27																										
28																										
29																										
30																										
31																										

TOTAL INTENSITY

March 1987

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1																										
2	Q																									
3																										
4																										
5	D																									
6																										
7	D																									
8																										
9																										
10																										
11																										
12																										
13																										
14																										
15																										
16																										
17		Mildura						59000. +tabular values in nT.																		
18								71	77	79	77	78	86	84	84	88	83	82	87	83	81	80	78	74	75	
19		78	71	64	62	64	66	69	74	77	76	77	77	79	81	81	81	84	80	79	80	79	79	76	74	75
20	Q	75	68	66	61	66	74	83	82	85	84	86	84	87	90	87	90	90	89	78	82	84	85	86	81	81
21	D																									
22	D	Etadunna						56000. +tabular values in nT.																		
23										284	284	283	285	285	282	284	284	285	286	286	288	284	284			
24	Q			274	271	274	278	282	287	289	284	284	284	285	283	285	285	286	286	285	286	285	285	286	283	
25																										
26																										
27	D	763	760	754	755	756	758	763	764	764	767	766	760	763	764	766	763	763	761	762	762	762	763	762	760	762
28		760	760	752	760	763	764	763	762	763	765	766	767	770	768	769	767	768	767	767	768	768	769	770	767	765
29		758																								
30	Q																									
31	Q	Emu						56000. +tabular values in nT.																		
		538	533	530	536	538	541	545	547	550	555	554	555	555	555	556	553	553	552	555	556	558	559	559	555	550

125

		TOTAL INTENSITY																								
May 1987		MEAN HOURLY VALUES																						PRELIMINARY		
	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1		Halls Creek										50000. +tabular values in nT.														
2									538	539	545	546	547	551	553	555	557	555	556	557	557	557			562	
3		565	565	562	563	560	550	545	549	552	548	554	553	551	552	555	556	556	561	559	562	563	562	566	572	558
4		577	570	565	564	562	555	546	542	548	554	554	554	558	560	559	558	556	556	556	557	558	559	562	569	558
5		Derby										50000. +tabular values in nT.														
6		316	315	315	318	317	305	293	291	294	303	307	309	310	307	308	308	307	313	316	313	308	305	305	318	308
7		320	319	307	291	280	274	280	276	280	280	282	288	294	295	293	297	302	302	302	302	304	307	309		
8		Port Hedland										52000. +tabular values in nT.														
9			346	339	332	331	322	317	322	327	336	336	333	329	333	332	328	327	328	329	329	330	329	331	334	
10		346	349	348	343	336	325	314	315	320	333	324	314	322	328	330	327	327	325	328	330	332	332	332	340	330
11		345	339	333	332	331	324	316	315					277												
		Telfer										52000. +tabular values in nT.														
12										885	891	892	893	893	894	892	892	893	893	893	895	897	899	901	910	
13		910	911	907	905	904	896	889	886	886	893	896	897	898	897	898	901	898	895	896	897	896	893	893	900	898
14		905	906	901	898	896	885	879	876	884	890	895	889	887	880	883	886	889	891	893	893	893	894	892		
15																										
16																										
17	Q																									
18	Q	Carnarvon										54000. +tabular values in nT.														
19	Q								894	902	913	918	917	915	915	913	913	914	913	915	914	915	914	913	914	
20		921	924	918	907	901	897	892	894	904	914	918	916	915	915	913	913	913	913	914	915	915	916	918	916	912
21	Q	920	922	915	907	900	899	898	900	905	919	923	922	922	921	916	916	914	913	914	915	914	916	916	916	913
22																										
23		Mt Vernon										54000. +tabular values in nT.														
24	D				469	461	466	464	463	463	462	455	465	471	477	475	481	477	477	480	476	472	469	473	485	
25	D	492	491	485	468	449	451	448	440	440	460	471	476	472	476	476	475	478	478	475	478	480	479	479	482	471
26		490	493	488	480	474	469	462	464	478	481	482	477	472	473	474	475	477	478	473	470	477	476	473	475	476
27	D	Meekatharra										56000. +tabular values in nT.														
28					265	264	258	256	254	260	268	267	271	271	271	270	266	268	268	270	270	268	269	262	268	
29	D	281	277	268	253	255	254	249	241	247	248	240	243	255	259	262	263	263	263	262	262	263	262	263	264	258
30		271	270	264	264	265	261	255	255	258	259	264	272	267	265	268	270	269	270	270	272	267	266	269	273	266
31	D	281	281	279	274	270	270	263	262	263	260	258	263	265	263	265	263	264	262	265	273	265	264	261	264	267

TOTAL INTENSITY

July 1987

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	Q																									
2	Q																									
3																										
4																										
5																										
6	Q	Warburton										56000. +tabular values in nT.														
7	Q		55	48	43	38	40	41	45	50	50	51	50	50	49	47	45	45	46	45	46	49	51	53	55	
8		56	57	53	45	42	40	33	38	47	50	48	46	45	45	44	45	45	47	47	50	50	50	50	54	47
9																										
10																										
		Zanthus										58000. +tabular values in nT.														
11					270	273		273	271	278	278	279	281	279	278	279	279	278	279	279	278	279	279	280	280	
12		284	286	283	280	277	273	274	279	284	281	282	280	280	280	280	280	277	277	278	279	279	280	282	283	280
13		286	286																							
		Esperence										60000. +tabular values in nT.														
14					128	123	123	120	122	127	129	133	136	136	136	133	131	130	129	129	130	130	131	131	132	
15	D	135	140	140	133	125	118	117	121	132	136	135	140	137	140	143	138	126	121	117	124	126	123	120	123	130
16	D	131	130	127	128	125	124	124	123	129	131	127	129	132	133	134	135	125	121	126	126	127	124	126	124	128
17		131	135																							
		Albany										60000. +tabular values in nT.														
18			243	246	240	235	234	231	233	235	237	247	247	239	239	238	229	235	236	232	222	230	233	234		
19		236	242	244	243	244	243	236	234	236	239	242	242	238	241	236	238	238	236	237	234	232	226	222	224	237
20		232	240	243	250	247	243	239	238	240	240	240	240	240	243	240	240	235	229	239	237	236	233	226	228	238
21		233	240	239																						
		Augusta										60000. +tabular values in nT.														
22			413	404	398	390	391	396	400	405	406	408	407	408	404	402	402	403	402	400	393	396	400	398		
23		403	406	410	408	398	388	382	384	396	412	410	411	412	410	412	409	404	400	400	401	400	396	399	400	402
24		405	412	410	404	399	397	393	392	396	405	408	410	411	410	406	403	394								
25	D																									
26	Q																									
27																										
28	D																									
29	D																									
30																										
31																										

		TOTAL INTENSITY																											
August 1987		MEAN HOURLY VALUES																								PRELIMINARY			
	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
		Eucla																											
		58000. +tabular values in nT.																											
1		527	522		519	514	509		507	513	521	521	525	527	526	526	525	527	525	526	526	526	527	527	529				
2	Q	533	534	533	529	525	522		517	525	529	530	529	529	529	529	526	526	527	528	527	529	530	529	527	528	528		
3		529	527	527	524	521	519		521	527	530	531	529	530	530	528	528	528	526	525	523	523	524	523	523	522	526		
4																													
		Ceduna																											
		58000. +tabular values in nT.																											
5		646			645	642	641		641	642	646	646	644	648	648	647	650	648	646	646	646	647	647	647	649	650			
6		651	649	647	643	642	640		640	645	649	649	650	651	651	652	651	649	647	647	648	647	648	649	649	651	648		
7	Q	647	646	644																									
8		Port Lincoln																											
		60000. +tabular values in nT.																											
9										257	255	256	256	254	260	254	254	248	250	251	252	254	253	252	256				
10	Q	256	255	250	242	238	240		244	253	258	256	255	256	254	251	253	252	250	248	253	250	252	249	250	256	251		
11		262	257	250	244	237	233		242	254	260	257	256	256	254	253	251	250	250	252	250	253	253	252	251	259	252		
12																													
		Parafield																											
		59000. +tabular values in nT.																											
13	D					771		780	790	803	779	790	789	791	789	791	789	789	789	788	790	789	790	792	797				
14		800	795	790	788	780	779		782	789	793	792	790	790	791	791	788	791	787	789	787	786	787	783	786	790	789		
15		796	797	797	792	786	786		786	796	797	790	793	793	790	791	789	791	789	790	790	789	789	782	786	792	791		
16		799	793	794	788	786	780		783	788	789	793	787	789	788	791	787	788	788	788	786	786	786	786	790	795	789		
17		798	796	793	785	782	780																						
		Warracknabeal																											
		60000. +tabular values in nT.																											
18	Q								107	107	105	105	105	104	103	105	106	107	106	106	105	107	108	110	109				
19		109	102	97	98	98	101		103	109	111	108	107	107	108	108	109	109	112	110	110	109	109	109	110	110	107		
20		113	113	108	101	96	100		106	112	113	109	110	109	109	108	107	107	108	107	106	107	106	105	108	108	107		
21	Q	Portland																											
		61000. +tabular values in nT.																											
22		194	193	192	183	181	190		192	196	196	190	190	195	197	199	199	197	195	194	197	196	194	194	194	193			
23		191	188	186	182	186	194		197	197	198	196	196	204	199	195	191	192	178	187	188	188	185	185	182	181	190		
24		186	188	182	179	178	182		190	198	191	185	190	199	207	203	193	193	195	193	191	193	193	190	187	185	190		
25	D	189	186	186	185	190	192																						
26	D	Toolangi																											
		60000. +tabular values in nT.																											
27	D				301	301	307		309	310	306	305	307	307	307	305	304	305	292	289	292	296	299	301	303	305			
28		305	298	295	298	300	305		308	308	310	308	308	307	308	310	309	310	307	307	302	304	304	303	300	300	305		
29		301	298	295	298	302	304		304	308	310	310	309	310	310	308	309	309	308	306	305	304	304	305	305	306	305		
30																													
		Mallacoota																											
		59000. +tabular values in nT.																											
31	D				921	920		930	929	913	912	907	903	907	906	898	907	914	889	906	912	911	906	902	904				

