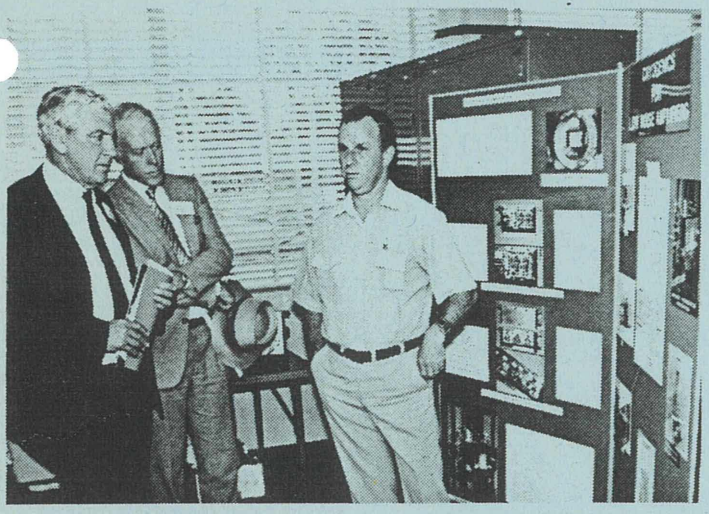
AT NEWSLETTER
The Australia Telescope
Number 6 - November 1984
The Australian Bicentenary 1788-1988
National Project

INAUGURATION OF CONSTRUCTION

Construction of the AT was officially inaugurated at Culgoora on 27 September by the Minister for Science and Technology, the Hon Barry O Jones, MP.

The ceremony was attended by representatives from the astronomical community, the Narrabri Council , local press, landowners, industry and other local representatives including the Federal member for Gwydir, the Hon Ralph Hunt, MP.

The visitors were treated to a tour of AT displays and the existing radioheliograph facility which will cease operation in December this year.



The photos show Mal Sinclair explaining the intricacies of cryogenic receiver technology to two of the invited guests, and Barry Parson's smile of approval as the Minister examines the 'New Astronomy' book presented to him by Bob Frater at the conclusion of the ceremony.

STAFFING DETAILS

New Arrivals

Ross Gardyne: Joins Alan Young's Signal Distribution Group as a technical officer on a 3 year appointment. Ross was previously employed by the Department of Defence as a trainee technician and in that capacity has previously spent a 6 months period with us.

Keith Corkery: Has now taken up his position as Chief Draughtsman on a 3 year appointment in the Drawing Office. Keith's previous job was with a firm called Envirotech where he was Chief Draughtsman.

Simon Hoyle: Will, in the near future, join Mal Sinclair's group as a technical assistant (3 year appointment) working on cryogenic systems. Simon has already spent time with the Division as a trainee technician for his previous employer, the Department of Defence.

Graham Moorey: Rejoins the Division after a two year leave without pay stint working at Tucson for NRAO as a senior engineer. Graham will take up a position in the AT receiver group.

Departures

Bryan Anderson has now returned to Jodrell Bank, U.K. after spending a 3 month period with us as a Distinguished Visitor. Bryan gave invaluable advice and support to Alan Young and his group whilst he was with us.

TENDERS FOR CIVIL WORKS AND ANTENNA CONSTRUCTION

Advertisements were issued in the national press for the preselection of qualified tenderers for the execution of civil works at Culgoora and for the antenna construction.

Following the selection of a short list of qualified companies for each of these activities, tenders will be called for the civil works late in November and for the antennas early in January. Civil works should then commence in April 1985 for completion by the end of the year while antenna construction should start in August 1985 for completion by September 1987.

Key Dates

Culgoora civil works, tender let	March	1985
Completion	End	1985
Antenna construction, tender let	June	1985
Completion - 6 antennas at Culgoora	July	1987
- 1 antenna at Siding Spring	Sept	1987
First Interferometer Tests	July	1987

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ATSOC REPORT

The 8th meeting of the AT Scientific Objectives Committee was held on 23 August. The communication system for the LBA, and off-line computing requirements for the AT were the main items discussed. Systems involving radio links, optical fibres and the AUSSAT satellite were reviewed, as well as the use of tape recorders and accurate clocks as in VLBI systems. A tape recorder system appears most attractive from the standpoint of future expansion of the Long Baseline Array.

