

## ATNF ATUC Memorandum

**To:** ATUC  
**From:** Jim Lovell  
**Date:** 2005 November 21  
**Subject:** Tidbinbilla report

### 1. 70m Observing statistics for July to December 2005.

Currently there are 9 active proposals and observations have been completed for 2 of these. Three proposals are for zero-spacing maps to support ATCA observations and two proposals are for pulsar observations. A status summary of proposals is available on the ATNF web pages and is regularly updated.

Between July and December 2005 no observations were made with the 70 m antenna due to maintenance activities (see item 2). Observations will begin again in January 2006.

### 2. 70m Antenna Maintenance.

From July 18 until January 2006, the 70m is undergoing maintenance on the azimuth bearing and the antenna controller hardware will be upgraded. At time of writing the maintenance and upgrade are on track for completion on time. Tidbinbilla proposals submitted for the 2005APRS deadline will remain active for 18 months rather than the usual 12 to compensate.

### 3. Tidbinbilla Support.

In order to spread the support load it has been proposed that a few Tidbinbilla DAs be appointed to help carry out service observations and other support work. As an initial step, Erik Muller has been spending some time on Tidbinbilla support this year and had been involved in developing observing software to support on-the-fly mapping.

### 4. Development.

The most limited resource at Tidbinbilla is observing time, granted to us by NASA. Therefore development work is aimed at getting the most science out of the available time by improving observing efficiency. In the past, this work has included increasing the instantaneously accessible bandwidth to allow more spectral lines to be observed simultaneously and improving the observing software to reduce overheads.

There are two main development tasks currently underway. The first is an implementation of on-the-fly (OTF) mapping, as requested by ATUC. This will improve the efficiency of mapping and antenna pointing measurements over the current point-by-point method. The second is an upgrade to the 12mm system on the 70m from one to two channels. The upgrade will allow dual polarisation observations, improving sensitivity by a factor of  $\sqrt{2}$  and halving the integration time required to reach a given sensitivity limit.

- **OTF Mapping.**

As reported in previous ATUC meetings, attempts to implement OTF mapping have proved unsuccessful to date due to limitations in DSN software. The software updates that have been necessary as a result of the 70m upgrade should allow OTF mapping to be achieved and initial test observations are promising. Meanwhile, tests of gridded mapping have recently been carried out and, while slower than OTF mapping, have proved successful

- **12mm dual polarisation upgrade.**

With the help of Graham Moorey, the upgrade of the 12mm system from single to dual channel is progressing well. All necessary hardware is in hand and installation will begin soon. It is expected that the new system will be

available when the antenna returns to service in January.

**5. 34m beam-waveguide antenna DSS34.**

At the last meeting, ATUC asked:

*Would the DSS34 7mm system be added to the ATNF call for proposals, subject to an assessment by the Tidbinbilla support staff?*

In response to this I promised to report back to AT management and ATUC on some options for supporting observations on the 34m. A separate options document has been submitted to ATUC for their consideration.

**6. Astronomy Morning Tea at Tidbinbilla**

A few times per year we are inviting astronomers who have used Tidbinbilla facilities to present their results to staff. The main aims are to raise the profile of radio astronomy at Tidbinbilla, to let staff know that their support of radio astronomy observations is important and appreciated, and to improve communication with Management

First meeting was held on August 16. Cormac Purcell spoke on results from his mapping observations: "Dissecting the Giant HII region NGC-3576" and Steven Tingay presented a talk on "How Tidbinbilla is helping to push toward the Square Kilometre Array".

The meeting was well attended and appreciated by staff. The next meeting will be held early in the new year and Tidbinbilla users are more than welcome to volunteer to present their results!