

CSIRO - ATNF

Interference Excision Technical Meeting No. 1**1. Background**

A preliminary meeting was called by Ron Ekers to review inputs from various areas and people working on, or requiring knowledge of, interference excision. As Ron is to be absent overseas for two months, it was considered desirable to hold this meeting at short notice; Mike Kesteven would coordinate future meetings, and a more comprehensive list of participants will gradually evolve.

Currently, the following will be added to the invitation list:

Lister Staveley-Smith	John Whiteoak
Warwick Wilson	Gareth Banks
Marcus Price	Dave McConnell
Mal Sinclair	

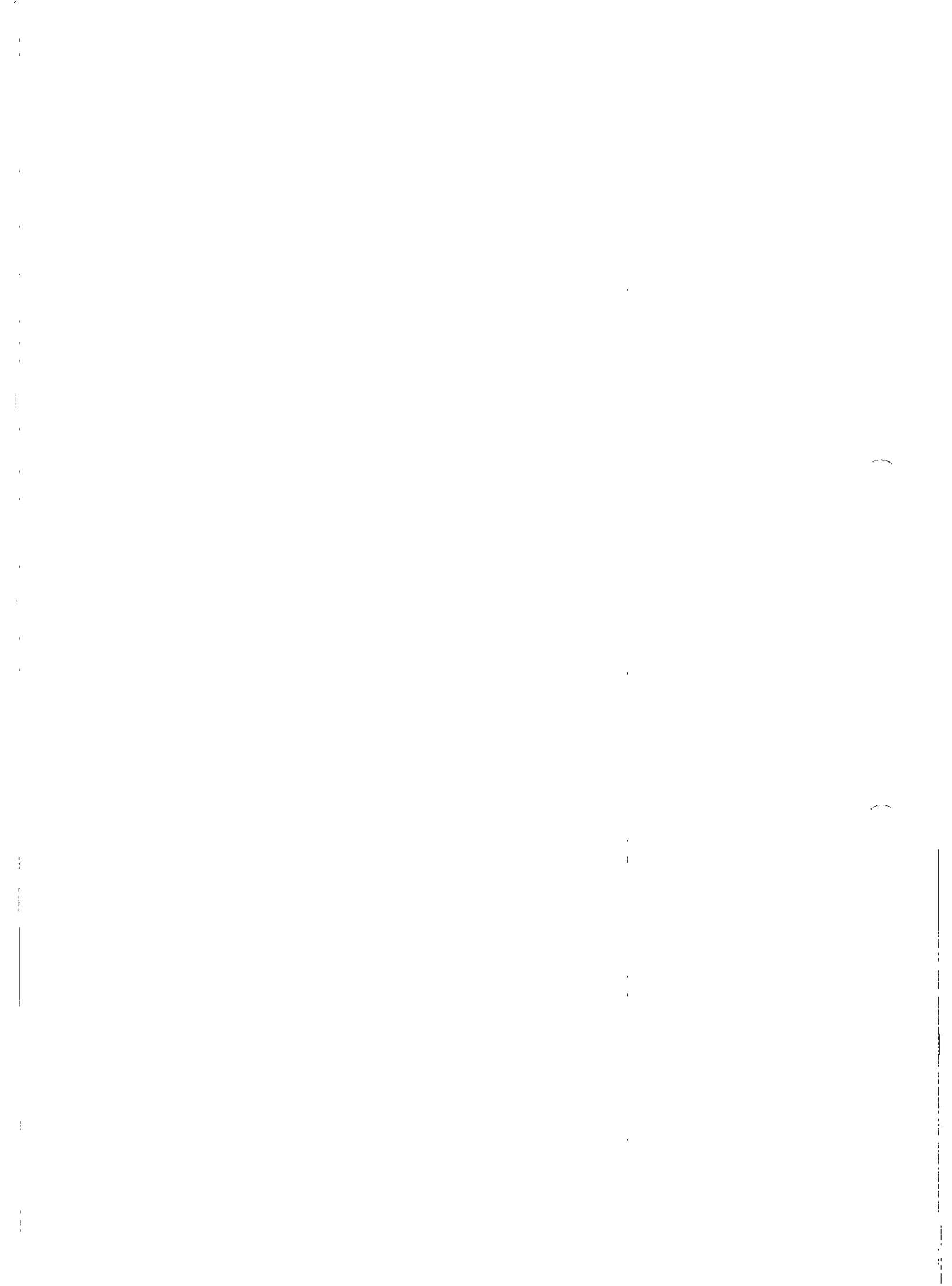
2. Meeting

The meeting was held on 14 April, 13:30-14:45 in Room 4.

