

National Radio Astronomy Observatory  
Charlottesville, Virginia

24 October 1984

To: Computer Coordination Group  
From: R. C. Walker  
Subject: Computer decisions.

The computer coordination committee met on Oct. 2 and on Oct. 23 to discuss the choices of computer hardware and software for the various VLBA on-line systems. Persons present on Oct. 2 were Reid, Whitney, Moore, Clark, Ekers, Jahovich, Walker, Benson, Romney, D'Addario, Cotton, Ewing, Moffett, Fort, Pearson, and Burns. On Oct. 23, Reid, Walker, Hunt, Ekers, Burns, Shaffer, Cotton, Benson, Ewing, Moffett, Pearson, and Fort were present. The following were the major conclusions of the meetings:

1.) The monitor and control central computer (at the operations center) and the correlator control computer will be VAX's running the VMS operating system. The exact member of the VAX family to be used in each area is not critical and will not be chosen until the computer power needed is clear.

2.) It was agreed that the major microprocessors in the VLBA system should all be the same. There was some discussion of which processors should be considered in the overall computer planning and which should be considered to be parts of individual pieces of hardware. The best dividing line seems to be determined by whether it is likely that the software will need to be updated more often than once a decade or so. This can include devices that use ROM's because ROM's can be made quickly now and may well get updated on relatively short timescales. The specific systems that we now know should be included are the antenna control computers, the fringe processor, and the playback system control computers.

3.) The microprocessor chosen for the systems mentioned in point 2 above will be members of the Motorola 68000 series (probably mostly the 68020). This is not the ideal choice for the antenna computer but the alternative is a 16 bit machine which would be very unattractive for the fringe processor.

4.) The languages used will be a combination of FORTRAN and either C or PASCAL. The choice between C and PASCAL has been postponed until some experience is gained with the compiler/operating system combinations available. There is some preference for C because that language is already in use at NRAO (in Green Bank). Likewise the operating system(s) for use in the 68000 has not been chosen. It is possible that the needs of the antenna computer and the fringe processor are so different that the OS will be different.

5.) Some degree of specification, documentation, and coding standards are needed for the various on-line systems (the postprocessing system will follow AIPS standards). The leaders of the monitor/control, correlator, and record system groups are requested to provide written proposals for the nature and extent of these standards in time for discussion at the January meeting of the computer coordination group (date not yet set). The possible standardization of compilers, software development tools, etc. should also be considered.

6.) The operator interface to the various on-line systems should be the same to minimize training. If possible, this interface should be very similar to that used on the new VLA on-line system that will be developed over the next couple of years. Carl Bignell will provide a written description of a suggested interface in time for discussion at the January meeting. Ewing urged that the interface be a layer of software that is detached from the rest of the systems as much as possible.

In addition to the above major items, a few other points discussed should be mentioned. There was considerable sentiment at the Oct. 23 meeting (note both Clark and D'Addario were not present) that disk loaded, if not based, systems should be considered more seriously at the antennas. Ekers noted that the VLA based membership of the calibration/VLBA postprocessing group needs to be firmed up. It was also noted that it may be time to adopt the GKS graphics standards for AIPS and any other systems (such as operator interfaces) that use graphics. These last two points will be discussed further in the context of the postprocessing group.