ATNF NEWSLETTER

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COMPACT ARRAY OPERATION

Currently, the five antennas on the 3-km east-west railtrack are all equipped for operation with dual-channel 20-cm/13-cm and 6-cm/3-cm receiving systems. The turret rotation required for switching between the two systems can now be controlled remotely from the Array's Control Centre. All 35 observing 'stations' on the railtrack are operational.

The outfitting of the 6-km antenna was accelerated in March, and the antenna was used successfully as an array element on 20th March. It has been scheduled for operation in a 6-km configuration in June. However, not enough receiving equipment is available to support full simultaneous operation of all six antennas of the CA.

New configurations of baselines have been generated which are more suitable for 2-, 3- and 4-day observing projects than the configurations used initially. Each provides an approximately uniform coverage in baseline. Use of these configurations will begin in April 1991.

The large correlator system is still incomplete. Intended to provide spectral bandwidths ranging from 0.5 MHz to 256 MHz, it currently provides only dual-channel bandwidths of 64 and 128 MHz. Pending full outfitting, a set of 8-MHz filters have been installed in the antennas to enable limited spectral-line observations; in addition a set of 4-MHz filters has been ordered.

PARKES OPERATION

Two-person rule for operation. For both personal and equipment safety a minimum of two people has always been required to be present in the 64-m antenna tower while the telescope is in operation. After considerable discussion, it was decided to relax the rule to enable two-person operation with one person controlling the instrument and the other to sleep in the tower. Accordingly, a small bedroom has been constructed at the base of the tower.

Microvax computer installation. A Microvax 3400 computer was purchased in 1989 to replace the Vax 11/750 as the control computer for the Parkes antenna. Preparations for the changeover were made during 1990, and the final steps began in November.

New correlator. An autocorrelator based on the AT design was originally planned for completion in 1990/91. However, a lack of staff has delayed this project. In the meantime, an interim system will be provided which uses some standard AT correlator hardware together with part of the old system. The available maximum spectral bandwidth will be increased from 10 to 64 MHz. Tests of the system are scheduled for April 1991.

STATISTICS FOR 1990 OBSERVING

Compact Array. The CA began operating as a national facility with a formal observing schedule in April 1990. During the three quarters of 1990 that the CA was in operation, 64 programs involving 92 scientists from 34 different institutes were allocated time, Of these, 25 different programs involved 32 overseas observers from 20 overseas institutes; these programs usually also included local astronomers. The average time per program was 30 hours.

Parkes 64-m antenna. This telescope operated for the full year. Observing time was allocated to 43 different programs involving 88 scientists from 32 institutes. Of these, 24 programs involved 33 overseas observers from 24 overseas institutes. The average length of observing program was 8 days. The Parkes telescope was also used for VLBI projects by 5 different groups.

1990 STEERING COMMITTEE MEETING

The fourth meeting of the ATNF Steering Committee was held during 18-21 November 1990. It included a two-day review of CA on-line software systems.

The formal meeting of the Committee began on the afternoon of 20th November and continued through the following day. The half-day session was devoted to discussions of the more routine aspects of astronomical and operational issues. Reports to the Committee were given by John Brooks (construction), Ron Ekers (time allocation, AT Director's Report, on-line software review), Phil Howson (financial matters), Dick Manchester (AT Users Committee meeting), Graham Nelson (Narrabri operations), and John Whiteoak (observing statistics, ATNF Annual Report, Visitors Centres).

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General conclusions of the Committee included the following:

- The current members of the Time Allocation Committee would be requested to serve until at least the end of 1991.
- Letters would be sent to members of the Users Committee (formed initially as an interim group) to formally confirm membership of the Committee.
- The proposal for a Collaborative Research Centre (see last AT Newsletter) was endorsed.
- Concerning the Users Committee request to provide remote access to ATNF computers, in view of resource implications, ATNF should conduct a trial in association with a cost-benefit analysis.
- The 'construction phase' of the AT would be deemed as complete when the 6-km array system was commissioned, and the Mopra antenna was commissioned as a stand-alone system.
- There was some concern about the possibility of impending shortfalls in future funding of ATNF.
- It was agreed that the ATNF Director should represent Australia on the international VLBI working group.

The next meeting of the Steering Committee is planned for November 1991.

