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VLB ARRAY MEMO No. 564

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23 July 1986

To: VLBA
From: W. D. Cotton
Subject: Data Processing Meeting 22 July 1986

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RADIO ASTRONOMY OBSERVATORY
CHARLOTTESVILLE, VA.
AUG 04 1986

Participants:

CV:	Benson, Cotton, Romney
CIT:	Pearson
VLA:	Crane, Hunt, Walker
SAO:	Molnar

Agenda for Meeting

The agenda for the next VLBA post processing meeting (22 July 1986, 1600 EST ph (913) 749-9520) is as follows. The secret pass word for CONNEX is "conference code 999P".

Most of the discussion will be about VLBA distribution tapes. There have been a few recent changes made to the contents of the tables; those intrested can look at the current specification files in CVAX::UMA3:[VLBA.DATAPROC]. Especially of interest are CALTAB.SPC, GAINTAB.SPC, ANTTAB.SPC, SOURTAB.SPC and FLAGTAB.SPC.

Specific items for discussion:

1) Current status of distribution tape and calibration software (Cotton).

2) FITS tables

3) How to handle large data sets.
VLBA (and current correlator) data sets will frequently be larger than can fit on a single tape. Should we consider multivolume tapes and/or assuming that the reader will be able to extend a previous file. This latter option is attractive since the tables could be attached to a dummy file and be placed at the start of the tape.

4) How to handle additions, subtractions and modifications of tables files.
Since the details of the format of the uv data and table files are certain to change we need some agreements about how to do this.

5) Other on FITS distribution tape.

Item 1)

Most of the recent developments have been made in the 15JAN87 release of AIPS. The major items are as follows:

- Table definitions: Several of the tables have been revised to take advantage of the new tables format. AIPS internal tables format can now accomodate these tables and the table specific access routines have been updated. The calibration table has been split into a calibration table with all information and a gain table for use in routines which determine calibration information from the data (G. Hunt noted that this is the opposite convention from that used in the DEC-10 software so the nomenclature will be reconsidered).

- AIPS uv data access routines: The routines which read multisource, raw data files with optional data selection, calibration and editing have been updated to use the new tables files.

- AIPS tape routines: The FITS readers and writer can deal with the new tables format. Also, the ability to deal with disk FITS files has been added.

- A number of new or revised AIPS tasks will work on multisource, raw data files:

  + FILLR: This task reads VLA Modcomp archive tapes and will create multisource, indexed data files. At present it does not write a calibration table.

  + UVFLG: This task will create and modify the flaging table. This allows the user to specify data not to be used. Limited editing of the flag table is possible.

  + TAPLT: This task will plot data from a table. At present it can only make one plot per page and plot one set of data at a time.

  + PRTAB: This task prints the contents of an arbitrary AIPS table.

  + TAFLG: This task will flag (disable) or unflag (enable) entries in an AIPS table.

+ INDXR: This task will make an index table for a multi source data file. This index table allows the uv data access routines to quickly find the desired data.

+ SPLIT: This task reads a multisource, raw data file and optionally applies selection, calibration and editing information and writes single source, calibrated data files.

+ VLBIN: (under development by J. Benson) This task will read data from the NRAO Mk II VLBI correlator and write a multisource data file with a calibration table which contains the fully specified model used to processes the data.

+ CALIB: (under development by W. Cotton) This task is a general purpose calibration routine. At present its implementation does not include polarization, baseline dependent corrections, or frequency channel dependent corrections (except for delay corrections).

Item 2)

There was little discussion of the revised tables structures. W. Cotton noted that a number of items were cleaned up including the deletion of the convention that the first character of the keyword name indicate the data type of the corresponding value.

Item 3)

The discussion on the subject of what to do with large data files on tape indicated the desirability of both multivolumn FITS tapes and the ability to append data to an existing data file. C. Walker and others expressed concern over the vulnerability of data on tape and the resulting problems with multivolumn tape files. The FITS convention of writing the tables at the end of the file also causes problems on multivolumn tape files.

One compromise discussed was to put the tables on a dummy file at the beginning of each tape and then one or more data files containing subsets of the data on the tape. These files would then be concatenated when read to disk.

Item 4)

There were no constructive suggestions on how to deal with modifications to the tables structures although it was noted that the FITS format is sufficiently self documentating that simple additions were no problem. The items most likely to cause serious difficulty are the model delays and derivatives needed for astrometric and geodetic applications.

There was a consensus that the current design needs to be verified as soon as possible in order to uncover any problems before too much data is written using the current tables. Cotton suggested that a rigorous and necessary test was to process some MKIII geodetic data to assure that the same values of the observables (group delay, etc.) were obtained. (After the meeting E. Fomalont agreeded to discuss obtaining such test data from Haystack.)

Item 5)

None.