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22 March 1985

To: VLBA
 From: W. D. Cotton, J. D. Romney
 Subject: Data Processing Meetings 19 Feb and 19 March 1985.

VLBA Postprocessing Group Meeting
 1985 February 19

Participants:

CV: Benson, Burns, Romney
 VLA: Bridle, Cornwell, Crane, Greisen, Moore, Sowinski, Walker
 CfA: Molnar
 NRL: Johnston, Simon
 CIT: Ewing, Fort, Jones, Pearson

The items discussed on the agenda were the following:

The agenda for the next VLBA post processing meeting (19 February, 1600 EST ph (203) 797-0901) is as follows. The secret pass word for CONNEX is "conference code 999P". This file is CVAX::UMA3:[VLBA.DATAPROC]19FEB85.TXT.

Jon Romney will be chairing the meeting since Bill Cotton is out of the country.

The Socorro meeting brought out the fact that there is no path currently planned for data from the correlator to to post processing systems. The correlator group is planning to write an archive tape in an as yet specified format and we are planning on reading a distribution tape in FITS format.

Specific items for discussion:

1) Is there any overriding reason that the logical contents of the archive and files be different? The archive files probably should be written using an error correcting code which need not impact the logical contents of the file. If the archive physical medium is sequential access then header information, data and auxillary files need not come in the same physical order in a FITS tape file. None of these rule out use of FITS logical structure.

2) Whose responsibility is the hardware/software to sort user data from archive files to distribution files? (Here sort refers to the possibility that a given experiment may be observed and/or processed in several pieces.) Probably this will become the responsibility of our group.

3) John Benson's list of information to be written on the archive files. Anything missing? This memo is file
CVAX::UMA3:[benson.vlba]archive.spc.

In the absence of Cotton, the meeting was chaired by Romney, following Cotton's agenda. The following minutes were compiled by Romney.

Agenda item (1): "Is there any overriding reason that the logical contents of the archive and [distribution] files be different?" Cotton's introduction to discussion of this topic suggested that the archive could maintain a FITS logical structure independently of error-correcting encoding or the physical sequence of header information, data, auxiliary files, etc.

There were some suggestions that the archive might need to contain more information than would be of interest to the user in the distribution form; this would not be very voluminous, however, and could be made invisible to ordinary access in a FITS format. Or, it may be that the VLBA database (as yet poorly delineated) is the proper receptacle for such data.

On the issue of error correction, there was general agreement that some such scheme would be essential for the archive -- but it was realized as well that the details of the error-correction scheme would have to depend on the archive technology finally selected.

The general consensus on Cotton's suggestion was that it was probably a workable scheme, provided that the translation between the correlator's output (the "natural" archive format) and some FITS-compatible format can be handled "on the fly".

A stronger consensus, however, was that the real problem is not so much the format as the volume of the archive/distribution data. The correlator's maximum output data rate (0.5 Mbyte/sec) poses severe difficulties for ANY archive/distribution scheme. The computing resources required just to read in an archive file for translation to a distribution tape are non-negligible, which led to suggestions for parallel archive and distribution outputs from the correlator. The archive-to-distribution translation must be supported also, of course.

Agenda item (2): "Whose responsibility is the hardware/software to sort user data from archive files to distribution files?" Cotton's agenda suggested that this would become the responsibility of the post-processing group. Romney suggested the opposite, that postprocessing can reasonably expect to work from a distribution file in FITS format, and that the archive is logically part of the operations/processing center.

Members of the correlator group expressed willingness to provide and budget for the necessary hardware (and presumably are willing to undertake the necessary software to support the translation), but emphasized that the postprocessing group must specify the content of the distribution data.

Ewing emphasized that the associated hardware decisions must be completed in the next 6 months for timely budgeting; Burns concurred with this schedule.

Discussion of this point -- much of it interleaved with that of item (1) -- emphasized the problems anticipated from frequent subarraying within the array. Walker foresaw routine subarraying in the transitions between observing programs, due to the extended geographical range of the VLBA, especially when European non-VLBA stations are used as well. Several others felt that parallel processing of two small (i.e., 10-station) runs would also be essential. Thus a consensus considered it necessary to support sorting into at least 4 logically simultaneous distribution files.

Agenda item (3): "Is anything missing from Benson's list of the archive contents?" Benson had distributed this list recently and reported that he had already received numerous suggestions for additional items. In response to Romney's question, Benson emphasized that the list is purely that, rather than a logical structure; in particular the list's structure is for heuristic purposes only. This was accepted as a sensible approach: we will attempt to complete the list before worrying about how to organize the data.

A number of suggestions for additions were raised in the meeting. The most numerous came from Johnston and Simon, who mentioned the following: correlator model and fitted residual delays should be carried separately; information on UT1 and polar motion is essential; constants for precession and nutation, and atmospheric effects, involve a lot of data but should be included; radial velocities and proper motions are also essential. These and other items will be included in the NRL document on geodetic support to be delivered next month. There was no agreement on how and where information of this type should be maintained.

Other suggestions for additional archive items included Crane's request for meteorological monitoring data. Benson will accept further suggestions and will revise his list.

VLBA Postprocessing Group Meeting
1985 March 19

Participants:

CV: Bridle, Burns, Cotton, Hildrup, Johnston, Wells
VLA: Cornwell, Crane, Moore, Walker
CfA: Molnar
NRL: Simon
CIT: Benson, Ewing, Fort, Pearson, Romney

The items discussed on the agenda were the following:

The agenda for the next VLBA post processing meeting (19 March, 1600 EST ph (203) 797-0901) is as follows. The secret pass word for CONNEX is "conference code 999P". This file is CVAX::UMA3:[VLBA.DATAPROC]19MAR85.TXT.

Specific items for discussion:

1) Timing of meetings. Due to the decreasing probability of building the VLBA and its increasing timescale should this group meet less frequently? The prospect of 10 more years of these monthly meetings is depressing.

2) More on the correlator/archive writer etc. interface.

Item 1) Should this committee meet bimonthly rather than monthly? Cotton felt that bimonthly meetings are sufficient since we'll be having them for the next 10 years. There was no support for this, so meetings will continue on a monthly basis until June when the issue will be reconsidered.

Item 2) archive / distribution writer. Benson described the current state of discussions that he and Romney were having in the correlator group. The current scheme is to have the archive writer as part of the correlator control computer which writes FITS-like tapes wrapped in error correction codes. Pieces of experiments would be collected on a separate CPU and transcribed from the archive media to FITS distribution tapes.

Marty Ewing stated that if this (as yet unnamed processor) produced a well defined product (i.e. FITS tapes) it should be done by the correlator group.

There was some discussion of having this distribution writer perform more functions, especially distribution of data to post processing systems, either via disk or network without an intermediate tape copy. Marty and Tim Pearson expressed reservations about having this machine serve as the gateway to the postprocessing system. Walker and Cotton argued that all users would (or at least should)

want a tape copy of their raw data even if they were going to process it locally. As the discussion collapsed, there was no one voicing opposition to writing all data onto FITS distribution tapes as the standard path of data flow. (The previous statment contains some amount of editorial interpretation).

Walker wanted to have some discussion of the current state of the calibration software; Cotton promised to document what he was doing for discussion at the next meeting.

Johnston promised (again) to have a rough draft of his writeup on the requirments for geometric accountability next month and a final version the following month. He stated: "I think next month might finally be arriving now".