A I P S L E T T E R

Volume III, Number 1: January 15, 1983

Z- and Y-Routines Wanted

We have directories in the AIPS directory structure which are intended to hold the Z- and Y-routines for implementations other than those for Vax/VMS and I²S. We have already brought copies of the NRAO Modcomp implementation code to the main Vax files and intend to bring the IBM implementations when they are ready. We are eager to receive copies of routines from those groups who have developed revisions for their operating systems and/or their television display systems. We are especially interested in receiving Y-routines developed for non-I²S image displays (e.g. Args, deAnza, Ramtek, *et al.*). We will distribute these versions with our regular update tapes and will revise them (within our capabilities) should that be necessary (e.g. changed call sequences).

Status of the *COOKBOOK*

The AIPS *COOKBOOK* has been typeset. During this process numerous changes in both contents and style were made. Twenty copies of the "galley proofs" were distributed for review in Charlottesville and Socorro in December. Alan Bridle arrived in Charlottesville early in January and is now also reviewing the manuscript. When the Editors finish this *AIPSLETTER*, they will incorporate many of the numerous suggestions which have been received and will run off the first edition of the typeset *COOKBOOK*. The *COOKBOOK* uses the most modern version of the TeX typesetting software (which is remarkably more efficient than the version used for this *AIPSLETTER*). Arrangements have been made for printing the document in Green Bank. This first edition will describe the 15JAN83 release of AIPS and will have a particularly large press run. The frequency at which new editions will be printed remains to be determined. Suggestions for additions and improvements in the *COOKBOOK* should be sent to the Editors. We still intend to distribute copies of the *COOKBOOK* to sites which responded to the Questionnaire (page 31 of the 15 September 1982 *AIPSLETTER*). Sites which have not yet responded should do so *now* so that they can receive copies of the new *COOKBOOK*s.

AAS Working Group on Astronomical Software

A very congenial meeting of the American Astronomical Society Working Group on Astronomical Software was held in Boston on January 11, 1983. The Chairman, Don Wells, began the meeting by reviewing the history of the WGAS and the principal ground rules of its organization. These are

1. The AAS Council has authorized WGAS to exist as a formal entity of the Society.

2. The Council of the AAS has appointed the Chairman of WGAS, but has not decreed any other specifications for the organizational structure of the Group or its functioning.

3. Anyone can be a "member" of WGAS, even non-astronomers and astronomers who are not members of the AAS. Membership will be determined by the current content of the mailing list file.

Anyone who wishes to be on the mailing list of the WGAS and, thus, to be a member should write to Don Wells at the address given below.

The primary business of the meeting was the discussion and passage of a series of motions. The first motion, by Rudy Albrecht (STScI), was

1. "I move that the Working Group for Astronomical Software adopt the FITS tape format as described in the June 1981 *Astonomy and Astrophysics Supplement* paper by Wells, Greisen, and Harten as its standard for the interchange and transport of astronomical data."

After extensive discussion, the motion was passed unanimously. This motion is similar to ones adopted by the European Working Group for the Coördination of Astronomical Software (chaired by Philippe Crane of ESO) a couple of years ago and by the IAU on the recommendation of Commission V at last summer's meeting in Greece.

The other, more organizational motions were

2. "I move that the Chairman be authorized to appoint a FITS Standards Committee to develop a proposal for increasing the standard block length for Group-Coded (6250 bpi) FITS tapes in coordination with WGCAS and certain national centers and to consider various other refinements to the FITS specifications."

3. "I move that the Chairman be authorized to appoint a committee to produce a directory of sites and people involved in astronomical computing in North America."

4. "I move that the Chairman be authorized to appoint a committee to recommend ways and means for establishing a software library center under the auspices of WGAS."

5. "I move that the Chairman be authorized to appoint a committee to recommend ways and means for devising "recommended coding practices" for developers of astronomical software."

All were passed without dissent. The Chair announced the appointment of committee chairmen Eric Greisen (FITS), Dan Klinglesmith (Directory), and Rudy Albrecht (Library). The Standards Committee appointment was postponed until the appropriate people could be reached. Anyone who wishes to submit suggestions to, or be a member of, one of these committees should write promptly to Don Wells or the relevant Chairman. Their addresses are

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National Radio Astronomy Observatory
Edgemont Road
Charlottesville, VA   22901

Dan Klinglesmith
Laboratory for Astronomy and Solar Physics
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Greenbelt, MD   20771

Rudy Albrecht
Space Telescope Science Institute
Homewood Campus
Baltimore, MD   21218

The Group discussed having a newsletter of its own and decided to use the *Astronomical Image Processing Circular* of the Working Group on Computer Processing of Astronomical Data of Commission 9 of the IAU. This publication is edited and distributed by Rudy Albrecht and Massimo Cappacioli. Requests to be on the mailing list and papers submitted for publication (in camera ready form) should be addressed to Dr. Albrecht. The WGAS will meet next at the summer meeting of the AAS (June 19-22, 1983 in Minneapolis, Minnesota).

The meeting was followed by short papers on the general subject "Software Distribution Policies of the National Centers". Speakers were Peter Shames (Arecibo), Steve Ridgeway (KPNO), Eric Greisen (NRAO), and Rudy Albrecht (STScI).

The next morning, the first meeting of the Special Interest Group on the Use of Microcomputers in Astronomy was held. This sub-group of the WGAS will address those problems peculiar to users of the smallest computers systems, e.g. Apple. Anyone interested in membership should write to the Chairman

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Summary of Changes: 15 Nov – 14 Jan

These changes are listed in detail in the CHANGE.DOC file reproduced later in the *AIPSLETTER*. Despite the Christmas holidays and the AAS meeting, quite a few changes were made. Several tasks received major new options and a couple of new tasks appeared. Several interactive television functions were added and the image catalog generalized. Most importantly, the formats of the catalog header and the Clean Components file were revised.

The new tasks are WSLOD by Walter Jaffe and HANSM by Arnold Rots. WSLOD translates standard Westerbork Synthesis Radio Telescope UV-data tapes to the AIPS internal format for UV-disk files. It is currently written only for Vax computers to avoid special problems with the conversions of floating point numbers found in the WSRT format. HANSM is designed to do Hanning smoothing along the frequency or velocity axis in transposed spectral-line cubes. Task UVEXP was revised significantly to allow it to write out

more than one data file when **DOALL** is **TRUE**. It will detect VLBI data and switch to the special extension of the Export format for such data. This removes the need for the special task **VBEXP**. Cross-hand polarization data are now flagged by **CLIP** whenever the corresponding parallel-hand data exceed the allowed fluxes. An option to average the data in "bins" before plotting has been added to **UVPLT**. The handling of buffers and I/O has been changed in **UVSRT** resulting in reduced CPU time and I/O count requirements. Finally, task **IMLOD** now recognizes a new set of special keywords from the VLA PDP-11 computers. This set appears more likely to convey the correct position of the tangent point of the LL-MM coordinate system.

To the user, the most interesting changes in the plot area are the new TV verbs. Verbs **TVWINDOW** and **TVBOX** now offer a graphical display of the windows (**BLC/TRC** and **BOX**, respectively) being set. Options with the cursor buttons allow corners to be reset in any sequence. Verbs **TVLUT** and **TVMLUT** allow an n-point, piecewise linear transfer function to be developed and modified by the user. The current transfer function is displayed on the TV graphics screen. A verb by Jim Torson has been standardized and inserted as **TVHUEINT**. It uses one image plane to control the intensity and another to control the hue of the display and allows the user to enhance the display interactively. This verb depends on the I^2S capability to apply one set of lookup tables to each color/channel and another set to the resulting sums. An algorithm developed by Arnold Rots has been generalized as the verbs **TVMOVIE** and **REMOVIE**. The former loads and labels a number of planes from data cubes as subimages in the TV memories. Both then run a "movie" showing each plane in sequence at user-controlled rates. The maximum number of frames in the movie is limited by the number of TV channels and the maximum zoom allowed. The extreme for the Charlottesville I^2S is 256 frames each 63 on a side. Less visible to the user was a generalization of the image catalogs. They can now handle any number of images per gray-scale plane, although that number must be specified when the file(s) are created and initialized. A new handler for Versatecs has been available for Vaxes for some time. We have finally installed it, eliminating the requirement for special batch jobs to handle an ꓮꓲꓑꓢ plot queue separate from the normal print queue.

The most important changes in the system this month will, we hope, be invisible to the normal user. The contents of the Clean Components files have been revised to give the component flux and the x- and y-positions (with respect to the actual reference pixel) in that order. This involves a reordering of the numbers and a correction of the x-position parameter by one pixel. A stand-alone translation program, **CATCHC**, was written to correct existing disk files. **IMLOD** will detect the old Clean Component format and correct it when reading the FITS extension data back into ꓮꓲꓑꓢ. The catalog header was revised to get rid of some old inconveniences and to prepare for new capabilities. The clean beam parameters are now stored in floating point rather than scaled integer, the original antenna pointing position ("center of illumination" perhaps) is recorded, the cumulative shift of the phase reference from the tangent point is saved separately, and new spectral-line parameters are recorded. The last include the line rest frequency, a velocity reference code (e.g. optical vs radio convention, LSR vs Heliocentric vs Observer relative), and an alternate axis description including reference pixel value and position for the frequency/velocity axis. A stand-alone program, **CATCHL**, to translate the catalog-file records has been written and new, perhaps temporary, FITS keywords for the new parameters have been devised. ꓮꓲꓑꓢ has been revised to handle the new format, particularly that of the clean beam parameters. However, the completely new spectral-line parameters are not, at present, supported outside of the tape routines.

ꓮꓲꓑꓢ has assumed that the reference pixel is the center of the non-linear LL-MM coordinate system, i.e. that the reference pixel is the "tangent point". However, **UVMAP** did not shift the values of U, V, and W when it shifted the phases in making an off-axis map. Thus, the assertion by **UVMAP** that the reference pixel of the shifted map was at a shifted right ascension and declination (in the center of the output map) was in error. Although the consequences of this error are normally small, it has been corrected. Astute users will now notice that the reference pixel for shifted maps is no longer in the center of the field and that its coordinates are those of the input UV file. This change has consequences for several tasks, i.e. **UVSUB**, **ASCAL** and **APCLN**, which have been fully taken into account for this release.

CHANGE.DOC: 15Nov82–14Jan83

986. *November 16, 1982*   H2MEM   *Tim*

New version , should be faster, some changes in output.
Moved to 15-Nov-1982 version for transport, nowhere else.

987. *November 2, 1982*   TVXFR   *Arnold*

(This entry and subroutine were discovered November 16, 1982 in the [TEST] *area which had not been used in 6 weeks. As a result, it was not incorporated in the 15-Nov-1982 release. Eric)* A new verb for interactive TV work on Tek 4025 terminals. Brought up as T2VERB on the VLA VAXes. 4025s without graphics option need TVXFR1. HELP and INPUTS accordingly.
Both source modules moved to CVAX:: [TEST.AIPS].

988. *November 2, 1982*   TVDICO   *Arnold*

(This entry and subroutine were discovered November 16, 1982 in the [TEST] *area which had not been used in 6 weeks. As a result, it was not incorporated in the 15-Nov-1982 release. Eric)* A new verb for writing images to the Dicomed. Brought up as T3VERB on the VLA VAXes. HELP and INPUTS accordingly.
Source module moved to CVAX:: [TEST.AIPS].

989. *November 16, 1982*   GRTOTEX   *Eric*

Correct a format statement to new directory name.
Moved to 15-Nov-1982 for transport, nowhere else.

990. *November 17, 1982*   EXPTAP   *Gary*

Was searching for code-like subdirectories for HELP, INPUTS, and DOC. Correct to use VERSION instead.
Moved to 15-Nov-1982 for transport, nowhere else.

991. *November 18, 1982*   UVLOD   *Eric*

Correct format of source found message to I4 for QUAL.
Moved nowhere.

992. *November 18, 1982*   AUB   *Eric*

Go to proper date format in QUEUES verb.
Moved nowhere.

993. *November 18, 1982*   UVLOD   *Eric*

Move name-in-header setting later to avoid undoing actual name when another SORC structure is concatanated to the already-created file (Export format).
Moved nowhere.

994. *November 22, 1982*   IBM discovered   *Kerry/Eric*

The IBM (OS project) has found more minor bugs. Routines with TAB characters in them
were
```
CATCR      COMPIL    MSGWRT
```
Routines with constants or expressions invloving constants in call sequences were
```
CATCHG     APCLN     ZOPEN      ZTKILL
```
Routines using I*2 arguments to ENCODE unnecessarily were
```
ITICS      TKTICS    CLIP       COMLAB     CTICS      GREG
GREYS      PCNTR     PROFL      PRTIM      SKYFRM
```
but-FRMT will require such an argument which is now declared simply as INTEGER.
Moved nowhere.

995. *November 22, 1982*   VTRANS (PSAP)   *Eric*

Standardize typing some, remove constants from calls, replace call to ZUNSGN with call to
ZR8P4.
Moved nowhere.

996. *November 22, 1982*   Vax SPACE Proc   *Gary/Eric*

Change SPACE.COM, SPACES.COM, SPACED.COM to produce a single, more readable print out
and put in explicit references to [AIPS] directory for all temporary files.
Moved nowhere.

997. *November 23, 1982*   UVLOD   *Eric*

Correct *nasty* bug which caused the output file source name to be blank when INNAME was
blank and DOALL true with Export format data.
Moved nowhere - but should be.

998. *November 23, 1982*   UVEXP, ANTDAT   *Eric*

Add a true DOALL option allowing many files to be written at one time. Also add tests on
the antenna positions and number of frequency channels to detect the need for the VLB
extension to the Export format. VBEXP should no longer be needed. Add some progress
report messages as well. Also changed [.HELP and .INPUTS] UVEXP and [.HELP] POPSDAT
and [.HELP] DOARRAY.
Moved nowhere.

999. *November 24, 1982*   AU6B   *Eric*

CURVALUE was messing up when it encountered wedges. It has tried to read them from
disk! Fortunately, I saved the old code which read the image data from the TV. Now AU6B
uses that old code for wedges and the normal code (read from disk) for normal images.
Moved nowhere.

1000. *December 3, 1982*   WSLOD   *WaWa*

WSLOD loads WSRT Dwingeloo format tapes into AIPS as standard UV files. Seems to
work. Today I corrected an error that caused 10 times too much space to be allocated to
the output file.
Moved to Dwingeloo, nowhere else.

1001. *December 7, 1982* APROLL *Bill*

Changed to return error code to 1 if roll failed, but data are still in the AP.
Moved: from MODCOMP this date.

1002. *December 7, 1982* UVSUB *Bill*

Fixed % done messages for large (>9000) numbers of CLEAN components. Fixed error in computing the number of components which will fit in the AP and added more diagonostics when APROLL fails.
Moved: from MODCOMP this date.

1003. *December 7, 1982* ASCAL *Bill*

Removed compression of gain file which was causing trouble in GNPLT and ASCOR. Added info in history file about the gain normalization. If NITER is negative, it will use up to ABS(NITER) components, but stop at the first negative one. Also changed [HELP] ASCAL file.
Moved: nowhere.

1004. *December 7, 1982* CONVL *Bill*

Fixed problem which caused an incorrect reference pixel when a non-power of 2 image is used.
Moved: nowhere.

1005. *December 7, 1982* CLIP *Bill*

Fixed to flag cross polarized visibilities corresponding to a parallel polarized visibility which is clipped.
Moved: nowhere.

1006. *December 9, 1982* TVPL.HLP, TVPL.INP *Gary*

Added section explaining that 0 for TVCORN implies self scaling, while non-zero implies pixel scaling (plot will be the same size as an image loaded with TVLOD).
Moved nowhere.

1007. *December 13, 1982* EXTCOP *Bill*

Changed to reduce the number of complaints when the input file does not exist.
Moved: nowhere

1008. *December 13, 1982* OSORT *Bill*

Now accepts a maximum record length of 2048 R*4 words. This should not cause problems since, at the moment,it is only called by UVSRT which sends a sufficiently large work array.
Moved: nowhere.

1009. *December 13, 1982* MERGE *Bill*

Changed to single buffer I/O in an attempt to speed it up.
Moved: nowhere.

1010. *December 14, 1982*   UVSRT   *Bill*

Changed to use single buffering and remove the restriction that the blocks of data to be sorted be a power of two. Also fixed a bug in **INSORT** which might have caused problems for large records. In one test, **UVSRT** now runs 20% faster (real and CPU) and used 25% of the I/O counts of the old version.
Moved: nowhere.

1011. *December 15, 1982*   PRNTMN   *Gary*

This-program was-not printing a "file not found" message for erroneous "one member at a time" entries.
Moved nowhere.

1012. *December 17, 1982*   FIXFIL   *Eric*

Add a new operation to "type" portions of the file's records. This will provide additional info before fixing a file.
Moved nowhere.

1013. *December 17, 1982*   IMLOD   *Eric*

Correct its use of **OUTSEQ**. A value of < 0, not ≤ 0, was supposed to, and now does, request the task to use the sequence number on the (FITS) tape.
Moved nowhere.

1014. *December 17, 1982*   ACOUNT   *Eric*

Correct precursor remarks for file format including the IO count.
Moved nowhere.

1015. *December 20, 1982*   UVPLT   *Bill*

Added an option to bin data and to select the number of bins (**BPARM(8)**). If there are more than two entries in a cell, the vertical height of the symbol is the gaussian standard deviation of the mean of the distribution in the bin (minimum size is 10 resolution elements).
Moved: nowhere.

1016. *December 21-22, 1982*   TVBOX, TVWINDOW   *Eric*

New verbs to do interactive window setting with the current window visible on TV graphics plane 3. TVWINDOW sets BLC and TRC, TVBOX sets BOX(1:4,1:NBOXES). Files revised:
GRBOXS   — (New) does display and sets windows.
AU5C   — Call GRBOXS for the two verbs.
POPSDAT   — Add the new verbs.
TVWINDOW — New INPUTS and HELP files.
TVBOX   — New INPUTS and HELP files.
Moved nowhere.

1017. *December 23, 1982*   TVLUT, TVMLUT   *Eric*

New verbs to do interactive setting of the TV look-up tables (*i.e.* the black and white transfer function). Both use piecewise linear functions with the current function plotted on graphics plane 3. TVLUT sets NPOINTS vertices and then lets the user revise any of the vertices. TVMLUT sets up to 127 vertices in a more interactive, but probably more confusing fashion. Files revised:

GRLUTS — (New) does display and sets LUTs.
AU6A   — Call GRLUTS for the two verbs.
POPSDAT — Add the new verbs.
TVLUT   — New INPUTS and HELP files.
TVMLUT — New INPUTS and HELP files.
Moved nowhere.

1018. *December 27, 1982*   TVHUEINT   *Jim Torson/Eric*

Jim's verb to do an interactive hue/intensity TV display has been standardized and inserted. Files affected are

POPSDAT — Add verb and a proc OFFHUINT.
AU6   — Add verb here (replaces action of Jim's AUT getting adverbs and Jim's HI getting OFM set up).
STRLIN   — (New) computes a straight line segment for a look-up table or the like (Jim's FMLINE revised).
HIENH   — (New) performs main interactive actions of the new verb.
HILUT   — (New) changes LUT-of Intensity or Hue plane (Jim's NEWLUT revised).
GRLUTS   — Change to use STRLIN.
TVHUEINT — Create [.INPUTS and .HELP] files.
OFFHUINT — Create [.INPUTS and .HELP] files.
Moved nowhere.

1019. *December 27, 1982*   Image catalog   *Eric*

The image catalog has been limited to handling at most 51 images per gray-scale plane. This is inconvenient and has now been corrected. Before, the routines assumed that no more than one directory record existed for each plane. Now there can be as many as needed: (NIMAGE + 50) / 51. The programs which must be relinked include AIPS, APCLN, UVMAP, TVPL, TKPL, and FILINI. The routines changed are

ICINIT — Init all directory records.
ICREAD — Address directory records correctly and read as many as needed.
ICWRIT — Ditto, plus write them back.
TVFIND — Read directory records when needed in loop to NIMAGE.
ICOVER — Buffer now requires 512 words. Read directory records as needed in inner and outer loops.
FILAIP — Correct computation of required IC file size.
FILAI2 — Ditto and change basic size to NIMAGE to 64.
Moved nowhere.

1020. *December 27, 1982*   Vax procedures   *Eric*

I changed all vax compile-replace and compile-link procedures to expand the INCLUDE statements whenever a CROSSreference listing is being made. Files affected are

COMRPL   NCOMRPL   PCOMRPL   FCOMRPL
COMLNK   ACOMLNK   NCOMLNK   APCLNK   NAPCLNK
Moved nowhere.

1021. *December 28, 1982*   New TV status parameter   *Eric*

In anticipation of the verb TVMOVIE, I have added a movie status parameter TYPMOV(16) to the basic TV status file and common. Tasks to relink include AIPS, APCLN, TKPL, TVPL, UVMAP, and APMAP. Files changed are:

DTVC.INC — Add parameter.
CTVC.INC — Ditto.
TVOPEN   — Get parameter from disk file.
TVCLOS   — Put parameter back to disk.
YTVCIN   — Initialize parameter to zero (no movie).
AU5__   — Call MOVIST on TVCLEAR to clear status.
AU5A   — Call MOVIST on TVLOD and TVROAM to clear status.
AU6C   — Call MOVIST on TVALL to clear status.
YINIT   — Call MOVIST to clear status when channel zeroed.
YZERO   — Call MOVIST to clear status when channel zeroed.
MOVIST   — (New) Set and reset the movie status parameter to reflect the current full and partial movie(s).
FILINI   — Init TV device file correctly.
FILAIP   — Init TV device file correctly.
FILAI2   — Init TV device file correctly.

Moved nowhere.

1022. *December 28, 1982*   CURVALUE   *Eric*

Corrected AU6B for two problems: zoom correction could lead to a numeric display area slightly off the screen (with consequent error exit) and, in an effort to be faster, the subroutine did not check depths (in cubes) correctly and hence did not always read the correct plane. Fixed today.

Moved nowhere.

1023. *December 30, 1982* TVMOVIE, REMOVIE *Arnold/Eric*

Rots' verb standardized and inserted under the name TVMOVIE. It loads planes from a cube and then displays them one at a time in the form of a movie. The cursor controls the frame rate and buttons exercize start/stop, single step, reverse, and exit (resp.). REMOVIE reruns an already loaded movie sequence. Files changed:

ICNECT   — Allow vectors with 2 ends equal.
VERBS   — Add AU5D.
VERBSB   — Add AU5D as a "no-no" subroutine.
VERBSC   — Add AU5D as a "no-no" subroutine.
DAPL.INC — Add adverbs ZINC, TZINC, BCHAN, ECHAN.
CAPL.INC — Ditto.
AU5D   — (New) performs TV loading and labeling, calls TVMOVI.
TVMOVI   — Performs the frame switching and cursor reading movie algorithm.

Moved nowhere.

1024. *December 31, 1982*   Helps and Inputs   *Eric*

To implement the new verbs and adverbs, the following files in the [.HELP and .INPUTS] areas were changed:

POPSDAT — Add TVMOVIE and REMOVIE verbs, ZINC, TZINC, BCHAN, and ECHAN adverbs.
TVMOVIE — (Both areas) — explain new verb.
REMOVIE — (Both areas) — explain new verb.

Moved nowhere.

1025. *January 3, 1983*   More Helps   *Eric*

Add new Help files for new adverbs: ZINC, TZINC, BCHAN, and ECHAN. Also fix minor bugs in AU5D and MOVIST.
Moved nowhere.

1026. *January 4, 1983*   UVEXP   *Bill*

Fixed several bugs in handling VLB spectral data. Corrected values of JADR and IRCVIS in VISOUT.
Moved: nowhere.

1027. *January 4, 1983*   IMLOD   *Eric*

Change which VLA special keywords (from $IMPS$, $MAPPER$, and $SORTER$) are trapped from FITS tapes. The keywords OPHRAE11 and OPHDCE11 seem to represent the actual positions of the true coordinate reference point (the tangent point) and will be substituted for the "reference pixel" information given on these FITS tapes.
Moved nowhere.

1028. *January 4, 1983*   CLEAN components   *Bill*

Fixed bug in APCLN and PHCLN which referred CLEAN component positions to $(\frac{N_x}{2} + 1, \frac{N_y}{2} + 1)$ instead of the true reference position. Patchup code was removed from UVSUB, ASCAL, VBFIT, and CITCC. All CLEAN components files created before this fix should be corrected by adding one coordinate increment in RA to the RA component of the component position before using corrected code. These tasks have not been linked yet.
Moved: nowhere.

1029. *January 5, 1983*   KONTR   *Arnold*

Task to make contour plots on the pen plotter. Put into the system at the VLA site. Needs ZETASUBS for the ZETA plotter. New Help and Inputs files.
Moved from VLA this date.

1030. *January 5, 1983*   MOMNT   *Arnold*

Task to calculate profile moments from a map cube. Fixed up some bugs. Put into the system at the VLA site. New Inputs and Help files.
Moved from the VLA this date.

1031. *January 5, 1983*   SMOTH   *Arnold*

Task to do a map plane smooth. Fixed up some bugs. Put into the system at the VLA site.
Moved from the VLA this date.

1032. *January 5, 1983*   HANSM   *Arnold*

Task to perform Hanning smoothing on a map cube. Put into the system at the VLA site. New Help and Inputs files as well.
Moved from the VLA this date.

1033. *January 6, 1982*   Format change!!!!   *Eric*

The catalog block format has needed a revision. The clean beam parameters are now in floating point degrees. The antenna pointing position in degrees (R*8) now appears as do two R*4 parameters to keep track of the total shifts made in phase center. For spectral line primarily, the line rest frequency (Hz), the line velocity reference frame identifier, and the alternate coordinate reference value and pixel have been added. The latter two are either frequency or velocity when the main axis descriptor is velocity or frequency, respectively. Note that this requires modification whenever a subimage is taken. The main files changed to implement this are:

DHDL.INC — (New) old header descriptor common.
CHDL.INC — (New) old header descriptor common.
DHDR.INC — New header descriptor common.
CHDR.INC — New header descriptor common.
CATCHL — Service program to convert headers.
VHDRIN — Revised to compute new pointers.
MV2CO6CA — Revise header description for manual.
MV2CO6IC — Revise image catalog header description for manual.
Moved nowhere.

1034. *January 6, 1983*   FITS handling   *Eric*

The FITS reading and writing programs depend on an equivalence to the header descriptor common. This was changed to accomodate the new descriptor, to handle the new clean beam units, and to read/write the new header parameters. Changed are

DFIT.INC — IMLOD equivalence to header descriptor common.
CFIT.INC — IMLOD equivalence to header descriptor common.
DKEY.INC — FITTP equivalence to header descriptor common.
CKEY.INC — FITTP equivalence to header descriptor common.
DFUV.INC — UVLOD equivalence to header descriptor common.
EFUV.INC — UVLOD equivalence to header descriptor common.
VFUV.INC — UVLOD equivalence to header descriptor common.
IMLOD — Handle new format and clean beam, correct old CC files for new order and x-position meaning.
FITTP — New format and clean beam, new CC format, correct output of antenna data.
UVLOD — New format, force owner to be login user, correct antenna file header from FITS part.
GETCRD — New pointer address for SORT ORDER.
FPARSE — Drop BEAMS from call sequence, new pointer addresses in the commons.
FWRITE — New pointer addresses and changed calls to FPARSE and MSGHDR.
Moved nowhere.

1035. *January 6, 1983*   Header display   *Eric*

The new header needs extra display capability and correction for the new clean beam format. Changed are:

LSTHDR — New clean beam format, display new parms.
MSGHDR — New clean beam format, display new parms, drop BEAMS from call sequence.
PRTTP — New clean beam format, display new parms, new calls to FPARSE.
IBMTP — New clean beam format, pointing positions.
PRTIM — New clean beam format.
Moved nowhere.

1036. *January 6, 1983*   Clean Components   *Eric/Bill*

The clean components file is changed to have the (column) order flux, Δx, Δy and to have the Δs measured with respect to the header reference pixel. Program CATCHC has been written to correct existing CC files. FITTP uses a new code to write out corrected CC files and IMLOD will correct old style CC files when they are reloaded.
Moved nowhere.

1037. *January 6, 1983* New CLEAN components format *Bill*

The order of the values in the CLEAN components file has been changed to Flux, RA, Dec. The following programs have been changed to reflect this:

PRTCC	CITCC	VBCC	APCLN	
PHCLN	UVSUB	ASCAL	VBFIT	MV2CO6CC

Moved: nowhere

1038. *January 6, 1983*   PEAKFN   *Bill*

New subroutine to determine the location near the center (5 × 5 cells) of the peak in a image. Works on data cubes and integer or real cataloged images.
Moved: nowhere

1039. *January 6, 1983*   Reference pixel change   *Bill*

UVMAP now retains the tangent position as the coordinate reference position and adjusts the reference pixel. The RA and Dec offsets to the new phase center are now kept in the header. UVSUB, ASCAL, and VBFIT have been changed to reflect this. *(APMAP is such a mess that I didn't bother)*. Also changed DMPX.INC and CMPX.INC.

