AT NEWSLETTER
The Australia Telescope
Number 3 - September 1983
The Australian Bicentenary 1788-1988
National Projec

REVIEWS BY GOVERNMENT AUTHORITIES

Over the past few months various administrative and review procedures have been carried out in accordance with normal Government procedures for large Federally funded projects.

- Federal Department of Home Affairs and the Environment

A Notice of Intention (NOI) to construct the AT was prepared by the Division of Radiophysics and lodged with the Department on 21st June, 1983. The NOI provided details on the AT layout (see Figure 1 of AT Newsletter No. 2); the proposed frequency bands of operation (0.405-0.425, 1.24-1.75, 4.5-6.1, 8.3-10.1, 21.0-25.5, 42-50 GHz, and a future band of 80-115 GHz); optical fibre and microwave links; antenna sites; and environmental impact of the project. Subsequent discussions were held between the Division, the Department and the NSW Department of Environment and Planning. The Division has now been informed that an Environmental Impact Statement will not be required provided that the various measures of the NOI are adhered to, and that CSIRO continues consultation with the various councils and environmental authorities.

- National Parks and Wildlife Service

The Service was consulted concerning the effect of the AT construction on the environment, in particular to possible disturbance of archaeological relics and aboriginal artefacts on the proposed AT sites. The Service carried out archaeological surveys in June which showed that no such relics, artefacts or sacred sites would be affected by the proposed construction.

- Department of Administrative Services

Discussions have taken place between CSIRO and the Department concerning the acquisition of land adjacent to the CSIRO property at Culgoora. Five of the six antennas of the Compact Array will be located on a 3 km east-west rail track located within the CSIRO boundaries. However, for the 6 km antenna, 3 km further to the west, it will be necessary to purchase an area of land 150 m x 70 m (the antenna site), and to obtain an easement on a 10 m-wide strip of land between the CSIRO property and the 6 km antenna site (for an access road and buried cable). The Department is negotiating with the present landowners for the land acquisition.

- Federal Parliamentary Public Works Committee

Advice was received early in the year that the AT Project would be regarded as a 'large public work' and therefore must be referred to the Parliamentary Standing Committee on Public Works (PWC). Accordingly, a comprehensive submission was prepared by the CSIRO incorporating evidence by the CSIRO Chairman, Paul Wild, on the overall perspective of the project; by Howard Crozier, CSIRO Secretary (Finance and Administration) on the financial implications; and by Bob Frater, Chief of the CSIRO Division of Radiophysics on the more detailed technical aspects of the project. A statement of supporting evidence prepared by the Federal Department of Housing and Construction was also included. The evidence was presented at a PWC Hearing held at Parliament House Canberra on 5th September.

One month prior to the Hearing a Sectional Committe of the Public Works Committee and representatives from the Department of Housing and Construction and CSIRO Headquarters visited the Epping Laboratory a the observatories at Parkes, Siding Spring Mountai and Culgoora in order to acquaint themselves with the Project.

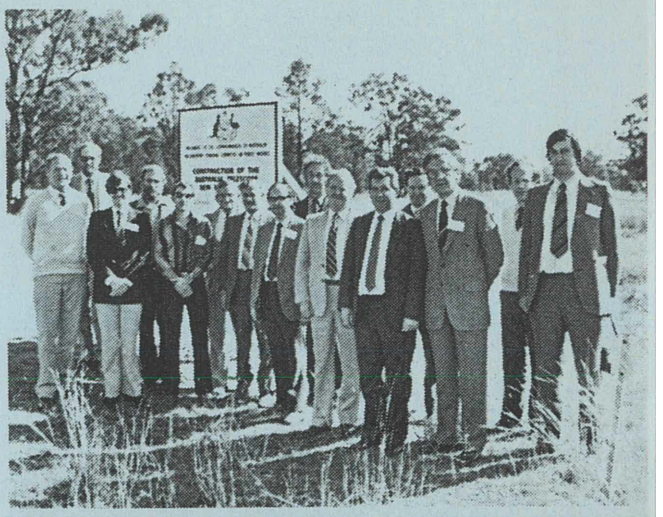

Figure 1. Top: The PWC delegation visits the Culgoora site.

Left to right: Peter Drummond (MP for Forrest, WA), Chris Simpson (Assistant Secretary, PWC), Ian Farrar (Assistant Secretary (Budget) CSIRO), John Brooks (AT Project Manager) Dennis Cooper (AT Antenna Manager), Dick Fenton (Secretary, PWC), Len Keogh (MP for Bowman, Q'ld) Bob Frater (Chief, CSIRO Radiophysics), John Whiteoak (AT Project Secretary), Bernie Kilgarif (MP, Northern Territory), Dominic Foreman (Chairman, PWC, and Senator for SA), Kelvin Smit (Acting Secretary (Finance and Administration) CSIRO), Neville Fletcher (Director, Institute of Physical Sciences, CSIRO), Raymond Howes (Projec Manager, Department of Housing and Construction), Mike Wiltshire (Institute of Physical Sciences, CSIRO).

Bottom: Keith Hodgson explains the work involved in machining corrugated feed horns for improving antenna performance.

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STAFFING

Since our last issue of the AT Newsletter (March, 1983) several new appointees have arrived. The staffing structure is currently as shown below and includes people who have Divisional duties in addition to those associated with the AT Project.