130

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		Mallacoota	59000. +tabular values in nT.																							
1	D	909	908	912	914	914	918	915	917	910	901	983	997	983	978	991	995	983	995	1003	995	989	991	991	984	957
2		987	981	983	988	998	1004	999	996	991	1001	993	995	992	993	999	997	997	1001	997	996	993	986	984	983	993
3	Q	988	993	995	1003	1007	1006	1003	997	1000	1002	1004	1002	1001	1000	1001	1000	1000	998	998	998	1000	999	996	992	999
4	Q																									
5	Q																									
6																										
7																										
8																										
9																										
10	D																									
11	D																									
12																										
13																										
14																										
15																										
16																										
17																										
18	Q																									
19	Q																									
20																										
21																										
22																										
23																										
24																										
25	D																									
26																										
27																										
28																										
29																										
30	D																									
31																										

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24							
1	Q																																
2																																	
3																																	
4																																	
5																																	
6		Flinders Is									61000. +tabular values in nT.																						
7							226	228	228	223	220	219	219	220	220	220	221	222	221	218	218	208	198	202	208								
8		212	216	216	215	222	236	244	235	229	224	226	223	226	216	217	228	224	225	221	218	214	209	209	210	221							
9		213	212	214	216	227	232	231	226	225	222	222	215	219	221	221	223	221	221	218	219	218	217	214									
10											62000. +tabular values in nT.																						
11								376	376	375	378	376	374	365	361	354	376	377	376	375	377	377	366	364	371								
12		378	381	378	375	376	375	376	380	379	376	371	378	381	379	380	374	376	365	374	376	373	382	375	374	376							
13	Q	377	377	373	371	370	373	377	375	375	372	374	374	374	375	376	377	378	378	379	375	375	372	374	376	375							
14		379	375	374																													
15																																	
16																																	
17																																	
18																																	
19	Q	Norfolk Is									52000. +tabular values in nT.																						
20						132		135	137	133	129	124	126	134	128	127	128	132	134	135	135	133	124	114	106								
21	q	100	103	109	119	126	131	135	138	138	138	135	133	130	131	130	129	132	134	135	139	141	136	126	114	128							
22	q	106	107	110	121	129	127	131	134	137	140	138	135	132	131	129	131	132	131	132	134	135	134										
23																																	
24		Lord Howe Is									55000. +tabular values in nT.																						
25		53	44	41	45	51	54	57	57	58	57	58	60	64	72	61	58	67	63	60	56	62	62	62	52	57							
26	D	37	31	37	37	39	40	48	48	53	50	48	57	59	61	63	74	65	49	38	21	16	23	25	35								

TOTAL INTENSITY

April 1988

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1																										
2																										
3	D																									
4	D	Weipa												46000. +tabular values in nT.												
5	D									588	594	595	598	601	604	602	602	602	605	607	613	616	621	621	615	
6	D	607	597	591	587		557	574	565	610	637	619	637													
7																										
8																										
9																										
10																										
		Gove												46000. +tabular values in nT.												
11											45	47	48	48	44	44	42	47	49	46	46	46	50	60	72	
12		77	74	75	70	66	55	50	47	48	45	38	38	29	35	42	42	45	48	50	50	50	53	56	60	52
13		66																								
		Darwin												46000. +tabular values in nT.												
14					418	412		406	403	401	399	401	399	396	395	398	401	402	403	405	408	409	405	407	414	
15	Q	420	424	426	427	422	409	399	398	401	405	404	401	401	402	411	405	405	409	408	409	409	406	405	410	409
16	Q	412	413	417																						
17	Q																									
18																										
19																										
20																										
21																										
22	D																									
23																										
24																										
25	Q																									
26	Q																									
27																										
28																										
29																										
30																										

HORIZONTAL INTENSITY

June 1986

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	D																									
2																										
3																										
4																										
5	Q																									
6																										
7	D																									
8																										
9																										
10	D																									
11																										
12																										
13																										
14																										
15	Q																									
16																										
17																										
18																										
19																										
20																										
21																										
22		Condobolin										25000. +tabular values in nT.														
23	Q								0	1	2	2	3	5	4	5	6	8	9	14	17	18	22	25	17	
24		7	4	0	3	0	5	10	6	6	10	6	-1	-1	0	-5	-3	-8	-5	0	4	9	11	10	0	3
25	Q	-7	-12	-14	-17	-12	-3	3	3	3	6	7	6	3	1	3	4	5	6	8	15	20	25	26		
26	Q	Moree										27000. +tabular values in nT.														
27	D	147	141	129	124	127	133	138	143	140	143	145	149	136	120	127	136	143	160	151	136	139	132	109		
28	D	106	95	86	81	65	86	104	117	118	120	118	119	119	117	118	125	126	126	128	129	134	140	142	130	115
29		127	125	118	115	113	114	118	122	125	122	122	119	109	104	117	123	125	128	134	140	137	137			
30																										

HORIZONTAL INTENSITY

July 1986

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		Bourke				26000. +tabular values in nT.																				
1		651	651	646	645	640	643	647	653	657	658	656	659	659	657	658	661	660	662	662	664	668	670	674	675	657
2	D	672	668	662	656	650	656	656	651	638	638	650	654	649	661	655	656	658	658	656	659	654	662	666	659	656
3																										
4																										
5																										
6																										
7	Q																									
8																										
9																										
10																										
11	Q																									
12																										
13																										
14	Q																									
15	Q																									
16																										
17																										
18																										
19																										
20	Q																									
21																										
22																										
23		Ashmore Reef				35000. +tabular values in nT.																				
24								446	429	423	425	428	427	428	427	425	425	427	429	443	455	465	466	458	447	
25	D	464	457	462	457	440	432	428	413	407	416	415	419	424	429	428	423	424	427	426	432	437	440	422	412	431
26	D	422	428	426	412	406	411	402	400	395	404	412	416	425	420	415	406	421	427	416	412	411	412	417	418	414
27	D	429	442	446	451	451	435	423	406	391	376	360														
28																										
29	D																									
30																										
31																										

HORIZONTAL INTENSITY

August 1986

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1																										
2	Q																									
3																										
4																										
5																										
6																										
7	Q																									
8																										
9																										
10																										
11		Wilcannia										25000. +tabular values in nT.														
12											601	612	622	620	624	624	628	629	629	634	634	638	642	635	625	
13		614	610	614	616	619	618	614	616	605	598	601	603	605	604	614	617	622	625	627	627	629	632	634	637	617
14		628	622	615	611	611	620	626	631	632	633	633	635	632	630	633	634	635	639	639	637	640	642	645	641	631
15																										
16	Q	Tibooburra										26000. +tabular values in nT.														
17		915	911	906	898	893	893	897	899	902	905	905	905	903	907	907	905	908	910	913	914	914	919	923	921	907
18	Q	910	902	893	896	894	893	894	894	901	904	905	905	906	906	904	903	907	907	908	908	910	913	914	911	904
19	Q																									
20																										
21		Birdsville										28000. +tabular values in nT.														
22	D				968	962	958	958	959	954	936	932	933	932	931	941	948	979	976	968	964	962	969	972	966	
23	D	972	969	964	937	928	947	951	937	909	944	957	957	959	958	946	945	952	957	959	968	962	965	974	964	953
24	D	956	953	954	956	954	936	917	928	933	940	940	953	957	967	956	964	970	965	963	958	965	967	962	956	953
25																										
26		Quilpie										28000. +tabular values in nT.														
27		657	654	656	663	672	678	680	691	693	693	703	703	701	696	698	702	705	707	706	709	714	713	708		
28		695	685	693	685	677	682	684	690	689	700	703	702	697	704	698	688	697	701	703	706	709	714	711	707	697
29		706	701	698	701	697	705	705	694	692	695	699	708	724	725	702	700	700	704	707	710	713	717	714		
30																										
31		Alpha										30000. +tabular values in nT.														
32	D	405	412	417	402	403	410	405	409	406	399	384	410	421	418	413	393	397	399	406	412	417	424	414		
33	D	423	435	427	414	388	387	390	399	409	409	413	405	418	418	407	410	408	414	417	424	408	420	418	393	411
34		369	382	369	366	392	399	402	408	409	411	412	406	397	399	402	410	416	417	420	422	424	423	420	417	404

HORIZONTAL INTENSITY

September 1986

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1		Winton										30000. +tabular values in nT.														
2		934	943		941	937	919	920	928	938	941	946	939	938	949	947	944	948	946	945	946	947	949	947	944	
3		942	943	942	937	933	934	932	936	943	946	944	944	944	940	943	943	944	950	952	953	954	957	955	950	944
4		949	946	933	922	918	919	926	930	937	943	945	945	948	949	948	949	949	954	952	957	959	961	958		
5																										
6																										
7	Q	Boulia										30000. +tabular values in nT.														
8	Q			672	679	675	665	655	651	657	664	663	665	665	665	667	668	670	672	674	676	677	679	680	682	
9		679	679	681	679	676	663	657	663	662	664	661	657	661	665	668	669	672	674	677	679	682	686	687		
10	Q																									
11																										
12	D	Mt Isa										31000. +tabular values in nT.														
13		793	781	779	790	795	803	805	810	809	820	813	832	821	812	820	827	829	829	830	837	834	830	826	820	814
14		814	814	812	814	810	815	824	829	834	833	837	836	836	837	835	833	837	844	854	848	857	868	857	851	835
15		Croydon										33000. +tabular values in nT.														
16								58	52	55	56	54	51	50	54	55	56	60	64	69	78	87	85	85	76	
17		79	88	95	93	88	65	47	42	55	60	60	61	61	58	58	59	61	65	68	78	89	77	67	69	68
18		63	61	70	67	46	49	54	59	57	51	52	61	63	62	61	68	63	67	68	72	72	76	68	61	62
18																										
19																										
20																										
21		Cooktown										34000. +tabular values in nT.														
22	Q										177	179	178	179	180	182	184	184	186	191	202	209	214	207	199	
23	D	194	191	179	168	139	124	115	146	149	152	152	149	156	172	160	177	189	166	174	173	172	171	161	163	162
24	D	159	158	174	183	177	153	150	139	134	156	172	170	163	173	173	169	166	170	173	174	180	172	170	176	166
25	D																									
26	D																									
27																										
28		Mackay										31000. +tabular values in nT.														
29		830	829		832	836	833	830	833	836	839	836	839	842	841	840	848	849	847	850	852	848	833	827	837	
30	Q	841	843	839	837	834	829	824	830	835	839	836	830	835	836	837	839	840	840	840	842	844	840	836	835	837