A further consequence is that the center of a beam can no longer be accurately determined from the catalog header. APCLN, PHCLN and CONVL now call PEAKFN to determine the location of the peak of the beam.
Moved: nowhere.

1040. *January 6, 1983*   CLEAN beam format change   *Bill*

The following routines were changed to reflect the new format for storing the CLEAN beam parameters in the catalog block:

APCLN	PHCLN	CONVL
IMEAN	IMFIT	

Moved: nowhere.

1041. *January 6, 1983*   Non-standard tasks   *Eric*

Several non-standard tasks of varying usability have also had to be modified as follows:

REGLR — New units for clean beam.
KONTR — New units for clean beam, correct format of INCLUDE statements — *still will not compile!*
MOMFT — New units for clean beam.
SMOTH — New units for clean beam, correct format of INCLUDE statements.
JAFPL — Correct format of INCLUDE statements.
HANSM — Correct format of INCLUDE statements.
MOMNT — Correct format of INCLUDE statements.
Moved nowhere.

1042. *January 6, 1983*   UVSUB   *Bill*

Fixed a bug which would cause an incorrect position shift on subsequent passes if a very large number of CLEAN components were subtracted.
Moved: nowhere.

1043. *January 7, 1983*   Image catalog header   *Eric*

Two new pointer words for plot type and extra plot-dependent information were added to the header pointer common. To use these, the following were changed:

AU8A   — Use I20TH.
AU9A   — Use I20TH and I2PLT.
SLOCIN   — Use I20TH and I2PLT.
TKSLIN   — Use I20TH and I2PLT.
SL2PL   — Use I20TH.
TVPL   — Use I20TH and I2PLT.
TKPL   — Use I20TH and I2PLT.
Moved nowhere.

1044. *January 13, 1983*   ZDOPRT.FOR   *Gary*

This program was rewritten to take advantage of the capabilities of Version C of the VERSATEC driver that was recently installed. ZDOPRT now writes a file that will be recognized by the driver as a plot file and spools this file to the printer. This eliminates a messy homemade "spooler" consisting of ZVERPL, ZQIOV, and batch job PLOT.COM that we had been using. The old driver is compatible with the new driver when writing directly to the VERSATEC so the OLD area of AIPS still works. *[Ed. note: the OLD area does not handle the new Image catalog files, CC files, and catalog headers correctly, so it does not work. So much for having only one data area!!!]* The old version of ZDOPRT is stored in the NEW area with the name ZDOPR2.MAR.
Moved nowhere.

1045. *January 14, 1983*   UVSRT   *Bill*

Limited in-core sort to 1024 values. It was blowing up on data sets with one correlator value.
Moved: nowhere.

1046. *January 14, 1983*   ZACTV9   *Gary*

Changed to handle lengths more carefully when translating logical names. This means this program should work for both VMS 3.0 and 2.5, although I have no way of testing the routine under 2.5.
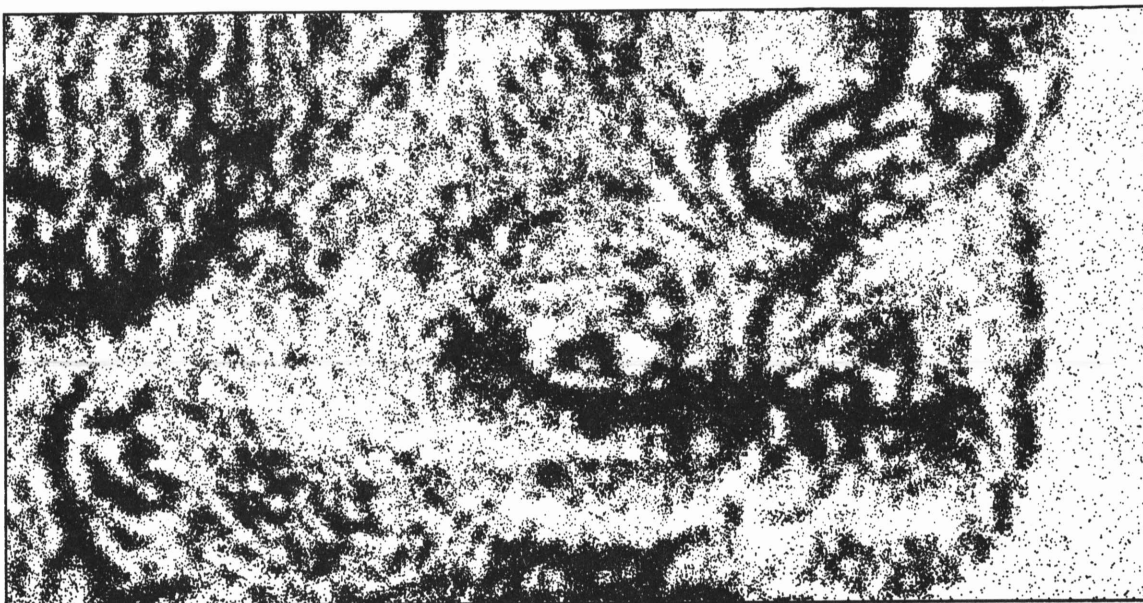Moved nowhere.

1047. *January 14, 1983*   Installation Instructions   *Gary*

Another pass through the installation instructions.
MV2C1002.   MV2C1003.   MV2C1005.   MV2C1006.
MV2C1007.   MV2C1008.   MV2C1009.
Moved nowhere.

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A newsletter for users of the
Astronomical Image Processing System

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TEXset by EWG

Miscellaneous

The 15JAN83 version of the TEXset *COOKBOOK* has finally been printed. Of the 300 copies (250 bound and 50 unbound) about one hundred were shipped to the VLA. We have also sent two bound copies and one unbound copy to each of the 17 persons who responded to the Questionnaire (page 31 of the 15 September 1982 *AIPSLETTER*). We expect to print another edition soon, perhaps for the 15MAY83 release of AIPS. This *AIPSLETTER* includes revisions to the 15JAN83 *COOKBOOK* to account for the changes in AIPS since that release.

We have received one tape of Z/Y-routines and are grateful (see discussion on the first page of the 15 January 1983 *AIPSLETTER*). We would like to emphasize that the whole community of AIPS users benefits when the AIPS group receives information about new implementations. It is even useful to know about implementations in progress or proposed so as to avoid duplication of effort. For example, we know of two different groups who expect to have de Anza image displays and two other groups who have, or propose to have, AP-100 array processors. We may be able to offer advice and assistance to implementors which could save them much trouble and wasted time. We may even be willing to make changes in "standard" AIPS which would facilitate specific implementations. We would like to encourage implementors to contact us before, during, and after they undertake any modifications of AIPS to support new devices and/or new operating systems.

New Distribution Policies

Since the distribution of ЯIPS tapes has become a significant activity for our group, we wish to streamline the operation. So as to permit us to serve an ever-growing list of sites, we must simplify the mailing of tapes and make it easy to send Gripe files back to Charlottesville. In addition, we find our records to be somewhat confusing because, at some sites, multiple people have requested tapes during the past two years. We are not always sure whether they represent different machines, different groups on the same machine, or just multiple people in the same group making separate requests. We would like to have a specific "contact person" designated at each site. This person would place the orders for new versions of ЯIPS and would receive any special mailings directed specifically to contact persons (the *AIPSLETTER* goes to *users* of ЯIPS). After discussing the matter for several months, we have decided to implement the following scheme:

1. An order form will be provided on the last page of each *AIPSLETTER* (see page 23 of this *AIPSLETTER*), and we want all orders for ЯIPS to be placed using the order form. For the moment, of course, we will continue to honor *all* requests, written or verbal.

2. We will assign one plastic mailing container for each ЯIPS site. We will regard the containers as belonging to NRAO (They are marked "AIPS Tape – Please return to NRAO-CV"). The use of these containers will begin with the mailings of the 15MAR83 version of ЯIPS during the next few weeks.

3. For a reorder, the contact person should send the plastic mailing container back to Charlottesville with a 2400-foot tape (either the original tape or a substitute) and the order form inside. Gripes may be written on the tape for this return trip using the service program GRITP. Our mailing address will be on the back side of the original mailing label on the container.

The result of this new policy will be that NRAO will only have to pay for one mailing container and one reel of tape per site. The plastic mailing containers will protect the tapes during shipment and they will substantially reduce the amount of effort required to prepare a tape for mailing. A bonus is that machine readable Gripes can be forwarded to Charlottesville on the return trip.

Sites which are interested in ЯIPS for Unix or OS360 should contact us because we may offer versions of ЯIPS for these two operating systems in the reasonably near future. A version of ЯIPS for Berkeley 4.1 Unix on VAXes is available from the Astronomy Department at the University of Texas (see the 15 May 1982 *AIPSLETTER*).

We have received three requests from commercial entities for copies of ЯIPS. This fact has made us aware of the potential commercial value of ЯIPS and, as a result, we intend to institute a licensing arrangement. Some details of the plan are not complete at this time, but we can give a description of the most important aspects. First, we propose to distinguish two classes of ЯIPS sites: "research" and "commercial". We intend to continue to distribute ЯIPS to the research (non-profit) community free of all charges. A license form will be enclosed with the distribution kit which will be signed by the contact person or other responsible person at the site and returned to Charlottesville. We may begin enclosing the form with the mailings of the 15MAR83 tapes, although this has not yet been decided. We hope that our friends in the research community will not be dismayed by this development and that they will not be confused by the legalistic language. The effective information content of the form will be merely that research sites may install ЯIPS on as many of their own machines as they please and use it in any way that they please. They simply agree to avoid redistributing ЯIPS to other sites, either research or commercial, without our permission. Arrangements with commercial sites will be made on a site-by-site basis.

Directory Structure and Adverb VERSION

The 15NOV82 release of ȺIPS implemented a hierarchical directory structure for the ȺIPS files. The scheme was described in the 15 September 1982 *AIPSLETTER*. It is also documented in Chapter 10 Section A.3 ("Directories / subdirectories") of Volume 2 of the ȺIPS manuals. On a VMS system, a listing of this section can be produced by listing the file [AIPS.xxxxxxx.DOC.TEXT]MV2C1002., where xxx would be 15MAR83 for the current version. Another source of information is Section F of the same chapter, located in file MV2C1006 in the same subdirectory. This section documents the command procedures which facilitate compilation and linking operations.

The adverb VERSION is closely related to the directory structure. The logical symbols NEW and OLD are equated to specific subdirectories (e.g., 15MAR83 or 15MAY83). This makes it easy to have site-dependent tasks as well as multiple versions of ȺIPS. A bonus is that it is possible to execute either the AP or the pseudo-AP version of a task. The idea is to set the value of adverb VERSION as well as adverb TASK before issuing command GO. To quote from the text in MV2C1006: *"Programmers (and users) can choose which version of a program to run by setting the AIPS adverb VERSION. AIPS recognizes several special names for VERSION. They are OLD, NEW, LOCAL, OLDPSAP, and NEWPSAP. If VERSION is equal to one of these names AIPS will get the executable modules, helps, and inputs from the subdirectories created by the installation procedure. If the string VERSION is not one of these values then AIPS will assume that VERSION is a directory or a device/directory specification and attempt to find the executable modules, helps, and inputs from this area. Therefore a programmer can develop and debug a new task without putting the task into the ȺIPS area."*

Summary of Changes: 15 Jan – 14 Mar

These changes are listed in detail in the CHANGE.DOC file reproduced later in the *AIPSLETTER*. We were quite busy during the last two months — there are 94 entries in CHANGE.DOC. A significant number of these entries were caused by our attempt to move all of the software to the MODCOMP. This went very well compared to previous such attempts. However, a variety of updates and corrections were required. A new Z routine used throughout allows ȺIPS to support demountable disk packs on the MODCOMP. Some ȺIPS tasks were not moved to the MODCOMP, and will probably not port to other non-VAX architectures, for a variety of reasons. The most understandable are those specifically designed to interface with other DEC-oriented software systems (i.e. WSLOD works with WSRT data tapes and TOAIP, TOVLB, VBCC, and VLBDR work with the Cal Tech VLBI package). Other tasks need some rearranging or other modifications to fit in the MODCOMP's address space (i.e. VBFIT, H2MEM, IMFIT, and GEOM). Smaller versions of GEOM and IMFIT, the latter called XXFIT, have already been linked on the MODCOMP. Unfortunately, there are also a few tasks which are so far from our transportable coding standards that they have no chance of compiling on the MODCOMP (i.e. HANSM, KONTR, MOMNT, REGLR and SMOTH). These will be either redesigned and rewritten or replaced by more general tasks when we get the opportunity.

There are some new capabilities in this ȺIPS release. The verbs MOUNT and DISMOUNT allow software tape mounts and dismounts from within AIPS. VAX users will no longer have to exit from AIPS to perform these functions. Another new verb, FREESPAC, displays the available disk space plus the volume name and other information on each ȺIPS disk drive. This verb also reduces the need to run services from job control outside AIPS. There are three new tasks. VBPLT is a VLB-inspired program to plot visibility data against models with one antenna pair per plot and a user-selected number of plots per page. UVFIX is designed to recompute u, v, and w and, if needed, visibility phases to correct for time errors and to shift to a new

tangent point. It provides a high accuracy recomputation of u, v, and w rotated to the specified epoch for data sets whose input format was not rotated or was of limited accuracy (e.g. the VLA Export format). APGS is another of Tim Cornwell's deconvolution programs. It implements the Gerchberg–Saxton algorithm. Tim has also updated our version of **REGLR**. Contact Tim at the VLA site for details.

In addition to these new capabilities, a number of older routines have been corrected and enhanced. In **AIPS**, a bug affecting the compilation of **IF THEN** statements inside **FOR** loops was corrected. Images loaded to the TV are now scaled from 1 through 255 with 0 reserved for blanked pixels. **TVLOAD** *etal.* now also handle 2048-pixel rows and honor the user-specified **PIXRANGE** even if it is outside the range of map intensities. An option was added to the verb **AXDEFINE** to allow "null" (1-point) axes to be removed from the header. The verb **DISKUSE** was replaced with a more accurate and detailed task called **DISKU**. It is still very slow, but it now runs in the background allowing users to do other things.

The handling of two-dimensional FFTs was cleaned up throughout AIPS. There were numerous improvements including corrections which allow the FFTs to work on systems having disk sector sizes which are not integer powers of two. **UVMAP** was revised to make up to 8 channel maps from true spectral-line input data in a single execution, to create its output files near the beginning, and to provide a more meaningful TV display of the uv coverage. **UVFND** now uses the new data acquisition routines developed for **UVMAP** and, hence, checks the same data that will be used by **UVMAP**. **APCLN** uses a short cut in its first major cycle: it scales the histogram with the map maximum rather than the maximum in the CLEANing boxes. It will now recompute the histogram if the maximum in the boxes is less than 90% of the map maximum. An inconsistency in the translation between Julian and calendar dates was corrected. A hard error in **CORER** was removed and the scaling of gray-scale plots in **PRTPL** was improved.

CHANGE.DOC: 15Jan83–14Mar83

1048. *January 18, 1983*   VBCAL   *Bill*

Fixed bug assuming **ICORO** positive. Fixed so that it will multiply all antennas (still 1 IF) by a constant factor. Also changed .HELP]VBCAL.HLP.
Moved: VLA 24Jan83, to OLD 08Feb, to MODCOMP Feb 24, nowhere else.

1049. *January 19, 1983*   SUMARY   *Bill*

Updated to new CC file format.
Moved: VLA 24Jan83, to OLD 08Feb, to MODCOMP Feb 24, nowhere else.

1050. *January 19, 1983*   VBPLT   *Bill/Lars Baath*

New task from Onsala, Sweden. Plots data and model one baseline per plot but with number of plots per page specified by the user. Also: DVBP.INC, CVBP.INC, VBPLT.INP, VBPLT.HLP, TASKS.HLP, VLBI.HLP.
Moved: to MODCOMP Feb 24, nowhere else.

1051. *January 20, 1983*   Precession routines   *Bill/Fred*

Installed Fred's precession routines. Including: PRECES, DMAP, DAPM, DPRE, BSC, BDN, CD, NUT4, NUT2, DA13, DA46, DTRC, DCUV, DUVC, CLD, GRD.
Moved: to MODCOMP Feb 24, nowhere else.

1052. *January 20, 1983*   PHCLN   *Bill*

Removed a bug inserted in updating to new CC file format. RA offset was = DEC offset and the DEC offset = 0.0.
Moved: VLA 24Jan83, to OLD 08Feb, to MODCOMP Feb 24, nowhere else.

1053. *January 20, 1983*   ZACTV9.MAR   *Gary*

I managed to introduce an error with the last change. This routine was having all tasks print to TT: and no tasks printing on the message terminal.
Moved VLA 24Jan, to OLD 08Feb, nowhere else.

1054. *January 20, 1983*   ILINKAN.COM   *Gary*

Installation subprocedure. This routine was putting psuedo AP tasks in [AIPS.*new*.LOAD] instead of [AIPS.*new*.PSAP.LOAD] even if the site has an AP.
Moved VLA 24Jan, to OLD 08Feb, nowhere else.

1055. *January 20, 1983*   Backup Procedures   *Gary*

RESAIPS.COM — Was using hard coded disk names.
RESAIPS.HLP — Updated a few obsolete statements.
BCKAIPS.COM — Added option to list files as they are backed up.
BCKAIPS.HLP — Updated for above change.
Moved VLA 24Jan83, to OLD 08Feb, nowhere else.

1056. *January 21, 1983*   General Helps   *Eric*

Add new verbs and tasks to INDEX, TVINTER, CURSOR, TVCOLOR, and CUBE general help files.
Moved to OLD and VLA 08Feb, to MODCOMP Feb 24, nowhere else.

1057. *January 25, 1983*   ZOPEN   *Gary*

Changed message level on 'STILL WAITING' message for locked file from 6 to 2. Now, when level 6 and 7 messages are masked with MSGSUP = 32000 the 'STILL WAITING' message will be printed. This problem was showing up in verb EXTLIST. Both Vax and Modcomp versions were revised on the Vax.
Moved to OLD and VLA 08Feb, to MODCOMP Feb 24, nowhere else.

1058. *January 25, 1982*   General HELP files   *Eric*

In working on the *COOKBOOK*, I found several general HELP files in need of work—mostly adding missing entries of both new and old programs. Revised were TAPU, UVPR, MAPETC, APTASKS, GENERAL, TVGEN, TVINTER, PL2D, SL1D, ANALYSIS, CUBE, POPSYM.
Moved to OLD and VLA 08Feb, to MODCOMP Feb 24, nowhere else.

1059. *January 26, 1982*   UVLOD   *Eric*

UVLOD failed to handle the "no data found" condition properly on Export format tapes when DOALL was TRUE. Additional setting of counters to zero was added.
Moved to OLD and VLA 08Feb, to MODCOMP Feb 24, nowhere else.

1060. *January 26, 1983*   FILAI2   *Gary*

This installation procedure program no longer re-initializes GRIPE, ACCOUNTING or MESSAGE files if they already exist. The installer with an existing AIPS no longer has to print these files unless changes have been made to the file format.
Moved to OLD and VLA 08Feb, nowhere else.

1061. *January 26, 1982*   UVFIX   *Bill*

New task. Recomputes u, v, and w using data supplied by the Antenna file and user input.
Will also shift tangent point of the data. Also: **UVFIX.HLP** and **UVFIX.INP**.
Moved: to MODCOMP Feb 24, nowhere else.

1062. *January 27, 1983*   IPROMPTL.COM   *Gary*

This installation procedure subprocedure was not setting up the logical name for the RUN
file area in **ASSIGNL.COM**. **ASSIGNL** should contain a line such as:

$ ASS /GROUP *disk1*: [AIPS.RUN] RUNFIL

Where *disk1* is the device name for **AIPS** disk 1. I suspect that this error was on the
15NOV82 tape also.
Moved to **OLD** and VLA 08Feb, nowhere else.

1063. *January 29, 1983*   APGS   *Tim*

New task. Another deconvolution program. Uses the Gerchberg- Saxton algorithm. Slow.
Also: **CGS.INC, DGS.INC, APGS.HLP,** and **APGS.INP**.
Moved: from 15JAN83 area on VLA VAXS to CVAX, to MODCOMP Feb 24, nowhere else.

1064. *February 3, 1983*   verb FREESPAC   *Gary*

New verb to print the number of free blocks, volume name, and open files (reference count)
on each **AIPS** disk. The system service used in this verb is not available on VMS systems
prior to 3.0. Files modified are:

AU3A	—	Call **ZFREE**.
FREESPAC	—	(new) HELP file.
ZFREE	—	(new) VAX Z routine to perform the function including the messages.
POPSGN	—	Add new verb.
GENERAL	—	General HELP file mentions new verb.
WHATSNEW	—	Also in the useful new routines HELP

Moved to MODCOMP Feb 24, nowhere else.

1065. *February 3, 1983*   verbs MOUNT/DISMOUNT   *Gary*

New verbs to software mount and dismount tapes. The system services used in these verbs
were not available on VMS systems prior to 3.0. The code in **AU4** may need to be changed
after the requirements for implementing these verbs on the MODCOMP are determined.
Files modified are:

AU4	—	Call **ZTAPE** to perform the verbs.
ZTAPE	—	Call **ZMOUNT** to do mounts and dismounts.
ZMOUNT	—	(new) VAX second level Z routine performs the system service.
MOUNT	—	(new) HELP file.
MOUNT	—	(new) INPUTS file.
DISMOUNT	—	(new) HELP file.
DISMOUNT	—	(new) INPUTS file.
POPSGN	—	Add new verbs to verb generation list.
TAPU	—	Add new verbs to general HELP file for tapes.
WHATSNEW	—	Add to useful new routines HELP file.

Moved to MODCOMP Feb 24, nowhere else.

1066. *February 3, 1983* REGLR *Tim*

Re-inserted new version of **REGLR** which seems to have been lost some time ago. Also **HELP**
and **INPUTS** file. Also in 15JAN83 area on VLA VAXs.
Moved to **OLD** 08Feb, to MODCOMP Feb 24, nowhere else.

1067. *February 3, 1983* CORER *Eric*

I do not understand what happened here. However, the correction placed in the **INPUTS**
file on 22SEP82 was gone today. Furthermore, two declarations in the crucial subroutine
were erroneous making the program non-functional. Since the program worked when I
added new options in November, I do not know what could have happened. Anyway, it
now seems to work.
Moved to **OLD** and VLA 08Feb, to MODCOMP Feb 24, nowhere else.

1068. *February 4, 1983* ISCALE (TVLOD) *Gary*

Unknown function type now defaults to linear. Changed **INPUTS** and **HELP** for **TVLOD**.
Moved to **OLD** and VLA 08Feb, to MODCOMP Feb 24, nowhere else.

1069. *February 7, 1983* UVMAP *Bill*

Major revision. New features include: multiple line maps per run, center at center uv
coverage display, output files are created at the beginning of the job, output uses the
routine **PLNPUT**. Also changed, **UVMAP.INP** and **UVMAP.HLP**. New AP routines: **GRIDAP.VFC**,
FINGRD.VFC, **APGRD3.AP**, and **GRDMIX.AP**. Corresponding routines have been added to the
Pseudo AP library.
Moved: to MODCOMP Feb 24, nowhere else.

1070. *February 7, 1983* SETVIS *Bill*

New routine to set pointers and factors to get a selected set of visibilities from an arbitrary
uv data set.
Moved: to MODCOMP Feb 24, nowhere else.

1071. *February 9, 1983* ZFREE *Gary*

Fixed to handle multi-volume data sets. VAX version.
Moved: nowhere.

1072. *February 9, 1983* PRTPL *Gary*

This program did unexpected things due to rounding problems when the **ASPMM** option
was used with grey scale plots. The problems included zero divide when the plot became
smaller than 1 dot per pixel, always rounding down when a users input would not exactly
produce an integer number of dots per pixel, and using a different number of dots per pixel
for X and Y at inappropriate times.
Moved: to MODCOMP Feb 24, nowhere else.

1073. *February 10, 1983* ZDCHIN *Eric*

Expunge the symbol ꓣꓓꓣꓒꓲꓓ from a comment. When will they all be gone? Did Vax and
Modcomp versions.
Moved to MODCOMP Feb 24, nowhere else.

1074. *February 10, 1983*   MODCOMP Z routines   *Eric*

It is time to get the MODCOMP caught up to the VAX revisions. First some Z routines in [.*.ZSUB.MC4] must be corrected:

ZVOLNA — (New) returns name of mounted disk pack using George Martin's new REX service.

ZFDLGN — Call ZVOLNA rather than hard coded names.

ZDCHIN — Init MSGKIL and VERSON parameters.

ZTOPEN — Add SL source code type, add VERSON (but ignored on MODCOMP), drop EXCL argument.

ZTXMAT — Add SL and (ignored) VERSON.

ZACTV8 — Add VERSON supporting [xxx] where xxx is the name of the desired TOC library.

ZGTDIR — Add VERSON but return IERR = NUM = 0 on source code files except when VERSON = 'SUB ' Raise size of name lists to 1000.

Moved to MODCOMP Feb 24, nowhere else.

1075. *February 10, 1983*   ZPREP   *Eric*

Fix up the typing in the MODCOMP preprocessor, change the name, and make it support the INCS: prefix (by ignoring it).
Moved to MODCOMP Feb 24, nowhere else.

1076. *February 17, 1983*   ZFREE2   *George Martin*

MODCOMP assembly program reads granule availability records on disk to return the amount of disk space available. It requires the task to be privileged (as AIPS already is).
Moved to MODCOMP Feb 24, nowhere else.

1077. *February 17, 1983*   ZFREE   *Eric*

Routine called by verb FREESPAC. Calls ZFREE2 and displays the results. MODCOMP version.
Moved to MODCOMP Feb 24, nowhere else.

1078. *February 17, 1983*   ZEXIST, ZEXIS2   *Eric/George*

MODCOMP versions changed to return the disk space used by the file if it exists, 0 if not. ZEXIS2 speeded up hopefully by getting the disk directory address from system memory rather than from sector 0 of the disk itself. This will reduce head movement a lot.
Moved to MODCOMP Feb 24, nowhere else.

1079. *February 17, 1983*   DISKU, AU3A   *Eric*

Stripped verb DISKUSE from AU3A and made it a task which uses the new calling sequence and parameters of ZEXIST. Moved the FREESPACE verb to the verb number of DISKUSE, but also support the old verb number for the moment. HELP and INPUTS files for DISKUSE were renamed DISKU and changed. The [.HELP] POPSDAT file was altered to remove DISKUSE as a verb and change the verb number of FREESPACE.
Moved to MODCOMP Feb 24, nowhere else.

1080. *February 17-18, 1983*   AU4   *Eric*

Minor rearrangements and improved error handling in connection with the MOUNT and DISMOUNT verbs.
Moved to MODCOMP Feb 24, nowhere else.

1081. *February 17, 1983* ZEXIST.MAR *Gary*

VAX version: Modified to return the size of the file, if found.
Moved nowhere.

1082. *February 18, 1983* ZTAPE *Eric*

MODCOMP version revised to do a message and rewind (plus an assign and deassign) on the **MOUNT** and **DISMOUNT** operations.
Moved to MODCOMP Feb 24, nowhere else.

1083. *February 18, 1983* CATCR *Eric*

Change call sequence to **ZEXIST**.
Moved to MODCOMP Feb 24, nowhere else.

1084. *February 18, 1983* SETVIS *Bill*

Fixed bug, **MVIS** was not set for **STOKES R** .
Moved: to MODCOMP Feb 24, nowhere else.

1085. *February 18, 1983* UVMAP *Bill*

Fixed bug, values of **DISKIN** and **SEQIN** were not fixed before call to **MAPOPN**.
Moved: to MODCOMP Feb 24, nowhere else.

1086. *February 18, 1983* Big FFT Cleanup *Bill*

Several changes were made to FFT routines:

AP2SIZ — New routine, computes largest power of 2 AP size compatable with the true AP size.

MINSK — Rewritten to allow records which are not integral multiples of the sector size. The logic was also simplified.

MSKIP — Ditto.

PASS1 — Changed to handle full complex to complex transforms. Calls **AP2SIZ** to assure a power of 2 AP size. Argument added to call sequence.

PASS2 — Ditto.

DSKFFT — Completely revised. Now uses **PASS1** and **PASS2** and works correctly for **HERM** = .FALSE. or .TRUE.. Now returns the maximum and minimum values for **HERM** .TRUE. DSKFFT should now handle any power of 2 two-dimension FFT. Resulting transform is now properly scaled. Two arguments added to call sequence.

