To: All Tucson NRAO employees

Minutes of Information Meeting of Thursday, 23rd June 1988

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1. Chris Biemesderfer gave a short talk about the Space Telescope Science Institute.

The Space Telescope is approximately 2.5 meters in diameter. It is principally an instrument for UV wavelengths, but the optics are good down to near IR. The instrumentation includes 2 spectrometers, a wide-field and a faint object camera, a high sensitivity photometer and the guidance system. The telescope tracks by locking on to field stars. Communication to the ground is via geosynchronous tracking and relay satellites. The satellite will be in a relatively low, 95 minute period orbit; official launch data is currently June 4th 1989, and the satellite has a projected lifetime of 17 years. During this lifetime, instruments will be maintained and/or replaced by shuttle astronauts.

The S.T.S.I. is in Baltimore, and is responsible for science operations, data dissemination, archiving and calibration, and for providing data processing and other facilities for observers. Approximately 320 people work at the institute, which has an annual budget of between 10 and 12 M$.

2. John Payne talked about the plans for a new closed-cycle cryogenic system, to be used for the next generation of SIS receivers for the 12-m.

The current SIS system uses a hybrid cryostat. The next generation will use a closed-cycle system, with a mini-dewar concept similar to the existing high-frequency Schottky receiver. The first stage of this project was to test the feasibility of transfering 4 K from one dewar to another, using a high purity (99.999%) copper rod. Troy Henderson carried out the test for us in Greenbank. It was extremely successful; 4 K could be attained in the second dewar, even with 150 mW of heat loading. The expected loading of the SIS system is only 30 mW.

John Payne, James Lamb and Tony Kerr are working closely together on the project. John is to go back to Charlottesville for a few months to work on the main dewar and cryogenics, James will be working on the mini-dewars and Tony will provide the SIS mixers. An optimistic date for the first tests of the system on the telescope is February of next year, using a system with 2 mini-dewars, each with 2 channels. Once the concept is working, the same system can be used with different mini-dewars, at different frequencies. The eventual aim is for a system of 4 mini-dewars, each with 2 mixers.

3. Darrel Emerson reported on the results of recent review committee meetings.

(i) A draft of the written report from the Chicago NSF review is now available. The 12 NSF-supported radio astronomy sites were compared. The committee chose to put the sites into three categories. Category A includes "those facilities whose continued funding is deemed absolutely essential to the continued health of astronomy in the U.S." . The VLA, VLBA, BIMA (Hat Creek interferometer), OVRO (Cal Tech interferometer) and CSO (10.4 meter sub-mm telescope at Mauna Kea) were put into Category A. Category B includes "those facilities which are highly recommended for continued funding under

all but truly disastrous funding levels." . In Category B are the NRAO 12-meter, FCRAO (U. Mass 14-meter), NAIC (the Arecibo 305 meter telescope) and the NRAO 140 foot telescope. Category C: "The differences between facilities listed in this category and those in category B are minor and subtle." ...."we have not found any facility which presents us with a case for termination at this time." In Category C are the Haystack dish, the NRAO 300 foot telescope and the OVRO 40-meter telescope.

This report was presented to A.C.A.S. (Advisory Committee for Astronomical Sciences) at the beginning of June; further consideration of the report has been put off until October, when budget figures for 1989 should be available. Every indication at present is that even Category C telescopes are likely to continue in operation in 1989 and beyond.

Personal comments: there were some minor factual inaccuracies in a comparison between the 12-meter and FCRAO; we have already contacted the chairman of the NSF committee in order to correct these errors. I personally feel that the 12-meter should have been placed in Category A. Apart from the VLA, all the Category A telescopes were put there on the basis of promises of future performance, rather than actual achievements. We have sent our comments to NSF.

(ii) The written report of the NRAO Visiting Committee has been received. The report was very favourable to all parts of NRAO. In particular, Tucson was complimented on its technical developments, especially at the high frequencies and for the multiple-feed receiver. The committee commented on the need for more programming help at Tucson, and for a scientific staff at the site.

(iii) The NRAO User Committee meeting was held in Tucson at the end of May; a verbal report was given by the committee at the end of the meeting. Tucson was singled out for particular praise. The committee was "impressed by the effort and achievement" at Tucson. "NRAO should reward the 12-meter for achievement under adversity". They were concerned at the dangerously low number of programmers and engineers at Tucson, and suggested that there should be an overall NRAO policy to look at the relative staffing at the different sites. A direct comparison was made of the achievements of the programming staff at Tucson (i.e. one person!) and at other sites having several programmers. They suggested that engineering and programming staff might be transferred temporarily from other sites, to help with specific projects at Tucson.

At the meeting, we had proposed a new 15-meter telescope to be built at Mount Lemmon; the committee liked the idea, and encouraged us to push to get funding for the project.

4. Holography.

Darrel Emerson reported that another holography session is planned for mid-July. The aim is to obtain higher resolution data on the telescope surface, to be used for a second iteration on the shaped sub-reflector. The first sub-reflector had increased the telescope efficiency at 345 GHz by 60 %, and with higher resolution we should be able to do significantly better. Charlie Mayer, from the University of Texas, will be analysing the data and arranging for the machining of the new sub-reflector. He will be here next month to help with the holography observations. The hope is to have the new subreflector in October of this year, in good time for our next high-frequency season.

5. Dale Webb reported that he had looked into possibilities of either a warning system, or a Halon protection system (or both) at the telescope site. Final quotes are still awaited.

6. Phil Jewell reported on telescope operations. The news is all good, with every observer in the last 6 weeks leaving the telescope happy. The SIS receiver is working well, and no time has been lost due to failures.

Shutdown: a memo has been circulated requesting comments on anything that might have been forgotten. Dennis Chase and Phil will be making a detailed schedule in the coming week. Most important is to be ready for the hybrid spectrometer at the end of shutdown, with highest priority going to Betty Stobie and Chris Biemesderfer for software work. Other jobs will be worked around these. A draft shutdown schedule will be circulated; an additional shutdown meeting will probably not be necessary.

7. Any other business. The problem of the UPS was raised; this is still not operating satisfactorily. The warranty expires in August. Every effort must be made to document the problems and to force the UPS supplier to correct them during the warranty period. Dennis is taking care of this.

DTE
24 June '88