AUSTRALIA TELESCOPE

Project Manager
Brooks, John

Antenna Manager
Dennis Cooper

Project Secretary
John Whiteoak

Project Scientist
Rick Forster

Project Office

Howson, Phil
Little, Alec
Petro, Val
Pik, Andrew
Wellington, Kel

MANAGEMENT SUPPORT

Manefield, G.Anne
Swan, David
Wilcockson, Brian

Antennas

Broderick, Eric
Harrigan, Vince
James, Graeme
Kennedy, Rod
Parsons, Barry
Payten, Warren

Signal Distribution and Monitoring

Wilson, Warwick (temporary)
Hrebeniuk, Peter
Miller, Peter
Percival, Terry

Digitizers/Correlators

Warwick Wilson

Brown, David
Gates, John
Henderson, Andy
Le Comte, David
Willing, Mike

Receiver Systems

Sinclair, Mal

Bolton, Russell
Gay, Grahame
Gerard, Gerry
Gough, Russell
Graves, George
Kanoniuk, Henry
McCulloch, Gerry
Moorey, Graham (O/S)
Rasmussen, Hans
Sykes, Pat
Wilcockson, Brian

Computing

Wand, Ron

ONLINE AND CONTROL DESK

Anderson, Keith
Chmiel, George
Crapps, Geoff
Dillon, Don
Mach, Joe

DATA REDUCTION

Kesteven, Mike

Firth, Michael
Mulhall, Phil
Norris, Ray
Rayner, Paul

AT WORKING GROUPS

As part of the overall management structure for the AT Project, a number of working groups has been established. The purpose of these groups is to provide an overview on design and progress and to monitor new developments in the relevant areas. In some sections the role of the group will be advisory in nature whilst in other areas it will contribute in greater depth to much of the detailed design work. Suggestions for all major changes envisaged to the Project will be submitted to the Advisory Committee for consideration.

The current convenors for the working groups are: Dennis Cooper (Antennas and Culgoora site), Bob Frater (MWP Contract and computing), Don Yabsley (Panels), Bruce Thomas (Feeds), Alec Little (Receivers, signal distribution and monitoring), and John O'Sullivan (Digitizers and Correlators).

COMPUTER WORKSHOP

A Workshop on computing for the AT was held at Epping and Parkes during the period 25-28 July 1983. The participants included not only 14 Radiophysics staff but also G.W. Bothwell (Anglo-Australian Observatory) and D.J. Skellern (Electrical Engineering, University of Sydney).

The aims of the Workshop were to:

- determine the overall computing requirements for the AT;
- establish manpower and cost estimates, and also the times when specific hardware might need to be purchased;
- identify any problem areas which may need more urgent and detailed study.

Three sub-groups were formed to work on details of on- and off-line computing; the correlator system; and the control monitor system. A report of the Workshop is available in the AT Memoranda Series (AT/10.5/002).

ADVISORY COMMITTEE MEETING

The sixth meeting of the AT Advisory Committee was held on 25 August, 1983 with the three overseas advisors (John Baldwin, U.K., and Ron Ekers and Peter Napier, USA) in attendance. The meeting included discussions on the preparation for the Public Works Committee hearing and progress reports on interference studies on Siding Spring Mountain and at Culgoora, microwave links, ATSOC (AT Scientific Advisory Committee) deliberations, configuration studies, and antenna design.

During the two days prior to the meeting talks were given by the AT Section Heads on the current status of work in their areas.

During the same and also subsequent weeks many discussions were held between AT Project personnel and overseas scientists who were in Sydney to participate in the URSI/IAU Indirect Imaging Symposium.

ANTENNA DESIGN

One of the major activities to date has been on the design of a 22 m antenna. Over the past 9 months extensive discussions by Dennis Cooper (AT Antenna Manager) and Nicholas Guoth from Macdonald, Wagner and Priddle (antenna consultants) have taken place with major antenna manufacturers and design groups around the world.

Since March the design work has concentrated on assessing the pointing performance of the antenna under thermal- and wind-loading conditions. Wind tunnel tests are being carried out under contract at Monash University.

The results of this work showed that a 'wheel-on-track' design gives much better performance under thermal and wind loading than the original 'yoke and pedestal' design. The essential feature of a wheel-on-track design is the large effective azimuth bearing diameter (i.e. the track), which in turn allows a wide separation of the elevation bearings on the back-up structure. The latter permits a truss system for the dish, increases the stiffness and reduces the deflection under wind loading. An open elevation alidade structure becomes possible instead of the plated yoke, improving the thermal characteristics. The problem then remains to make such a system movable. An examination of structural and mechanical possibilities has lead to a preferred antenna layout which incorporates a large slewing ring mounted low down in place of the track. The new and old designs are shown in Figure 2.

A wheel-on-track design is still being considered for the single fixed antenna to be placed on Siding Spring Mountain.

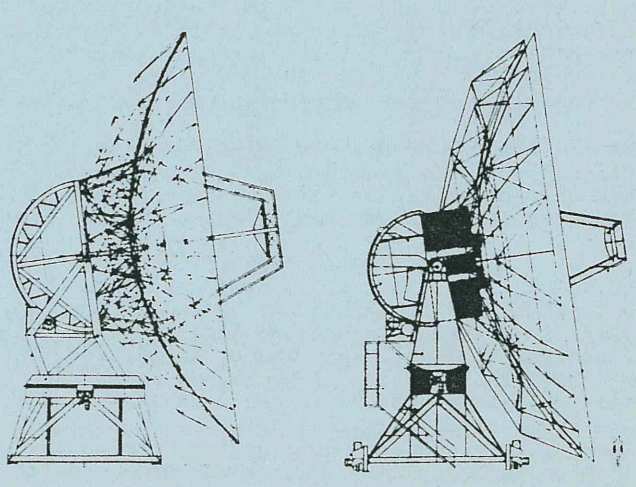

Figure 2. The newer AT antenna design, on left, compared with the 'yoke and pedestal' approach.