Affected tasks: **APCLN, UVMAP, APMAP, FFT, PHCLN, CONVL, H2MEM**. (**CONVL** had scaling on forward transform removed).
Moved: to MODCOMP Feb 24, nowhere else.

1087. *February 21, 1983* PRTUV *Bill*

Constrain weight to the range (-99, to 999)
Moved: to MODCOMP Feb 24, nowhere else.

1088. *February 23, 1983* MINSK *Bill*

Fixed bug which caused **MSKIP** to think it was trying to read past the end of the data in the double buffering mode. The problem appeared for large FFTs.
Moved: to Modcomp Feb 24, nowhere else.

1089. *February 24, 1983*   MODCOMP discovered   *Eric*

In moving programs to the MODCOMP several bugs have been found. So far they are:

ZPREP   —   MODCOMP preprocessor should not have worked— it did not initialize the parameter common it was using.

MOVIST   —   Used the variable NCHAN where it should have used NGRAY.

Moved to CVAX this date, nowhere else.

1090. *February 24, 1983*   Garbage removed   *Eric*

Old useless tasks and test garbage keep being found. Deleted were:

CCTP   —   Old task to talk to MODCOMP stand-alone selfcal.

JAFFE   —   Old version of WSLOD.

SCRAT   —   Test version of UVMAP.

CPASS1   —   Test version.

CPASS2   —   Test version.

CPTIME   —   Test program pretending to be a subroutine.

Corrected were:

TASKS   —   HELP file no longer lists CCTP.

ARSIN   —   Moved to [.APL.ZSUB.VMS] – not needed on non-VMS.

DARSIN   —   Ditto.

DFLOAT   —   [.APL.ZSUB.MC4] is a MAR not a FOR routine.

Moved nowhere.

1091. *February 25, 1983*   Modcomp discovered   *Eric*

More minor bugs found while moving everything to the MODCOMP

MSGHDR   —   K4YSH spelled K4YXSH.

PRTTP   —   Ditto.

AU6B   —   Lower case comment character.

ZVOLNA   —   Blank line (MODCOMP version).

ZACTV8   —   A , spelled with an M.

Moved to CVAX this date, nowhere else.

1092. *February 28, 1983*   ZDOPRT.FOR   *Gary*

Now uses logical name PLOTTER to find the plot queue. This allows the print output device to be different from the plot output device (the setup on VAX3). (VAX version only.)
Moved nowhere.

1093. *February 28, 1983*   TV loading   *Eric*

Revise image loading to the TV and other range setting to honor the user's values of PIXRANGE unless they are more than 100 times out of range. Also change the list of transfer functions to allow negative logarithmic type. Routines to link only are GREYS and PROFL.
Changed are

RNGSET   —   Set actual range to PIXRANGE unless absurd.

TVLOAD   —   Leave blanking to ISCALE mostly.

ISCALE   —   Test for blanked pixels, scale from 1 rather than 0 (using 0 for blanked pixels), support negative log transfer function, do actual scaling from 0.5 to 255.5.

AU6B   —   Correct CURVALUE on wedges to reflect changes in ISCALE.

AU5C   —   Remove assumption of 16-bit words.

AU6C   —   Ditto.

Moved to MODCOMP March 8, nowhere else.

1094. *February 28, 1983*   Helps and Inputs   *Eric*

Several HELP files were revised to include the changes above. They are FUNCTYPE, PIXRANGE, TVLOD, TVALL, and TVMOVIE. The Inputs files for TVLOD, TVALL, and TVMOVIE were also corrected.
Moved to MODCOMP March 8, nowhere else.

1095. *February 28, 1983*   APCLN   *Bill*

Fixed to recompute residual histogram (done in ADDMAP) if the maximum in the CLEAN window before the first major cycle is less than 90% of the map maximum.
Moved: to MODCOMP March 14, nowhere else.

1096. *March 1, 1983*   UVMAP   *Bill*

Added messages in MAPOUT in case CATIO or PLNPUT fails.
Moved: to MODCOMP March 14, nowhere else.

1097. *March 1, 1983*   VBFIT   *Bill*

Added check to make sure the FFT search will fit in the AP memory; under some cases it was wrapping around. Also added "single baseline" FFT search option (BPARM(3) > 1).
Moved: to MODCOMP March 14, nowhere else.

1098. *March 1, 1983*   MODCOMP discovered   *Eric*

The code in NOTST seems to be rather a mess. The following had to be revised just to get them to compile. The revisions made on the VAX include a start on standardizing.

AITOFF — Illegal computations in IO lists.
BDN — Bad order of declarations.
CLD — Could not compile.
FLAT — Blank line.
DMAP — DAPDEC spelled DAPCEC.
GRD — Bad order of declarations.
IMIO — Could not compile.
SETVIS — Missing commas in GO TO lists.
STRTIC — Multiple routines in one member, illegal computation in IO list.
UVHIST — Needs to appear to return on DIE call.

Moved to MODCOMP March 14, nowhere else.

1099. *March 1, 1983*   CVMMAX, SEARCH   *Bill*

Several changes were made in the FFT fringe search AP routines used in VBFIT. New routine CVMMAX in FPS (in WDC.AP library) and PSAP finds the maximum amplitude squared of a complex vector. The SEARCH.VFC (or FORTRAN PSAP) routine now uses CVMMAX. A bug was fixed in the PSAP version of SEARCH which caused serious errors in determining delay and rate.
Moved: to MODCOMP March 14, nowhere else.

1100. *March 1, 1983*   JULDAY, UVLOD   *Eric*

Was returning the JD for noon on the given date. Changed to midnight. UVLOD was correcting for this error when reading FITS tapes. Correction removed from there.
Moved to MODCOMP March 14, nowhere else.

1101. *March 1, 1983*   UVFIX   *Bill*

Responded to change in JULDAY described in entry number 1100.
Moved: to MODCOMP March 14, nowhere else.

1102. *March 1, 1983*   Byte flip code   *Don/Eric*

Add byte flip code variable to device characteristics common. Change IDCH.inc, DDCH.INC, CDCH.INC to declare it and ZDCHIN to initialize it.
BYTFLP = 0 implies standard architecture (IBM or MODCOMP),
BYTFLP = 1 implies bytes flipped, but not words,
BYTFLP = 2 implies words flipped but not bytes, and
BYTFLP = 3 implies fully flipped (like VAXes).
Moved to MODCOMP March 14, nowhere else.

1103. *March 1, 1983*   CVSDIV   *Bill*

Changed both AP ([.FPS.SUB]WDC.AP) and PSAP versions to multiply the weights by the amplitude of the model visibility rather than the square of the amplitude.
Moved: to MODCOMP March 14, nowhere else.

1104. *March 1, 1983*   UVEXP   *Gary/Bill/Eric*

Would produce "bad parameter value" error when antenna files were not present. UVEXP now handles this case. The program also incremented the date observed due to the problem in JULDAY (see entry 1100). UVEXP now works correctly with the latest JULDAY.
Moved to MODCOMP March 14, nowhere else.

1105. *March 2, 1983*   MODCOMP   *Eric*

The MODCOMP discovered that N256 was not declared or DATAed in CATCHL. Added new [.APL.ZPGM.MC4] files AVTP.E, AVTP.R, DISKU.E, DISKU.R, CORER.E, and CORER.R. Modified the files PRTAN.E, PRTAN.R, FITTP.E, and UVLOD.E to account for the changes in the programs. CORER was revised to remove an unused line of code.
Moved from the MODCOMP this date, nowhere else.

1106. *March 2, 1983*   MODCOMP discovered   *Eric*

More bugs uncovered by MODCOMP compiler:
FITTP — DATA statements with value -32768.
IBMTP — Blank line.
Moved from MODCOMP this date, nowhere else.

1107. *March 2, 1983*   ASSIGNP.COM   *Gary*

Removed hard coded disk device names. This will make installations slightly easier.
Moved nowhere.

1108. *March 3, 1983*   SETVIS, GETVIS, UVFND   *Eric*

Standardized SETVIS and GETVIS (stripped from UVMAP) and moved to [.APL.SUB]. Mostly correct except for minor typing changes and a few more tests needed in SETVIS. Changed UVFND to use these routines, rather than VISCHK, to get the data into Stokes parameters where possible and to return errors where not possible or flagged. UVFND should now support STOKES correctly, i.e. it should print only those samples which would affect a UVMAP of the same STOKES value.
Moved to MODCOMP March 14, nowhere else.

1109. *March 3, 1983*   MODCOMP discovered   *Eric*

More problems have been found by the MODCOMP compiler. Those fixed so far include:

TVPL   — Parameter MAGIC misspelled in the DATA statement. USER = 32000 was not supported as a result.

UVMAP   — XXROT not initialized in DPARM. This made errors shifting rotated UV data bases.

APMAP   — History common declared "wrong".

Tasks which failed to compile on the MODCOMP, but which have not been fixed yet, include APGS, H2MEM, REGLR, and UVDIS. The errors in some of these are substantive even on VAXes.

Moved from the MODCOMP this date, nowhere else.

1110. *March 4, 1983*   ASCAL   *Bill*

Fixed bug in VISDIV left from CC file format change. When NITER was negative it was checking the sign of the DEC offset rather that the flux density when deciding when to stop reading CLEAN components.

Moved: MODCOMP this date, nowhere else.

1111. *March 4, 1983*   MODCOMP discovered   *Eric*

The MODCOMP compiler has found more errors. Tasks not yet fixed are GEOM, HANSM, IMFIT, MOMNT, RMTST, RM, SMOTH. Fixed are:

NEWTB   — Spelled SAVE in the declaration NOSAVE.

IMLHS   — DATAed NOP as logical without using it and failed to set IERR.

Moved from Modcomp this date, nowhere else.

1112. *March 4, 1983*   IPROMPTL.COM   *Gary*

Installation procedure routine changed to ask for plot queue. See entry 1092.

Moved nowhere.

1113. *March 4, 1983* Installation procedure documentation *Gary*

Updated to reflect entry 1112, plus some spelling fixes, etc.

MV2C1002.	MV2C1003.	MV2C1004.	MV2C1005.
MV2C1006.	MV2C1007.	MV2C1008.	MV2C1009.

Moved nowhere.

1114. *March 4, 1983*   ZACTV8   *Eric*

Revise MODCOMP version to look for tasks in two libraries, first one for standard tasks then one for non-standard tasks. This was required since the task library would have exceeded 32760 sectors and could no longer be backed up on a single 1600-bpi tape.

Moved to MODCOMP this date, nowhere else.

1115. *March 5, 1983*   New subdirectory   *Eric*

Added a new subdirectory [.DOC.PUBL] to hold the TEX files for the *AIPSLETTER* and the *COOKBOOK*. Modified ASSIGNP.COM (VAXes) to have logical assignment for DOCPUBL:. Moved the Jan 15, 1983 *COOKBOOK* and old *AIPSLETTER*s to this area. Recreated COOKA.TEX from the backup copy of the full book (COOKBOOK.TEX) — it had vanished as a file but not as a directory entry.

Moved nowhere.

1116. *March 8, 1983*   MODCOMP discovered   *Eric*

More problems solved (or at least found) via the MODCOMP compiler and execution:
UVDGP — DATA statement out of order in DIDDLE.
AU2   — Format error (missing comma in 1520) and too little delay before scratch file deletion.
Moved to VAX this date, nowhere else.

1117. *March 8-9, 1983*   NG TV loading   *Eric*

Change the "negative logarithmic" transfer function to be proportional to $\log(T_{max} - T(x, y))$ rather than just the negative of the LG transfer function. Routines changed are ISCALE to do this scaling and AU6B to interpret it in CURVALUE.
Moved to MODCOMP this date, nowhere else.

1118. *March 9, 1983*   POPS compiler   *George Martin*

The POPS compiler was confusing the END of a FOR loop with the END of an IF statement when the IF lacked a THEN clause. Routines corrected: PSEUDO and EDITOR to check for REASON 54 as well as REASON 53.
Moved to MODCOMP March 14, nowhere else.

1119. *March 9, 1983*   DISKU   *Eric*

Corrected it to list as "other" (rather than maps) any catalogued file which is not UV or MA.
Moved to MODCOMP March 14, nowhere else.

1120. *March 9, 1983*   General HELPs   *Eric*

Add MOUNT, DISMOUNT, and FREESPAC and correct DISKUSE to DISKU to .HELP] GENERAL and INDEX. Also changed [.HELP] APTASKS, MAPETC, UVPR, INDEX to add APGS, UVFIX, and VBPLT. And added to [.HELP] WHATSNEW.
Moved to MODCOMP March 14, nowhere else.

1121. *March 8-9, 1983*   MODCOMP discovered   *Eric*

More [.NOTST] tasks failed to compile or link correctly on the MODCOMP They are UVDGP, UVFIX, VBCC, VBMRG, and VLBDR. Of these, VBCC and VLBDR are designed to use the CalTech VLB package and hence are of little interest on non-VAXes. Corrected so far:
VBCOR.E — Task not an AP task—limit to non-AP libraries.
UVDGP   — Put DATA statement in correct order in DIDDLE.
Moved from MODCOMP this date.

1122. *March 8-9, 1983*   [.DOC.PUBL]   *Eric*

Create UPCOOK.TEX to document changes in current edition of the *COOKBOOK*. Revise COOKA, COOKE, COOKI, COOKM, COOKAP to reflect changes until 15Mar83 version.
Moved nowhere.

1123. *March 10, 1983*   TV loading   *Eric*

For some, now forgotten, reason TVLOD and TVALL had buffers whose size limited the loaded image (before application of TXINC) to a subimage row size of 1800 integer pixels (900 floating point). This has been revised in AU5A, AU5D, and AU6C to allow 2048 integer pixels.
Moved to MODCOMP March 14, nowhere else.

1124. *March 10, 1983*   Clean up [.NOTST.APGM]   *Eric*

Add non-standard messages to tasks: APGS, CONVL, FFT, H2MEM, PHCLN, REGLR, UVSUB, and VBFIT. Delete old copy of DTCLN (currently being tested in Bill's area), LSCAL (no longer of interest), and UVTEST (non-functional and no one knows what it is). Delete HELP and INPUTS for LSCAL.
Moved nowhere.

1125. *March 10, 1983*   Clean up [.NOTST.PGM]   *Eric*

Add non-standard messages to AVER, BTCOP, DESCM, EXPND, GEOM, GNPLT, HANSM, IMLHS, JAFPL, KONTR, MOMNT, NEWTB, PRTDR, REDIT, SLOWMOMNT, SMOTH, STRIP, SUMSQ, TOAIP, UVDGP, UVFIX, VBCAL, VBCIT, VBCOR, VBMRG, VBPLT, VLBDR, and WSLOD. Revise non-standard messages in CITCC, TOVLB, and VBCC. Delete CTRIA (early version of IMLHS) and VBEXP and VBLOD (special VLB versions no longer needed). The latter two also had INPUTS and HELP files deleted, entries in HELP VLBI and TASKS removed, and corrections made to the *COOKBOOK* entries in UPCOOK and COOKM.
Moved nowhere.

1126. *March 11, 1983*   [.NOTST.PGM]   *Eric*

MODCOMP compiler and linker found the following errors:

UVFIX — Missing comma in DATA statement (UVWIN), INCLUDE header common forgotten in UVWHIS, DO's missing in DATA statements (UVWCAL), NAMEIN with wrong dimension in main routine.

VBMRG — NAMEIN with wrong dimension in main program.

IMFIT — Failed to declare WaWa commons correctly in the main program: IBUn, IITB, CITB, and CBUF are required to be in the main.

RMTST — Declared IBU2.INC in main, but called TSKBE3.

RM — Ditto.

Moved to MODCOMP this date, nowhere else.

1127. *March 11, 1983*   [.NOTST.APGM]   *Eric*

The MODCOMP compiler has found the following:

APGS — Refer to clean beam with old pointer type.

UVDIS — Incorrect RETURN handling in TVDISP and UVHIST, fail to declare a logical variable in CMXCOM.

REGLR — Use old format clean beam header values, computation in ENCODE statement (CGM), incorrect RETURN handling (TVDISP, TVMAX, and RESTOR).

H2MEM — Variable WTLIM undefined in RESID (DATA it to 0.), variable N1 undefined in AMEM (-> 0 not 1 on Vax), illegal exponentiation (GRAD), GO TO statements into loops (GRAD and QRESID), variable EPSSTR, SUMWT, RSNRSQ undefined in QRESID (not fixed!), variable XBI and, thus, MEMSTR undefined in GETIN (also not yet fixed).

Moved to MODCOMP March 14, nowhere else.

1128. *March 12, 1983*   AXDEFINE   *Eric*

Apparently it is easy to add a one-point axis to the header by mistake. Therefore, I revised AU7 and [.HELP] AXDEFINE so that if NAXIS = *ndim* and AXTYPE = ' ' and the number of points on that last axis is 1, the last axis is removed from the header.
Moved to MODCOMP March 14, nowhere else.

1129. *March 12, 1983*   GEOM   *Eric*

Remove FORTRAN errors found by MODCOMP including the same variable in 2 commons, init common in DATA, numerous IMPLICIT NONE statements, etc. Also standardize a bit. Also revised DEVI.INC and CEVI.INC.
Moved to MODCOMP this date, nowhere else.

1130. *March 12, 1983*   TV clean up   *Eric*

Clean up some minor problems:

TVPL — Call YSLECT not YGRAPH to turn on graphics, this gets the channels-on common parameter set right.
GRLUTS — Leave graphics plane on when done.
GRBOXS — Ditto.
YGRAPH — Try a new, hopefully more contrasting, color for graphics plane 3.
Moved to MODCOMP March 14, nowhere else.

1131. *March 14, 1983*   RM   *Eric*

I've made a quick pass at standardizing the typing and correcting errors found by the MODCOMP: removing DO loops to computed limits and TYPE statements.
Moved to MODCOMP March 14, nowhere else.

1132. *March 14, 1983*   KONTR includes   *Arnold/Eric*

I have copied the missing INCLUDE files for KONTR into the correct area. They are called CATREC.INC, CATDAT.INC, CONS.INC, CONDAT.INC, and PCNTREQ.INC. Note that these are all rather non-standard names.
Moved nowhere.

1133. *March 14, 1983*   CLD   *Eric*

Convert to use R*8 rather than I*4 in the computations and revise the typing.
Moved to MODCOMP March 14, nowhere else.

1134. *March 14, 1983*   NUT2, EPS   *Eric*

Split the 2 routines apart and clean up the typing.
Moved to MODCOMP March 14, nowhere else.

1135. *March 14, 1983*   H2MEM   *Tim/Eric*

Revise DMEM.INC and CMEM.INC to pass the needed variables, set WTLIM to 1.E-6 via a DATA, set XBI to 0. This will correct the problems listed by the MODCOMP compiler.
Moved to MODCOMP March 14, nowhere else.

1136. *March 15, 1983*   GEOM   *Don*

Changed flag arguments (APARM vals 7, 8, and 9) so that logical "false" is signified by either zero or negative value. Also fixed problem in subroutine GEOHDR in which improper dimensions of axes of output image would be computed if APARM(8) (axes-only flag) was true and the input was being subimaged. Revised GEOM.HLP to explain the sign convention of APARM(1) and APARM(2), the shift values.
Moved nowhere.

1137. *March 15, 1983* WINDOW, GREYS *Eric*

Found that WINDOW was allowing user specified BLC, TRC both greater than the image size to be converted to the top right pixel. Removed from WINDOW a test which limited BLC to the number of points on the axis. Added to GREYS a test for BLC = TRC after WINDOW and corrected the corners being passed to CONDRW.
Moved nowhere.

1138. *March 15, 1983* MRTAPE *Gary*

VMS 3.2 does not like it when you mount foreign tapes twice. MRTAPE now checks to see it the tape is already mounted before trying to mount a tape.
Moved nowhere.

1139. *March 15, 1983* TKRSPL, UVSRT *N. Killeen/Eric*

A variable was declared INTEGER in TKRSPL causing residual slice plots to equal minus the model. Added CHLTOU to UVSRT to convert the sort order to upper case before any use is made of it.
Moved nowhere.

1140. *March 15, 1983* UVMAP *Bill*

Fixed bug in MAPOUT which caused it to use the maximum value from a previous row for the Y gridding correction function if NY was greater than NX.
Moved: MODCOMP this date.

1141. *March 15, 1983* AIPS *Gary*

AIPS now calls OERROR on restart to close RUN files. A RUN file ending with RESTART would leave the RUN file open causing any other RUNs to return without doing anything.
Moved nowhere.

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Changes: 15-Mar-1983 version of AIPS

This publication is intended to provide corrections and updates to the *AIPS COOKBOOK* in order to fill the gap between publication dates. We also hope that users will annotate their current copies of the *COOKBOOK* rather than request a new copy at each publication date.

This Section will provide details of the changes to the *COOKBOOK* caused by changes in software between the 15-Jan-1983 and 15-Mar-1983 versions of *AIPS*. There are three primary changes which affect the *COOKBOOK*: (1) Tape mounting and dismounting is now available through the AIPS program itself. Users of VAX systems will no longer need to exit AIPS to perform these functions. (2) The AIPS program now provides a verb called FREESPAC to report the available disk space in the system. Users will no longer need to run special utilities from the job control level. (3) The very slow verb DISKUSE has been made into a task called DISKU. The specific changes are listed below.

Page 5, § 2.5

Replace § 2.5 with:

When you have the tape physically mounted on the tape drive, most computer systems must also be told of your decision. This step is called a "software tape mount" If you are logging in to AIPS on such a system, go to step 2 of the login tape mount procedure described in § 2.3 above. If you are logged in to AIPS without having mounting a tape, type:

> \> INTAPE *n* C_R   to specify the drive labeled *n*.

> \> MOUNT C_R   to mount the tape in software.

Read any messages which appear on your terminal carefully since they report the success, failure, and/or limitations of the operation.

Page 8, tape dismount paragraph

Replace the paragraph on tape dismounting with:

Please deassign the tape drive once you are completely done with tape data. Use:

> \> INTAPE *n* C_R   to specify the drive labeled *n*.

> \> DISMOUNT C_R   to dismount the tape in software.

Please also remove your tape from the tape drive promptly so that other users will know that it is again available for use.

Page 14, first paragraph

Replace the first paragraph on page 14 with:

Disk space is generally at a premium and there are several ways to monitor the available amount of space. Within AIPS there is:

> FREE C_R   to list the total space available on each *AIPS* disk and other useful information.

and

> USER 32000 ; INDISK 0 C_R   to get all disks and users.

> GO DISKU C_R   to run the *AIPS* disk user task.

This will (eventually) list on the *AIPS* monitor the amount of data space in use by each user for all *AIPS* disks. Identify the worst disk hogs and apply appropriate peer pressure.

Page 21, transfer functions

Insert the line:

> FUNC 'NG' C_R   inverse logarithmic.

in the list of available transfer functions used in loading images to the TV by TVALL.

Page 32, § 9.2

Change the opening sentence to:

The task UVMAP (§ 3.1) will make up to eight maps from true spectral-line UV data sets in one execution. It also has certain features that are useful for spectral line mapping of pseudo-continuum data:

Page 38, § 11.6

Change item 1 to:

1. Are you executing a long verb, e.g. TIMDEST, REWIND, or AVFILE? If so, be patient.

Section 13

Add to TAPU, Page 48:

DISMOUNT	V	Rewind and logically dismount a tape	§ 3.1.2
MOUNT	V	Logically mount a tape in software	§ 2.5

Add to UVPR, Page 49:

UVFIX	T	Recompute u, v, and w from antenna data	§
VBPLT	T	Plot data vs model 1 baseline/plot	§

Add to MAPETC, Page 50:

APGS	T	Deconvolution by Gerchberg-Saxton algorithm	§

Add to APTASKS, Page 50:

APGS	T	Deconvolution by Gerchberg-Saxton algorithm	§

Change GENERAL, Page 51 DISKUSE *entry to:*

DISKU	T	List by user all disk space used in *AIPS*	§ 4.4

Add to GENERAL, Page 51:

FREESPAC	V	List total available disk space in *AIPS*	§ 4.4

Add to VLBI, Page 57:

VBPLT	T	Plot data vs model 1 baseline/plot	§

Remove from VLBI, Page 57 entries for VBEXP *and* VBLOD

Add to INDEX, Page 60:

APGS	T	Deconvolution by Gerchberg-Saxton algorithm	§

Change INDEX, Page 61 DISKUSE *entry to:*

DISKU	T	List by user all disk space used in *AIPS*	§ 4.4

Add to INDEX, Page 61:

DISMOUNT	V	Rewind and logically dismount a tape	§ 3.1.2
FREESPAC	V	List total available disk space in *AIPS*	§ 4.4

Add to INDEX, Page 62:

MOUNT	V	Logically mount a tape in software	§ 2.5

Add to INDEX, Page 65:

UVFIX	T	Recompute u, v, and w from antenna data	§

Add to INDEX, Page 66:

VBPLT	T	Plot data vs model 1 baseline/plot	§

Page 81, § Z.1.5

Replace § Z.1.5, "Software tape mount at the VLA" with:

When you have the tape mounted on the tape drive, VAX/VMS must also mount the tape in software. This may now be done at system job control level or from within **AIPS**. If you are logging in to **AIPS**, go to step 2 of the login procedure described in § Z.1.3 above. If you have already logged in to **AIPS** without mounting a tape:

> INTAPE *n* ^C_R to specify that your tape is mounted on the drive labeled *n*.

> MOUNT ^C_R to mount the tape in software.

Please dismount the tape as soon as you are finished with it using:

> INTAPE *n* ; DISMO ^C_R to dismount a tape from the drive labeled *n*.

Please also remove the tape from the tape drive.

Page 81, § Z.1.6

Replace the first sentence of the second paragraph with:

The job control command:

$ SHOW DEV MX ^C_R

is similar to the **AIPS** verb **FREESPAC** and will list the vacant space on each of the disks.

Page 86, § Z.2.5

Replace § Z.2.5, "Software tape mount on the CV VAX" with:

When you have the tape mounted on the tape drive, VAX/VMS must also mount the tape in software. This may now be done at system job control level or from within **AIPS**. If you are logging in to **AIPS**, go to step 2 of the login procedure described in § Z.2.3 above. If you have already logged in to **AIPS** without mounting a tape:

> INTAPE *n* ^C_R to specify that your tape is mounted on the drive labeled *n*.

> MOUNT ^C_R to mount the tape in software.

Please dismount the tape as soon as you are finished with it using:

> INTAPE *n* ; DISMO ^C_R to dismount a tape from the drive labeled *n*.

Please also remove the tape from the tape drive.

Page 86, § Z.2.6

Replace the first sentence of the second paragraph with:

The job control command:

$ SHOW DEV MX $^{C}_{R}$

is similar to the **AIPS** verb **FREESPAC** and will list the vacant space on each of the disks.

Page 92, § Z.3.5

Replace § Z.3.5, "Software tape mount on the MODCOMP", with:

The MODCOMP is happy to take your word (or anyone else's) that the hardware-mounted tape is yours. Therefore, no software mount is required and MODCOMP users do not have to exit from **AIPS** to mount and dismount tapes. The **AIPS** verbs **MOUNT** and **DISMOUNT** simply cause the tape to rewind and an appropriate message to appear. However, there is some danger that another user might accidentally read or write your tape. Therefore, cautious users do not leave their tapes ON LINE longer than they have to and do not insert write rings unless they are about to write on their tapes.

Pages 92-93, § Z.3.6

Replace § Z.3.6, "Monitoring disk space on the MODCOMP", with:

See § 4.4 for a general discussion of the problem of disk space. The total available disk space may be displayed with the verb **FREESPAC**. The verb **TIMDEST** is useful, but we prefer that users ask the System Manager before invoking it. On the MODCOMP, the *AIPS* catalog files are "public" — all users' images are cataloged in the same file. Type:

> USER = 32000 $^{C}_{R}$ to see all users.

> INDISK = 0 $^{C}_{R}$ to see all disks.

> MCAT $^{C}_{R}$ to list all map files.

> UCAT $^{C}_{R}$ to list all uv files.

The users who have large numbers of files, particularly uv files, are the users on whom you wish to apply pressure in order to obtain free disk space. Typing:

> GO DISKU $^{C}_{R}$ with the above adverb values,

provides more exact and detailed information, but takes a very long time to run.