HORIZONTAL INTENSITY

October 1986

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		Mackay																								
		31000. +tabular values in nT.																								
1		838	842	843	843	844	844	845																		
2	D																									
3		Roma																								
4		70	66	67	63	58	62	66	63	60	61	65	67	66	66	64	67	69	71	78	83	86	84	77	75	69
5	D	63	51	57	63	62	70	69	68	67	65	55	42	57	39	51	58	62	71	67	61	57	62	61	65	60
6		Maryborough																								
7							698	690	682	681	684	683	683	682	684	684	685	685	685	688	688	686	678	671	667	
8		670	676	689	708	719	713	700	690	687	685	690	697	687	687	690	701	701	695	692	693	695	691	685	678	692
9		676	682	688	692	696	692																			
10	Q																									
11	Q	Grafton																								
12	Q	349	356	365	372	379	381	376	377	377	372	375	376	374	374	389	388	387	388	385	390	373	365	326	307	371
13	D	297	292	301	296	309	307	300	327	327	336	328	339	361	354	338	343	347	347	349	355	357	358	357	358	333
14	D																									
15																										
16																										
17																										
18																										
19	D																									
20																										
21																										
22																										
23																										
24	Q																									
25																										
26	Q																									
27																										
28																										
29																										
30																										
31																										

		HORIZONTAL INTENSITY																											
March 1987		MEAN HOURLY VALUES																								PRELIMINARY			
	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1																													
2	Q																												
3																													
4																													
5	D																												
6																													
7	D																												
8																													
9																													
10																													
11																													
12																													
13																													
14																													
15																													
16																													
17		Mildura										23000. +tabular values in nT.																	
18								826	829	837	842	844	846	846	846	854	845	849	851	846	844	843	841	819	826				
19		832	829	831	826	828	823	823	827	830	826	831	835	835	841	840	837	836	839	839	839	836	835	833	831	833			
20	Q	829	822	823	823	827	833	833	837	841	842	843	843	844	845	844	845	846	848	849	850	850	849	843	838	839			
21	D																												
22	D	Etadunna										27000. +tabular values in nT.																	
23										187	187	185	188	189	182	185	186	187	189	190	192	189	188	183	174				
24	Q	169	172	178	179	178	177	181	193	200	189	189	190	189	190	192	193	194	196	196	198	196	196	194	189	188			
25																													
		Woomera										25000. +tabular values in nT.																	
26																									402				
27	D	396	396	393	391	388	387	393	393	392	399	394	385	387	387	391	393	392	388	389	391	392	390	390	388	391			
28		392	393	382	389	390	387	384	381	382	387	392	391	397	393	394	393	394	392	394	394	394	394	393	389	390			
29		384																											
30	Q	Emu										26000. +tabular values in nT.																	
31	Q	629	632	636	636	633	632	630	626	626	630	632	634	632	634	636	638	640	640	642	645	645	647	647	644	636			

HORIZONTAL INTENSITY

April 1987

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		Emu																								
		26000. +tabular values in nT.																								
1		641	630	626	622	616	619	612	605	598	599	606	618	625	630	628	628	630	635	630	633	636	640	640		
2		Oodnadatta																								
		27000. +tabular values in nT.																								
3	Q									847	849	853	855	855	857	856	856	856	857	858	859	859	856	855	853	851
4	D	850	847	840	855	857	852	853	860	861	846	813	815	844	801	810	827	833	833	839	845	848	848	851	846	841
5	D	848																								
6		Ayers Rock																								
		28000. +tabular values in nT.																								
7	D									830	844	851	858	861	864	864	866	880	867	880	873	871	872	875	877	875
8	D	877	876	876	880	881	872	858	856	860	863	868	874	872	873	871	871	877	876	876	875	882	880	870	867	872
9		868	871	880	887	887	883	877	870	865	867	867	869	877	875	868	868	869	873	872	879	876	876	879	887	875
10		Alice Springs																								
		29000. +tabular values in nT.																								
11							915	914	915	921	927	930	929	928	920	919	925	931	939	939	941	942	941	940	939	
12		939	941	940	940	933	922	926	928	932	936	938	936	939	938	938	940	942	943	945	948	950	953	957	952	940
13	D	956	956	957	956	950	938	933	937	945	938	937	939	940	941	940	939	939	923	920	932	935	930	934	931	939
14		926	928	931																						
		The Granites																								
		31000. +tabular values in nT.																								
15											632	634	634	632	629	627	625	631	633	635	631	629	629	630	625	
16		620	619	625	633	637	633	627	625	630	632	633	631	629	630	630	632	632	634	634	635	636	637	639		
17																										
18	Q																									
19		Tennant Creek																								
		32000. +tabular values in nT.																								
20							246	246	245	244	254	270	270	272	275	275	279	279	279	280	283	286	289	293	298	
21	Q	299	300	300	299	291	277	272	276	280	286	289	291	291	291	291	291	293	293	294	295	297	300	302	303	292
22		305	300	298	299	295	292	286	286	292	297	301	295	294	298	302	301	300	298	305	306	306	308	312	311	299
23	Q																									
		Daly Waters																								
		34000. +tabular values in nT.																								
24		44	43		39	28	15	6	6	9	11	8	1	-10	-17	-4	4	6	8	8	8	14	23	30	35	
25		34	34	35	35	31	24	17	14	11	15	17	17	17	18	16	15	15	18	17	17	18	22	26	27	21
26		30	27	33	32	29	25	20	19	22	23	22	20	23	22	25	24	26	26	28	29	31	34	38		
27																										
28	Q																									
29																										
30																										

HORIZONTAL INTENSITY

May 1987

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1		Halls Creek										32000. +tabular values in nT.														
2									561	568	572	569	566	575	576	579	582	583	583	590	594	596	597	599	601	
3		600	602	604	606	597	586	584	583	570	567	579	570	563	572	586	588	591	592	597	600	598	601	608	611	590
4		607	604	603	597	594	584	569	565	575	579	581	582	584	583	588	587	586	586	589	593	594	596	605	607	589
5		Derby										33000. +tabular values in nT.														
6		149	154	161	161	153	138	125	122	125	130	135	137	138	135	137	137	140	150	149	145	142	138	143	147	141
7		139	145	143	128	115	113	116	105	102	91	99	111	115	118	122	127	130	130	132	134	136	142	149		
8		Port Hedland										31000. +tabular values in nT.														
9			142	143	139	140	131	129	131	131	134	137	133	128	130	130	129	128	131	134	135	133	133	137	143	
10		145	145	147	148	143	133	123	128	125	130	118	101	111	114	117	120	120	120	125	130	131	134	137	141	129
11		143	139	136	135	134	128	125	126				146													
12	Q	Telfer										30000. +tabular values in nT.														
13									514		518	520	520	519	517	518	519	519	519	521	522	523	525	533	544	
14		549	554	552	548	542	530	522	514	512	520	524	525	525	526	532	535	533	530	532	537	534	530	529	535	532
15		533	536	538	538	532	518	507	505	512	522	523	515	513	505	509	511	515	521	524	526	524	525	528		
16																										
17	Q																									
18	Q	Carnarvon										27000. +tabular values in nT.														
19	Q								610	617	622	626	627	627	626	624	621	622	624	626	626	627	627	627	631	
20		634	631	627	626	624	618	613	618	619	623	624	625	625	625	623	622	622	625	626	626	624	625	626	628	624
21	Q	633	630	627	624	618	616	613	612	616	621	623	624	624	623	624	625	624	625	624	627	629	630	632	638	624
22																										
23		Mt Vernon										28000. +tabular values in nT.														
24	D				536	522	529	528	524	519	511	496	510	517	522	524	537	536	533	542	537	537	532	543	567	
25	D	565	561	549	525	492	491	487	473	460	487	502	517	519	524	530	534	537	538	537	543	545	547	551	555	524
26		557	555	550	544	537	533	527	529	542	544	542	534	523	521	520	525	531	532	530	533	546	544	545	548	537
27	D	Meekatharra										26000. +tabular values in nT.														
28					795	791	784	778	769	769	776	773	779	783	784	782	779	782	784	788	789	788	785	775	780	
29	D	795	788	778	758	758	759	751	733	731	723	714	705	727	729	738	749	754	757	758	760	762	764	767	770	751
30		771	776	777	775	774	771	768	766	763	758	763	773	770	759	758	768	772	772	774	783	775	775	779	788	771
31	D	798	801	796	790	784	776	764	768	765	755	745	752	757	755	758	755	755	753	764	787	772	770	768	777	769

HORIZONTAL INTENSITY

June 1987

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24								
1		Meekatharra										26000. +tabular values in nT.																						
		780	782	781		783	774	769		768	771	774		779	777	773		768	771	770		772	774	772		781	783	788		793	796	791		778
2		Geraldton										25000. +tabular values in nT.																						
3						174	172		167	166	169		171	170	170		168	168	168		169	169	169		169	169	172		174	175	180			
4		182	180	176		173	170	169		171	172	171		168	168	161		154	159	162		163	164	164		163	165	170		173	172	174		169
5		177	179	176		170	163	162		161	160	163		165	164	165		165	168	165		160	158	164		169	168	170		171	170	175		167
6	D																																	
7	D																																	
8	Q																																	
9	Q																																	
10																																		
11																																		
12	D																																	
13																																		
14																																		
15																																		
16																																		
17		Southern Cross										24000. +tabular values in nT.																						
18				148	148	143	135		133	139	145		151	154	152		153	151	151		154	157	158		158	159	158		158	160	162			
19	D	160	163	164		157	142	133		136	131	122		131	146	138		132	136	143		148	150	151		152	153	154		152	156	162		146
20		163	165	166		163	158	155		152	153	155		158	156	153		148	144	151		151	151	154		156	163	162		160	164	162		157
21		Laverton										25000. +tabular values in nT.																						
22	Q										935		941	940	938		940	939	939		939	941	944		945	946	944		947	950	952			
23	Q	952	950	949		942	933	934		935	936	939		943	943	944		944	945	947		948	949	951		950	949	955		957	959	961		946
24		959	957	955		949	948	945		942	941	944		949	951	953		953	953	954		952	952	952		949	949	951		953	956	963		951
25																																		
26	D													919	921	921		922	923	922		922	920	922		924	930	933		936	942	943		
27		945	943	939		935	934	930		926	923	922		923	918	917		916	919	921		924	926	925		928	930	933		934	938	943		929
28		945	942	942		938	926	923		924	924	927		931	935	937		937	937	937		937	938	939		941	942	944		946	947	953		937
29																																		
30	Q																																	