COMPACT ARRAY SOFTWARE REVIEW

A review of the CA on-line computing systems was held at the Narrabri site on 18th and 19th November. The twenty-six participants in this review included relevant ATNF staff, members of the ATNF Steering Committee and external experts Wim Brouw (Chairman, Netherlands Foundation for Research in Astronomy), Geoff Croes (Associate Director (Computing), US National Radio Astronomy Observatory), Colin Jacka (CSIRO Division of Radiophysics), David Keightley (CSIRO Division of Information Technology), and John O'Sullivan (Deputy Chief, CSIRO Division of Radiophysics). Subjects discussed included the system architecture, antenna computer environment, Array communications, correlator matters, monitor and data quality tasks, software management, archiving, and automatic operations.

Although the participants were impressed by the level of achievement in bringing the AT to its current operational state producing significant astronomical results, some problem areas were identified:

- A general problem is the lack of an overall long-term plan for the development of hardware and software, coupled with minimal use of standard sound software engineering practices.
- An area of concern for some time involves the antenna control systems, in particular the position control computers. A rough plan of attack was discussed during the review, and this is now being developed.
- Changed requirements for the antenna servo (such as a need for quick position changes during mosaicing observations) resulted in a call for the development of new specifications.
- In the antenna communications area there was unanimous agreement that the use of Pascal language should cease.
- In data archiving, it was argued that, for a longer range solution, Digital Audio Tape (DAT) is preferable to the Exabyte system currently used by ATNF because it has a defined format and also is expected to become the international interchange standard.
- The ultimate goals for automatic CA operation proved a contentious issue. Some participants argued that totally unattended operation (with automatic dial-up for emergencies) was achievable.

MEETING OF THE AT USERS COMMITTEE

The AT Users Committee (ATUC) met at the CSIRO Radiophysics Laboratory on 17th November. It followed an AT Users meeting; held on the previous day. This included a symposium of scientific results based on projects using AT facilities.

The ATUC meeting was attended by 12 members (current membership is listed in ATNF's 1990 Annual Report); in addition B. Carter attended as a substitute for Warwick Couch. ATUC agreed on a number of resolutions which the Chairman (Dick Manchester) listed in a report to the ATNF Director. They included the following:

- ATUC expressed confidence in its current composition and representation; it supported an ATNF member as Chairman.
- Users meetings should continue to be held six monthly, on occasion at institutions outside ATNF.
- The use of graduate students as 'Duty Astronomers' at Narrabri should be encouraged. In addition to the free accommodation and Sydney-Narrabri travel provided to all Duty Astronomers, ATNF should consider additional contributions to the travel costs for those students not located in Sydney.
- ATNF should hold an image synthesis workshop, aimed at users and potential users of AT facilities, during 1991.
- A set of four standard one-day configurations for each of maximum baselines 0.375, 0.75, 1.5,3 and 6 km should be generated, with each configuration providing uniform baseline coverage and no baselines common to its other associated three configurations. Sets of configurations providing 'zoom' baseline coverage should also be generated.
- Remote use of ATNF computer facilities for AIPS tasks should be implemented.

• A priority ordering for completion of tasks relating to AT construction has been created. The top five tasks are: completion of the 6-km antenna for CA operation; completion of the Parkes AT correlator; implementation of the CA polarization system; implementation of the phase stabilization system for the 3-km CA section; and provision for VLBI operation using one of the CA antennas.

AT TIME ALLOCATION MATTERS

The period for allocation of observing time on ATNF instruments has been extended from quarterly to terms of ~~three~~ four months. These terms will commence in April, August, and December. The closing date for applications for observing time in the August term is 31st May. The closing date for the December term is 30th September.

The proposal form format and the site information sheet are still changing. LATEX and Macintosh versions of the proposal forms are available from ATNF on request.

From March 1991 onwards, Betty Siegman of ATNF will replace Gwen Manefield as Secretary of the Time Allocation Committee. All correspondence related to observations should be addressed to Betty.

AT USER SUPPORT GROUP

The roles of members of the User Support Group have been rearranged during 1991. As mentioned elswhere, Betty Siegman has taken on the role of Time Allocation Secretary. Gwen Manefield will provide specific secretarial support to ATNF Management and will be responsible for the preparation and distribution of ATNF preprints. Robina Otrupcek will be responsible for tending to the needs of visiting AT users - accommodation, computer access, office space etc.; enquiries concerning observing visits to ATNF should be directed to her.