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AIPS Order Form

1. Name and address of Contact Person: _____

   _____

   _____

   _____

   _____

   _____

2. ☐ new order   ☐ reorder
   (*N.B.*: If you have received a plastic mailing container from us, we insist that you use it for a reorder.)
   Version of AIPS currently running: _____

3. Tape type desired:
   ☐ VAX/VMS BACKUP
   ☐ Simple blocked card images
   ☐ FITS compressed text format

4. Tape density desired:
   ☐ 800 bpi
   ☐ 1600 bpi
   ☐ 6250 bpi

5. There are Gripes on the tape:
   ☐ Yes
   ☐ No

Send order form to: AIPS Group
                       National Radio Astronomy Observatory
                       Edgemont Road
                       Charlottesville, VA   22901   USA

To:
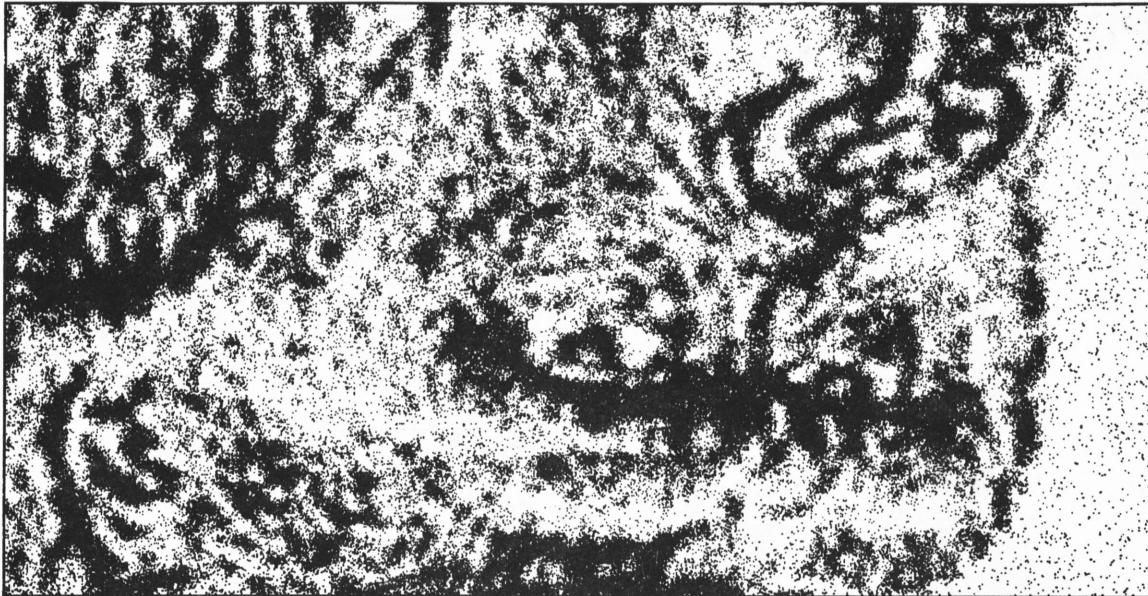
Library
National Radio Astronomy Observatory
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A I P S L E T T E R

Volume III, Number 3: May 15, 1983

National Radio Astronomy Observatory

A newsletter for users of the
Astronomical Image Processing System

AIPS Memo Series

A new NRAO memorandum series, called the AIPS Memorandum Series, has been initiated. A diverse collection of old memos and letters related to AIPS were collected and numbered to form the initial entries in the series. Many of these are no longer current, but some are still quite relevant. Since the initial compilation, a paper on position computations in AIPS has been added. All memos in the series are to be regarded as the opinions of the authors of the memos and do not necessarily reflect the opinions of the NRAO management or the members of the AIPS programming group. Copies of the memoranda may be obtained by writing to

Nancy Wiener
Computer Division Secretary
NRAO
Edgemont Road
Charlottesville, VA   22901

The current contents of the AIPS Memorandum Series is

#	DATE	TITLE	AUTHOR
1	****	AIPS memo series	Ed Fomalont
2	****	Comments about AIPS memos	Ed Fomalont
3	80/09/23	Adapting RANCID to the U. Minn CDC CYBER 74	Frank Ghigo, U. Minn.
4	81/07/23	Map timing tests on a VAX	Walter Jaffe
5	81/08/01	Experiences with AIPS	Thijs van der Hulst, U. Minn.
6	81/08/05	Spectral line wish list for AIPS	Arnold Rots
7	81/08/26	Suggested Changes in AIPS	Walter Jaffe
8	82/01/07	Map word types in AIPS	Ron Ekers
9	82/04/01	Proposed NRAO Image Storage Unit	Ray Escoffier
10	82/04/29	Spectral line matters in AIPS and easy I/O	Arnold Rots

11	82/06/30	A computer-assisted astrometry system	Don Wells
12	82/07/21	Template task for AIPS	Arnold Rots
13	82/07/30	Summary of July 29, 1982 AIPS meeting	Ed Fomalont
14	82/08/09	VLA AIPS scheduling procedure	Ron Ekers
15	82/08/12	Mapnames	Barry Clark
16	82/08/31	AIPS usage rules at the VLA	Tim Cornwell
17	82/09/02	Software status records in AIPS	Arnold Rots
18	82/09/02	Suggested changes in AIPS	Tim Cornwell
19	82/10/01	Suggestions for spectral line software	Walter Jaffe
20	82/10/05	Image display software in AIPS; DICOMED	Arnold Rots
21	82/10/08	AIPS wish list; version 1.0	Ed Fomalont
22	82/10/18	Timing of AIPS mapping software	Ed Fomalont
23	82/12/08	New AIPS code	Arnold Rots
24	82/12/10	Some AIPS-Pipeline discussions	Ed Fomalont
25	83/02/23	EXPLAIN files	Ed Fomalont, Tim Cornwell
26	83/03/10	Summary of AIPS meeting of March 10, 1983	Ed Fomalont
27	83/05/20	Non-linear Coordinate Systems in AIPS	Eric W. Greisen

AIPS Sites

Our new order forms (see back page) have proven rather popular. In fact, we shipped over 20 copies of the 15-Mar-1983 version of AIPS. Because of this unprecedented request for code, because we are often asked how many sites use AIPS, and because we have not printed the list in 1.5 years, we present below a list of all sites to which we have mailed the source code for AIPS. The list is divided into sections according to the date of the most recent source code sent to the institution. Please note that only some of these sites actually use our programs in a significant manner. We hope that the list is reasonably complete in any case.

15MAY83

Astronomy Department
University of California
Berkeley, CA

Smithsonian Astrophysical Observatory
Cambridge, MA

University of Illinois
Urbana, IL

CSIRO
Epping, NSW, Australia

NASA-Goddard Space Flight Center
Greenbelt, MD

15MAR83

Arizona State University
Department of Physics
Tempe, AZ

Department of Physics and Astronomy
The University of New Mexico
Albuquerque, NM

Steward Observatory
University of Arizona
Tucson, AZ

Applied Technology Association
Albuquerque, NM

International Imaging Systems
1500 Buckeye Drive
Milpitas, CA

California Institute of Technology
Pasadena, CA

Department of Astrophysics
University of Colorado
Boulder, CO

Naval Research Laboratory
Washington, DC

Dept. of Terrestrial Magnetism
Carnegie Inst. of Washington
Washington, DC

Department of Astronomy and Astrophysics
University of Chicago
Chicago, IL

Department of Physics and Astronomy
University of Iowa
Iowa City, IA

Department of Astronomy
University of Minnesota
Minneapolis, MN

Cornell University
Ithaca, NY

Columbia University
New York, NY

Astronomy Department
University of Washington
Seattle, WA

Niels Bohr Institute
Copenhagen, Denmark

Max-Plank Institut fur Radioastronomie
Bonn, West Germany

Starlink (Manchester, RGO, ROE)
University of Manchester
Manchester, Great Britain

Onsala Space Observatory
Onsala, Sweden

Stokholms Observatorium
Saltsjobaden, Sweden

15JAN83

Kitt Peak National Observatory
Tucson, AZ

Massachusetts Institute of Technology
Department of Physics
Cambridge, MA

University of Victoria
Department of Physics
Victoria, BC, Canada

Netherlands Foundation for Radio Astronomy
Dwingeloo, The Netherlands

University of Bologna
Astronomy Department
Bologna, Italy

15NOV82

Lockheed Missles and Space Corporation
Sunnyvale, CA

Systems and Applied Sciences Corp.
Hyattsville, MD

Space Telescope Science Institute
Baltimore, MD

Washburn Observatory and MADRAF
University of Wisconsin
Madison, WI

Mount Stromlo Observatory
Canberra, ACT, Australia

University of Toronto
Toronto, Ontario, Canada

Perkin-Elmer (Canada) Ltd
Vancouver, BC, Canada

IRAM
Grenoble, France

15SEP82

Lockheed Palo Alto Research Lab
Palo Alto, CA

Radio Physics Research Department
Bell Labs.
Holmdel, NJ

Astronomy Program
University of Maryland
College Park, MD

12AUG82

Center for Astrophysics and Space Sciences
University of California
La Jolla, CA

Astronomische Institute der Universiteit
Bonn, West Germany

18JUN82

Radio Research Laboratories
Ministry of Posts and Telecommunications
Kashima-Machi.
Ibaraki-Ken, Japan

Kapteyn Lab.
University of Groningen
Groningen, Netherlands

20APR82

Astronomy Department
University of Texas at Austin
Austin, TX

09MAR82

Dominion Astrophysical Observatory
Victoria, BC, Canada

European Southern Observatory
Garching, West Germany

School of Natural Sciences
Institute for Advanced Study
Princeton, NJ

02FEB82

National Center for Atmospheric Research
Boulder, CO

1981

Institut D'Astrophysique
Paris, France

Lick Observatory
University of California
Santa Cruz, CA

Department of Physics and Astronomy
Northwestern University
Evanston, IL

Randall Laboratory
University of Michigan
Ann Arbor, MI

Laboratory for Planetary Atmospheres
Department of Physics and Astronomy
University College London
London, Great Britain

Summary of Changes: 15 Jan – 14 Mar

These changes are listed in detail in the CHANGE.DOC file reproduced later in the *AIPSLETTER*. We seem to have been in a revisionist mood during the past two months. There are 126 entries in CHANGE.DOC for the period, including five new tasks and five new verbs. Most of these, however, are more outgrowths of previous work than truly new algorithms. Nonetheless, we think that users will find the many changes made during the past two months to be quite helpful and desirable.

We have made several rather global changes to the heart of the AIPS processor. The *POPS* language processor now uses a new mode for addressing adverb values and prevents the values of certain adverbs from being changed at run time. These changes will be seen only by those users who desire to attempt to change the value of TRUE or FALSE. This change and others again required the deletion of all SAVE/GET files. To reduce the need for such deletions, the code now supports a SAVE/GET "version number" for each file. AIPS will only GET a file of the current version. However, the OLD: version of AIPS may be able to use files which cannot be used by the NEW: version of AIPS (on those systems supporting both a NEW: and an OLD: copy of AIPS). The verb SGINDEX lists the version of each SAVE/GET file as "too old", "current", or "too new" relative to the version of AIPS being executed. The Inputs and Help files have been merged in a single directory, which helps us with some printed documentation, disk space, and maintenance, but which should be invisible to the user. All physical file names in AIPS have been changed to express the numeric fields in hexadecimal rather than decimal strings. This allows us to support user numbers up to 4095 and extension file version numbers up to 255. Only those users who access their AIPS files with fundamental system job control commands will need to know their user numbers in the hex code.

There has been a major change in the way positions are handled by AIPS. The 15-May-1983 release supports four non-linear projective geometries in either Celestial, Galactic, or Ecliptic coordinates. The choice of coordinates is shown in the first four characters of the axis type (RA--, DEC-, GLON, GLAT, ELON, and ELAT). The other four characters show the type of projection to the map plane as -SIN (VLA and other synthesis mapping), -TAN (optical), -ARC (Schmidt plates, single-dish radio maps), and -NCP (the WSRT). VLA coordinates under their old names (LL and MM) will also be supported. During this change, position displays and axis labeling were improved. In particular, the third and fourth axes (if present) will always have their values shown, the second axis value will always appear on slice plots, and the algorithm for labeling TVMOVIE images has been improved. GREYS was restructured and corrected to use the correct header for each portion of the labeling. A new non-linear axis, called FELOcity, was introduced to display in velocity units (in the "optical" convention) data which are regularly gridded in frequency. The new verb ALTDEF allows the user to provide AIPS the information relating frequency and velocity and the verb ALTSWTCH switches the header between the two descriptions. AXDEFINE was modified to allow the user to express the reference pixel value more accurately.

A variety of changes were made to verbs in AIPS. SAVDEST will now ask permission before destroying the user's TPUT/TGET file. WAITTASK will now accept the task name as an optional immediate argument (like GO). WAITTASK and ABORTASK now use minimum match (on the HELP directory) to construct the full task name. MOUNT has a new adverb to specify the tape density. Under normal circumstances, the status of the television system is known throughout AIPS without any forced initialization due to the use of a TV status disk file. Initialization is now required only when something catastrophic (*e.g.* power failure) has occurred. Since such circumstances require a complete initialization, TVINIT now clears all channels and selects gray channel 1. TVBOX and TVWINDOW now display their results on the user's terminal and in the message file. The formatting routine used by INPUTS has been made smarter so that, among other things, it will use an exponential format for very small and very large numbers. The other new verbs are CELGAL, QHEADER, and EXPLAIN. CELGAL converts the header coordinates from Celestial to Galactic and back again. QHEADER is like IMHEADER, but its display is shorter and it shows the coordinate values at the numeric field center rather

than at the reference pixel. **EXPLAIN** normally prints both the **HELP** and the "explain" information on the line printer although the user may request that the display appear on his terminal instead. At present, only the usual **HELP** information is available since the "explain" documentation is still in preparation.

The ЯIPS batch system has been found to be somewhat fragile. To correct this, we have made a number of changes. The most important of these is the introduction of a new job status called "failed". When a batch job fails in the normal ways it is marked with this status. In addition, when a batch queue starts up, any job marked "running" is changed to "failed" since it cannot be actually running. Jobs with this status may be handled with the verbs **JOBLIST** and **UNQUEUE** and will be replaced in the queue if necessary. The batch checking program (**AIPSC**) will now delete bad files should they occur. And there is an ЯIPS program which–may be run every time the operating system is rebooted to restart all ЯIPS batch queues. Another rather general change in this release is a switch in the meaning of the value zero for logical adverbs. In the past, ЯIPS generally took 0.0 to mean "true", but it has become clear that most users and some programmers would prefer that 0.0 be "false". This change has been made in the 15-May-1983 release. The **AIPS** adverbs **TRUE** and **FALSE** retain their standard values (1 and -1, respectively) and we continue to recommend that logical adverbs be set to **TRUE** or **FALSE**.

The VLB format translation program (**TOAIP**) has been replaced by two new and improved tasks. **VBCIT** translates the Cal Tech format and **VBLIN** translates the NRAO-SAO Decode format to standard ЯIPS uv format. The other new tasks are called **BLOAT**, **TAFFY**, and **CANDY**. The latter two are "paraform" tasks to be used in constructing new ЯIPS tasks. **TAFFY** uses an input map and constructs an output map. **CANDY** constructs an output map from scratch and will mostly be of interest in modeling. **BLOAT** converts pseudo continuum uv data sets to true spectral-line uv form. **IMLOD** has been revised heavily and should now run significantly faster for normal FITS images. **UVPLT** has a new option to print the averaged values and uncertainties produced by its binning option. **UVFND** now supports the **UVRANGE** adverb and **CLIP** handles a range of spectral-line channels via the adverbs **BCHAN** and **ECHAN**. **GNPLT** uses the adverb **CPARM** rather than **APARM** (which is used by **ASCAL**). **DBCON** has a new option to suppress the generation of multiple subarray numbers.

A variety of bugs have been squashed. The test programs **CORMS**, **RM**, and **RMTST** now compute rotation measures in the correct FITS units (degrees/meter^2) and put these units and the correct Stokes value in the output headers. **CONVL** no longer performs a right shift on some images. **MCUBE** handles images with zero axis increments more intelligently. **CCMOD** now supports the new CC file format. **TVPL**, **TKPL**, and **PRTPL** will now share plot files with the world, while **SL2PL** and **SLFIT** will share slice files. This prevents **EXTLIST** and other processes from hanging up while waiting for such files. The parsing of FITS tape headers was improved so that clean beam parameters will again be recovered correctly. Finally, the spelling of the prefixes **MILLI**, **MICRO**, and **FEMTO** has been corrected.

CHANGE.DOC: 15Mar83–14May83

1142. *March 16, 1983* ARCOS, DARCOS *Eric*

Provide standard name functions in [.APL.ZSUB.VMS] to call the (VAX) named functions **ACOS** and **DACOS**. Change call in **H2MEM** to **ARCOS**.
Moved nowhere.

1143. *March 16, 1983* REGLR *Eric*

Fix declaration of History common in main.
Moved nowhere.

1144. *March 17, 1983* ZDOPRT *Gary*

This subroutine of **PRTPL** now opens the file that is spooled to the Versatec with an initial size, and will try all disks if the open fails. This corrects the problem of Versatec plots being incomplete if disk space on the default disk goes down to zero. All of our other programs which produce printed output have the same potential problem, but since their spooled output files are small the problem will rarely occur.
Moved nowhere.

1145. *March 18, 1983* H2MEM *Eric*

Move **RELPOP** call from main to **GETIN**. Move history and catalog calls to **MEMHIS** from main. This will hopefully allow the program to link on the MODCOMP. Revise **H2MEM.E**, the MODCOMP link edit instructions.
Moved nowhere.

1146. *March 18, 1983* AU6 *Eric*

Was returning an error condition in **TVPSEUDO** whenever button D was pressed in Button B and C modes. Statements added to set error codes correctly.
Moved nowhere.

1147. *March 20, 1983* AU2, AIPSC *Eric*

Correct list of AP tasks to drop **LSCAL** and add **H2MEM**, **APGS**, and **PHCLN**.
Moved nowhere.

1148. *March 20, 1983* INIT, ASSIGN, QUICK *Eric*

Put in concept of "protected adverb" — one that the user cannot change value. Use **K(KXORG+7-1)** as the storage of the **TAG** of the highest protected adverb. All unprotected ones must come after this. For the moment, have **INIT** set this **TAG** for **FALSE**.
Moved nowhere.

1149. *March 21, 1983* GTPARM *Eric*

Add **IERR = 3** return to signify that the task name field in the TD file was set to zero (**IERR = 1** signifies non-zero and not the present task's name). This could arise if a task were to call **GTPARM** twice.
Moved nowhere.

1150. *March 21, 1983* AIPSTR.COM, AIPS.COM *Gary*

Before **AIPS** starts up we must set the terminal type to **/UNKNOWN/FULLDUP** to allow AIPS and tasks to talk to the same terminal. Previously, when we reset the terminal type, we assumed a VT100. Now the procedures remember the terminal type and reset to the proper type.
Moved nowhere.

1151. *March 21, 1983* AU5D *Eric*

Error in labeling computation for axis value corrected. Failed to scale reference pixel value by the a priori (expected) scale factor (**LTYPE = 3** only).
Moved nowhere, but might go to OLD.

1152. *March 22, 1983*   XREFS, ZTOPEN   *Eric*

The MODCOMP version of ZTOPEN was using the file name as INTEGER, but it was declared as REAL. XREFS is a program designed to produce cross-reference lists of adverbs (from INPUTS area), includes (from source code areas), commons and externals from link-edit libraries. So far it only works on the MODCOMP (*n.b.* !) since there are problems with duplicate subroutine names in tasks and with Z-routine design which affect the VAX. I have revised this routine to be more standard — to use ZTTYIO to talk to the user, to use VERSION to call ZGTDIR and ZTOPEN, to use MSGWRT for error messages, etc.
Moved (only partly) to MODCOMP this date, nowhere else.

1153. *March 24, 1983*   UVMAP   *Bill*

Added call to APWAIT before call to FINGRD in CONGRD. This apparently unnecessary call is needed on the MODCOMP and perhaps the VAXes.
Moved MODCOMP this date.

1154. *March 24, 1983*   Service programs   *Eric*

EXPTAP PRNTMN, XREFS, and PRTACC were revised. The first three had wrong call sequences to CHPACK, the latter two had a funny business with semi-equal LUNIN and LUNOUT variables. I suspect that the latter causes PRTACC to work on only one of the MODCOMP's terminals.
Moved nowhere.

1155. *March 24, 1983*   EXPTAP   *Gary*

Now looks for ZPGM files to export.
Moved nowhere.

1156. *March 24, 1983*   PLNPUT   *Bill*

Modified to handle blanked images and not to require exclusive use of the input file.
Moved nowhere.

1157. *March 27, 1983*   UVLOD   *WaWa/Eric*

Was initializing the Antenna data record via a COPY rather than the desired FILL call.
Moved nowhere.

1158. *March 28, 1983*   UVFIX   *Bill*

For VLBI data the z component of the array center was not set; it is now set to 1.0E-20 to keep ATAN2 happy.
Moved nowhere.

1159. *March 29, 1983*   TAFFY   *Bill*

New task. User definable task which sends an image to a subroutine one row at a time. It will handle real or integer input, data cubes and blanked data. Also TAFFY.INP and TAFFY.HLP.
Moved nowhere

1160. *March 29, 1983*   FFT   *Bill*

Fixed misspelled variable which caused the INDISK not to be used.
Moved nowhere.

1161. *March 31, 1983*   Batch   *Eric*

Batch in AIPS has been rather fragile. To try to correct this to some extent some revisions have been made. Among these are the creation of a "failed" status for jobs. This status is put on any job which is listed (but can't be) running when AIPSB first starts. Such jobs will appear in QUEUES and may be listed by JOBLIST and pulled back to the work area by UNQUE. Routines revised:

AUB   —   Fix the marking as busy in UNQUE and JOBLIST, show failed status in QUEUE.

BATER   —   Fix CUB to match AUB.

BATQ   —   Fix OPEN (find a vacant slot) algorithm to use empty or, if none, oldest finished or, if none, oldest failed slot. Add OPCODE FAIL to convert all "running" to failed.

AIPSB   —   Handle init errors better, resume BSTRT if the initiator had *POPS* number 1 (that can't be an AIPSC), call BATQ with FAIL opcode, print all messages if any had failed. Add call to create user-private catalogs if needed.

AIPSC   —   If the output batch text file already exists despite the new "FAILed" status, destroy the old file and re-try the creation.

Moved nowhere.

1162. *April 4, 1983*   MASSGN   *Eric*

Add protected adverb concept to the routines which handles the ARRAY = V1, V2, V3, ... grammar. Also improve error handling.
Moved nowhere.

1163. *April 4, 1983*   ZDOPRT   *Gary*

The equivalence name and logical name were transposed in the call to SYS$CRELOG. This caused output of the PRTPL to go to SYS$PRINT no matter what the assignment of logical name PLOTTER.
Moved to OLD and VLA.

1164. *April 5, 1983*   New adverbs, verbs   *Eric*

Modified POPSDAT to redefine AXVAL as an array (2), to add verbs ALTDEF, ALTSWTCH, and CELGAL, and to add adverbs RESTFREQ, INFILE, IN2FILE, and OUTFILE. Modify the includes DAPL.INC and CAPL.INC to reflect these new adverbs. Note the change to AXVAL requires the recompilation of all AU... subroutines and the destruction of all SAVE / GET files.
Moved nowhere.

1165. *April 5, 1983*   AXDEFINE   *Eric*

Modify AXVAL to be a 2-element array and have AXDEFINE (subroutine AU7) use AXVAL(1) + AXVAL(2) (both made double precision before addition) as the axis value. To protect against user error, if AXVAL(1) = AXVAL(2), use only AXVAL(1). Fixed Inputs and Help for AXDEFINE and Help for AXVAL.
Moved nowhere.

1166. *April 5, 1983*   ALTDEF   *Eric*

New verb in subroutine AU7 to provide a definition of the relationship between frequency and line velocity. New files: [.HELP] ALTDEF, RESTFREQ and [.INPUTS] ALTDEF.
Moved nowhere.

1167. *April 5, 1983*   ALTSWTCH   *Eric*

New verb to switch header between the frequency and the line velocity desriptions entered via ALTDEF. New files: [.HELP and .INPUTS] ALTSWTCH.
Moved nowhere.

1168. *April 5, 1983*   CELGAL   *Eric*

New verb in subroutine AU7 to switch the axis labels between Celestial and Galactic coordinates. Works only on correct projections to the tangent plane. New files: [.HELP and .INPUTS] CELGAL.
Moved nowhere.

1169. *April 5, 1983*   IMLOD, LMPIX   *Eric*

Generalize the code in IMLOD which corrects the reference pixel positions for VLA PDP-written FITS tapes. It should now handle transposed cubes if they are ever written. This required a new routine LMPIX which takes the longitude and latitude values and returns the appropriate pixels. It is a simpler version of XYPIX.
Moved nowhere.

1170. *April 5, 1983*   Plot on device programs   *Eric*

Change TVPL, TKPL, and PRTPL so that they do not take exclusive control of the plot file. This will allow EXTLIST and each other to work while one of them runs. A similar change was made for Slice files to SL2PL and SLFIT.
Moved nowhere.

1171. *April 5, 1983*   LOCation common   *Eric*

Change this common to be more general. In particular, it will now carry pointers to specific types of axes, the full DEPTH parameter, up to 4 axes of reference info, 2 strings for labeling displays with info about axes > 2, and a parameter for non-linear velocity computations. Changed are:

SETLOC   —   Heavily rewritten to compute and use these parms.
DLOC.INC   —   To declare the variables.
CLOC.INC   —   To declare the common.
AXSTRN   —   (New) build the axis descriptor strings.
Moved nowhere.

1172. *April 5, 1983*   Position computation   *Eric*

The basic non-linear (angular) position routines have been revised to support four projective geometries: –SIN (i.e. VLA), –TAN (i.e. optical), –ARC (i.e. Schmidt, single-dish), and –NCP (the WSRT). In addition, the FELO axis requires a non-linear conversion to velocity (optical convention) from spectra regularly space in frequency. Routines modified so far:

NEWPOS   —   New calling sequence and error returns, add the 3 new projective geometries.
DIRCOS   —   New calling sequence, add message on error, add the three new geometries.
DIRDEC   —   As DIRCOS.
DIRRA   —   As DIRCOS.
FNDX   —   Change calls to above routines, add non-linear "Felocity" computation.
FNDY   —   As FNDX.
XYVAL   —   As FNDX.
XYPIX   —   As FNDX.
Moved nowhere.

1173. *April 5, 1983*   Axis labeling   *Eric*

Modify labeling routines to use the new common and position routines. Affected:

COMLAB — Drop search for axes, use prepared labels instead.

LABINI — Prepare z-axis label (when an angle), use pointer variables (rather than list of angle types); reset AXFUNC when needed, use AXSTRN rather than SKYFRM.

CLAB1 — Add strings and string lengths for other angle axis types.

COORDD — Put angles > 100 degrees with the 100's part in HM(1).

CTICS — Accept other angle types.

TICCOR — No tick correction needed in two z-axis case.

GREYS — Change GLAB as did COMLAB. Also add code to rescale gray scale integer pixel values when the PIXRANGE has been set outside the image pixel value range. *Needs more!*

ITICS — Accept other angle types.

AU5 — Verb IMPOS to use new labeling routines.

AU9 — Verbs MAXFIT, IMVAL to use new labeling routines.

IAXIS1 — Drop search for axes, use prepared labels instead. Add strings and string lengths for other angle axis types.

PROFL — As CLAB1, COMLAB and CTICS.

Moved nowhere.

1174. *April 5, 1983*   Slice labeling   *Eric*

Similar actions need to be taken for slice plot labels. Ones at constant RA, for example, need a string giving the DEC in addition to any changes to support the new position common. Users should note that positions and velocities given as tick labels on slice plots are only approximate. The more detailed labels are exact, however. Routines changed:

SLBINI — Finish top label for certain plots, add test for new AXTYP (2 "z" axes), use AXSTRN.

SL2PL — Modify labeling as COMLAB.

LABINI — Add test for LTYPE=3 Slices and make a string to show the roughly constant position value.

AU9A — Verbs TKPOS to use new labeling routines.

AU9B — Minor typing fix.

AU9C — Add Includes for location common.

TKLAB — Support other axis types, use strings in common.

TKTICS — Support other axis types.

SLFIT — Declare needed commons in root. *NOTE:* this program should be revised in how it provides answers to the users. More accurate answers would be desirable.

AU8A — Apply CHLTOU in requested plot type.

Moved nowhere.

1175. *April 5, 1983*   Position axes (FITTP)   *Eric*

Several other routines refer to position axes and need to be updated one way or another. Among these are FITTP, where a search for an RA-like axis was left in despite the new format for the clean beam.

Moved nowhere.

1176. *April 5, 1983*   POPS addressing   *Eric*

Modify *POPS* a bit so that it addresses adverbs always with floating point addresses, so that it uses the C equivalenced array to load the language from/to disk, and to allow more verbs. This should assist custom installations, but requires all **SAVE** / **GET** files to be deleted.

AIPS   —   Allow verb numbers up to 999 in **INTERP**.
AIPSB   —   Ditto.
AIPSC   —   Ditto.
POPSGN   —   Express array sizes more uniformly, use **KX** array with floating indices, read and write C array, allow protected adverbs to be defined.
INIT   —   Express array sizes more uniformly, read in *POPS* array via the C equivalence.
PSEUDO   —   Allocate adverbs in floating point.
RLOCAT   —   (New) Version of **LLOCAT** to make adverb value space.
STORES   —   Move *POPS* array via the C array, improve **CORE**, correct file size computation.
SYMBOL   —   Allocate adverb value space with floating point.
Moved nowhere.