Present:	Ron Ekers	Evan Davis
	John Brooks	Peter Hall
	Bob Sault	Mike Kesteven
	George Graves	Bruce Thomas

3. Organisation Aspects

- 3.1 Ron Ekers will be overseas for about two months, Mike Kesteven to call meetings during his absence.
- 3.2 Rick Fisher (NRAO Green Bank) will be visiting ATNF on 28 July to 22 August, and a meeting should be organised soon after his arrival.
- 3.3 1kT International Technical Meeting will be held at the Radiophysics Laboratory from 15 to 18 December, where interference excision will be a major part of the workshop.
- 3.4 As a result of discussions between Ron Ekers and SETI, and his forthcoming support in late July/early August, Ron has negotiated a shared position to be funded by SETI to support SETI's/ATNF's general interest in new facilities. The appointee would spend 6 months of every year for an (initial) two-year period. Depending on the person's background, he/she could be supporting the interference excision research (Position closes 30 April at SETI).
- 3.5 Mike Kesteven will be visiting Doug Gray (CSSIP/University of Adelaide) at the end of May as a follow up from the 1kT meeting in January so as to discuss relationships between radioastronomy and radar nomenclature/techniques.



4 Summary reports/interests:

- 4.1 Peter Hall: Basic program agreed between Ananda Mohan (Snr. Lecturer, Elec. Eng., UTS) re fourth year student Robert Soretz to undertake statistical analysis and modelling of interference, using MATLAB as an aid to produce an "interference visualisation" tool (frequency, intensity, time). Peter's proposal is to initially use data from the Parkes multibeam system. The earlier tests results at Parkes would not be useful for this current exercise. A question was raised about the current interference measurement system at Narrabri; further information is necessary about this system.
- 4.2 Bob Sault: Bob is following through the analysis of the cross-correlated data from the recent multibeam experiment which included WEW, RDE, Bob Sault and Lisa Kewley (MSSSO). Results shown looked promising. Another experiment relating to phase closure using the ATCA and a Mt. Kaputar microwave link signal were successful. Bob will also be undertaking a study of the radar and communications literature in relation to understanding their concepts for interference excision; this will result in a summary being produced.
- 4.3 Ron Ekers: The SETI data-base does not appear to be very useful for interference studies; in fact it appears quite unmanageable! (Lister has the data-base).
- 4.4 Evan Davis: The current multibeam system can cope with the cross-correlation of five beams only. Evan also reported that Tucson is building a system to scan two LO's to smear interference in the image bands.
- 4.5 George Graves: There are already notched filters in the multibeam and H/OH receivers at Parkes (airport beacon) and the pulsar receiver (4 filters). Filters would only be used where the interfering signals are excessive. Tunable notch-filters would be acceptable, but not tunable band-pass filters (due to the uncertainty of the phase response). It would appear that a generalised parameter sensitivity study should be undertaken. George will circulate some "workshop" notes on interference characteristics.
- 4.6 Bruce Thomas: A progress report on a preliminary study of a possible antenna element for the 1kT - a 70m Cassegrain antenna using a phased-array at the secondary focus - has been produced for comment. The need to fully understand the effectiveness of the array for interference excision is the next step.
- 4.7 Other issues (RDE):
- Use of time-gating to eliminate interference?
 - Use of digital filters/special correlator options
 - Importance of frequency management regulations (JBW, RMP)
 - Polarimetry need to be included in discussions (Gareth Banks)
 - Minimisation of H1 interference through the sidelobes (John Dickey)

Bruce MacA Thomas
14/4/1997