Recommendations to the AT Advisory Committee arising from that meeting include:

- Attention should be given to the use of the Siding Spring antenna as a stand-alone instrument, particularly for the higher frequencies.
- Care must be exercised in the choice of off-line computing facilities for the AT in order to avoid potential bottlenecks due to very large spectral line databases.
- The proposed observing frequency of 408 MHz is too badly affected by radio interference to be useful at Culgoora.
- The location of a future north-south extension to the Compact Array near the middle of the 1.5 km section is recommended.
- Effort should be given to providing dual polarization capability for the low (<1 GHz) observing frequencies.

AT ADVISORY COMMITTEE

A meeting of the Committee was held on 18 October. The meeting was preceded by two symposia on the 16th and 17th which dealt with the status of the Correlator and the LBA communication links respectively.Two of our overseas advisors, John Baldwin, Ron Ekers and were in attendance.

Some of the main conclusions reached by the Committe include:

1. Request to the Configuration Study Group to assess the implications of bandwidth synthesis on the mode of operation of the Compact Array.

2. Confirmation of the provision of a VLSI correlator for the Parkes Telescope for use in stand alone operations.

3. Provision of an auto-correlator facility for the six km antenna at Culgoora again for use in a stand alone mode of operation.

4. The use of magnetic tapes for operation of the LBA in preference to optical fibre or microwave transmission links. This option will facilitate any future expansion of the LBA to antennas at Hobart and other parts of Australia and will also allow for collaboration with the proposed radio telescope satellite, QUASAT, a joint USA/European venture.

5. The AT Computer Group has been asked to assess developments in computer language standards in terms of future flexibility for the AT computer system. They have also been asked to convene a workshop on the standardisation for the use and selection of microprocessors both within the AT and in relation to other astronomical institutions in Australia.

6. The current status of recent developments by the University of WA on sapphire-loaded superconducting cavity clocks is to be investigated. These extremely stable clocks could provide a low cost alternative to the currently used hydrogen masers for LBA observations. If the assessment is positive a 12 month feasibility study will be undertaken jointly by the Division and the AT Project.

POSSIBLE INTERFERENCE

The Pilliga region between Culgoora and Siding Spring has been declared as a possible site for an army training school. The activities of such an army base in the region could seriously interfere with the operations of the AT. A formal submission from the Division detailing the possible adverse effects is being prepared.

A SOURCE CATALOGUE FOR THE AT

Ray Norris of the AT's data reduction section has prepared a draft specification for a source catalogue for use with the Australia Telescope.

The proposed system consists of an astrophysical source catalogue (a file of ASCII records containing data on astrophysical sources) and a separate calibration catalogue (a set of binary files for observation, source, station and receiver). Software for handling these catalogues will also be needed.

RECEIVER SYSTEMS

Prototype production boards for the FET amplifier bias supplies have been completed. Each board contains four complete bias supplies and can operate a complete amplifier of up to four stages. Each dual band front end system for the antennas will have four of these multiple bias supplies.

The first prototype of a C/X band r.f. module has been completed, with the conversion module(r.f. to i.f.) as the next unit to be prototyped.

Specifications for the helium plumbing and distribution on the antennas are now completed while the specifications for the antenna vacuum system equipment requirements are presently being compiled.

A prototype low noise amplifier dewar design has been finalized and material ordered for the construction of the first C/X prototype. Assembly drawings for the C/X receiver system including horn, dewar and cooled component assembly have also been prepared.

CONTRACT LET FOR VLSI CORRELATOR CHIPS

At the Inauguration of Construction ceremony on 27 September at Culgoora, the Minister for Science and Technology, the Hon Barry O Jones, MP, announced that Austek Microsystems of Adelaide was the successful tenderer for the VLSI correlator chip contract.

The tender worth $258,000 is for the production and supply of 5,000 chips fabricated with 2.5 micron minimum geometry NMOS technology. Delivery is expected by mid-1985.

Work is now in progress on the final production design of the chip. The first prototype test structures using the production process were submitted for fabricaton on 22 October.

SERVO-CONTROL DESIGN CONTRACT LET

A contract for the design of the servo-mechanism control systems for the antennas has been let to the University of Newcastle. The Division has been collaborating with the University on the redesign for the control system for the Parkes radiotelescope as part of the overall upgrade in time for participation in the Giotto Project - a European Space Agency satellite mission to study Halley's Comet in 1986.

PROJECT OFFICE DETAILS

Major Purchases (since July 1984)

(a) Intergraph CAD system (including 1 colour workstation plus a VAX 11/751).

(b) Touchstone & Filsyn computer aided design software packages plus a micro computer system.

(c) Automated weather station for Culgoora.

(d) 10 CTI Model 1020 cryogenic systems for the receivers.