1177. *April 6, 1983*   Position labeling   *Eric*

Upgrade additional labeling to match new standards:

AU5D   —   Add non-linear velocity capability, test the axis value display better to avoid silly labels (for **TVMOVIE**).
LSTHDR   —   Add new string designations for RA and DEC, avoid overflow of random parameter labels, test shift parameters better to avoid print.
MSGHDR   —   As **LSTHDR** (for verb **TPHEAD**).
PRTTP   —   Change **PRTHDR** as for **LSTHDR**.
Moved nowhere.

1178. *April 6, 1983*   Parsing of FITS headers   *Eric*

The standard parsing routines for FITS headers were exiting too fast while trying to parse **AIPS** history cards. This causes the Clean Beam parameters to be missed among other problems:

GETCRD   —   Add a new error code for real troubles, use 1 for unrecognized but valid keyword. Loop when starting to parse history cards.
FPARSE   —   Use new error code to know when to loop on history cards.
UVLOD   —   As **FPARSE**.
GETSTR   —   Fill in string before exit branch when the number of characters found exceeds the limit.
Moved nowhere.

1179. *April 6, 1983*   ZMOUNT   *Gary*

Updated to check for device already mounted. Mounting tapes foreign twice under VMS 3.2 makes a tape drive unusable until a dismount is done.
Moved nowhere.

1180. *April 7, 1983*   GREYS   *Eric*

Rearrange the code to a more respectable collection of subroutines. Change the commons so that the gray-scale image is used for the main labels, but the contour image is used for some secondary labels. Use the new labeling tools. Create **DGRY.INC**, **CGRY.INC**, and **EGRY.INC** to avoid repetitive declarations. Also corrected minor bugs in DIRRA (**-TAN** geometry) and DIRDEC (formats).
Moved nowhere.

1181. *April 8, 1983*   Position axes   *Eric*

Continuing to check the handling of position axes, I have corrected:

IMEAN — The clean beam area in cells was erroneously computed. Correct answers were found only on images with square cells with **LL** and **MM** as the first two axes. I have corrected the computation. put in more complete checks for zero divides, and added support for more angular axis types.

PRTIM — Add support for new character strings representing RA and DEC.

IMLOD — Insert new strings in headers on IBM format images.

SKYFRM — Add more possible axis types - not used much now.

CONVL — Remove useless handling of axis labels (once needed for clean beam).

FFT — Insert only the first four characters of each axis and use **UU--** and **VV--** or **RA--** and **DEC-**

UVMAP — Put out axis types **RA---SIN** and **DEC--SIN** rather than **LL** and **MM**.

VBPLT — Recognize above two sets of strings.

Moved nowhere.

1182. *April 8, 1983*   ZMOUNT   *Gary*

Changed the name of the common block **ARGLOO2** to **ARGLOO3** to avoid conflict with **ZFREE**. This conflict was introduced in 1179 above.

Moved nowhere.

1183. *April 8, 1983*   AXEFND   *Eric*

Change call sequence to specify how many characters of the axis label must match. Routines with text modified for the new call sequence are **ROTFND, CONVL, UVSUB, TAFFY,** and **VBPLT**. Add new kind of declination string to **ROTFND**. Relink (for **ROTFND** change) **APCLN, ASCAL, UVMAP,** and **VBFIT**.

Moved nowhere.

1184. *April 9, 1983*   VBCOR   *Bill*

Fixed several problems in **DELFAZ** which causes it to return improper values when there was only one fringe fit solution in the **DR** file.

Moved nowhere.

1185. *April 11, 1983*   VBCOR, VBFIT   *Bill*

Neither task was flagging data when no solution was available, now fixed.

Moved nowhere.

1186. *April 11, 1983*   AVER   *Bill*

Fixed bug which caused the last sample on a given baseline to be labeled as being the next baseline.

Moved nowhere.

1187. *April 12, 1983*   FELOcity axes   *Eric*

Change the definition of the FELOcity axis increment to a simpler and also correct form. This required revisions in **SETLOC, FNDX, FNDY, XYPIX, XYVAL, AU5D,** and **AU7**. A nasty typo was also corrected.

Moved nowhere.

1188. *April 12-13, 1983* ALT axis reference pixel *Eric*

The reference pixel recorded for the alternate axis (if any) must also be corrected whenever a subimage or other regridding is done. Routines involved so far:

SUBHDR — (New) subroutine to correct headers for BLC, TRC, XINC, and YINC. Does CAT4(K4ARP) as well.

SUBIM — Call SUBHDR rather than do corrections.

COMB — Ditto.

CORMS — Ditto.

MCUBE — Ditto.

TRANS — Add code to do the ARP.

GEOM — Add code to do the ARP.

CONVL — Call SUBHDR, call WINDOW to check windows, more checks to get meaningful axis increments.

FITTP — Call SUBHDR.

HANSM — Add simple code (freq/velo must be axis 1).

NTERP — Add code for axes 1 and 2 — cubes are not supported.

TAFFY — Add code for ARP.

HDRWIN — (WaWa IO package) have it call SUBHDR rather than do the work itself. (Relink RGBMP, SUMIM, SUMSQ which call this one.)

RM — correct handling of BLC and TRC (note they still don't apply to the input cube!), call HDRWIN to correct header, remove LOC common since it's not used.

RMTST — Like RM.

PBCOR — Quit if not the "right" kind of image. Use header pointing positions if present. Misc typing. Remove attempts to provide header parameters which never get to the header.

Moved nowhere.

1189. *April 13, 1983* CCMOD *Bill*

Corrected order of data in CC record. Also noted that before the January CC file cleanup the model was being added one cell off from the specified location.
Moved nowhere.

1190. *April 14, 1983* PLNPUT *Bill*

Fixed bug in scaling which caused a divide by zero for a constant value image.
Moved nowhere.

1191. *April 14, 1983* CANDY *Bill*

New task. User definable task which creates a specified size image file and gets the image one row at a time from a user supplied routine. Most of the bookkeeping, history, I/O etc. is taken care of already. CANDY will handle blanked pixels and up to 7 dimensions. Also: CANDY.INP and CANDY.HLP.
Moved nowhere.

1192. *April 15, 1983* APGS *Tim*

Overlooked in PASS1, PASS2 update. Now o.k.
Moved nowhere.

1193. *April 19, 1983* FRMT *Eric*

In testing the new verbs, I have improved FRMT.(used by INPUTS among other things) to switch to E format when needed. A bug in AU7 (misspelled K4CTP) also fixed.
Moved nowhere.

1194. *April 19, 1983* DBCON *Bill*

Added an option to suppress new subarrays (DOARRAY). Also modified: DDBC.INC, CDBC.INC, DBCON.INP, DBCON.HLP, DOARRAY.HLP, and [EXPLAIN] DBCON.HLP.
Moved nowhere.

1195. *April 19, 1983* INFILE, etc. *Eric*

Changed POPSDAT and DAPL.INC to declare these file name adverbs as STRING*48 rather than 60.
Moved nowhere.

1196. *April 19, 1983* TOVLB *JMB*

TOVLB now derives proper error bars for CIT Merge data from AIPS weights originally set in TOAIP and VBCIT.
Moved nowhere.

1197. *April 19, 1983* VBCIT *JMB*

Task VBCIT created. VBCIT generates AIPS uv data from CIT Merge data. VBCIT replaces the CIT half of TOAIP
Moved nowhere.

1198. *April 19, 1983* VBLIN *JMB*

Task VBLIN created. VBLIN generates AIPS uv data from NRAO-SAO DECODE format VLBI data. VBLIN replaces half of TOAIP. The current version of VBLIN does *not* directly read and translate an IBM tape as advertised.
Moved nowhere.

1199. *April 19, 1983* position routines *Eric*

The functions DARSIN and DARCOS are not natural to VAXes and must be declared in order to be considered REAL*8. Routines changed: NEWPOS, DIRCOS, DIRRA, DIRDEC, AU7. Lots of things should be relinked.
Moved nowhere.

1200. *April 20, 1983* BLOAT *Bill*

New task. Converts pseudo-continuum (or other) uv database to a proper line format database. Also: BLOAT.INP and BLOAT.HLP.
Moved nowhere.

1201. *April 21, 1983* UVMAP *Bill*

Fixed bug which caused failure if OUTDISK was 0. Also fixed bugs by which the frequency override was ignored for STOKES='L'
Moved nowhere.

1202. *April 21, 1983*   Other coordinates in UV data   *Eric*

We should allow other kinds of projections and other coordinate systems for the tangent
point representation. To do this right will be a lot of work which doesn't seem justified
at this time. To allow Galactic observers to find a useful rotation angle, I have changed
CELGAL to work on UV data sets. However, for the moment, UV programs will only accept
RA/DEC coordinates.

UVPGET — Accept RA-- and DEC- as useful coordinates.

AU7   — Do not require a projection type for coordinate axes with only one pixel (to
allow UV data sets to be converted to Galactic coordinates).

PRTUV — Change printed header to use axis labels from the catalogue block and use
hours only for real RA.

Moved nowhere.

1203. *April 22, 1983*   SWAPAX   *Eric*

Add identification to the error message.
Moved nowhere.

1204. *April 23, 1983*   VBCIT   *JMB*

Added polarization axis to VBCIT.
Moved nowhere.

1205. *April 25, 1983*   LMPIX   *Eric*

Wrong portion of header referenced: bad answers resulted.
Moved nowhere.

1206. *April 25, 1983*   MCUBE   *Eric*

Add diagnostic messages to the routine which tries to figure out which axes are different.
The problem with *SORTER* output is that the axis increments are zero on the axis which
is different. The routine does not want to be excessively fussy and hence would like to
base comparisons on some fraction of the axis increment. When the increment was zero,
the routine took a fraction (too large) of the reference *value* and hence found no difference
when there was one. It proves once again that when the input data are messed up, it is
hard to get things right!
Moved nowhere.

1207. *April 25, 1983*   CITCC   *JMB*

CITCC now removes rotation applied in UVSRT.
Moved nowhere.

1208. *April 25, 1983*   SAVE/GET files   *Eric*

Add a "version number" to the directory entry for each file (starting with 0 to support
the current ones). Then, instead of deleting all SAVE/GET files whenever there is a K array
format change, we just upgrade the allowed version number in the NEW area. The OLD
version of AIPS can still use the older files. Changed: OERROR to add a new error message,
SGLOCA to check and set the version number, and AU2A to display it. The latter two should
change each time there is a catastrophic version change. Also changed MV2CO6SG in the
[.DOC.TEXT] area.
Moved nowhere.

1209. *April 25, 1983*   Misc   *Eric*

Change UVPLT to allow negative times and to set the default time range to -1.E6 to 1.E6
days. Change LSTHDR, MSGHDR, and PRTTP to say that the Alternate reference value is *with
respect to* the alternate reference pixel (since the stored frequency is that of the velocity
reference pixel not the "alternate" frequency pixel).
Moved nowhere.

1210. *April 26, 1983*   VBCAL   *Bill*

Changed to allow specifying both IFs and all antennas/arrays in one run with a constant
factor. Also changed: VBCAL.HLP and VBCAL.INP.
Moved nowhere.

1211. *April 26, 1983*   QHEADER   *Eric*

New verb: like IMHEADER but lists fewer things and gives the coordinate values at the
numeric center pixel rather than the *reference* pixel. Routines changed:

POPSDAT — Add new verb, change verb numbers in AU3A to make room.
VERBS   — Change verb branch table to allow more AU3 verbs.
VERBSB   — As VERBS.
VERBSC   — As VERBS.
AU2A   — Change current SAVE/GET version number to 1.
SGLOCA   — Change current SAVE/GET version number to 1.
AU3   — Add pickup of adverbs and call to QIKHDR to implement QHEADER.
QIKHDR   — (New) does the coordinate computation using SETLOC *et al.* and the display.
QHEADER — New INPUTS and HELP files.
Moved nowhere.

1212. *April 26, 1983*   WHATSNEW   *Eric*

Delete oldest section (15Sep-15Nov). Add 18 new things for the period 15Mar-15May (so
far!).
Moved nowhere.

1213. *April 27, 1983*   DELSG   *Eric*

New service program. Deletes all SAVE/GET files having a version number less than that
specified to the program. This should become part of the installation procedure beginning
with the 15-Jul-83 release and is already useful in Charlottesville.
Moved nowhere.

1214. *April 27, 1983*   BSTRT1   *Eric/Gary*

New program to restart the ЯIPS batch queues (see entry 1161) if the system crashes. On
CVAX the program is started as a detached process by the SYSTARTUP command file.
Moved nowhere.

1215. *April 27, 1983*   ZTOPEN, ZGTDIR   *Gary*

The VAX version of these routines now handle MODCOMP .E and .R files. That is,
ZGTDIR includes them in its list of names and ZTOPEN can open them. This allows us to
write tapes containing the MODCOMP version of ЯIPS from the VAX.
Moved nowhere.

1216. *April 28, 1983*   DOC files   *Eric*

Update MV2CO6SG and MV2CO6ME to reflect the current K and LISTF sizes and the addition
of a version number for SG files.
Moved nowhere.

1217. *April 28, 1983*   TIMDEST, SAVDEST   *Eric*

Fixed bug in TIMDEST: it was checking only users 1 - 99 for SG and TS files. SAVDEST should
ask before deleting the TS file. Routines changed: AU3A and AIPSC (sr CU3A has to ask
too).
Moved nowhere.

1218. *April 29, 1983*   WAITTASK, ABORTASK   *Eric*

WAITTASK was changed to accept an immediate argument. Min match is now applied to
both of these pseudoverbs. Routines affected HELPS, AU2, POPSDAT, and both HELP files. A
new SAVE/GET version number is also required — 2 is now current in SGLOCA and AU2A.
Moved nowhere.

1219. *April 29, 1983*   Inputs and Helps   *Eric*

All HELP files were revised by adding a line of dashes at the beginning and the end. Ahead
of the first line of dashes (minus signs) was placed either the Inputs file for the symbol
(if there is one) or a single line giving the symbol name. The INPUTS directory no longer
needs to exist. Instead all secondary documentation for a symbol will be in one file divided
into 3 parts: the Inputs, the basic Help info, and the extended Explain info.
Moved nowhere.

1220. *April 29, 1983*   EXPLAIN   *Eric*

In order to implement the above new format and to implement the new pseudoverb EXPLAIN
(extended HELP to the line printer or terminal), the following routines were changed:

POPSDAT — Add EXPLAIN and change WAITTASK to pseudoverb.

POPSGN — Read until first line of minuses before processing input.

HELPS — Add two more pseudoverbs to the list handled like HELP and GO.

AU2 — Stop reading an Inputs section on a line of minuses. Make WAIT use an
optional immediate argument. Apply min match to WAIT and ABORT. Modify
WAITs messages.

AU2A — Stop reading an Inputs section on a line of minuses (in TGET). Change *POPS*
version to 2.

AU1A — HELP skips over file until first line of minuses, quits on second line. Add code
for EXPLAIN to be just like HELP except that DOCRT controls a line printer
vs terminal output and the HELP file is read to the end. INPUTS stops on
first line of minuses.

OERROR — Add message for case in which a required INPUTS portion of a HELP file does
not exist.

SGLOCA — *POPS* version number goes to 2.

AIPSC — Track changes in AU2 in the Checker version of AU2 (called CU2). Correct
handling of VERSION.

EXPLAIN — (New) HELP file (with an Inputs section).

Moved nowhere.

1221. *April 29, 1983*   UVLOD   *Gary*

Changed to use **DFUV.INC** and **VFUV.INC** in **REQCD** instead of **DFIT.INC** and **VFIT.INC**. This reserves the latter pair for **IMLOD**.
Moved nowhere.

1222. *April 29, 1983*   GETCRD   *Gary*

The change in **GETCRD** (see 1178) caused **UVLOD** to ignore antenna files. **GETCRD** now returns to the calling routine when it finds **ANT** on an ΑΙΡS history card.
Moved nowhere.

1223. *April 29, 1983*   IMLOD   *Gary*

The FITS header, history and data parts were rewritten to try to speed things up for FITS. The data is no longer written to a scratch file and rescaled when the number of bits per word on tape are equal to the number of bits per word on disk. The header and history cards are now processed at the same time instead of in separate passes. The program creates a map with a temporary name to provide a hook for the history records and then renames the map to the correct name after parsing the header cards.
Moved nowhere.

1224. *April 29, 1983*   Misc HELP files   *Eric*

Several **HELP** files were found to have lines longer than 64 characters. This makes an unpleasing terminal display. Revised were:

APGS	BPA	COROF	MSGKILL	POPSDAT
PRTTP	REGLR	TVALL	TVMOVIE	UVPLT
VBPLT	VLBI	WHATSNEW		

Moved nowhere.

1225. *May 2, 1983*   GRTOTEX   *Don*

Revised various details of the format of the output file in order to make it more convenient to edit.
Moved nowhere yet, because DECnet is down.

1226. *May 2, 1983*   Service programs   *Eric*

The service programs **PRNTMN**, **EXPTAP**, and **XREFS** required modifications to match the changes above in the Inputs and Helps. **XREFS** quits on the first line of dashes, uses the 'HE' area now, and also will search the source directory ZPGM.*xxx*. **EXPTAP** had the Inputs directory dropped from its lists. **PRNTMN** no longer loops for Inputs after the Helps.
Moved nowhere.

1227. *May 2, 1983*   ASCAL   *Bill*

Added check in **SOLVE2** to avoid divides by zero.
Moved nowhere.

1228. *May 4, 1983*   YINIT   *Eric/Gary*

This routine was turning off graphics planes but not setting the image catalog properly to indicate this. This could cause verbs such as **TVWIN** to fail to turn on the graphics planes if used after **TVINIT**.
Moved nowhere.

1229. *May 4, 1983* TOVLB *JMB*

Fixed non-fatal error resulting in MAPCLR error message.
Moved nowhere.

1230. *May 4, 1983* Logical adverbs *Eric*

In AIPS, TRUE is 1 and FALSE is -1. The question was how to treat the rest of the possible values. It appears that most people (programmers and users) prefer to have 0 be treated as false, contrary to a decision I made a long time ago. So I have revised everything to go along with the population norm. I still recommend using the adverb values TRUE and FALSE, however. The revisions so far are only for routines using standard logical adverbs (DO....). Others will be fixed, if needed, when found. Subroutines revised were:

GTPARM	AU2	AU7	AU5D

(requires all tasks be relinked). Tasks and the corresponding HELP files revised were:

FITTP	UVEXP	UVLOD	ASCAL	IMFIT
XXFIT	NTERP	PRTPL	GREYS	KONTR
PCNTR	APMAP	IBMTP	UVMAP	IMEAN
SLFIT	SL2PL	DBCON	APCLN	APGS
H2MEM	PHCLN	COMB	CORMS	REGLR

Additional HELP files revised were:

INP	INPUTS	GO	TVMOVIE	REMOVIE
PRTHI	PRTCC	DOALL	DOALIGN	DOARRAY
DOCAT	DOCENTER	DOCONT	DOCRT	DOEOF
DOEOT	DOGRIDCR	DOHIST	DOINVERS	DOMAX
DOMODEL	DOPOS	DORESID	DOSLICE	DOSTOKES
DOTV	DOVECT	DOWAIT	DOWIDTH	

Moved nowhere.

1231. *May 6, 1983* UVEX2 *Eric*

Remove antique experimental version.
Moved nowhere.

1232. *May 6,1983* UVMAP *Bill*

CELLSIZE and Field of view are now written in the history file in an E12.5 format.
Moved nowhere.

1233. *May 6,1983* ASCAL *Bill*

Added solution type to history.
Moved nowhere.

1234. *May 6, 1983* IMLOD *Gary*

I fixed some bugs introduced in the new "improved" IMLOD (see entry no. 1223), plus the back file action in the FITHDR subroutine was changed to a back record. This seems to be a more reliable action on tapes written on other computer systems.
Moved nowhere.

1235. *May 6, 1983* QUICK *Eric*

Change logical tests to meet new rules about 0.0.
Moved nowhere.

1236. *May 6, 1983*   New file names   *Gary*

The VLA user numbers have reached 771 and will soon go to 4 digits (since they are octal). ꓱIPS file names often contain the user number encoded in 3 characters. Thus, we must change the encoding from decimal to hexadecimal. This will allow 4095 as a maximum user number, 255 as a maximum version, and up to 15 disks in the system. File names are generated by ZPHFIL which was revised heavily. The old version of ZPHFIL was kept around under the name ZPHOLD to be used by a stand-alone service task CATCHR. The last will convert existing data sets to the new names.
Moved nowhere.

1237. *May 6, 1983*   USELIM   *Eric*

A new parameter has been added to the system characteristics common and file. It is called USELIM and limits the maximum user number. Routines changed:

DDCH.INC	—	Declare parameter.
IDCH.INC	—	Ditto.
CDCH.INC	—	Put parameter in the common.
SETPAR	—	Allow ꓱIPS Manager to set this limit.
ZDCHIN	—	Set a default USELIM and get real one from disk.
RDUSER	—	Check user number against USELIM.
DELSG	—	Use USELIM rather than 999 as range of user number to check.
CATCHC	—	As DELSG.
CATCHG	—	As DELSG, also limit version numbers to 255 on extension files.
CATCHL	—	As DELSG.
CATCHU	—	As DELSG.

Moved nowhere.

1238. *May 6, 1983*   Support new limits   *Eric*

A variety of routines were changed to correct the tests on version number (or to add tests) and on user number range. These include:

CATCR	—	Add limit to 4095 entries in catalogue.
AU3A	—	Version number limit changed, use USELIM for loops.
AU8	—	Version number limit changed.
AU8A	—	Version number limit changed.
QIKHDR	—	Format changed to allow larger version numbers.
MADDEX	—	Test on version number changed.
MDESTR	—	Test on version number changed.
EXTINI	—	Test on version number added!
SNCR	—	Higher version numbers allowed in loop.
SNCRB	—	Higher version numbers allowed in loop.
FIXFIL	—	Read in file name in hex.
FILINI	—	read in file name in hex.
FITTP	—	Test on version number changed.
FILAI2	—	Limit catalog size, use UCTSIZ < 0 to give the size of a public catalog.
FILAIP	—	Change limits on disks, catalogue size.
PRTPL	—	Minor typing changes.
DISKU	—	Use USELIM as limit of search loops, change default on USERID = 0 to mean login user.

Moved nowhere.

1239. *May 6, 1983*   HELP files   *Eric*

A variety of HELP files were also revised. DISKU had its defaults for USERID changed. The others had their limits on version number changed and some typing corrections. Several had the spelling of INVERS corrected (from INVER). Those affected are

EXTDEST	PRTPL	SLFIT	SL2PL	TKAGUESS
TKAMODEL	TKARESID	TKASLICE	TKGUESS	TKMODEL
TKPL	TKRESID	TKSLICE	TVPL	VBPLT
APCLN	ASCAL	CCMOD	CITCC	PHCLN
PRTAN	PRTCC	UVSUB	VBCC	VBFIT

Moved nowhere.

1240. *May 6, 1983*   CONVL   *Bill*

Fixed argument order in call to PEAKFN.
Moved nowhere.

1241. *May 6, 1983*   RESAIPS, BCKAIPS, SPACED   *Gary*

Utility command procedures updated to accept and display decimal user numbers, but internally work with hex user numbers.
Moved nowhere.

1242. *May 6, 1983*   PRTTP   *Eric*

Revised to handle the tape more gently. It does one back-file at the beginning. Then, for each file, it does an initial read followed by a back-record. This should work unless something goes really wrong.
Moved nowhere.

1243. *May 9, 1983*   CATCHR   *Eric*

Add code to revise ME, MS, and BA work files when needed.
Moved nowhere.

1244. *May 9, 1983*   [HELP] PRTMSG, IMHEADER   *Eric*

Add some clarifications of PRTMSG and the message level of IMHEADER.
Moved nowhere.

1245. *May 9, 1983*   GNPLT   *Eric*

Now uses CPARM rather than APARM. This will remove conflict with ASCAL, a highly related task.
Moved nowhere.

1246. *May 9, 1983*   PRNTMN, EXPTAP, XREFS   *Eric*

Call CHLTOU on all input character strings so as to allow both upper and lower case input.
Moved nowhere.

1247. *May 9, 1983*   TVBOX, TVWINDOW   *Eric*

Add messages to display the results on the terminal at message level 2. Subroutine AU5C.
Moved nowhere.

1248. *May 9, 1983*   UVPLT   *Bill*

Added option to list in the message file the binned values and standard deviations. Also changed to not exclude data to be binned that is outside of the input Y value range. Also changed UVPLT.HLP.
Moved nowhere.

1249. *May 9, 1983*   ASCAL   *Bill*

Removed bug added when the solution type was added to the history file.
Moved nowhere.

1250. *May 9, 1983*   PBCOR   *Ed*

Corrected PBCOR.HLP description of the default outname from INNAME to 'PBCOR'.
Moved nowhere.

1251. *May 9, 1983*   TVMOVIE   *Eric*

Corrected code (AU5D) to compute a parameter all the time — apparently it worked ok the other way for some reason. Also added a remark about REMOVIE to the TVMOVIE.HLP file.
Moved nowhere.

1252. *May 9, 1983*   PLNGET   *Bill*

Fixed bug which shifts images read. Affected CONVL.
Moved nowhere.

1253. *May 10, 1983*   EXTINI   *Eric*

Found bug which could cause integer overflow. A floating variable was computed with all integers on the right hand side of the = sign. The variable was then tested (too late) for an integer overflow value. EXTIO minor typing change.
Moved nowhere.

1254. *May 10, 1983*   TKGGPL, SLFIT   *Gary*

These routines were fixed to close down gracefully for a zero initial guess for the half width instead of blowing up. The tolerance in SLFIT was loosened to 1.0E-5.
Moved nowhere.

1255. *May 10, 1983*   ZDIR   *Gary*

Modified so that the error message for an invalid directory format for adverb VERSION is *VERSION is not a valid directory* instead of *No logical name for ....*
Moved nowhere.

1256. *May 10, 1983*   PRTTP   *Eric*

Add sequence number to display of Export format files. This number is useful in UVLOD.
Moved nowhere.

1257. *May 10, 1983*   UVEXP   *Bill*

The antenna name written on the EXPORT format tape will now be the first 4 characters of the name unless they are VLA:.
Moved nowhere.

1258. *May 10, 1983*   Prefixes   *Eric*

Users complain about the abreviated prefixes MILI, MICR, and FEMT, so they have been fixed. The main changes are to DLOC.INC to declare prefixes(2) and to METSCA to return a 5-character string in two reals (4 and 1 char). Routines which call METSCA had to be revised:

AU5D	AU6B	AU9	AU9A	QIKHDR
APCLN	CORER	IMEAN	UVPLT	LABINI
SLBINI	APGS	H2MEM	PHCLN	GNPLT
MOMFT	VBPLT	XXFIT		

Routines which use the prefix variable in the LOCATI common were also revised:

IAXIS1	ITICS	TKLAB	TKTICS	PROFL
UVPLT	CLAB1	CTICS	LABINI	SETLOC
SLBINI	VBPLT			

All programs which reference the location common must be recompiled and relinked:

AU5	AU9B	AU9C	CNTR	GREYS
IMLOD	PCNTR	PRTPL	SL2PL	SLFIT
TKPL	COMLAB	FNDX	FNDY	LMPIX
TICCOR	XYPIX	XYVAL	IMFIT	PBCOR

Moved nowhere.

1259. *May 11, 1983*   CLIP.HLP   *Eric*

Clarify meanings of APARM.
Moved nowhere.

1260. *May 11, 1983*   UVFND   *Eric*

Add UVRANGE parameter to inputs, provide tests for it, correct to display bad antennas *et al.* under all circumstances. Change DUVF.INC, CUVF.INC, the HELP file and WHATSNEW.
Moved nowhere.

1261. *May 12, 1983*   CLIP   *Eric*

Add adverbs BCHAN and ECHAN. Should we get real spectral-line UV data bases (through UVLOD, AXDEFINE, or BLOAT), then users may wish to apply specific clip levels only to specific channels.
Moved nowhere.

1262. *May 12, 1983*   FITTP   *Eric*

There was a bad format used to report that a CC file is in the header, but not on the disk. The VAX unceremoniously dumped the program out, thereby voiding all the code I had put in to deal with such situations. The format has been fixed and a parameter added to avoid several later error messages.
Moved nowhere.

1263. *May 12, 1983*   Mount Verb   *Gary*

Added DENSITY adverb for use in the MOUNT verb. The user can now select 800, 1600 or 6250 when mounting tapes. The following programs and text files were changed:

POPSDAT.HLP	DENSITY.HLP	MOUNT.HLP
AU4.FOR	ZMOUNT.FOR	ZTAPE.FOR

Moved nowhere.