MAGNETIC TAPE CHARGES

Because of the growing cost of tapes (both conventional and Exabyte tapes) being taken from ATNF sites by AT users, it has been unfortunately necessary to begin charging for consumables. In future, tapes will not generally be supplied free of charge to users. If possible, users should bring to ATNF sites all the tapes that they will need. Alternatively, ATNF can supply tapes, but the users will be billed A$20 for each conventional 6250-rated tape or Exabyte-compatable cassette tape. The latter will not be of archive quality, but archive-quality tapes can be supplied at higher cost upon request.

In the past, old or bad tapes brought in by users have dirtied or even damaged tape drives. Therefore, it is requested that all tapes supplied by users should be of good quality and no older than five years. The following tape brands are banned from ATNF sites: Wabash "G", Wabash "Quadronix", Wabash "Mira", Scotch "777" with yellow, green or blue labels, and "Black Watch". Recommended tapes are: 6250 bpi - Memorex Telex, and WPA; Exabyte - Sony MP.

ATNF ACCOMMODATION

The on-site ATNF accommodation at the Radiophysics Laboratory in Sydney is proving extremely popular, and intending users of this accommodation should contact Robina Otrupcek well in advance of their visit. As mentioned in the last Newsletter, the cost per person is A$25 per night or A$125 per week. Funds have been provided to add extra sleeping accommodation.

SUMMER VACATION STUDENT PROGRAM

ATNF again ran a vacation student program during the period December-February. On the basis of about 70 applications received during August, nine students were chosen, two to be located at ATNF's Narrabri site. One student was supported by a special grant from CSIRO Public Affairs Unit. Similar vacation student programs were carried out by the CSIRO Division of Radiophysics and the Anglo-Australian Observatory. As a result, there were 19 vacation students at the Radiophysics Laboratory site.

The students with ATNF were assigned projects under the supervision of members of staff. Near the end of their stay an open meeting (followed by a barbecue) was held at which the students reported on the progress with their projects.

The students attended talks by ATNF, Radiophysics, AAO and Sydney University staff on various subjects. They participated in observing programs at Parkes and Narrabri, and even carried out a two-day observing project of their own choice using the Parkes radiotelescope. The observing was successful, and a report has been sent off to Southern Astronomy.

Following a practice initiated by last year's students, the students produced a weekly newsletter ('Jansky') on their activities.

ATNF IMAGING WORKSHOP

An Astronomical Synthesis Imaging Workshop will be held at the Radiophysics Laboratory during the second week of July 1991. The program is still being planned, and will generally follow that for the workshop held in June-July 1989. Further details can be obtained from Ron Stewart at ATNF.

ATNF PREPRINTS

ATP021 Communications aspects of the Australia Telescope [J.W. Brooks].

ATP022 Data transfer, monitor and control for the Australia Telescope [M.J. Hayes].

ATP023 LO reference frequency distribution in the Australia Telescope [S.T. Ables].

ATP027/1-6 Collection of papers presented at IAU Symposium 148: The Magellanic Clouds and their Dynamical Interaction with the Milky Way [J.R. Dickel, D.K. Milne, N. Junkes, M.J. Kesteven, R.N. Manchester, L. Staveley-Smith, U. Klein, R.F. Haynes, R. Wielebinski, S.R. Wayte, J.I. Harnett, E. Bajaja, J.D. Murray, A.J. Hunt, R. Wark, L. Sciacca, U.R. Buczilowski, D. McConnell, P.M. McCulloch, P.A. Hamilton, J.G. Ables, P.J. Hall, C.E. Jacka, A.J. Hunt, P.R. Wood, M.S. Bessell, S.M.G. Hughes, A.R. Hyland, J.B. Whiteoak, F.F. Gardner, R.E. Otrupcek].

ATP029 Papers presented at the 5th Asian-Pacific Meeting of the IAU, Sydney, Australia, 16-20 July 1990 [J.L. Caswell, R.T. Stewart, J.I. Harnett, U. Klein, R.F. Haynes, R. Wielebinski, Yang Jian, R.E. Otrupcek, A.E. Wright, Wang Jing-sheng, N. Junkes, J.G. Robertson, T.R. Bedding, R.G. Marson, P.R. Gillingham, R.H. Frater, J.D. O'Sullivan, R.P. Norris, L. Staveley-Smith, R.N. Manchester, M.J. Kesteven].

ATP031 The Australia Telescope [R.N. Manchester].