HORIZONTAL INTENSITY

July 1987

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24							
1	Q																																
2	Q																																
3																																	
4																																	
5																																	
6	Q	Warburton										28000. +tabular values in nT.																					
7	Q		48	45		43	40	40		39	37	38		42	43	43		42	42	41		39	40	43		45	47	54		59	63	63	
8		60	61	61		51	42	39		30	32	39		44	43	34		34	35	36		38	40	42		43	46	48		51	54	60	44
9																																	
10		Zanthus										24000. +tabular values in nT.																					
11						493	493		485	476	484		494	496	491		485	485	490		487	487	490		493	498	500		501	505	512		
12		518	516	506		500	493	488		486	491	494		491	491	485		481	481	488		493	493	495		497	499	500		503	505	511	496
13		513	512																														
14		Esperence										22000. +tabular values in nT.																					
15	D					693	694	688		681	687	696		701	700	694		692	690	690		691	695	696		695	696	699		702	703	708	
16	D	713	715	708		696	694	693		698	703	688		695	687	667		671	663	658		657	678	689		695	689	685		689	682	686	687
17		677	690	680		670	668	664		666	670	663		673	687	687		688	685	680		677	681	688		688	682	680		683	685	684	679
		689	696																														
18		Albany										21000. +tabular values in nT.																					
19				451		445	441	439		432	434	442		448	448	446		441	444	448		448	458	454		452	450	450		453	455	455	
20		457	455	453		453	450	447		445	443	447		453	447	447		450	451	460		457	453	456		454	453	453		451	456	457	452
21		460	461	460		453	448	451		449	445	446		450	454	454		454	452	452		453	453	457		455	455	457		454	451	455	453
		461	458	458																													
22		Augusta										20000. +tabular values in nT.																					
23				974		967	961	954		943	942	945		957	964	967		966	965	965		966	966	967		967	964	963		965	966	967	
24		970	974	976		973	965	956		946	946	957		966	968	968		968	968	971		967	968	967		968	965	963		962	966	972	965
25	D	976	985	985		979	970	963		957	953	956		963	967	969		969	967	969		970	973										
26	Q																																
27																																	
28	D																																
29	D																																
30																																	

HORIZONTAL INTENSITY

August 1987

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24							
		Eucla										23000. +tabular values in nT.																					
1		664	655		643	629	632		636	641	644	643	650	652	649	647	651	654	653	657	656	654	656	656	660	664							
2	Q	665	661	663	661	654	649	645	652	656	658	658	657	659	660	660	660	659	661	663	663	664	667	670	671		660						
3		669	665	659	654	649	650	656	661	667	670	661	645	630	626	627	626	633	642	648	646	647	649	651	655		649						
4																																	
		Ceduna										24000. +tabular values in nT.																					
5			606		602	599	602		598	591	592	584	579	589	595	597	607	600	600	604	606	608	609	612	618	622							
6		621	620	615	606	605	604	605	605	606	605	608	612	618	610	603	604	608	611	612	614	617	621	624	626		612						
7	Q	623	613	610																													
8																																	
		Port Lincoln										23000. +tabular values in nT.																					
9													160	164	163	159	157	167	152	155	157	158	161	161	168	172	179	186					
10	Q	183	175	171	166	157	151	152	161	167	169	171	171	171	169	170	171	173	177	178	179	183	189	191		172							
11		187	174	163	158	153	151	158	166	174	177	178	178	178	175	172	169	170	173	173	178	181	178	186	188		172						
12																																	
		Parafield										22900. +tabular values in nT.																					
13	D											78	88	88	87	80	89	99	102	105	101	105	109	112	112	113	113	117	127	127			
14		124	104	90	99	71	73	104	112	108	103	110	110	102	112	108	114	111	114	116	121	127	121	123	128		109						
15		122	114	114	109	92	81	97	98	102	89	102	107	109	101	114	115	110	111	114	117	125	116	126	123		109						
16		117	102	96	91	77	75	85	101	108	116	113	109	115	108	106	111	112	113	113	116	119	122	128	130		108						
17		125	116	104	98	95	92																										
		Warracknabeal										22000. +tabular values in nT.																					
18	Q												444	449	453	457	457	457	456	457	457	461	461	457	458	463	469	476	472				
19		463	450	438	430	424	421	435	444	449	454	455	453	450	458	455	457	458	458	460	462	463	469	475	475		452						
20		470	462	456	451	436	441	441	449	454	455	454	460	453	454	456	458	459	460	462	467	468	474	476	474		458						
21	Q																																
		Portland										20000. +tabular values in nT.																					
22		968	963	954	946	941	942	953	960	966	977	976	974	970	969	970	969	970	971	964	962	970	975	976	972		965						
23		966	964	959	951	942	945	953	961	962	962	955	942	943	947	950	949	965	958	958	961	958	958	963	965		956						
24		960	958	951	937	940	952	960	963	966	982	969	956	943	941	956	962	963	968	975	973	970	976	979	981		962						
25	D	971	962	952	950	949	951																										
26	D	Toolangi										21000. +tabular values in nT.																					
27	D											865	866	859	865	865	871	881	878	871	868	867	885	912	908	877	884	880	887	896	901	897	
28		892	883	877	875	877	887	894	890	890	887	878	876	873	883	883	895	896	888	879	890	897	907	886	875		886						
29		880	873	874	875	877	879	880	886	892	893	891	899	896	900	898	897	904	896	890	888	896	903	900	902		890						
30																																	
		Mallacoota										22000. +tabular values in nT.																					
31	D											295	305	303	271	268	280	293	294	283	301	285	286	279	296	290	287	289	284	285	282		

HORIZONTAL INTENSITY

September 1987

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		Mallacoota								22000. +tabular values in nT.																
1	D	271	256	258	266	269	261	249	247	267	285	317	279	299	285	267	280	287	282	288	292	293	284	280	291	277
2		282	277	275	276	276	268	273	283	302	291	300	301	301	288	287	291	291	287	293	291	296	303	306	307	289
3	Q	302	291	280	278	284	288	292	297	299	301	299	297	298	300	298	299	299	301	302	302	305	310	311	308	298
4	Q																									
5	Q																									
6																										
7																										
8																										
9																										
10	D																									
11	D																									
12																										
13																										
14																										
15																										
16																										
17																										
18	Q																									
19	Q																									
20																										
21																										
22																										
23																										
24																										
25	D																									
26																										
27																										
28																										
29																										
30	D																									

HORIZONTAL INTENSITY

March 1988

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	Q																									
2																										
3																										
4																										
5																										
6		Flinders Is									20000. +tabular values in nT.															
7						436		434	420	425	435	438	438	437	436	434	434	436	441	448	443	446	441	430	429	
8		424	411	400	404	420	425	408	408	422	424	415	416	419	422	403	416	418	420	425	422	423	422	418	412	417
9		406	406	409	413	423	417	422	425	426	427	427	441	425	427	428	430	429	431	428	424	426	428	426		
10																										
11											18000. +tabular values in nT.															
12		337	338	342	347	348	353	351	351	351	350	349	350	351	350	350	352	353	354	351	352	350	346	345	343	349
13	Q	343	340	342	347	352	356	356	357	356	359	358	358	357	357	357	356	356	355	357	357	355	355	353	347	354
14		345	348	353																						
15																										
16																										
17																										
18																										
19	Q	Norfolk Is									28000. +tabular values in nT.															
20						754		754	754	748	742	735	739	752	747	745	748	749	752	752	749	742	733	725	725	
21	Q	729	739	751	758	758	759	759	761	762	760	757	758	760	760	760	760	761	763	764	766	764	760	752	747	757
22	Q	745	752	757	768	771	766	767	769	770	771	771	769	767	766	766	766	767	767	767	767	762	761			
23																										
24		Lord Howe Is									26000. +tabular values in nT.															
25		231	237	241	250	251	244	239	234	234	233	233	236	237	235	225	230	249	239	235	235	246	240	237	230	238
26	D	215	206	215	216			203	184	197	188	188	216	222	223	223	235	241	233	232	201	178	157	141	167	
27	D																									
28	D																									
29	D																									
30	D																									
31																										

HORIZONTAL INTENSITY

April 1988

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1																										
2																										
3	D																									
4	D	Weipa									35000. +tabular values in nT.															
5	D									521	527 527 530		534 536 536		537 539 542		544 548 551		552 548 546							
6	D	541 533 538		534 514 498		500 493 518		535 525 538		526 533 535		537 553 550		546 549 552		556 555 562		534								
7		559 570 577																								
8																										
9																										
10																										
		Gove									35000. +tabular values in nT.															
11											212 212 214		214 210 210		208 213 218		215 217 218		224 236 246							
12		252 250 251		246 241 225		215 211 211		211 203 202		191 197 204		206 206 213		218 220 221		224 227 232		220								
13		246																								
		Darwin									35000. +tabular values in nT.															
14				224 212		206 204 199		197 201 202		196 195 200		202 205 206		209 214 215		215 211 212										
15	Q	220 235 245		245 235 219		206 202 203		204 202 198		198 198 207		203 201 207		208 209 209		207 207 208		212								
16	Q	217 232 245																								
17	Q																									
18																										
19																										
20																										
21																										
22	D																									
23																										
24																										
25	Q																									
26	Q																									
27																										
28																										
29																										
30																										