1264. *May 12, 1983*   CORMS   *Eric*

Correct a variety of bugs related to the OPCODE for rotation measure. The output image class, units, and Stokes were not correct in the header. The correct units for RM in FITS are Degrees/Meter/Meter — so changed the code. Also did a bit of retyping, but this task needs a lot of work. Changed AXSTRN and QIKHDR to support the new Stokes value required for rotation measure. Change RM, RMTST, and the HELP files to the new units and try to put out correct header for the RM map.
Moved nowhere.

1265. *May 13, 1983*   TV initialization   *Eric*

The TV logic was rearranged some time ago so that it normally does not require initialization, but determines the status of the TV from the TV disk file. The code to initialize the TV when needed has been extended:

REGLR   —   Call YZERO rather than YINIT and clear image catalog.
APMAP   —   Call YZERO rather than YINIT and clear image catalog.
IMLHS   —   Call YINIT rather than TVINIT.
AU5   —   New call sequence to YINIT.
TVINIT   —   Delete — no longer needed.
YINIT   —   Drop all opcodes except ALLL, change call sequence, call YTVCIN and ZTVMC to insure standard common values and a hardware clear, zero all channels, select only gray channel one.

Moved nowhere.

1266. *May 13, 1983*   CAPL.INC, DAPL.INC   *Gary*

Modified to have less than 19 continuation statements (FORTRAN 66 standard).
Moved nowhere.

1267. *May 13, 1983*   Installation procedure updates   *Gary*

These installation procedures and doc files were modified for the changes in ᴀIPS plus some improvements (I hope) were made in the documentation.

ICOMPNS.COM	ICREATE.COM	ILOAD.COM
IPROMPTL.COM	IPROMPTP.COM	ISHORTINS.COM
MV2C1002.	MV2C1003.	MV2C1004.
MV2C1005.	MV2C1006.	MV2C1007.
MV2C1008.	UP15MAY83.	

Moved nowhere.

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Changes: 15-May-1983 version of AIPS

This publication is intended to provide corrections and updates to the *AIPS COOKBOOK* in order to fill the gap between publication dates. We also hope that users will annotate their current copies of the *COOKBOOK* rather than request a new copy at each publication date.

This Section will provide details of the changes to the 15-Jan-1983 *COOKBOOK* caused by changes in software between the 15-Mar-1983 and 15-May-1983 versions of *AIPS*. The changes during this period, although numerous, are minor and have little affect on the *COOKBOOK*.

Page 5, § 2.5

Replace § 2.5 with:

When you have the tape physically mounted on the tape drive, most computer systems must also be told of your decision. This step is called a "software tape mount". If you are logging in to AIPS on such a system, go to step 2 of the login tape mount procedure described in § 2.3 above. If you are logged in to AIPS without having mounting a tape, type:

> INTAPE n c_R to specify the drive labeled n.

> MOUNT c_R to mount the tape in software.

Some systems may allow or require you to specify the tape density at mount time. AIPS provides the parameter **DENSITY** for this purpose. Read any messages which appear on your terminal carefully since they report the success, failure, and/or limitations of the operation.

Page 13, § 4.2.4

Replace § 2.4 with:

You can get a terminal listing of the image header file by following the GETNAME step above with

> IMHEAD c_R for a detailed listing.

> QHEAD c_R for a shorter listing.

QHEAD reports the position at the *numeric* center of the image while **IMHEAD** reports the position of the "reference pixel". The output of these verbs may also be printed via PRTMSG (at PRIORITY 2).

Page 14 § 4.5

Add to the first paragraph:

To have the **HELP** information printed on the line printer, enter EXPLAIN *word* c_R instead. For some of the more difficult verbs and tasks, **EXPLAIN** will print extra information giving more detailed explanations, hints, and examples.

Page 34+ § 9.6

Add the new Section entitled Image Header Modification:

On occasion, you may feel the need to modify or add to the information in the image header. For example, to add an alternate velocity description for the frequency axis of a cube, type:

> GETNAME *n* C_R   to select the image.

> AXTYPE 'OPTHEL' C_R   to specify optical convention velocities relative to the Sun.

> AXREF 33 C_R   to specify the velocity reference pixel (need not be integer).

> AXVAL 3.E5 , 0 C_R   to specify the velocity at the reference pixel in meters/sec (here 300 km/sec).

> RESTF 1420.4E6 , 5752 C_R   to specify the line rest frequency in Hz (here 1420405752 Hz).

> ALTDEF C_R   to add the information to the header.

To switch between frequency and velocity in the main header description, used in labeling, type:

> ALTSW C_R   to switch the two alternatives.

Observers may find the Galactic coordinates of their sources to be of interest. To switch the header between Celestial and Galactic coordinates, type:

> CELGAL C_R   to go to Galactic coordinates.

and

> CELGAL C_R   to return to Celestial coordinates.

Observers of galactic objects may wish to map them in Galactic coordinates. *AIPS* uv data programs only accept Celestial coordinates at present. However, you may use **CELGAL** to convert uv headers temporarily in order to determine the rotation parameter for **UVSRT**.

You may also modify the header in more drastic ways. The verb **AXDEF** allows you to create a new axis in your image or to revise completely the description of an existing axis. The verb **RESCALE** allows you to change the scale and zero level of your images.

Section 13

Add to UVPR, Page 49:

| BLOAT | T | Convert data to correct spectral-line form | § |

Add to MAPETC, Page 50:

| TAFFY | T | Template task to work on map data | § |
| CANDY | T | Template task to make model maps | § |

Change GENERAL, Page 51 WAITTASK *entry to:*

| WAITTASK | pV | Suspends AIPS until specified task is done | §9.1 |

Add to GENERAL, Page 51:

| EXPLAIN | pV | List help information on printer | §4.5 |

Add to CATINFO, Page 52:

| QHEADER | V | List summary of image header | §4.2.4 |
| CELGAL | V | Switch between Galactic and Celestial coords | §9.6 |

Add to CUBE, Page 57:

| ALTDEF | V | Define velocity relation to frequency axis | §9.6 |
| ALTSWTCH | V | Switch between velocity and frequency in header | §9.6 |

Add to VLBI, Page 57:

| VBCIT | T | Convert CIT Merge data to *AIPS* | § |
| VBLIN | T | Convert NRAO-SAO Decode data to *AIPS* | § |

Add to INDEX, Page 60:

ALTDEF	V	Define velocity relation to frequency axis	§9.6
ALTSWTCH	V	Switch between velocity and frequency in header	§9.6
BLOAT	T	Convert data to correct spectral-line form	§
CANDY	T	Template task to make model maps	§
CELGAL	V	Switch between Galactic and Celestial coords	§9.6

Add to INDEX, Page 61:

| EXPLAIN | pV | List help information on printer | §4.5 |

Add to INDEX, Page 63:

| QHEADER | V | List summary of image header | §4.2.4 |

Add to INDEX, Page 64:

| TAFFY | T | Template task to work on map data | § |

Add to INDEX, Page 66:

| VBCIT | T | Convert CIT Merge data to *AIPS* | § |
| VBLIN | T | Convert NRAO-SAO Decode data to *AIPS* | § |

Page 81, § Z.1.5

Replace § Z.1.5, "Software tape mount at the VLA" with:

When you have the tape mounted on the tape drive, VAX/VMS must also mount the tape in software. This may now be done at system job control level or from within AIPS. If you are logging in to AIPS, go to step 2 of the login procedure described in § Z.1.3 above. If you have already logged in to AIPS without mounting a tape:

> INTAPE *n* C̣ᵣ   to specify that your tape is mounted on the drive labeled *n*.

> DENSITY *m* C̣ᵣ   to specify that the system is to write the tape at a density of *m* bpi, where *m* = 800, 1600, or 6250.

> MOUNT C̣ᵣ   to mount the tape in software.

Please dismount the tape as soon as you are finished with it using:

> INTAPE *n* ; DISMO C̣ᵣ   to dismount a tape from the drive labeled *n*.

Please also remove the tape from the tape drive.

Page 86, § Z.2.5

Replace § Z.2.5, "Software tape mount on the CV VAX" with:

When you have the tape mounted on the tape drive, VAX/VMS must also mount the tape in software. This may now be done at system job control level or from within AIPS. If you are logging in to AIPS, go to step 2 of the login procedure described in § Z.2.3 above. If you have already logged in to AIPS without mounting a tape:

> INTAPE *n* C̣ᵣ   to specify that your tape is mounted on the drive labeled *n*.

> DENSITY *m* C̣ᵣ   to specify that the system is to write the tape at a density of *m* bpi, where *m* = 800, 1600, or 6250.

> MOUNT C̣ᵣ   to mount the tape in software.

Please dismount the tape as soon as you are finished with it using:

> INTAPE *n* ; DISMO C̣ᵣ   to dismount a tape from the drive labeled *n*.

Please also remove the tape from the tape drive.

AIPS Order Form

1. Name and address of Contact Person: _____

   _____

   _____

   _____

   _____

   _____

2. ☐ new order   ☐ reorder
   (*N.B.*: If you have received a plastic mailing container from us, we insist that you use it for a reorder.)
   Version of AIPS currently running: _____

3. Tape type desired:
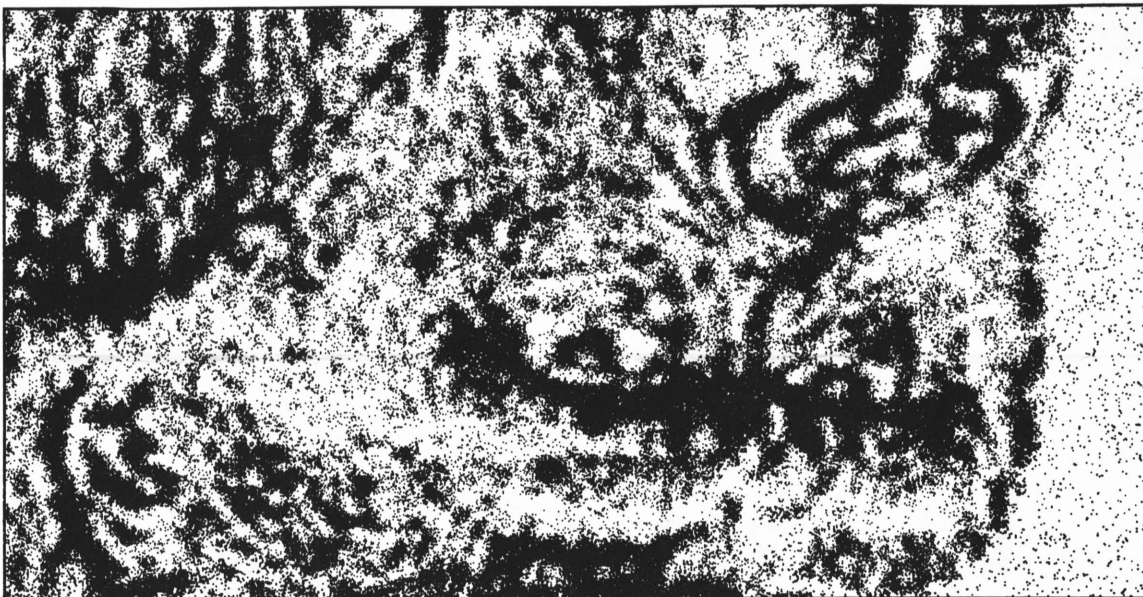   ☐ VAX/VMS BACKUP
   ☐ Simple blocked card images
   ☐ FITS compressed text format

4. AIPS version desired:
   ☐ 15-May-1983
   ☐ 15-Jul-1983

5. Tape density desired:
   ☐ 800 bpi
   ☐ 1600 bpi
   ☐ 6250 bpi

6. There are Gripes on the tape:
   ☐ Yes
   ☐ No

Send order form to: AIPS Group
National Radio Astronomy Observatory
Edgemont Road
Charlottesville, VA   22901   USA

To:

A I P S L E T T E R

Volume III, Number 4: July 15, 1983

Miscellaneous notes

We are pleased to announce that Dr. Gustaaf A. van Moorsel has joined the AIPS programming group in Charlottesville. He completed his doctorate recently at the Rijksuniversiteit te Groningen with a thesis entitled *Neutral Hydrogen Observations of Binary Galaxies.* We expect that he will help us develop post-mapping analysis programs aimed primarily at spectral-line data.

The Working Group on Astronomical Software of the American Astronomical Society met June 22 in St. Paul, MN. A motion to adopt the GROUPS extension to the FITS format (a.k.a. UV-FITS) was made and passed. The FITS Standards Committee reported on a sequence of discussions with its counterparts in Europe. Tentative agreements are near for a standard form to be used in extensions to FITS and for a character-oriented extension to transmit tabular data of all types. AIPS already supports UV-FITS and we will revise our (primitive) Tables extension when the agreements become a bit more definite. The VLA Pipeline project is developing the capability to write UV data in the FITS format. Bob Duquet expects to have the program ready for detailed testing in August.

We mailed out answers to 172 older Gripes on July 7. Answers to 158 more recent Gripes plus many of the old "to be continued" Gripes are mostly done and should be mailed in August. Many of the changes in the source code listed in this and previous editions of the *AIPSLETTER* have been occasioned by the Gripe system. It is a valuable source of bug reports and new ideas and we encourage you to continue to use it. We take all Gripes seriously and, even if we are slow sometimes, we will eventually answer them all.

Summary of Changes: 15 May – 14 Jul

These changes are listed in detail in the CHANGE.DOC file reproduced later in the *AIPSLETTER*. There are 155 entries in this issue's CHANGE.DOC file — a new record. Many of these represent new or substantially revised capabilities. Perhaps the most visible, and certainly the most pervasive, change was in the handling of message files. Each user will henceforth have his own semi-permanent message file for messages from all ЯIPS numbers including batch. The AIPS verb PRTMSG no longer deletes the messages it prints. Instead, a separate verb, CLRMSG, performs this function. Both PRTMSG and CLRMSG support a variety of adverbs to select the messages to be printed or deleted on the basis of task name, ЯIPS number, and time. PRTMSG even supports a DOCRT option for output to the terminal rather than to the line printer. Messages older than 3.0 days are automatically deleted on EXIT and RESTART and may be destroyed by TIMDEST. The files grow as needed when messages are generated and are compressed when messages are deleted. These changes, which will undoubtedly be controversial, are designed to make message files more flexible and to protect them from printer failure and other causes of lost printout. The pseudoverb MSGKILL is available to interactive users who wish to suppress message logging entirely.

The *POPS* language processor has become better during the last two months. Added to it are the character-string functions for concatenation (! !), sub-string excision *and* insertion (SUBSTR), length determination to the last non-blank (LENGTH), conversion of numbers to strings (CHAR), and conversion of strings to numbers (VALUE). The store operator (=) now complains only if the source string is longer to the last non-blank than the destination string. The logical equal (=) and not-equal (<>) operators now function on numeric arrays, scalar strings, and string arrays as well as on numeric scalars. The fundamental integerization functions FLOOR and CEIL were also added. For all operations involving HELP files (*e.g.* GO, ABORT, INPUTS, EXPLAIN, *et al.*), the VERSION adverb can now be used to specify a sequence of directories to be searched using minimum match on each directory individually. The default directory (NEW or OLD) will always be searched last.

Several new or revised verbs have been added to AIPS. The changes in *POPS* were stimulated in part by the development of GETHEAD and PUTHEAD. These verbs allow the user to obtain any, and to change almost every, header parameter by specifying the FITS keyword corresponding to the desired parameter. They provide very powerful tools for developing procedures, for correcting incomplete or incorrect headers, and for messing up the catalogue in significant ways. Another new verb, ADDBEAM, is a simpler method of inserting clean beam parameters in the header. The verb TVSLICE provides an interactive method, similar to TVWINDOW, for setting the end points of slices. The old TV procedures SETWIN, SETBOX, and SETNBOX were changed to graphics screen procedures TKWIN, TKBOX, and TKNBOX. Since TVINIT became a complete initialization routine in the last release, the less drastic procedure TVRESET was added. Since IMVAL produces too many messages for heavy use in procedures, a "silent" version, QIMVAL, was created. The interactive intensity and position verb CURVALUE now recognizes the residual maps produced, for example, by APCLN and VM, and reads their intensities back from the TV memory. CLRSTAT has become friendly enough to clear all status flags at once and MOUNT attempts to report who is currently occupying the desired tape drive (when someone is).

A variety of new or rewritten tasks have appeared. Tim Cornwell has contributed a new maximum entropy related deconvolution task called VM. It appears to work well in a variety of cases and to produce far more believable results than its predecessor H2MEM. Eric Nelson has submitted two new tasks to add model components to files while rescaling the original data. They are called IMMOD for images and UVMOD for UV data. An experimental task, NNLSQ, seems to do a good job deconvolving Gaussians from spectra using a positivity constraint. The new task XSMTH will convolve or interpolate along the *x* axis with resampling, while XSUM produces an *n*-1 dimensional image by summing or averaging each row. We expect XSUM and XSMTH to be used primarily on transposed cubes in which the "*x*" axis is velocity or frequency, but other

uses will undoubtedly arise. A new version of self-cal called BSCAL will support up to 63 antennas and, in particular, should work for data from Clark Lake. Versions of ASCOR and GNPLT to support the new gain file (type 'GN') have yet to be written. John Benson has added PRTGA to print the current gain files. Two old and problem-filled tasks, FFT and IMFIT, have been substantially revised. The former will now create correct headers, handle non-square images, and deal with phase shifts sensibly. The latter has been completely restructured and will solve for linear baselines as well as Gaussian components.

A wide variety of less drastic improvements and bug corrections were also made. The error handling while attempting to copy extension files was strengthened and several UV tasks will now copy gain as well as antenna files. The handling of non-projective position axes was corrected. And AP tasks running in batch will, while they have the AP *only*, raise their priority to interactive levels. This will let them get enough CPU time to finish their AP operations in a timely fashion. The bias against giving the AP to batch jobs was made even stronger, however. For UV data, FITTP now writes the sample weights with an extra scaling parameter and will write u, v, and w with extended precision if requested. UVLOD will support both of these functions. A bug in FITTP leading to a 0.5 day error in the times was corrected. For Export data, UVLOD now uses the adverbs BCOUNT and NCOUNT rather than BITER and NITER and will allow the DOEOF option only if all the data selection adverbs have been specified. For images, FITTP supports a DOTABLE option by which the writing of Clean component tables may be suppressed. In IMLOD, several minor bugs were fixed, the reading of 8-bit images was speeded up, and the "signal-to-noise" blanking (found in IBM-format images) was suppressed by converting the output images to magic-value blanking.

In the new release, the spheroidal convolving function is fully the default in UVMAP and the TV display of sampled cells is transposed when possible to have u on the horizontal axis. The test in APCLN for the initial maximum intensity in the cleaning boxes was corrected to use the absolute value throughout. ASCAL was revised to create smaller gain files and to provide more leeway in the default solution interval. UVCOP now deletes fully flagged data records unless instructed otherwise. Several bugs in the binning option of UVPLT were corrected and the user parameters are now given default values individually. Task PRTPL supports a COPIES option and has had bugs in the scaling of rectangularly gridded images corrected. The ASPMM option will henceforth refer to the x axis with the scaling of the y axis determined by XYRATIO. In the new release, IMEAN displays the coordinates of the maximum and minimum intensity pixels and PRTCC displays the positions with SI scaling. The VLB tasks, particularly VBCIT and TOVLB, were revised to handle data weights in a more consistent fashion. And finally, the paraform task TAFFY was corrected in a variety of ways and otherwise "standardized".

CHANGE.DOC: 15May83–14Jul83

1268. *May 16, 1983*   VBPLT   *Lars*
Fixed bug in computing u and v.
Moved to OLD:, nowhere else.

1269. *May 17, 1983*   TAFFY   *Bill*
Corrected declaration in NEWHED of NCHTYP from real to integer.
Moved to OLD:, nowhere else.

1270. *May 17, 1983*   UVMAP   *Bill*
Changed format for zero spacing weight in MAPHIS to allow larger values.
Moved nowhere.

1271. *May 18, 1983*   YINIT   *Eric*

The call to YTVCIN was losing the file info showing that the TV was open. Save the variables in temporary locations.
Moved to OLD: this date, nowhere else.

1272. *May 18, 1983*   PLNPUT   *Bill*

Fixed bug which caused it always to write on the first plane.
Moved to OLD:, nowhere else.

1273. *May 19, 1983*   UV data reading routines   *Gary*

The routines that read UV data would handle only 6 coordinate axes instead of the advertised 7. The tasks/verbs with the bug were UVLOD, PRTTP, and TPHEAD. Some other reading routines had to be changed because of the new position of the special case keywords (*e.g.* SORT ORDER) in the table. The routines changed were:

VFUV.INC	DFUV.INC	EFUV.INC
UVLOD	IMLOD	GETCRD	FPARSE

Moved nowhere.

1274. *May 20, 1983*   TAFFY   *Bill/Fred*

Fixed a couple of bugs which caused trouble when the output row length differs from the input row length. Also it no longer, by default, marks the units UNDEFINE.
Moved to OLD:, nowhere else.

1275. *May 20, 1983*   TV routines   *Eric*

Several bugs have turned up in the TV routines:

YINIT   —   Declare and init N4 so that channel 1 may be selected.
AU5   —   Change calls to YINIT to calls to YZERO for TVCLEAR and GRCLEAR.
AU5C   —   Clear image header axes 2 - 7 before labeling, fix computation of offset for scaling wedge.
AU6C   —   Clear image header axes 2 - 7 before labeling.
Moved to OLD: this date, nowhere else.

1276. *May 22, 1983*   TOVLB   *JMB*

Fix a bug in TOVLB: when LTYPE is not set to 0 or 1, the record type flag in the Merge header is set to correl. coefficent instead of flux density. Now when LTYPE is not 0 or 1, the Merge records are marked as in units of flux density.
Moved to OLD:, nowhere else.

1277. *May 23, 1983*   PRTCC   *Bill*

Fixed to scale positions and to label and give a rational listing for Gaussian component files.
Moved nowhere.

1278. *May 23, 1983*   PRTGA   *JMB*

Created new task, PRTGA, which prints out the contents of gain (GA) extension files.
Moved nowhere.

1279. *May 24, 1983*   XXFIT   *Bill*

Will now write fitted or deconvolved Gaussians into a CC file. Also changed XXFIT.HLP.
Moved nowhere.

1280. *May 24, 1983*   ASCAL   *Bill*

Fixed not to blow up when doing amplitude calibration with one solution interval.
Moved nowhere.

1281. *May 24, 1983*   QIKHDR   *Eric*

A bug in the metric scaling caused the prefix to appear, but the max/min were not scaled.
Moved to OLD:, nowhere else.

1282. *May 25, 1983*   SUBHDR   *Eric*

Change call sequence to have the x and y increments in floating point. Required corresponding changes in COMB, FITTP, MCUBE, SUBIM, HDRWIN, CONVL, and CORMS. None need relinking now since their function has not actually changed.
Moved nowhere.

1283. *May 26, 1983*   ASCAL   *Bill*

Fixed bug in shifted point model in which the position offset was used as though it were in degrees.
Moved nowhere.

1284. *May 26, 1983*   UVLOD   *Bill*

Fixed so as not to subtract five days from the time if no antenna records are given in Export-format data.
Moved nowhere.

1285. *May 26, 1983*   ASCAL   *Bill*

Fixed VISCOR not to count flagging of cross polarized data if none exist in the data base.
Moved nowhere.

1286. *May 26, 1983*   UVFND   *Eric*

Test on UVRANGE contained bug causing it to print all data.
Moved to OLD:, nowhere else.

1287. *May 27, 1983*   XSMTH   *Eric*

New task to interpolate or convolve along the x axis. Interpolations are linear, cubic, quintic, and septic polynomials. Convolutions are with triangle, Gaussian, boxcar, and sinc functions with user-controlled width and support. Also an appropriate HELP file.
Moved nowhere.

1288. *May 27, 1983*   Clean beam display   *Eric*

It may be possible to have "clean" beam parameters in the header with no clean iterations. In such a case, the beam represents an approximate convolution size due to some other process. LSTHDR, MSGHDR, QIKHDR, PRTTP, and FITTP were revised to display the clean beam parameters even if the number of iterations is zero. The "product" is called DIRTY in this case.
Moved nowhere.

1289. *May 27, 1983*   HANSM   *Eric*

Delete all files. This task is replaced by the more general and standard XSMTH.
Moved nowhere.

1290. *May 27, 1983*   UVPLT   *Bill*

Fixed bug in binning option in which data were binned one bin low.
Moved to OLD:, nowhere else.

1291. *May 27, 1983*   TAFFY   *Eric*

Standardize and move to APLPGM:. Changed how it creates and writes to scratch files so
that integer cubes may be produced. Corrected numerous bugs in the DROP1 option.
Moved to OLD:, nowhere else.

1292. *May 27, 1983*   XSUM   *Eric*

New task to sum or average all pixels in each row which have not been blanked with magic
value blanking. It produces an N-1 dimensional image. Also the HELP file.
Moved nowhere.

1293. *May 29, 1983*   VBCIT   *JMB*

VBCIT now calculates ᴀIPS vis. weights like this: ᴀIPS weight $=$ CONST / (Merge amp
error bar)**APARM(5). When Merge amps are correl. coefficents CONST $=$ 2.5E-07, when
Merge amps are flux densities CONST $=$ 1.0.
Moved to OLD:, nowhere else.

1294. *May 29, 1983*   TOVLB   *JMB*

TOVLB calculates Merge error bars from ᴀIPS weights and newly added INPUTS parameter
FACTOR. FACTOR is the exponent specified by APARM(5) in VBCIT.
Moved to OLD:, nowhere else.

1295. *May 30, 1983*   GRLUTS   *Eric*

Correct test on button value for TVLUT use (as opposed to the TVMLUT use).
Moved nowhere.

1296. *May 30, 1983*   VBFIT   *Bill*

Modified to use input weights as the output weights (unless the data are flagged). Also
corrected message when the specified solution interval was too long and (?) fixed a bug
in the history routine by which it tried to copy the Clean map history file if BPARM(2) $=$
0.0.
Moved nowhere.

1297. *May 31, 1983*   NNLSQ   *Don*

New task. Decomposes spectra into Gaussian components by means of a non-negative least
squares algorithm. Needs a spectral-line cube which has had the frequency or velocity axis
brought to the front with TRANS. The task is quite experimental, but has been tried by
Jacqueline, who wants to use it more. Thus, it is being released in this experimental form.
The task uses the TAFFY paraform.
Moved to OLD: (for shipping to VLA), nowhere else.

1298. *May 31, 1983*   IMLOD   *Gary*

Fixed bug. Not flushing buffer after each plane. Maps would contain garbage in last few rows of each plane except the last one. Also modified handling of 8 bit per pixel maps to work faster.
Moved to OLD:. Should go to VLA and to 15MAY83 tape.

1299. *June 1, 1983*   UVMAP   *Bill*

Added timing calls to AP and changed some to APWAIT in an attempt to get rid of an apparent timing problem.
Moved nowhere.

1300. *June 2, 1983*   VBLIN   *JMB*

Fixed bug. VBLIN was not creating a correct AN file when stations specified in IN2FILE were not present in the INFILE input data set.
Moved to OLD:, nowhere else.

1301. *June 2, 1983*   AU8A   *Gary*

Verb EXTLIST not printing PIXRANGE correctly.
Moved nowhere.

1302. *June 1, 1983*   Verb numbering   *Eric*

We had run out of verb numbers to use to add verbs to existing verb subroutines. So I renumbered all of them to leave lots of room. Revised were POPSDAT, VERBS, VERBSB, VERBSC, and HELPS to deal with the new verb numbers. SGLOCA and AU2A had the acceptable SAVE / GET file version number raised to 3.
Moved nowhere.

1303. *June 1, 1983*   ADDBEAM   *Eric*

New verb: inserts beam parameters in header recording the old and new values in the history file. Also a HELP file.
Moved nowhere.

1304. *June 1, 1983*   GETHEAD, PUTHEAD   *Eric*

New verbs: read and replace parameters in the header using the appropriate FITS keyword to point at the parameter. Uses three new adverbs: KEYWORD, KEYVALUE, and KEYSTRNG. These verbs are in the new routine AU7A. Also new HELP files for the verbs and adverbs. The new routine required revision in VERBS, VERBSB, and VERBSC. The new symbols required revisions in POPSDAT, DAPL.INC, and CAPL.INC.
Moved nowhere.

1305. *June 3, 1983*   General HELPs   *Eric*

Update general HELP files UVPR, MAPETC, GENERAL, CATINFO, CUBE, and INDEX to reflect listings in the 15-May *AIPSLETTER*.
Moved nowhere.

