

## ATNF ATUC MEMORANDUM

**To:** ATUC  
**From:** Ray Norris/Michelle Storey  
**Date:** 1/6/04  
**Subject:** SKA Project Report

### LOFAR Status:

Australia withdrew from negotiations with the LOFAR Consortium regarding an Australian siting for LOFAR when it became clear in January 2004 that the Dutch Government funding for LOFAR was linked to a Dutch siting for the telescope. A science and technical meeting in Hawaii in March 2004, attended by research partners previously engaged in the LOFAR project, endorsed the importance of developing a low-frequency radio astronomy facility in Western Australia. In addition, the value of science and technical demonstration was recognized for the Western Australian site. As a direct result, opportunities for international collaboration have arisen for the development of a radio astronomy demonstrator at a remote Australian site.

### MNRFII

A recent highlight of ATNF MNRF-funded research has been the installation of the proof-of-concept digital filter bank at the Mopra radio telescope. Current best performance of this system is 256 MHz bandwidth with 1024 frequency channels. The plan is to increase this to 600 MHz with 1024 channels by July 2004. Work is well underway on the design of a prototype 2GHz filter bank printed circuit board.

### **MNRF New Technology Demonstrator Project**

The original Business Plan for this project outlines a technology demonstrator consisting of Luneburg lenses or phased arrays attached to existing ATNF facilities. However, due to:

- Conclusions of an ASKACC subcommittee review of the Luneburg lens project recommending that Luneburg lenses not be carried forwards as a proposed SKA concept at this time
- Recent developments recognizing the importance of establishing a very radio-quiet site for astronomy
- Recent results emphasizing the potential of wide field-of-view for tackling key cosmological questions

ATNF is currently exploring the option of re-shaping the New Technology Demonstrator project (in which ATNF is the lead institution) in order to develop a low-frequency astronomy demonstrator array in Western Australia. A project plan is being developed in collaboration with MIT in the US, who plan to apply for US National Science Foundation funding to support their participation in the project. Financial and collaborative support is also being sought from the Government of Western Australia, and universities in Western Australia. After consultation with the Australian Astronomy Board of Management and the Australian SKA Consortium Committee, ATNF aim to submit the revised Project Plan for the NTD to the Federal Department of Education, Science and Training by July 2004. The revised NTD project will enable feasibility studies and subsystem prototyping for a range of technologies. Offset-fed cylindrical reflectors, low-frequency phased array antenna tiles, small parabolic dishes and signal processing technologies will be investigated to Preliminary Design Review phase in April 2005. One or more of these

technologies will then be progressed to Critical Design Review phase by mid-2006, with small demonstrator construction to mid-2007. The extra funding discussed above may enable the construction of an array with survey capability exceeding the Parkes radio telescope.

**Advice sought:**

ATNF seeks ATUC's endorsement of the change of direction for the New Technology Demonstrator project.