HORIZONTAL INTENSITY

May 1988

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1																										
2																										
3		Christmas Is									35000. +tabular values in nT.															
4						327	311	297	291	289	292	297	292	292	306	310	311	313	316	317	314	315	319	317	324	
5	D	328	338	350	358	358	354	350	346	324	307	281	268	287	297	299	305	307	312	312	310	315	314	314	298	318
6	D	303	295	300	332	357	311	271	259	175	118	106	107	118	108	125	160	197	194	206	219	234	235	235	242	217
7		259	267	275	283	288	288	284	287	282	279	274	273	263	265	273	276	273	275	279	284	275	276	277	283	277
8	D	290	294	300	304	308	306	301	300	298	288	286	282	279	271	276	284	292	280	279	282	286	288	294	303	290
9		309	314																							
10		Cocos Is									33000. +tabular values in nT.															
11			430	433	433	431	428	419	407	404	404	407	404	404	405	403	406	408	412	412	416	417	418	420		
12	Q	426	428	432	435	444	444	435	429	428	423	419	421	418	419	418	415	417	419	423	423	424	425	428	431	426
13	Q	432	434	438	440	441	438	432	426	421	419	417	419	418	418	415	415	414	415	422	426	428	427	431	434	426
14	Q	433	438	438	442	444	447	438	431	425	417	416	418	420	418	416	417	418	418	421	421	426	425	429	430	427
15		435	437	438	436	434	430	430	433	430	426	424	422	421	422	423	422	419	422	425	426	430	432	440	445	429
16		451	457	454	452	450	444																			
17	D																									
18	D																									
19																										
20																										
21																										
22																										
23																										
24																										
25																										
26																										
27	Q																									
28	Q																									
29																										
30																										
31																										

HORIZONTAL INTENSITY

April 1989

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	D																									
2																										
3																										
4	D																									
5	D																									
6																										
7																										
8																										
9																										
10	Q																									
		Newcastle												25000. +tabular values in nT.												
11		439 438 438		432 430 433		439 444 446		447 449 451		449 449 452		459 455 454		455 456 458		460 455 452		448								
12	Q	450 449 442		435 434 439		443 447 451		453 453 453		453 452 451		452 452 453		454 456 457		458 459 458		450								
13		457 456 453		452 448 445		437 433 434		440 439 439		439 445 444		444 444 444		444 447 448		447 448										
14																										
15																										
16																										
17																										
18																										
19	Q																									
20																										
21	Q																									
22	Q																									
23																										
24																										
25																										
26	D																									
27	D																									
28																										
29																										
30																										

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	D																										
2																											
3																											
4																											
5	Q																										
6																											
7	D																										
8																											
9																											
10	D																										
11																											
12																											
13																											
14																											
15	Q																										
16																											
17																											
18																											
19																											
20																											
21																											
22		Condobolin										-52000. -tabular values in nT.															
23	Q									213	213	214	214	214	214	215	215	215	215	215	215	216	216	215	213		
24		213	212	211		209	210	210		211	211	211	211	212	213	214	214	214	214	214	214	214	214	214	213	213	213
25	Q	213	214	212		212	214	213		213	213	212		212	213	213		213	214	214	215	216	216	216	215	214	
26	Q	Moree										-48000. -tabular values in nT.															
27	D		613	615		614	619	621		622	621	622		620	622	625		632	633	633		633	626	629	627	620	620
28	D	616	613	614		616	614	619		618	620	622		623	623	625		626	627	630		633					

[illegible]

		VERTICAL INTENSITY																											
August 1986		MEAN HOURLY VALUES																								PRELIMINARY			
	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1																													
2	Q																												
3																													
4																													
5																													
6																													
7	Q																												
8																													
9																													
10																													
11		Wilcannia										-51000. -tabular values in nT.																	
12												419	420	420	420	421	422	422	422	422	423	423	423	423	421	420			
13		417	414	409	407	405	409	412	413	415	416	417	418	420	421	421	421	421	420	418	419	418	419	418	417	416			
14		416	415	414	415	417	419	418	419	419	419	419	419	419	420	421	420	421	420	420	420	421	421	419	418	419			
15																													
16	Q	Tibooburra										-49000. -tabular values in nT.																	
17		711	709	707	704	704	707	709	711	712	714	714	714	715	716	716	716	716	717	718	718	718	718	721	718	714			
18	Q	719	715	713	709	709	709	710	713	714	713	715	715	717	717	717	718	719	719	720	720	720	720	721	720	716			
19	Q																												
20		Birdsville										-46000. -tabular values in nT.																	
21	D				245	243	242	242	244	247	248	249	249	249	250	250	250	248	248	248	249	249	249	249	249	250			
22	D	249	248	247	246	246	247	247	248	250	251	250	250	250	251	252	252	252	251	251	251	251	251	250	251	250			
23	D	251	250	249	249	248	249	252	253	253	252	253	253	253	253	254	254	254	254	254	254	254	254	255	252				
24		Quilpie										-46000. -tabular values in nT.																	
25		340	338	338	337	337	337	337	339	339	339	340	340	340	340	340	340	340	341	341	341	341	341	341	341	341			
26		341	341	341	339	339	338	338	339	340	340	340	340	340	340	340	341	341	343	342	343	343	342	342	341	341			
27		340	338	337	336	336	336	337	338	339	339	340	340	340	340	339	339	341	341	341	341	342	342	341	341	341			
28		Alpha										-42000. -tabular values in nT.																	
29	D	774	771	764	766	769	774	777	777	777	778	776	778	780	780	780	780	781	782	782	782	783	783	784	783	781			
30	D	784	782	776	773	771	774	777	776	779	780	780	781	781	781	783	783	784	784	784	786	787	789	785	783	781			
31		778	775	769	769	769	772	775	777	779	779	780	780	781	782	782	783	784	785	785	786	786	787	785	783	780			

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1		Winton										-41000. -tabular values in nT.														
2		581	578		572	570	574	582	589	589	589	590	590	591	593	591	592	591	593	593	593	594	594	594	594	588
3		588	587	581	572	568	573	581	584	588	589	589	591	592	594	594	593	594	594	595	595	595	596	596	594	588
4		585	581	576	569	564	565	572	579	582	584	585	586	588	587	587	588	589	590	589	589	590	589	594	594	
5																										
6																										
7	Q	Boulia										-42000. -tabular values in nT.														
8	Q			541	532	532	538	550	554	558	560	560	561	563	563	562	564	563	563	562	562	559	557	555	549	
9		551	550	547	546	544	548	552	554	558	559	561	562	562	563	563	563	562	559	557	557	554	551	550		
10	Q																									
11																										
12	D	Mt Isa										-40000. -tabular values in nT.														
13		93	91	89	83	80	81	84	91	92	93	94	94	95	95	96	95	94	95	96	95	93	95	95	95	92
14		95	91	85	79	76	77	81	86	89	92	93	93	93	93	93	93	93	93	92	90	92	91	91	91	89
15																										
16		Croydon										-36000. -tabular values in nT.														
17								715	719	719	719	719	720	720	720	719	720	719	720	720	719	718	719	717	710	
18		708	706	703	698	699	703	708	713	716	716	716	716	715	715	715	716	716	717	718	717	717	719	720	719	713
19		711	708	705	703	704	710	715	716	716	717	718	718	717	717	716	716	716	716	715	717	716	718	718	714	714
20																										
21		Cooktown										-32000. -tabular values in nT.														
22	Q											623	623	624	625	625	625	625	624	624	625	626	627	627	623	619
23	D	614	609	607	610	611	615	618	626	625	626	626	626	628	630	627	631	629	625	627	626	627	628	625	625	623
24	D	623	620	622	625	623	620	621	622	624	630	629	629	628	629	628	627	628	628	628	629	629	627	625	624	626
25	D																									
26	D																									
27																										
28		Mackay										-39000. -tabular values in nT.														
29		382	381		383	390	393	395	396	395	395	394	393	393	393	394	395	395	397	398	397	397	395	393	391	
30		386	379	374	372	376	381	388	393	395	395	393	392	393	394	395	395	396	397	398	399	399	396	393	389	390

VERTICAL INTENSITY

October 1986

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		Mackay																								
		-39000. -tabular values in nT.																								
1		383	379	379	381	385	390	393																		
2	D																									
3		Roma																								
		-45000. -tabular values in nT.																								
4		423	422	421	419	419	419	422	424	427	429	431	431	430	430	432	431	431	432	432	432	433	431	430	428	427
5	D	428	428	427	424	423	425	424	425	427	429	430	429	429	431	434	433	433	433	432	432	433	433	432	431	429
6		Maryborough																								
		-43000. -tabular values in nT.																								
7							557	556	556	557	559	560	561	562	563	563	562	561	561	560	560	559	558	558	556	
8		552	551	552	553	555	554	554	554	554	556	558	559	560	562	564	566	562	562	560	559	558	558	558	559	558
9		559	561	563	564	563	562																			
10	Q																									
11	Q	Grafton																								
		-47000. -tabular values in nT.																								
12	Q	864	866	867	868	869	872	875	876	873	870	874	871	874	877	882	880	881	881	893	928	937	883	856	848	878
13	D	859	864	867	885	888	898	892	885	867	872	876	876	876	874	888	892	888	890	894	896	890	886	879	873	881
14	D																									
15																										
16																										
17																										
18																										
19	D																									
20																										
21																										
22																										
23																										
24	Q																									
25																										
26	Q																									
27																										
28																										
29																										
30																										
31																										