1306. *June 3, 1983* ASCAL *Fred*

Modified SCFIND so that when APARM(9) = 0 is specified by the user, the program assumes that the solution interval length ought to be equal to the (deduced) integration time (plus a bit — 25%). In case that there has been heavy on-line editing (with data points tagged with averaged time tags) this change ought to prevent "stragglers" (points labeled with times differing slightly from multiples of the basic integration time) from being flagged due to lack of data tagged with the identical time. When the deduced integration time looks too large (>60 sec.), ASCAL assumes that 1 min. solution intervals are appropriate.
Moved nowhere.

1307. *June 3, 1983* IMLOD *Eric*

IMLOD is the only program in ЯIPS which can generate "multi-bit" blanked maps (from reading IBM format tapes). Since there seems to be no inclination to use this form of blanking in ЯIPS, it is hereby declared to be no longer supported. The support for it, present in many, but not all, routines may be removed at our leasure. IMLOD was revised to convert IBM tapes to "magic-value" blanking. In so doing, I cleaned up the typing a little in Gary's new routines and added support for axes labeled 'DEC-'.
Moved nowhere.

1308. *June 4, 1983* AU2 *Eric*

Change delay operation after killing task in ABORTASK before trying to clear scratch files. Put in loop with 0.2 sec delays and allow up to 50 until the task no longer shows as active. Also improved error checking in SUBS and minor typing change in POLISH.
Moved nowhere.

1309. *June 5, 1983* VBLIN *JMB*

Fixed bug in subroutine SETSTN that sometimes created a mangled AN extension file.
Moved to OLD:, nowhere else.

1310. *June 6, 1983* UVPLT *Bill*

Bin counters changed to R*4.
Moved nowhere.

1311. *June 6, 1983* VBFIT *Bill*

Fixed a bug in DEV affecting polarization data; time message in print option changed to give, days, hours, min, sec. If the least squares option is requested and the data has too many antennas (> 10), then the program bitches and quits.
Moved nowhere.

1312. *June 7, 1983* VM *Tim*

New TJC blood sucker - does MEM type deconvolution. Replaces H2MEM. Delete H2MEM Help and load modules.
Moved from VLA to NEW:, nowhere else.

1313. *June 7, 1983* PBCOR *Tim/Eric*

Fixed error in call sequence to CHCOMP.
Moved from VLA to NEW: and OLD:, nowhere else.

1314. *June 8, 1983*   POPS String handling   *Eric*

The language processor has been revised to provide much better support for character string variables. In particular, the operations SUBSTR (take a substring), !! (concatenate), LENGTH (return the position of the last non-blank), CHAR (convert number to string), and VALUE (convert the string to a number) have been added as function type verbs. Furthermore, the = (store) operator has been made to complain only if the last non-blank character will not fit in the storage space. The = (store) operator supports SUBSTR on the left-hand side of the =. The logical comparison operators = and <> (not equal) have been generalized to support strings and numeric arrays. The logical operations scalar = scalar, array = scalar, and array = array (in either order) are now supported. *POPS* variable type 9 was created to refer to string scalars which do not begin on a floating-point boundary (namely substrings). Files changed so far:

POPSDAT   — Add verbs SUBSTR, LENGTH, CHAR, VALUE, !!.

ASSIGN   — Recode to check real length of RHS and to support substrings on both RHS and LHS.

COMPIL   — Set appropriate priorities on SUBSTR, !!, and LENGTH.

CONCAT   — (NEW) Do concatanation by creating temporary hollerith and moving the characters.

EQUIV   — (NEW) Test for equivalence of *POPS* variables.

GETFLD   — Look for compound verb name !!.

MASSGN   — Allow substring type.

QUICK   — Perform all the new verbs calling CONCAT or EQUIV or doing the work itself. New types supported in READ and PRINT. Change stack tests at start.

Moved nowhere.

1315. *June 10, 1983*   VM   *Tim*

Fixed minor bug affecting initial image.
Moved nowhere.

1316. *June 10, 1983*   HELP files   *Eric*

Add new HELP files for SUBSTR, LENGTH, VALUE, and CHAR. Modify HELP POPSYM.
Moved nowhere.

1317. *June 10, 1983*   IMLOD   *Gary*

Bug in setting blanked pixel values.
Moved to VLA by Ed, to OLD: 13-Jun, nowhere else.

1318. *June 10, 1983*   MSGHDR, PRTTP   *Gary*

Bug in printing pixel type for 32 bit per pixel tapes.
Moved nowhere.

1319. *June 10, 1983*   UVLOD   *Eric*

Change program to refuse DOEOF TRUE unless the desired SOURCE, BAND, and QUAL are specified. Otherwise, the program can concatanate diverse data — which turned out to be the default! Change HELP file also.
Moved nowhere.

1320. *June 10, 1983* FITTP *Eric*

Correct bugs: failed to set default window for writing AN tables (ok on Vaxes, however),
failed to send error conditions back to the main routine to halt execution.
Moved nowhere.

1321. *June 10, 1983* Misc *Eric*

Because of Gripes, I also did today:

DETIME — Change HELP to mention SUBMIT and correct units.
AUT — Change verb CLRSTAT to clear and report all current catalog status flags.
CLRSTAT — Correct HELP file and change for above.
DESCR — Add task VM files of type HH for destroying scratch files in ABORTASK and SCRDEST.

Moved nowhere.

1322. *June 12, 1983* IMFIT, XXFIT *Eric*

Standardize typing a little, correct position handling to current standards.
Moved nowhere.

1323. *June 12, 1983* SUBIM *Eric*

Add test to make sure image is an MA file.
Moved nowhere.

1324. *June 12, 1983* TVLOAD *Eric*

Fix image catalog header to have transfer function in upper case letters.
Moved nowhere.

1325. *June 12, 1983* Batch *Eric*

Allow endbatch as well as ENDBATCH to terminate input to a batch work file. Changed
BBUILD and HELP files for BATCH and BATEDIT.
Moved nowhere.

1326. *May 26–27, 1983* KONTR *Arnold*

For mysterious reasons the new version (3.6) of KONTR was not included in the 15MAY83
update. Also HELPS and INPUTS were out of date. Change to accept coordinates RA–SIN
and DEC–SIN. New copy of KONTR.HLP (including INPUTS) moved also.
Moved from VLA to CVAX June 12, nowhere else.

1327. *June 12, 1983* KONTR *Eric*

Revise HELP and FOR files to meet the new rules that a logical is false when it has value
zero.
Moved nowhere.

1328. *June 12, 1983* TVLUT, TVMLUT *Eric*

Change GRLUTS to accept Button D as an exit request when it is looking for an old vertex
to be modified. This should make it easier for the users to get out when they are actually
done.
Moved nowhere.

1329. *June 12, 1983*   TVSLICE   *Eric*

New verb like **TVWINDOW**. It draws a diagonal line between 2 points to set **BLC** and **TRC** for making Slices. Routines changed include **POPSDAT.HLP**, **GRBOXS**, **AU5C**, and a new **HELP** file for **TVSLICE**.
Moved nowhere.

1330. *June 13, 1983*   AU8   *Eric*

Lower to upper case on extension type in **EXTDEST**.
Moved nowhere.

1331. *June 13, 1983*   SETWIN, SETBOX   *Eric*

Delete these procedures (also **SETNBOXS**) since they have been replaced by **TVWINDOW** and **TVBOX**. Change **POPSDAT** and delete the **HELP** files.
Moved nowhere.

1332. *June 13, 1983*   UVLOD   *Eric*

Change the adverbs **BITER** and **NITER** in this task to **BCOUNT** and **NCOUNT**. Revised **POPSDAT**, **DAPL.INC**, **CAPL.INC**, and the comments in **UVLOD**. Created new **HELP** files for **BCOUNT**, **ECOUNT**, and **NCOUNT**.
Moved nowhere.

1333. *June 14, 1983*   Help files   *Don*

Help files for **TKSET**, **TK1SET**, **TKPOS**, **TKVAL**, and **TKXY** revised so that they state that when making a thumbwheel setting on the Tektronix one should press any key *except* the **RETURN** key.
Moved nowhere.

1334. *June 14, 1983*   TASKS.HLP   *Don*

Changed name of **MEM** task from **APMEM** to **VM**.
Moved nowhere.

1335. *June 15, 1983*   FITTP   *Gary*

FITTP was still compensating for the 1/2 day error in subroutine **JULDAY** that was corrected some time ago. The times for UV data would be off by 1/2 day.
Moved nowhere.

1336. *June 15, 1983*   Helps   *Don*

CONVL   — Remove statement that **CONVL** demands power of 2 image size. Insert statement that it pads with zeroes.

COMB   — Add remark about Peak values being computed as maximum absolute value.

COMBCODE — Ditto.

Moved nowhere.

1337. *June 15, 1983*   VERSION   *Eric*

Change the VERSION adverb to Character*48 to allow more complicated expressions. This changes POPSDAT.HLP, DAPL.INC, SGLOCA (to SAVE / GET version 4), and AU2A (ditto). Develop new routine VERMAT which uses the user's VERSION and TXTMAT to determine which area is actually desired. VERSION can now be several areas in sequence separated by the | character and always includes the default area (NEW or OLD) at the end of the list. Routines changed to use VERMAT were AU1A, AU2, AU2A, HELPS, AUA, AIPSC, and BATER. For use by VERMAT, the call sequence to CHMATC was generalized forcing a corresponding change in AU7.
Moved-nowhere.

1338. *June 15, 1983*   HELPs   *Eric*

The HELP for VERSION was rewritten some to explain the enhanced meaning and use. The HELPs for EXPLAIN, GO, HELP, INP, INPUTS, SUBMIT, TGET, and TPUT were revised particularly in the placement of the comments on the VERSION adverb in the Inputs sections. HELP STOKES had the erroneous definition of 'RL' corrected.
Moved nowhere.

1339. *June 16, 1983*   Batch   *Eric*

To support the new tests on VERSION, there must be standard HELP files for AIPSC and AIPSB. These were typed with some useful info included. To prevent GO from causing some AIPS, AIPSC, or AIPSB to start (and to prevent access by WAITTASK and ABORTASK), AU2 and AIPSC (s.r. CU2) were changed to test for a task name beginning in AIPS.
Moved nowhere.

1340. *June 16, 1983*   Extension file copy   *Eric*

Our main routine for copying extension files, EXTCOP tried to create the needed output file even if the input file had troubles (i.e. had gotten deleted). This never seems to work since such files need parameters describing their structure in their headers. So EXTCOP was changed to avoid creating the dummy files and to report various error conditions via the IERR return code. EXTINI was made to close files it had opened and delete files it had created if an error occurs in EXTINI. To use these changes, the following programs were modified in their EXTINI error messages:

| VBCOR | VBFIT | SUBIM | VBMRG | VBCAL |

The following also now copy gain extension files:

| FUDGE | CLIP | AVER | UVFIX |
| UVSRT | UVSUB | DESCM | UVDGP |

DBCON and ASCAL had minor typing changes and need linking with EXTCOP as does ASCOR.
Moved nowhere.

1341. *June 16, 1983*   UVCOP   *Eric*

Also BTCOP: Change to copy gain files, change error messages, change to omit from the copy fully flagged visibility records unless told to copy them via a user adverb. Change the HELP files accordingly.
Moved nowhere.

1342. *June 17, 1983*   Extension versions   *Eric*

Put a warning about the limit of 255 versions of extension files in the HELP files for SLICE, CNTR, PCNTR, GREYS, SL2PL, GNPLT, and UVPLT.
Moved nowhere.

1343. *June 17, 1983*   PRTPL   *Eric/WaWa*

Correct bug in the file initialization routine which affects plotters with a number of points not equal to an integer multiple of the number of bits/word. Change routine to draw single width lines if the number of points on the x axis is less than 1101. Also change DPRT.INC and CPRT.INC.
Moved nowhere.

1344. *June 17, 1983*   Modcomp ZPHFIL   *Eric*

Create ZPHOLD from the old version of ZPHFIL and change ZPHFIL to use hexadecimal codes. MODCOMP now up to VAX revisions.
Moved nowhere.

1345. *June 17, 1983*   Batch priority   *Eric*

Modify timing of delays in FPS: versions of BPINIT and BPRLSE. Add calls to ZPRIO for batch tasks. Write new Z routine ZPRIO to bump batch task's priority to that of interactive tasks while they have the AP. The MODCOMP version is fully coded, but not tested. The VAX version is currently stubbed.
Moved nowhere.

1346. *June 17, 1983*   QUEUES   *Eric*

Change display of "finished" jobs to encompass 7 days (s.r. AUB) and add a bit to the HELP file.
Moved nowhere.

1347. *June 17, 1983*   UVMAP   *Eric*

Change HELP file and POPSDAT to reflect the decision to use the spheroidal convolving function as the default. Correct error message on no room for scratch files — it had arguments not supported in the FORMAT statement.
Moved nowhere.

1348. *June 19, 1983*   FPS directory   *Eric*

Create directory entries [.FPS.ZSUB.VMS] and [.FPS.ZSUB.MC4] to hold ZPRIO. Also create logical names FPSVMS and FPSMC4 in the ASSIGNP procedure (plus comparable entries in the VPOPS area update procedures). Correct FCOMRPL procedure to use new area.
Moved nowhere.

1349. *June 19, 1983*   APCLN   *Eric*

Fix test on window max to test in absolute value. Fix call to "BPRLS" to be the correct BPRLSE.
Moved nowhere.

1350. *June 19, 1983*   CURVALUE   *Eric*

Fixed AU6B to recognize images loaded by APCLN and its clones and to read their values from the TV memory rather than look (in vain) on disk.
Moved nowhere.

1351. *June 19, 1983*   PRTCC   *Eric*

Add to the header info on the type of components and on the total number of components in the file.
Moved nowhere.

1352. *June 19, 1983*   **UVLOD**   *Eric*

Fixed bug: the file compression was using the input **OUTDISK** rather than the disk actually used for the file. Also change for Export format to use the recorded RA and Dec as the "observed" RA and Dec. It's the best this format allows.
Moved nowhere.

1353. *June 19, 1983*   **UVFIX**   *Eric*

Standardize the typing a bunch. Remove attempts to clear a write status from the read file-and-get the read-status to clear.
Moved nowhere.

1354. *June 19, 1983*   **MOMFT**   *Eric*

Clean up typing in **HELP** file and in code. This is not enough however, to correct the routine to normalcy.
Moved nowhere.

1355. *June 20, 1983*   **SUBIM**   *Eric*

Change max/min initialization statements. For integer maps an overflow could occur when other header parameters were in error.
Moved nowhere.

1356. *June 20, 1983*   **VM**   *Tim*

New improved version uses AP more effectively. Also has a minor change which should speed convergence. New **INCLUDE** file : **DMAG1.INC**.
Moved nowhere.

1357. *June 21, 1983*   **IMLOD**   *Gary*

Another bug in new FITS section. Scaling factor was left at 0.0 when this value was not specified in tape header. It will now be set to 1.0.
Moved nowhere.

1358. *June 24, 1983*   **ASCAL**   *Fred*

Program would quit, and not state the reason for doing so, when the input file was lacking an antenna extension file. The cause was recently changed error codes in **EXTCOP**. I changed the variable **IER** in the call to **EXTCOP** in **SCFIND** to a dummy variable, **JER**, in order to cure the problem.
Moved nowhere.

1359. *June 24, 1983*   **Misc**   *Eric*

Minor changes: **IMVECT** to use TV parameters rather than hard coded 512s. **ICNECT** minor typing revisions. Fix bug in **MOMFT** that caused it to lose the **IN2CLASS** value (used for a dirty beam). **MOMFT** still does not give answers one would believe.
Moved nowhere.

1360. *June 24, 1983*   FFT   *Eric*

Major set of corrections: output headers are correct now for angle axes with UU and VV in wavelengths. The old x, y are saved in extra axes. It will now work on rectangular images — the transpose aspect had been forgotten in the I/O routines. Corrections between the reference pixel in the map plane and the UV plane are now done by a full phase shift (i.e. the UV plane images have unshifted phases).
Moved nowhere.

1361. *June 26, 1983*   TV parms   *Eric*

Add 2 parameters to the TV parameter common: TVXMOD and TVYMOD to describe how data may be loaded to the TV memories. Values 0 (not allowed), 1 (ok in AIPS numbering direction), and 2 (ok in reverse of AIPS numbering direction) are recognized. (The I^{2}S uses 1 for x and 2 for y.) Files changed include DTVC.INC and CTVC.INC to declare the parms, YTVCIN to set them, YGYHDR to support further values of IANGLE (in comments only), and ICNECT to use the parameters in line drawing.
Moved nowhere.

1362. *June 26, 1983*   UVMAP   *Eric*

Revise the TV display portion to use the new loading parameters. IF a Y-direction load is allowed, then the routine will transpose the UV-distribution into the "normal" (U increase to right, V increase up) form on the TV screen.
Moved nowhere.

1363. *June 27, 1983*   AU2   *Eric*

Correct an incorrect error branch direction. On an IO error in the Task Data file, it was possible to leave the Task Save file open.
Moved nowhere.

1364. *June 27, 1983*   GETNUM   *Gary*

Increased the maximum size of the exponent when GETNUM parses an E format number. The old maximum size was smaller than needed to prevent overflow. The new limits are needed for parsing double integer UV FITS tapes.
Moved nowhere.

1365. *June 27, 1983*   QIMVAL   *Eric*

New verb: does IMVAL without all the display of pixel position, pixel value, and coordinates. Revised: AU9, POPSDAT, IMVAL.HLP, and QIMVAL.HLP. This should be faster and less obnoxious than IMVAL when used repetitively in procedures. Also fixed AU9 to read floating images as well as integer (affects MAXVAL as well as the IMVALs).
Moved nowhere.

1366. *June 27, 1983*   IMEAN   *Eric*

Added display of the coordinates of the max and min pixel positions.
Moved nowhere.

1367. *June 27, 1983*   FITTP   *Eric*

Drop the adverb SNCUT (as a start on dropping it everywhere). Add the new adverb DOTABLE to instruct FITTP to write the clean components out as a table when true (the default). Also revised FITTP.HLP, POPSDAT, DAPL.INC, CAPL.INC, and DOTABLE.HLP.
Moved nowhere.

1368. *June 27, 1983*   TK procedures   *Eric*

Reincarnate the old TV procedures SETWIN *et al.* for use with the green screen (TK) graphics device. Change POPSDAT.HLP and create TKWIN, TKBOX, and TKNBOXS HELP files.
Moved nowhere.

1369. *June 28, 1983*   AXSTRN   *Eric*

Remove bug in ENCODE for large field angle axes and redefine "large field" to be more than 5 degrees.
Moved nowhere.

1370. *June 29, 1983*   FITTP   *Gary*

FITTP now writes out weights for COMPLEX axis types, uses separate scaling factors for all random parameters, and uses a separate scaling factor for weights that is put on a HISTORY card. Since no offset is used, weights will always have the correct sign even if this scaling factor is ignored. FITTP also has a new option to write double integers for the random parameters. Also changed were DFTP.INC, CFTP.INC, POPSDAT.HLP.
Moved nowhere.

1371. *June 29, 1983*   UVLOD   *Gary*

Changed to recognize the weight scaling factor in the history (HISTORY AIPS WTSCAL =). Also there were some bugs in the handling of double integer random parameters. Also changed were DUIN.INC, CUIN.INC, DFUV.INC, VFUV.INC.
Moved nowhere.

1372. *June 29, 1983*   ZPRIO, ZACTV8, ZACTV9   *Gary*

ZPRIO allows tasks to change their priority to interactive, or batch priority. ZACTV9 was changed so that AIPSB now runs at interactive priority in order to allow the subtasks it starts to raise their priority. ZACTV8 and ZACTV9 have been changed to initially give subtasks started from a batch task (AIPSB) batch priority.
Moved nowhere.

1373. *June 29, 1983*   VM   *Tim*

New version, minor bug fixed. Should converge faster.
Moved nowhere.

1374. *June 30, 1983*   CONCAT   *Eric*

Changed convention on concatenation of strings. Henceforth, trailing blanks will be dropped from both strings before the second is appended to the first.
Moved nowhere.

1375. *June 30, 1983*   CEIL, FLOOR   *Eric*

Add two new function verbs to *POPS*. CEIL returns the smallest integer $\geq$ the argument and FLOOR returns the largest integer $\leq$ the argument. Of course, the answer returned is floating point, but it has an integer value. Changed QUICK to implement these, added HELP files for CEIL and FLOOR, and added the verbs to POPSDAT. Also added adverbs to POPSDAT, DAPL.INC, and CAPL.INC in anticipation of the new message file handling. These are PRTASK, PRNUMBER, and PRTIME.
Moved nowhere.

1376. *July 1, 1983*   Message files   *Eric*

Changed message files to user owned. Change the philosophy to one of non-destructive printing and, user-optional, file clearing. On **EXIT** and **RESTART**, messages older than 3.0 days are deleted and the file compressed. Changed:

AIPS   —   Add error message on stack not empty at end of processing the input line.

AIPSC   —   Change calls to **PRTMSG** to print (on error) or delete (on success) the **AIPSC** messages.

AIPSB   —   Add stack not empty message, change calls to **PRTMSG** to print (not delete) the batch job messages.

AU1   —   Rewrite heavily changing calls to **PRTMSG** to print messages, clear messages (new verb **CLRMSG**), and delete old messages on **EXIT** and **RESTART**. Interpret adverbs for call to **PRTMSG**.

AU3A   —   Add message file compression (deleting old messages) and deletion if empty to **TIMDEST**.

CATCR   —   Create user message file if needed.

FILAI2   —   Automatically create user 1 message file only.

FILAIP   —   Ditto.

FILINI   —   Change **MS** file handling to support user number.

PRTMSG   —   Rewritten. Does separate delete/compress and print operations. Supports *POPS* number, user number, task name, priority, and time limit options. Purports to support **DOCRT = TRUE** also.

RDUSER   —   Set user to 1 before read.

DISKU   —   Include message files in misc. file sizes listed.

GTPARM   —   Set user to 1 before proceding.

MSGWRT   —   New message file names, store *POPS* number rather than user number, don't mess with file at all on message level 1.

ZPHFIL   —   Remove **MS** files from "public" file list.

Moved nowhere.

1377. *July 1, 1983*   HELP files   *Eric*

Make new **HELP** files for **CLRMSG**, **PRTIME**, **PRNUMBER**, and **PRTASK**. Revise old **HELP** files for **PRTMSG**, **TIMDEST**, **EXIT**, **RESTART**, and **PRIORITY**.
Moved nowhere.

1378. *July 1, 1983*   ASCAL   *Fred*

Removed a test in subroutine **CNV** which caused the program to reject any data on baselines i-j with $i > j$. As long as for all data in the file either $i < j$ or $i > j$, but not both, the program will be happy. **WSLOD** created the screwball data file. (*See # 1384, however.*)
Moved nowhere.

1379. *July 1, 1983*   UVMAP   *Eric*

Add to messages in **MAPOUT** about peak flux. It was saying nothing on the L map and treating the L beam as an **IMAP**.
Moved nowhere.

1380. *July 1, 1983*   CCMOD   *Walter*

Added **OPCODE** of 'POIN' which inserts a single δ function component in the **CC** file. Corrected error in field center calculation left over from **CC** file format change.
Moved nowhere.

1381. *July 1, 1983*   WSLOD   *Walter*

Switched order of antenna numbering since it seemed to upset ASCAL.
Moved nowhere.

1382. *July 1, 1983*   EXTCOP   *Eric*

The comments to EXTCOP were wrong about the needed buffer sizes. Thus all routines
trying to copy Gain files did so with overlapped buffers. Corrected EXTCOP comments and
tasks UVCOP, BTCOP, FUDGE, CLIP, AVER, UVFIX, UVSRT, UVSUB, DESCM, and UVDGP.
Moved nowhere.

1383. *July 2, 1983*   AU5   *Eric*

Add error check on COLOR for TVON, TVOFF, etc.
Moved nowhere.

1384. *July 2, 1983*   ASCAL   *Fred*

I undid the change described in #1378, since there were other places in the program than
where I had looked where it was assumed that the first mentioned antenna is always the
lower numbered one.
Moved nowhere.

1385. *July 3, 1983*   VM   *Tim*

New version, takes different step length, also new default entropy., new EXPLAIN file.
Moved nowhere.

1386. *July 4, 1983*   GNPLT, ASCOR   *Eric*

These are grossly non-standard, but still they should quit if there is an error reading the
Gain file. I've added some tests and branches to do this.
Moved nowhere.

1387. *July 4, 1983*   RECAT   *Eric*

New service program: it rebuilds a directory record in the catalog file on the assumption
that the header records in that file are ok.
Moved nowhere.

1388. *July 4, 1983*   ASCAL   *Eric*

The Gain files are coming out much too big. So I've changed the initial size to 2 granules
and we'll let it expand as needed.
Moved nowhere.

1389. *July 4, 1983*   AU3A   *Eric*

Found a bug in TIMDEST causing it to fail to delete TGET / TPUT and SAVE / GET files. It's
fixed now!
Moved nowhere.

1390. *July 5, 1983*   CLIP   *Eric*

There was an error in the looping for addressing spectral-line visibilities. Things were
rearranged and a proper reference to the kind of Stokes added. In the case of both
polarization and line channels, cross hands are flagged due to parallel hand flagging on
a channel-by-channel basis now.
Moved nowhere.

1391. *July 5, 1983*   BSCAL   *Fred*

This is a new task. It is identical to ASCAL, except that the data arrays are dimensioned large enough to accommodate 63 antennas (rather than 28, as in ASCAL) and the gain file records are each of length 1536 bytes (rather than 1024 bytes, as in ASCAL). This modified version of ASCAL is needed in order to be able to self-calibrate Clark Lake data (512 correlators used to correlate data from 48 banks of 15 antennas each). To avoid confusion, the gain files created by BSCAL are given the type designation 'GN' rather than 'GA'. (48 antennas would require gain records longer than 1024 bytes, and 63 antennas would require exactly 1530 bytes — that's why the number 63 was chosen.) At present, BSCAL is incompatible with ASCOR, GNPLT, and PRTGA because of the longer gain records. Probably I'll create new versions BSCOR, BNPLT, and PRTGB to handle the longer gain records. BSCAL is not intended to supersede ASCAL because data arrays large enough to handle 1953 baselines (rather than 378) are required and will be too large for the program to fit on the MODCOMP. Therefore, some new version of ASCAL to write 1536 byte gain records also will be required, to reduce the number of kindred programs from eight to five.
Moved nowhere.

1392. *July 5, 1983*   GRIPR, BATER   *Eric*

Correct these routines to support the new PRTMSG. Add verb CLRMSG to both and the DOCRT option for PRTMSG. Revise routines: PRTMSG to allow DOCRT for this *POPS* number and SCHOLD to include the proper common and to work for this *POPS* number. (I don't know how SCHOLD worked before the common was included.) Also created a GRIPE.COM file for the VAX.
Moved nowhere.

1393. *July 6, 1983*   NEWTASK   *Eric*

Rewrite the HELP file called NEWTASK to bring it up to date. Add procedures LCOMLNK and LAPCLNK to the [.LOCAL] area.
Moved nowhere.

1394. *July 6, 1983*   MV2C06MS   *Eric*

Update the message file description in Volume II of the manual.
Moved nowhere.

1395. *July 6, 1983*   UVMAP   *Eric*

There was an error in the TV display routine which was most visible on small maps. The routine which selects into which row data are gridded applied the frequency correction twice, making a slight error. The gridding itself seems to make errors for points very close to the edge. This was prevented by excluding all points within a support radius of the edge — a better solution could be found, however. There are several questionable aspects of the handling of spectral line UV data bases. These were not altered today.
Moved nowhere.

1396. *July 6, 1983*   TKSLIN   *Gary*

There were accuracy problems in the calculation of the ranges for the y axis in verb TKSET that could lead to slight differences from the values used in TKSLICE. These small values could occasionally lead to big differences when scaling was determined (milli vs. micro for example).
Moved nowhere.

1397. *July 6, 1983*   CORMS   *Eric*

Correct typo in HELP file.
Moved nowhere.

1398. *July 7, 1983*   UVPLT   *Eric*

Change defaulting conventions. Now set default axis plot types individually and allow fixed scale even if the types are defaulted, but only if BPARM(3) > 0 and BPARM(4) $\neq$ BPARM(5) and BPARM(6) $\neq$ BPARM(7). Fix HELP file for this.
Moved nowhere.

1399. *July 7, 1983*   UVFND   *Eric*

Add OPCODE 'UVBX' to print all points in a rectangular area of the uv plane. Change DUVF.INC, CUVF.INC, and the HELP as well.
Moved nowhere.

1400. *July 7, 1983*   ZMOUNT   *Gary*

This routine now handles "tape already mounted" conditions in a more sophisticated way. The routine will print
TAPE DRIVE ALREADY MOUNTED BY THIS PROCESS   or
TAPE DRIVE STILL ALLOCATED BY PROCESS xxxx.
If the AIPS process does not have enough privilege to find the name of the process that has the tape drive allocated (this will occur if the process is in another group) then ANOTHER USER is substituted for the process name.
Moved nowhere.

