AST Usage

This document is an attempt to give a realistic estimate of requests for observing time from potential users of the AST for one year of operation (Table I). The basis of the list is Section G of the revised AST proposal (6 April 1978). Individuals concerned have not been consulted so the estimates are necessarily approximate. Also, staff turnover will have occurred by the time the AST is in full operation. It is assumed that new people would have at least as much interest in using the AST as those listed. For users from Universities, listed times are assumed to include projects by students working under their supervision. Estimates err on the conservative side and are based in part on the time and effort required for interpretation of the data. Observation times are based on Configuration IV (4 movable + 6 fixed antennas) with full synthesis possible at one of four frequencies (1.4, 5, 10 and 22 GHz) in 4, 2 or 1 x 12^h. Some users are assumed to make (mostly) short observations (e.g. for positions, fluxes).

The estimated total of requests for observing time by observers resident in Australia is about 360 x 12^h. We might expect at least another 10% from overseas users, so the total requested time is 400 x 12^h. We might (optimistically) expect that 15% of all observations will have to be repeated because of interruptions due to equipment breakdown or bad weather. This brings the total to 460 x 12^h.

There are a total of 730 x 12^h in one year. Maintenance and array reconfiguration will take (at least) 20% of this and calibration will take a further 10%. This leaves 510 x 12^h. In general it will be impossible to schedule two 12^h observations in one day as they will overlap. (There is less problem for short observations.) It is estimated that this will further reduce the available time by 25% leaving about 380 x 12^h of available observing time.

The conclusion is that Configuration IV should be able to satisfy potential observing requests with a small oversubscription (17%). If only 8 antennas can be built within the budget (as seems likely, *cf*. ASTDOC45), then for a 4 movable + 4 fixed array the observing speed is reduced by the factor 16/24, so the oversubscription would be about 75%. For a 2 movable + 6 fixed array, the speed is halved and the oversubscription would be about 135%. For Configuration I array of 5 movable antennas, the speed is down from the Configuration IV array by a factor of 2.5, so the oversubscription would be

nearly 200%. If correlators are provided for only two polarizations (ASTDOC45), then polarization observations would take twice as long. This would further increase the oversubscription factor by 5 to 10%.

For a system consisting of 8 antennas with correlators for two polarizations, we would expect (on the basis of these figures) an oversubscription factor of close to 100%. This is perhaps close to optimum.

POTENTIAL AST USAGE (ONE YEAR)

Name	Number of fields	Observing Time (12h units)
Anglo-Australian Observatory		
D.A. Allen	3	6
D.C. Morton	20	2
G. Robertson	4	10
M.M. Phillips	3	6
ANU-Mount Stromlo Observatory		
A. Bosma	4	16
K.C. Freeman	4	16
A.R. Hyland	2	4
D.S. Mathewson	4	16
A.W. Rodgers	2	4
CSIRO Division of Radiophysics		
J.G. Bolton	100	10
J.L. Caswell	4	16
F.F. Gardner	8	16
R.F. Haynes	20	2
D.L. Jauncey	20	2
M.M. Komesaroff	40	4
R.N. Manchester	2	8
R.X. McGee	2	8
D.J. McLean	100	10
D.K. Milne	4	16
B.J. Robinson	2	8
K.V. Sheridan	100	10
J.B. Whiteoak	8	16
K.J. Wellington	2	8
A.E. Wright	100	10
Monash University		
R.D. Brown	2	8
University of NSW		
K.N.R. Taylor	2	8
B.L. Turtle	2	8
University of Sydney		
R.W. Hunstead	20	2
B.Y. Mills	4	16
H.S. Murdoch	20	2
University of Tasmania		
P.A. Hamilton	20	2
R.M. Thomas	20	2
UK Schmidt Telescope Unit		
J.A. Dawe	4	8
A. Savage	100	8
AST Post-Docs		
A	6	24
B	6	24
C	6	24