		VERTICAL INTENSITY																											
March 1987		MEAN HOURLY VALUES																								PRELIMINARY			
	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
1																													
2	Q																												
3																													
4																													
5	D																												
6																													
7	D																												
8																													
9																													
10																													
11																													
12																													
13																													
14																													
15																													
16																													
17		Mildura							-54000. -tabular values in nT.																				
18								52	53	53	52	53	54	54	54	54	56	56	54	56	56	57	58	63	63				
19		58	54	51	50	51	55	58	60	60	61	61	61	60	61	60	62	62	61	61	62	63	63	63	63	59			
20	Q	59	54	52	54	55	59	61	60	59	59	60	61	61	61	62	62	62	62	63	63	64	65	67	66	60			
21	D																												
22	D	Etadunna							-49000. -tabular values in nT.																				
23										283	282	283	283	284	284	284	284	284	284	284	285	285	287	287	287				
24	Q	285	282	278	277	278	280	282	282	282	282	282	283	283	283	283	283	284	284	284	284	284	285	285		282			
25																													
26		Woomera							-51000. -tabular values in nT.																				
27	D	884	886	888	887	886	885	885	885	884	885	884	883	881	882	882	883	882	882	881	881	881	880	880	881	883			
28		883	884	884	883	882	882	881	880	880	880	880	879	880	879	879	879	879	879	879	878	878	878	878		880			
29		880																											
30	Q																												
		Emu							-49000. -tabular values in nT.																				
31	Q	880	870	865	868	872	876	880	886	890	892	892	894	895	896	895	894	897	897	898	897	899	899	898	894	889			

VERTICAL INTENSITY

April 1987

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24							
1		Emu										-49000. -tabular values in nT.																					
		887	884	875		869	873	882		889	893	896		898	899	898		895	894	897		898	898	898		899	899	900		900	901		
2		Oodnadatta										-48000. -tabular values in nT.																					
3	Q									661	663		662	664	664		665	666	667		668	668	669		669	669	670		670	667	661		
4	D	655	650	649		645	648	652		656	657	659		664	668	668		666	673	673		672	670	670		669	669	669		669	665	660	662
5	D	657																															
6		Ayers Rock										-46000. -tabular values in nT.																					
7	D									744	746		747	749	751		751	750	751		750	751	751		751	751	751		751	751	748		
8	D	742	735	727		723	725	732		738	741	742		744	745	746		747	747	748		749	747	748		749	750	749		750	750	748	743
9		741	734	735		737	735	735		737	741	742		744	745	746		746	747	749		749	750	752		752	752	751		752	752	750	745
10		Alice Springs										-44000. -tabular values in nT.																					
11							688		690	691	692		693	694	695		695	697	698		698	698	698		697	698	698		698	697	694		
12		692	689	688		685	683	685		687	689	689		690	692	693		694	695	696		696	696	696		697	697	697		697	695	692	692
13	D	689	685	682		680	681	685		689	689	690		691	692	693		693	694	694		695	696	697		698	698	699		698	698	696	692
14		690	686	687																													
15		The Granites										-41000. -tabular values in nT.																					
16														727	726	727		727	728	728		729	729	730		730	731	730		730	735	735	
17		731	712	702		701	703	708		713	716	718		721	722	724		724	724	724		725	725	725		725	726	726		725	728		
18	Q																																
19		Tennant Creek										-39000. -tabular values in nT.																					
20							532		532	534	537		538	539	539		539	539	538		539	539	539		539	539	539		538	539	537		
21	Q	534	528	525		525	525	525		527	530	534		536	537	537		537	537	537		538	538	538		538	539	538		538	539	539	534
22		536	530	525		526	528	528		528	531	534		535	536	537		537	537	537		537	537	538		538	538	537		537	539	540	534
23	Q																																
24		Daly Waters										-35000. -tabular values in nT.																					
25			355	348		348	352	351		352	354	357		359	361	362		363	363	363		363	363	363		364	364	364		364	365	367	
26		360	353	351		353	351	349		353	357	359		361	362	363		363	363	363		362	363	363		363	365	365		365	367	368	360
27		365	359	353		354	352	350		351	355	360		361	362	363		363	363	363		363	364	364		365	364	364		364	364		
28	Q																																
29																																	
30																																	

VERTICAL INTENSITY

May 1987

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1		Halls Creek										-38000. -tabular values in nT.														
2								646	649		651	652	655	655	657	657	658	658	658	656	655	654	655	655	655	
3		653	648	643	640	642	638	638	644	652	654	654	657	660	657	656	659	660	660	659	653	650	650	650	650	651
4		651	648	641	642	642	642	644	646	649	651	651	652	652	653	653	655	655	655	654	654	653	652	652	656	650
5		Derby										-37000. -tabular values in nT.														
6		856	852	845	845	848	846	839	840	843	846	848	849	851	851	850	851	851	850	853	853	851	852	846	858	849
7		863	855	843	837	839	835	832	839	847	856	854	853	853	854	852	851	850	851	852	853	852	850	851		
8		Port Hedland										-42000. -tabular values in nT.														
9		64	60		55	52	47	42	41	50	58	60	60	59	60	60	59	58	58	59	59	59	60	60	62	
10		65	66	64	61	57	49	42	42	48	57	56	58	64	69	68	64	62	61	63	64	65	67	66	70	60
11		72	68	63	62	62	58	52	49				72													
12	Q	Telfer										-43000. -tabular values in nT.														
13		198	196	193	193	194	193	191	191	192	194	195	196	196	196	196	196	195	195	195	196	196	197	197	200	195
14		201	200	195	192	191	190	187	187	191	194	195	196	195	195	196	196	195	195	195	194	194	194	194		
15																										
16																										
17	Q																									
18	Q	Carnarvon										-47000. -tabular values in nT.														
19	Q							448	452		457	459	459	459	459	458	459	459	458	458	458	458	459	458	459	
20		461	462	458	451	443	442	442	443	449	455	458	458	458	458	457	457	459	458	458	458	459	459	460	459	455
21	Q	460	459	454	448	446	444	444	445	450	457	458	457	458	457	456	457	457	458	458	458	459	460	460	459	45
22																										
23		Mt Vernon										-46000. -tabular values in nT.														
24	D				395	396	396	394	395	398	401	402	405	407	407	407	408	407	407	406	405	403	404	403	401	
25	D	404	404	403	399	399	399	396	397	400	407	410	409	408	408	407	406	405	405	405	406	406	407	406	408	404
26		412	411	407	402	400	397	395	394	398	401	401	402	404	407	408	409	411	410	409	409	409	409	406	404	405
27	D	Meekatharra										-49000. -tabular values in nT.														
28					482	481	480	478	479	483	487	489	490	491	490	489	489	488	487	488	487	486	487	488	490	
29	D	490	488	486	483	484	483	481	480	486	494	491	496	500	502	501	497	494	494	493	493	493	494	493	494	491
30		493	489	485	485	484	483	481	481	484	487	489	489	490	493	493	492	490	490	489	488	488	488	487	487	488
31	D	490	490	488	484	485	485	485	483	484	486	489	491	492	491	490	491	492	491	491	489	489	488	487	486	488

VERTICAL INTENSITY

June 1987

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1		Meekatharra							-49000. -tabular values in nT.																		
		487	487	487	485	482	481	479	476	478	483	484	485	486	487	488	488	488	488	487	486	484	484	483	482	484	
2		Geraldton							-51000. -tabular values in nT.																		
3						202	199		194	195	200	203	204	204	206	206	206	206	205	205	205	205	205	202	203	204	201
4		203	206	204	200	198	196		194	194	195	200	202	206	210	210	209	207	206	207	206	205	205	204	205	204	203
5		204	205	205	202	197	196		195	196	200	204	205	206	208	206	207	208	210	205	202	203	203	204	203	200	203
6	D																										
7	D																										
8	Q																										
9	Q																										
10																											
11																											
12	D																										
13																											
14																											
15																											
16																											
17		Southern Cross							-53000. -tabular values in nT.																		
18			367		365	363	364		364	365	367	367	369	371	372	372	373	372	371	370	371	371	370	370	369	369	
19	D	370	370	367	361	356	357		361	365	374	373	370	374	381	376	373	372	371	372	372	373	372	372	368	368	370
20		371	372	371	371	370	367		365	368	373	374	374	376	379	381	380	381	380	380	379	377	376	377	376	375	375
21		Laverton							-50000. -tabular values in nT.																		
22	Q								764			764	764	765	765	764	764	764	763	764	764	764	764	765	765		
23	Q	766	767	767	763	762	762		762	763	764	765	765	765	765	765	765	765	765	765	766	766	766	766	766	765	
24		767	764	762	757	757	755		754	758	760	762	762	763	763	763	762	763	763	763	764	764	765	765	765	765	762
25																											
26	D	Carnegie							-47000. -tabular values in nT.																		
27		937	935	934	932	931	931		930	929	931	933	934	934	935	935	935	935	935	936	936	936	936	937	936	937	934
28		936	935	933	931	930	930		930	930	932	932	933	933	934	934	934	934	934	934	934	935	935	936	936	936	933
29																											
30	Q																										

VERTICAL INTENSITY

July 1987

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	Q																									
2	Q																									
3																										
4																										
5																										
6	Q	Warburton										-48000. -tabular values in nT.														
7	Q		526	523	521	519	519	519	522	522	523	523	523	524	524	524	524	527	527	527	527	527	527	527	527	527
8		527	526	525	524	523	523	523	523	525	526	527	528	528	528	528	527	527	528	528	528	528	528	527	528	526
9																										
10																										
		Zanthus										-52000. -tabular values in nT.														
11					879	879		880	880	880	880	880	881	881	881	881	881	881	881	881	881	881	881	881	881	
12		880	880	880	880	880	879	880	880	880	880	881	881	881	881	881	881	881	881	881	881	881	881	881	881	881
13		881	881																							
		Esperence										-55000. -tabular values in nT.														
14					678	678	679	678	679	681	681	684	688	688	688	688	685	683	683	684	684	684	684	685	684	
15	D	685	687	687	685	677	672	667	669	683	684	688	698	695	699	703	698	685	675	674	679	682	679	677	680	684
16	D	692	685	686	688	686	686	683	683	692	691	684	687	689	692	696	695	687	683	685	687	687	685	685	687	688
17		688	688																							
		Albany										-56000. -tabular values in nT.														
18			189	191	187	180	182	180	179	182	182	186	196	199	190	190	189	181	186	188	185	177	182	186	188	
19		190	192	190	189	187	186	183	183	181	182	188	190	187	191	185	187	190	189	190	190	189	184	182	184	187
20		188	190	192	196	194	188	184	186	187	186	185	187	188	192	189	190	187	184	190	189	187	184	180	180	188
21		183	188	187																						
		Augusta										-56000. -tabular values in nT.														
22			651	648	644	640	645	646	647	650	651	652	652	650	649	648	646	646	646	647	641	642	645	643		
23		646	650	656	653	648	640	635	634	645	653	655	656	656	656	658	657	653	649	647	649	649	643	645	645	649
24		649	651	651	648	645	645	641	640	644	651	652	652	653	653	652	650	640								
25	D																									
26	Q																									
27																										
28	D																									
29	D																									
30																										
31																										

VERTICAL INTENSITY

August 1987

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																					
		Eucla																																													
		-53000. -tabular values in nT.																																													
1		533	532		532	532	528	525	528	533	536	536	535	537	538	538	537	537	536	537	537	537	537	536	537																						
2	Q	537	536	534	531	530	528	526	529	532	533	534	536	536	536	536	536	537	537	537	537	537	538	537	536	537	534																				
3		535	533	532	530	529	526	525	527	531	531	534	539	542	546	546	545	543	539	538	539	540	539	539	539	536																					
4																																															
		Ceduna																																													
		-53000. -tabular values in nT.																																													
5		233			233	231	229	230	237	239	241	243	242	241	240	238	240	239	238	238	237	237	236	236	236																						
6		234	233	232	231	230	228	229	232	235	237	237	237	236	239	241	242	240	240	240	239	240	239	239	237	236																					
7	Q	236	236	234																																											
8		Port Lincoln																																													
9		-55000. -tabular values in nT.																																													
10	Q	622	621	618	614	613	616	619	623	626	624	624	623	622	622	622	622	621	620	622	621	622	620	619	622	621																					
11		622	622	620	615	609	608	612	619	621	621	621	621	621	621	621	622	620	620	620	622	622	620	620	624	619																					
12																																															
		Parafield																																													
		-55000. -tabular values in nT.																																													
13	D					177		181	187	200	184	190	189	189	186	188	187	186	185	185	186	187	183	184	187																						
14		189	189	190	183	189	185	179	184	186	187	185	186	188	186	186	186	184	185	184	179	180	178	180	183	185																					
15		185	189	187	184	184	188	184	193	193	191	187	188	186	190	185	187	188	188	187	184	184	180	179	186	187																					
16		192	194	196	191	193	190	190	190	189	187	187	190	189	191	191	190	190	189	189	189	189	188	190	193	190																					
17		195	196	195	189	187	187																																								
		Warracknabeal																																													
		-55000. -tabular values in nT.																																													
18	Q							756	755		755	754	755	755	755	755	755	755	755	756	756	755	755	755	755																						
19		753	752	752	753	754	755	753	754	754	753	753	754	755	754	754	754	754	755	755	755	755	754	753	753	754																					
20		752	754	750	748	750	751	752	753	754	753	754	753	755	755	755	756	756	757	758	758	758	757	757	755	754																					
21	Q	Portland																																													
		-57000. -tabular values in nT.																																													
22		490	490	492	487	487	496	495	494	490	472	479	485	493	494	493	496	494	494	505	508	495	489	491	493	492																					
23		487	486	483	483	494	498	498	498	501	497	507	524	518	509	506	503	478	495	494	492	493	494	483	483	496																					
24		490	492	487	492	486	486	494	497	493	476	494	515	531	525	505	499	500	494	485	493	496	488	484	477	495																					
25	D	485	483	485	483	488	490																																								
26	D	Toolangi																																													
		-56000. -tabular values in nT.																																													
27	D				201	203	206	209	211	202	199	200	205	206	205	198	185	172	183	186	189	190	188	190	192																						
28		191	185	184	188	191	190	192	194	195	196	200	200	202	200	200	194	191	190	195	191	187	183	188	196	193																					
29		194	193	189	189	192	192	193	195	196	195	196	194	196	198	199	200	196	196	199	199	196	192	196	194	195																					
30																																															
		Mallacoota																																													
		-55000. -tabular values in nT.																																													
31	D				620	615		627	642	620	618	608	605	613	598	594	609	621	584	605	613	609	606	601	604																						

VERTICAL INTENSITY

September 1987

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		Mallacoota				-55000. -tabular values in nT.																				
1	D	610	625	627	628	622	630	635	638	623	598	577	623	586	591	614	611	596	615	624	612	608	614	611	596	613
2		597	590	595	597	612	616	616	606	593	610	599	600	599	611	621	616	620	625	619	621	615	604	595	593	607
3	Q	596	604	610	616	619	616	608	599	605	607	610	610	610	610	610	609	608	607	607	608	607	605	599	595	607
4	Q																									
5	Q																									
6																										
7																										
8																										
9																										
10	D																									
11	D																									
12																										
13																										
14																										
15																										
16																										
17																										
18	Q																									
19	Q																									
20																										
21																										
22																										
23																										
24																										
25	D																									
26																										
27																										
28																										
29																										
30	D																									

VERTICAL INTENSITY

March 1988

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	Q																									
2																										
3																										
4																										
5																										
6		Flinders Is										-57000. -tabular values in nT.														
7							711	714	723	716	706	704	705	706	708	711	713	712	707	699	703	689	675	686	693	
8		701	713	719	714	716	731	751	738	726	723	731	724	728	712	728	735	728	730	722	720	714	707	703	706	722
9		711	707	709	711	721	731	726	717	716	716	717	704	720	725	724	725	723	721	719	724	721	715	709		
10																										
		Hobart										-59000. -tabular values in nT.														
11								617	616	616	618	618	617	615	612	611	620	619	618	618	619	619	614	613	615	
12		618	617	616	614	614	613	613	615	615	615	613	615	615	615	615	612	613	609	613	614	613	617	614	613	614
13	Q	614	615	613	610	609	610	612	612	614	612	614	613	613	613	614	615	615	615	616	615	615	614	613	614	613
14		616	612	610																						
15																										
16																										
17																										
18																										
19	Q	Norfolk Is										-43000. -tabular values in nT.														
20							486	492	496	497	496	496	494	495	492	491	492	493	494	495	496	496	492	483	474	
21	Q	465	461	460	465	472	478	483	487	489	489	488	487	486	484	484	484	486	487	488	491	492	489	480	470	481
22	Q	463	459	459	464	468	473	477	481	485	485	484	484	483	481	479	479	479	482	483	485	487	485			
23																										
24		Lord Howe Is										-48000. -tabular values in nT.														
25		403	389	382	381	386	398	407	411	412	412	414	417	420	430	419	414	416	415	412	408	411	413	412	402	408
26	D	389	385	390	389	394	403	413	426	425	426	426	421	421	422	424	436	420	405	387	382	387	408	420	417	409
27	D																									
28	D																									
29	D																									
30	D																									
31																										

VERTICAL INTENSITY

April 1988

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1																										
2																										
3	D																									
4	D	Weipa									-30000.	-tabular values in nT.														
5	D									144	146	148	150	149	149	149	148	148	148	149	149	149	154	158	156	
6	D	151	146	139	138	134	132	142	147	151	151	154	155	151	153	154	154	152	151	150	150	151	152	148	140	148
7		137	132	131																						
8																										
9																										
10																										
		Gove									-29000.	-tabular values in nT.														
11											659	658	657	658	659	659	659	663	662	660	659	661	661	665	667	
12		670	665	659	654	656	652	657	657	658	657	656	659	658	660	664	663	664	665	665	665	662	663	662	664	661
13		659																								
		Darwin									-30000.	-tabular values in nT.														
14					219	222		220	222	225	227	231	234	235	235	236	237	238	239	239	238	238	231	235	242	
15	Q	235	222	207	205	208	206	205	211	218	221	224	225	223	228	229	226	227	230	231	231	230	226	227	236	222
16	Q	233	217	210																						
17	Q																									
18																										
19																										
20																										
21																										
22	D																									
23																										
24																										
25	Q																									
26	Q																									
27																										
28																										
29																										
30																										

VERTICAL INTENSITY

May 1988

MEAN HOURLY VALUES

PRELIMINARY

	UT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24								
1																																		
2																																		
3		Christmas Is										-30000. -tabular values in nT.																						
4						44	36		33	32	35		38	42	42	46	52	51		52	50	50		50	50	52	55	53	54					
5	D	52	51	50		46	42	36		32	32	33		38	39	47		54	57	57		56	57	54		52	49	51	52	49	48		47	
6	D	62	58	57		61	61	43		36	48	41		47	56	63		69	73	78		80	83	74		71	71	70		67	64	65		62
7		66	62	58		56	56	53		52	51	50		49	51	54		56	59	63		61	59	60		60	62	56		59	61	62		57
8	D	61	57	58		56	52	51		50	46	48		47	50	50		51	56	58		60	61	58		57	61	64		62	62	61		56
9		59	58																															
10		Cocos Is										-33000. -tabular values in nT.																						
11				214		215	214	212		211	212	215		219	220	223		225	226	226		230	229	227		228	228	227		224	223	222		
12	Q	222	224	222		220	215	215		219	220	218		222	222	223		224	227	229		227	226	230		230	229	226		225	224	223		223
13	Q	220	220	217		213	211	210		213	212	214		216	217	218		222	223	226		222	220	221		221	223	223		225	228	223		219
14	Q	220	220	221		220	217	215		218	219	222		227	230	231		232	227	230		227	226	225		225	224	226		228	229	226		224
15		222	223	223		222	217	211		208	205	207		212	222	227		232	228	223		224	223	224		222	221	224		225	225	222		221
16		218	219	220		219	213	212																										
17	D																																	
18	D																																	
19																																		
20																																		
21																																		
22																																		
23																																		
24																																		
25																																		
26																																		
27	Q																																	
28	Q																																	
29																																		
30																																		
31																																		

165

UT

10 11 12 13 14

23 24

[illegible]

Table 8 Adopted field values and secular variation at Epoch 1990.0

Station		D	H	F	Z	I	X	Y	dD	dH	dZ	dF	dI	dX	dY
		°	nT	nT	nT	°	nT	nT	'	nT	nT	nT	'	nT	nT
Albany	C	-3.083	21433	60144	-56195	-69.123	21402	-1153	2.6	-13.4	-3.1	-1.9	-0.78	-12.5	16.6
Alice Springs	E	5.070	29941	53799	-44698	-56.196	29823	2646	1.6	-3	-7.8	0	-0.44	-4.2	13.9
Alpha	A	8.795	30413	52446	-42727	-54.569	30056	4650	1.9	-5.1	9.9	-13	0.1	-7.6	15.7
Augusta	D	-4.637	20934	60390	-56646	-69.726	20866	-1692	2.6	-14.6	-9.7	-4	-0.97	-13.3	17
Ayres Rock	C	4.322	28877	54950	-46751	-58.306	28795	2176	1.6	-9.7	-6.7	0.6	-0.74	-10.7	12.6
Birdsville	B	6.982	28936	54580	-46278	-57.969	28722	3517	2.1	-12.2	-0.8	-2.7	-0.68	-14.2	15.6
Boulia	C	6.980	30640	52453	-42574	-54.255	30413	3724	1.9	-9	-3.1	-1.7	-0.6	-10.9	15.4
Bourke	C	9.800	26630	56230	-49524	-61.754	26241	4533	2.3	-15.2	4.6	-17	-0.69	-18	15
Carnarvon	D	-1.453	27626	54975	-47530	-59.833	27617	-701	1.1	-0.6	-27.5	23.5	-0.9	-0.4	8.9
Carnegie	A	1.893	27924	55510	-47975	-59.793	27909	923	1.4	-5.9	-16	11.4	-0.81	-6.3	10.8
Ceduna	D	5.352	24563	58626	-53232	-65.232	24456	2291	2.1	-21.8	-2.1	-8.4	-1.21	-23.1	12.5
Christmas Is	B	-0.952	35451	46423	-29972	-40.283	35447	-589	-3.6	57.2	4.2	33	2.97	56.6	-37.6
Cocos Is	A	-4.350	33534	47180	-33188	-44.714	33438	-2544	-4.1	63.5	12.7	36.2	3.91	60.3	-44.2
Condobolin	B	10.463	24905	57905	-52276	-64.513	24491	4523	2.1	-17.6	6.1	-13.1	-0.79	-20.1	11.8
Cooktown	C	6.895	34150	47230	-32626	-43.692	33903	4100	0.6	-7.7	5	-9	-0.12	-8.4	5.1
Croydon	B	6.587	33062	49390	-36692	-47.997	32844	3792	1.1	-4.2	-1.2	-4.5	-0.27	-5.4	9.8
Daly Waters	B	4.500	34068	49100	-35358	-46.074	33963	2673	0.6	12.7	-3.6	11.4	0.47	12.2	7.1
Darwin	E	3.485	35232	46430	-30240	-40.654	35167	2142	-0.3	7	-10.6	12.4	-0.26	7.2	-2.3
Derby	E	2.495	33176	50380	-37915	-48.793	33144	1444	1.7	13.5	-22.3	23.4	-0.31	12.8	17.2
Emu	A	4.883	26630	56536	-49871	-61.9	26533	2267	2.4	-14.8	-8.5	0	-1.04	-16.3	17
Esperance	C	-0.528	22667	60130	-55694	-67.854	22666	-209	2.3	-15.3	-4.2	-2.6	-0.9	-15.2	15.1
Etadunna	A	7.133	27160	56428	-49462	-61.178	26950	3373	1.7	-12.7	-1.4	-4.9	-0.72	-14.3	12.1
Eucla	C	4.238	23622	58522	-53543	-66.194	23557	1746	2.1	-18	-5.4	-2.3	-1.1	-19	12.9
Flinders Is	B	13.567	20405	61200	-57698	-70.52	19836	4787	2.6	-21.6	16.9	-16.2	-0.83	-24.6	9.9
Geraldton	C	-2.172	25144	57092	-51257	-63.868	25126	-953	1.6	-10.6	-21.6	14.7	-1.15	-10.2	11.8
Gove	B	4.750	35236	46062	-29667	-40.099	35115	2918	-0.8	5	-2.6	5	0.09	5.7	-8.2
Grafton	A	11.737	27343	55085	-47820	-60.247	26771	5562	2.3	-11.2	13.2	-17	-0.2	-14.6	15.3
Halls Creek	D	3.167	32620	50600	-38682	-49.856	32570	1802	1.0	7.5	-10.9	13.2	-0.09	6.9	10.3
Hobart	H	14.553	18323	62310	-59555	-72.908	17735	4604	3.0	-29.6	13.5	-21.6	-1.34	-32.7	8.0
Laverton	D	1.883	25928	57025	-50790	-62.954	25914	852	1.6	-10.5	-10.5	4.3	-0.85	-10.9	11.7
Lord Howe Is	C	15.480	27069	55460	-48406	-60.794	26087	7225	1.7	-10.3	16.9	-19.8	-0.05	-13.5	10.0
Mackay	B	9.045	31800	50595	-39352	-51.048	31405	4999	1.6	-15.0	8.1	-15.7	-0.45	-17.1	12.3
Mallacoota	A	13.368	22292	59880	-55576	-68.144	21688	5154	2.5	-12.0	11.9	-16.9	-0.39	-15.3	12.7
Maryborough	C	11.083	29655	52672	-43531	-55.749	29102	5701	1.2	-12.2	7.2	-12.8	-0.39	-14.0	8.1
Meekatharra	B	1.243	26788	56315	-49536	-61.601	26782	581	1.7	-3.9	-21.2	16.8	-0.83	-4.2	13.5
Mildura	D	9.388	23796	59053	-54047	-66.237	23477	3882	2.3	-17.8	6.2	-12.8	-0.8	-20.1	12.5
Moree	F	10.760	27100	55630	-48583	-60.859	26624	5060	1.4	-12.4	5.1	-13.3	-0.52	-14.2	8.4
Mt Isa	A	6.158	31862	51207	-40087	-51.524	31678	3418	1.4	-2.1	-1.8	0.6	-0.19	-3.5	12.7
Mt Vernon	A	0.500	28574	54542	-46458	-58.400	28573	249	1.0	4.7	-20.6	20.0	-0.43	4.6	8.4
Newcastle	A	12.352	25430	57239	-51280	-63.622	24841	5440	2.0	-15.0	6.4	-14.4	-0.64	-17.8	11.2
Norfolk Is	B	15.378	28736	52080	-43434	-56.523	27707	7621	0.8	-18.7	18.1	-25.4	-0.37	-19.8	1.5
Oodnadatta	B	5.767	27832	56056	-48659	-60.239	27691	2797	1.7	-11.2	-0.9	-5.8	-0.62	-12.5	12.6
Parafield	A	8.200	22996	59760	-55158	-67.371	22761	3280	2.2	-12.5	8.6	-13.8	-0.47	-14.5	12.8
Port Hedland	D	1.368	31156	52400	-42132	-53.508	31147	744	0.9	7.8	-23.5	25.5	-0.51	7.6	8.6
Port Lincoln	C	5.617	23128	60240	-55623	-67.424	23017	2264	2.6	-18.9	-0.8	-7.1	-1.01	-20.5	15.5
Portland	C	9.813	20924	61145	-57454	-70.003	20618	3566	2.5	-19.0	8.4	-14.4	-0.84	-21.3	11.6
Quilpie	A	8.305	28678	54476	-46316	-58.229	28377	4142	1.7	-10.8	5.2	-10.1	-0.41	-12.8	12.7
Roma	C	9.670	29048	53904	-45408	-57.391	28635	4879	2.2	-11.0	7.8	-12.5	-0.32	-14.0	16.6
Southern Cross	B	-0.272	24121	58597	-53402	-65.692	24121	-114	2.1	-17.5	-14.8	6.0	-1.29	-17.4	14.8
Telfer	A	1.802	30539	52930	-43232	-54.753	30524	960	1.1	4.0	-9.5	11.3	-0.14	3.7	9.4
Tennant Creek	C	4.720	32305	51054	-39533	-50.750	32196	2658	1.4	0.8	-2.4	2.4	-0.06	-0.3	13.1
The Granites	C	3.627	31653	52395	-41753	-52.835	31590	2002	1.7	3.4	-10.2	9.6	-0.23	2.4	15.8
Tibooburra	A	8.552	26862	56508	-49715	-61.613	26563	3994	2.3	-13.6	2.1	-6.2	-0.67	-16.2	16.0
Toolangi	SM	11.573	21872	60275	-56167	-68.726	21427	4388	3.1	-17.0	10.6	-16.0	-0.68	-20.6	15.7
Warburton	A	3.192	28038	56065	-48551	-59.994	27994	1561	2.0	-4.9	-10.5	6.6	-0.58	-5.8	16.1
Warracknabeal	C	10.088	22430	60065	-55720	-68.082	22083	3929	2.7	-16.1	5.6	-17.2	-0.74	-19.0	14.7
Weipa	B	5.748	35593	46642	-30143	-40.265	35414	3565	0.8	4.0	-0.8	3.6	0.15	3.1	8.8
Wilcannia	D	9.333	25600	57400	-51375	-63.526	25261	4152	2.4	-12.0	2.5	-11.1	-0.58	-14.7	15.7
Winton	A	7.600	30900	51850	-41637	-53.426	30629	4087	2.1	-10.6	-1.3	-6.0	-0.62	-13.0	17.4
Woomera	A	6.583	25350	57742	-51880	-63.955	25183	2906	1.6	-17.0	-3.9	-7.4	-1.01	-18.2	9.8
Wyndham	C	3.022	34155	48980	-35106	-45.790	34108	1801	0.9	12.4	-11.9	16.3	0.04	11.9	9.3
Zanthus	B	1.343	24468	58292	-52908	-65.180	24462	574	2.3	-14.8	-10.1	3.0	-1.04	-15.2	15.7