1401. *July 7, 1983*   TVRESET   *Eric*

Add procedure TVRESET to POPSDAT.HLP and create a new HELP file. The procedure turns off all gray memories, clears all graphics planes, turns off zoom and pseudocolor, turns on TVCHAN, and resets TVCHAN's look-up table and scroll.
Moved nowhere.

1402. *July 8, 1983*   Position routines   *Eric*

Revise XYVAL, XYPIX, FNDX, and FNDY to handle the linear angle axis case correctly.
Moved nowhere.

1403. *July 8, 1983*   UVLOD, FITTP   *Gary/Eric*

Both routines had problems with handling flagged data since we started including weights on tape (see entry 1370). FITTP was blanking all three complex values. It now blanks the first two, but leaves the weight as the original negative value. UVLOD was replacing the three blanked values with 'INDE', but now replaces blanked values with zero.
Moved nowhere.

1404. *July 11, 1983*   SL2PL   *Gary*

Bug in labeling the *y* axis values when the user input PIXRANGE is re-adjusted by the task because of unreasonable values.
Moved nowhere.

1405. *July 12, 1983*   UVMAP   *Eric*

The program was requiring that the frequency correction for "Stokes" L be positive when only L was being mapped.
Moved nowhere.

1406. *July 12, 1983*   CTYPE   *Eric/Ed*

New adverb added to AIPS. Used by IMFIT to convey the component type. It is a scalar of dimension 4.
Moved nowhere.

1407. *July 12, 1983*   IMFIT   *Ed*

The task IMFIT has been extensively rewritten and the FORTRAN code has been put in NOTPGM:. A new HELP file also.
Moved nowhere.

1408. *July 12, 1983*   PRTPL   *Gary*

Added option to make more than one copy. Changed: PRTPL, ZDOPRT (VAX), ZDOPRT (MC4), and PRTPL.HLP.
Moved nowhere.

1409. *July 12, 1983*   VM   *Tim*

New version, cleverer and neater.
Moved nowhere.

1410. *July 12, 1983*   IMMOD, UVMOD   *Eric Nelson*

New tasks, allow modelling of data and images. Also HELP files with EXPLAINs.
Moved nowhere.

1411. *July 13, 1983*   UVPLT   *Bill*

Fixed bug which caused the value given for the rms binned value to correspond to the minimum size of the vertical height of the symbol.
Moved nowhere.

1412. *July 14, 1983*   AU8   *Eric*

Correct format for user numbers $>$ 999 on the GETNAMEs.
Moved nowhere.

1413. *July 14, 1983*   UVPLT   *Eric*

On self-scale, make the plot 2 per cent larger to avoid having points fall off the plot.
Moved nowhere.

1414. *July 14, 1983*   PRTPL TKPL   *Gary*

Bug in the arc sec per mm part when the x-axis increment differed from the y-axis increment. Also the case where a user has created the plot file using a non-default XYRATIO has been modified. PRTPL or TKPL will now use the user input ASPMM to scale the x axis and use the XYRATIO to determine the (possibly different) scaling to use for the y axis and print both scale factors if different.
Moved nowhere.

1415. *July 14, 1983*   Installation procedures   *Gary*

Changes required because of the addition of another subdirectory and user owned message files.

FILAI2.FOR	FILAIP.FOR	ILOAD.COM
ICOMPAP.COM	ICREATE.COM	TRANSPRT.COM

Moved nowhere.

1416. *July 14, 1983*   BATQ   *Eric*

Error test on user number during OPEN was restricted to users < 1000. Now employs the USELIM parameter.
Moved nowhere.

1417. *July 14, 1983*   EXPLAIN   *Ed*

The following tasks have had their EXPLAIN files added to the HELP area:

APCLN	APMAP	ASCAL	CNTR	DBCON	MCUBE
TOVLB	UVLOD	UVMAP	UVSRT	UVSUB	UVPLT
VBCAL	VBCIT	VBCOR	VBFIT	VBLIN	VBMRG
VM	IMFIT	PCNTR			

Moved nowhere.

1418. *July 15, 1983*   EXPLAIN   *Ed*

The following tasks have had their EXPLAIN files added to the HELP area:

ALLDEST	AVER	AXDEFINE	BATCH	BTCOP
CITCC	CNVRT	CORFQ	DESCM	GNPLT
PBCOR	REDIT	RUN	WSLOD	

Moved to OLD (15JUL), nowhere else.

1419. *July 15, 1983*   EXPLAIN   *Bill*

Corrected minor errors in VBCAL and TOVLB EXPLAIN files.
Moved to OLD (15JUL), nowhere else.

1420. *July 15, 1983*   General HELPs   *Eric*

All of the General HELP files (e.g. UVPR, INDEX, MAPETC) have been updated to correspond to the *AIPSLETTER* of 15-July.
Moved to OLD (15JUL), nowhere else.

1421. *July 15, 1983*   VM   *Tim*

Fixed bug affecting the value of ALPHA used immediately after a restart.
Moved to OLD (15JUL), nowhere else.

1422. *July 15, 1983*   EXPLAIN   *Ed*

More explain files installed in HLPFIL:

CCMOD	MAXFIT	MODIFY	PHCLN
PROFL	PRTDR	SLFIT	SL2PL
SPY	TRANS	UVCOP	UVEXP

Moved to OLD (15JUL), nowhere else.

Changes: 15-Jul-1983 version of AIPS

This publication is intended to provide corrections and updates to the *AIPS COOKBOOK* in order to fill the gap between publication dates. We also hope that users will annotate their current copies of the *COOKBOOK* rather than request a new copy at each publication date.

This Section will provide details of the changes to the 15-Jan-1983 *COOKBOOK* caused by changes in software between the 15-May-1983 and 15-Jul-1983 versions of *AIPS*. The changes during this period, although numerous, are minor and mostly have little affect on the *COOKBOOK*. The change to the Message file handling is perhaps the most significant. A new edition reflecting the 15-July-1983 release of *AIPS* is now being prepared for publication.

Page 10, § 3.1.4

Replace text at top of page 10 with:

Other inputs, as well as the last 3, are defaulted sensibly. Use:

> HELP *xxx* C$_R$

where *xxx* is a parameter name to get useful information on what they specify. The default UV convolution function is a spheroidal function (XTYPE, YTYPE = 5) and has very good characteristics for suppressing aliasing. Check that you are satisfied with the inputs by:

> INP C$_R$

then:

> GO C$_R$ will run UVMAP.

Page 11, § 4.1

Replace second paragraph of § 4.1 with:

Each entry in the message file has an associated priority: 0 for user input, 2 for "unimportant" messages, 5 for general output messages, and 8 for serious error messages. To set the priority level for hard copy output of messages type:

> PRIORITY *np* C$_R$ where *np* is the desired minimum level.

before running PRTMSG; then only messages at this level or above will be listed on the printer. If *np* is $\leq$ 5, then messages at level 0 are also printed. PRTMSG has additional parameters which allow you to limit the display by program name, time, and *AIPS* number and to have the display on your terminal rather than on the printer. PRTMSG does not delete messages from your file. Use:

> CLRMSG C$_R$ to delete messages and compress the file.

Note that CLRMSG supports parameters like those of PRTMSG. Messages older than 3.0 days are automatically deleted from your file when you EXIT from AIPS.

Page 14 § 4.4

Change the third paragraph to:

The verb TIMDEST will destroy all data sets which have not been used in some minimum time interval. In standard versions of *AIPS*, this time interval is 14 days. TIMDEST will also delete messages older than 3 days from all users' message files. The parameters of TIMDEST allow you to request less stringent cutoffs. Your local *AIPS* Manager may set other limits on the time ranges.

Page 14 § 4.5

Renumber old § 4.5 to § 4.6, add new § 4.5:

4.5. Moving and compressing files

There are two tasks which may be used to move files from one disk to another with options to reduce the size of the files. They are **SUBIM**, used on maps, and **UVCOP** used on UV data sets. **SUBIM** uses the parameters **BLC** and **TRC** to select a portion of the input image. If these parameters are defaulted (set to 0), the entire image is copied. Clean component and history extension files are copied as well, but plot and slice extensions are not. Similarly, **UVCOP** uses the parameter array **BPARM** to select a range of UV-sample times to copy. If **BPARM** is zero, all data are copied except for completely flagged records. If you have done extensive data editing, **UVCOP** may produce a rather smaller data set even when the whole time range is copied. Antenna and gain extension files are copied, but plot files are not.

Page 17 § 5.1.2

Replace § 5.1.2 with:

The list of CLEAN components associated with a CLEAN map can be printed by:

> INDI *n* ; GETN *ctn* ^CR   where *n* and *ctn* select the disk and catalog numbers of the CLEAN map.

> BITER *n1* ; NITER *n2* ; XINC *n3* ^CR   to list CLEAN components from *n1* to (*n1* + *n2* - 1) with increment *n3*.

> GO PRTCC ^CR   to execute the task.

Page 19 § 5.3

Replace the first paragraph of § 5.3 with:

There are many programs which aid in the processing, display and editing of UV data. This software is listed by: -

> HELP UVPR ^CR

and in § 13 of the *COOKBOOK*. In particular, there are facilities in **ASCAL** and **CLIP** to flag UV data in *AIPS* based on deviations from specified norms. There is also a task, **UVFLG**, which allows flagging and unflagging by antenna-IF or by correlator. Type HELP ASCAL, HELP CLIP, or HELP UVFLG for details. The task **UVPLT** plots various combinations of UV data—type HELP UVPLT ^CR for details. The task **UVFND** is also recommended for printing out suspicious portions of the data base. Note that **CLIP** examines the data correlator by correlator, but **UVFND** converts the data to Stokes components (using the same criteria as **UVMAP**) before checking that the amplitudes are in range. To examine the parallel-hand correlators individually, use STOKES 'RL' in **UVFND**.

Page 19 § 5.3

Add a third paragraph of § 5.3:

Another method for finding suspicious data is provided by the task **FFT**. Transform your map back into the (*u,v*) plane by running **FFT** and then display the results on the TV. Verbs like **CURVALUE** and **IMPOS** will help you find the U and V values for abnormally high cells. Then **UVFND** with OPCODE 'UVBX' will print the data surrounding these cells and **UVFLG** can be used to delete the bad data. This method is particularly effective on the residual maps from CLEAN. (You can instruct **APCLN** to put out a residual map by setting **BMAJ** < 0.)

Page 23 § 6.3

Add to the list of verbs:

> TVSLICE C_R   works like **TVWIN** above to set **BLC** and **TRC**. Instead of a rectangle however, the display shows a diagonal line which is useful for setting the ends of slices.

Page 26 § 7.4

Change the second paragraph of § 7.4 to:

To generate a slice:

> TASK 'SLICE' ; INP C_R   reviews the inputs to **SLICE**.

Use **INDISK** and **GETNAME** to select the input image. The bottom left (**BLC**) and top right (**TRC**) end points for the slice can be specified conveniently using the TV cursor if the map to be sliced is first displayed on the TV with **TVLOD** or **TVALL**. To set these points with the TV, type:

> TVSLICE C_R

then set the TV cursor to the desired beginning (**BLC**) point for the slice, press any trackball button, and repeat for the ending (**TRC**) point for the slice. Note that, for slices, **BLC** need not be below or to the left of **TRC**. Finally:

> GO C_R   to generate the slice file.

Page 29 § 8.2

Change § 8.2 to:

The task **IMEAN** is used to determine the statistics in the map over a specified rectangular area. It derives the minimum and maximum value and location, the rms, the average value and an approximate flux density within the area (if it is a CLEANed map). A typical run might be:

> TASK 'IMEAN' ; INP C_R   to list the input parameters.

> INDI n ; GETN ctn C_R   where n and ctn select the disk and catalog numbers of the relevant map file.

> BLC $n1$, $n2$; TRC $m1$, $m2$ C_R   to set the window from $(n1,n2)$ to $(m1,m2)$ — or use **TVWIN** with the cursor on the TV.

> DOHIST TRUE C_R   to make a plot file of the pixel histogram.

> PIXRANGE $x1$, $x2$ C_R   to set the range of the histogram from $x1$ to $x2$.

> NBOXES n C_R   to set the number of boxes in the histogram.

> GO C_R   to run the task.

The statistics will appear on the *AIPS* monitor. For a hard copy type:

> PRTASK 'IMEAN' ; PRTMSG C_R   with **PRIO** $\leq$ 5.

To see the histogram of the intensities, type one of:

> GO TKPL C_R   to display histogram on the Tektronix.

> GO PRTPL C_R   to display histogram on the printer/plotter.

Page 31 § 8.3.3

Change the second paragraph of § 8.3.3 to:

When the task gets an answer, it will be displayed on the *AIPS* monitor, recorded in the message file, and recorded in the slice file itself. To get a hard copy of the answers:

> PRTASK 'SLFIT' ; PRTMSG Cr to print the message file.

To display the results on the Tektronix 4012, enter:

> TKSLICE Cr to replot the slice.

> TKAMODEL Cr to add the model results to the plot.

> TKARESID Cr to add the residuals (data - model) to the plot.

To get a higher quality plot of the results:

> DORES TRUE ; DOMOD TRUE Cr to request the model and the residuals.

> DOSLICE FALSE Cr to leave the slice data out of the plot.

> TASK 'SL2PL' ; GO ; WAIT Cr to make a plot file and wait for it to be complete.

> GO PRTPL Cr to display it on the printer/plotter.

Page 34 § 9.5

Change the third paragraph of § 9.5 to:

The task MOMNT will calculate a set of moment maps (from moment 0 to moment 3) from a data cube. The task SMOTH will convolve each image in a cube as desired in order to obtain better signal to noise ratios on extended emission. CONVL performs a similar function with an alternate set of inputs. x-axis smoothing may be done more quickly with the task XSMTH. XSMTH also does interpolation and regridding if desired. Smoothed maps assist in determining the boundaries of sources as windows to be used in subsequent spectral line analysis. For example, the smoothed cube could be used to set the CLIP limits in task COMB to be applied to the unsmoothed cube. Note that COMB will accept a cube as the first input map and a single, matching plane as the second map. Thus, you can use COMB to subtract the continuum from the cube or to convert the cube to optical depth (for example). The tasks XSUM and NNLSQ also perform interesting operations.

Page 34+ § 9.6

Change the third paragraph of § 9.6 (see AIPSLETTER of 15-May-1983) to:

You may also modify the header in more drastic ways. The verb AXDEF allows you to create a new axis in your image or to revise completely the description of an existing axis. The verb RESCALE allows you to change the scale and zero level of your images. The verb ADDBEAM allows you to insert a new clean beam in the header even of dirty maps. The verb GETHEAD allows you to fetch any header value into an AIPS parameter. The verb PUTHEAD allows you to store values in almost every header location. Type EXPLAIN GETHEAD ; EXPLAIN PUTHEAD Cr for details.

Page 35 § 10.2

Change the third and fourth paragraphs to:

For massive deletions — the kind we hope you will use when you depart — use:

> ALLDEST $\circ_R$ to destroy all data files which are consistent with the inputs to ALLDEST.

And to clear all your messages and compress your file, after using PRTMSG to print any you want to keep, use:

> PRNUM -1 ; PRTASK ' ' ; PRTIME 0   to do all messages.

> CLRMSG $\circ_R$ to do the clear and compress.

DO NOT DELETE OTHER USERS' DATA OR MESSAGES WITHOUT THE EXPLICIT PERMISSION EITHER OF THE OTHER USER OR OF THE SYSTEM MANAGER. Old data and messages belonging to any user (including you) may be deleted by the verb TIMDEST. The definition of "old" is set by the local *AIPS* Manager, who must be consulted about the rules for invoking TIMDEST.

Page 36 § 10.4

Shorten § 10.4 to:

To exit from AIPS type:

> EXIT $\circ_R$

Please clean up any papers, tapes, etc. in the area around your terminal before you go.

Page 46 § 12.7

Change last paragraph of § 12.7 to:

At present, batch jobs are run after a delay of about 10 minutes, on a first-come-first-served basis. However, batch jobs which use the array processor are forbidden batch queue number 1 and are postponed until evening in the other queues. After your job has been submitted successfully, type:

> QUEUES $\circ_R$ to list jobs in the queue.

Note the SUBMIT TIME for your job. It will not start before that time. The messages generated by your batch job will be printed automatically. They are kept in your message file, however, and can be reprinted or examined later via PRTMSG with PRNUMB set to the *AIPS* number of the batch queue.

Section 13

Add to UVPR, Page 49:

UVMOD	T	Rescale UV data while adding model component	§
BSCAL	T	Self-cal uv data (> 28 antennas)	§
PRTGA	T	Print gain files	§

Change MAPETC, Page 50 H2MEM entry to:

VM	T	Make a map using a maximum entropy-related method	§

Add to MAPETC, Page 50:

BSCAL	T	Self-cal uv data (> 28 antennas)	§
IMMOD	T	Rescale map while adding model component	§
PRTGA	T	Print gain files	§

Change APTASKS, Page 50 H2MEM entry to:

VM	T	Make a map using a maximum entropy-related method	§

Add to APTASKS, Page 50:

BSCAL	T	Self-cal uv data (> 28 antennas)	§

Change GENERAL, Page 51 RESTART and EXIT entries to:

RESTART	V	Restart AIPS	§
EXIT	V	Exit from AIPS	§ 2.3, 10.4

Add to GENERAL, Page 51:

CLRMSG	V	Delete messages from the user's message file	§ 4.1, 10.2

Add to CATINFO, Page 52:

ADDBEAM	V	Insert clean beam values in header	§ 9.6
GETHEAD	V	Fetch header value into adverb	§ 9.6
PUTHEAD	V	Put adverb value into header	§ 9.6

Add to TVGEN, Page 52:

TVRESET	P	Reset TV functions leaving image on	§

Add to TVINTER, Page 53:

TVRESET	P	Reset TV functions leaving image on	§

Change CURSOR, Page 54 SETBOX, SETNBOX, and SETWIN entries to:

TVSLICE	V	Set slice end points with graphics display	§ 6.3
TKBOX(I)	P	Set I^{th} cleaning box using cursor on TEK	§
TKNBOX(I)	P	Set I cleaning boxes using cursor on TEK	§
TKWIN	P	Set BLC and TRC using cursor on TEK	§

Add to ANALYSIS, Page 56:

XSMTH	T	Smooth data along x-axis only	§ 9.5
NNLSQ	T	Deconvolve spectral components	§ 9.5
QIMVAL	V	Get image intensity into adverb, no messages	§
XSUM	T	Produce n-1 dimensional image summing x-axis	§ 9.5

Add to DELETE, Page 56:

CLRMSG	V	Clear messages from user's message log file	§ 4.1, 10.2

Delete from CUBE, Page 57 HANSM entry

Add to CUBE, Page 57:

NNLSQ	T	Deconvolve spectral components	§9.5
XSMTH	T	Smooth data along x-axis only	§9.5
XSUM	T	Produce n-1 dimensional image summing x-axis	§9.5

Add to INDEX, Page 60:

ADDBEAM	V	Insert clean beam parameters in header	§9.6
BSCAL	T	Self-cal UV data (> 28 antennas)	§
CEIL	V	Return lowest integer ≥ argument	§
CHAR	V	Convert a number to a string	§
CLRMSG	V	Delete messages from user's message file	§4.1, 10.2

Add to INDEX, Page 61:

FLOOR	V	Return highest integer ≤ argument	§
GETHEAD	V	Fetch a header parameter value	§9.6

Delete from INDEX, Page 62 the H2MEM and HANSM entries:

Add to INDEX, Page 62:

IMMOD	T	Rescale map while adding model component	§
LENGTH	V	Return number of characters in string	§
NNLSQ	T	Deconvolve spectral components	§9.6

Add to INDEX, Page 63:

PRTGA	T	Print gain files	§
PUTHEAD	V	Put adverb value into header	§9.6
QIMVAL	V	Get image intensity no messages	§

Delete from INDEX, Page 64 the SETBOX, SETNBOX, and SETWIN entries.

Add to INDEX, Page 64:

SUBSTR	V	Reference portion of character string	§
TKBOX	P	Fill any BOX using TEK cursor	§
TKNBOX	P	Fill BOXes using TEK cursor	§

Add to INDEX, Page 65:

TKWIN	P	Fill BLC, TRC with TEK cursor	§
TVRESET	P	Reset TV functions leaving image on	§
TVSLICE	V	Set slice end points with graphics display	§6.3
UVMOD	T	Rescale UV data while adding model component	§

Add to INDEX, Page 66:

VALUE	V	Return numeric value of string	§
VM	T	Make map with maximum entropy-related method	§
XSMTH	T	Smooth data along x-axis only	§9.5
XSUM	T	Produce n-1 dimensional image summing x-axis	§9.5
!!	V	Concatenate strings	§

In POPSYM, Page 58 change logical expression entries = and <> to:

=	A = B	A equal B (numeric or string)	§
<>	A <> B	A not equal to B (numeric or string)	§

Add to POPSYM, Page 58

String expressions ——

!!	A !! B	String = string A followed by string B	§
SUBSTR	SUBSTR(A,i,j)	String = chars i through j of string A	§
LENGTH	LENGTH(A)	Position last non-blank in A	§
CHAR	CHAR(A)	Convert number A to string	§
VALUE	VALUE(A)	Convert string A to number	§

Add to POPSYM, Page 59

CEIL(A)	X = CEIL(A)	Lowest integer $\geq$ A	§
FLOOR(A)	X = FLOOR(A)	Highest integer $\leq$ A	§

Page 94 § Z.3.7.4

Change the third paragraph of § Z.3.7.4 to:

The MODCOMP reacts to devices which are not ready by issuing an error message to the Operator terminal and placing the device in a software "Off Line" status. To bring the device back on line, first mount the required tape, add the needed paper, or whatever. Then turn the power on and type on the Operator terminal:

CTRL A	to get OC's attention.
/ON LPP C_R	to turn on the line printer.
/ON MT1 C_R	to turn on tape drive 1.
/ON MT2 C_R	to turn on tape drive 2.
/ON SP C_R	to turn on the plotter part of the Varian.

AIPS Order Form

1. Name and address of Contact Person: _____

   _____

   _____

   _____

   _____

   _____

   _____

2. ☐ new order   ☐ reorder
   (*N.B.*: If you have received a plastic mailing container from us, we insist that you use it for a reorder.)
   Version of AIPS currently running: _____

3. Tape type desired:
   ☐ VAX/VMS BACKUP
   ☐ Simple blocked card images
   ☐ FITS compressed text format

4. AIPS version desired:
   ☐ 15-Jul-1983
   ☐ 15-Sep-1983

5. Tape density desired:
   ☐ 800 bpi
   ☐ 1600 bpi
   ☐ 6250 bpi

6. There are Gripes on the tape:
   ☐ Yes
   ☐ No

Send order form to: AIPS Group
                         National Radio Astronomy Observatory
                         Edgemont Road
                         Charlottesville, VA   22901   USA

To:
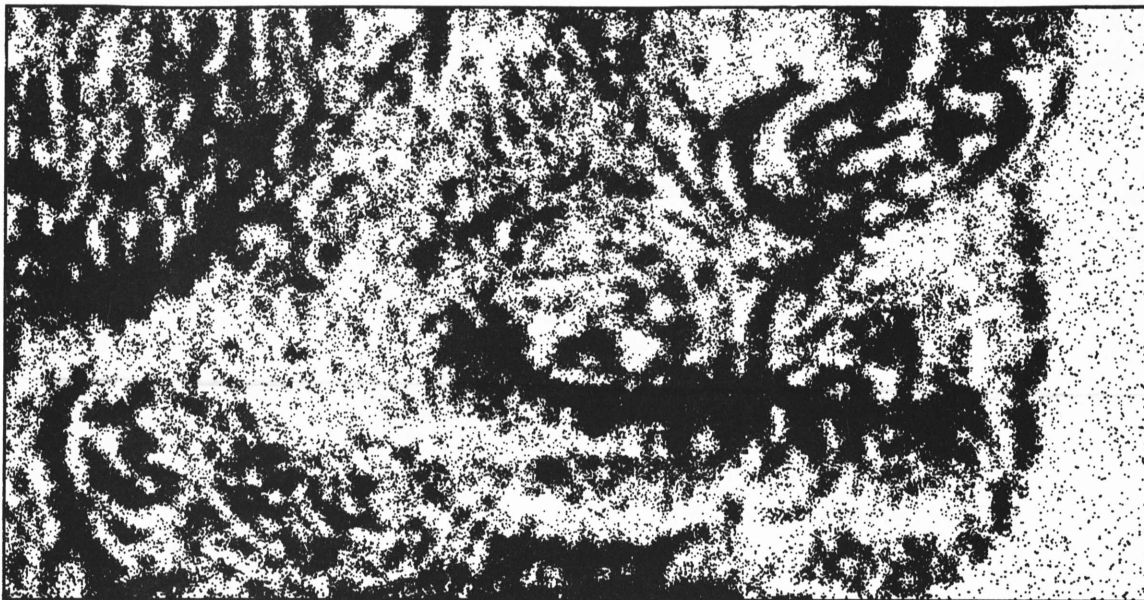
A I P S L E T T E R

Volume III, Number 5: September 15, 1983

Coming attractions

The new edition (15SEP83) of the *COOKBOOK* is almost ready to go to press. We had intended to bring it out based on the 15JUL83 release, but travel plans and the the development of new software delayed it and made our present plans seem attractive.

Bill Cotton has been working on a new task, which is currently called MX. It is a "MIRVed" combination of UVMAP, APCLN, and UVSUB. In other words, it works on up to 16 large fields and multiple spectral channels simultaneously. This approach is capable of destroying *any* computer system, but is expected to be particularly suitable for wide-field imaging problems and will probably be faster than the standard sequence for snapshot observations. MX has made maps and is likely to be released for 15NOV83. Another long-awaited task currently under development is BLANK. It will provide numerous batch-like methods and at least one TV-interactive method for blanking the source-free regions of an image. Detailed design specifications for BLANK have been drawn up and some of the trickier subroutines have been written and applied to easier problems (see verb TVSTAT below). Some effort has also been invested so far in a revision of the handling of ℜIPS file names. In the near future, we hope to support some "wild-card" conventions for both input and output names and to revise the meaning of input and output sequence number 0.

For almost a year now the ℜIPS Group has been working on the project of preparing a version of ℜIPS to run under the UNIX operating system. This project was stimulated by David Garrett's pioneering demonstration at the University of Texas (see the 15MAY82 *AIPSLETTER*). Our project has been done on the IBM 4341 under Amdahl's UTS system, which is approximately a Version 7 UNIX (or is it System III?). UTS itself seems to work well. However, the Fortran compiler had a number of bugs when we first received it a year ago. We reported them and they were fixed, but that only uncovered other bugs. They too have been fixed and still more bugs were discovered. The process does seem to be converging, but the rate is frustratingly slow. During the last three weeks, AIPS under UTS has come up and talked to us a bit (for example, HELP, INPUTS, message files, and TYPE 2+2 all work now). Our implementation is for UNIX in

general, not just for the IBM under UTS. The goal is defined as: *"to support AIPS under UNIX as well as we support it under VMS"*. Our UNIX implementation supports the same heirarchical directory structure that we use under VMS (including the logical names!). The source code is *exactly* the same as it is on the VMS version, except for the Z routines of course. In order to compile **ENCODE** / **DECODE** statements under the Fortran-77 compiler, our compilation command procedure invokes an elaborate "sed" script which we have developed to translate such statements to equivalent Fortran-77 code. The purpose of these techniques, plus some others we are still working on, is to make it possible to update multiple UNIX implementations and installations rapidly and automatically even though our development system will continue to be our VMS machine in Charlottesville. We have constructed special editor scripts which search for subtle machine dependencies in AIPS code and we are systematically rooting out such departures from our standards. This is necessary because both the IBM and Motorola 68000 architectures are different from those of the VAX and MODCOMP. A UNIX "tar" tape option should appear on the order form in a future release and should include as complete an installation procedure as the VMS option. There are also tentative plans to obtain other UNIX systems to test in Charlottesville. We hope to have more concrete results of our UNIX project to discuss in the **15NOV83** *AIPSLETTER*.

Summary of Changes: 15 Jul – 14 Sep

These changes are listed in detail in the CHANGE.DOC file reproduced later in the *AIPSLETTER*. Despite numerous business and vacation excursions, we have been busy. During the reporting period, we have made a wide variety of changes. However, most of them should be only mildly visible to the user under normal circumstances. There are four new tasks and three new verbs. **UVFIL** is another paraform task to be used in entering external *uv* data into the **AIPS** data base. **VSCAL** is a complicated version of self-calibration with many new options of interest primarily to VLBI observers. For example, it can constrain and time-smooth the gain solutions for each antenna individually. **XGAUS** is the first truly interactive task in **AIPS** and is of special interest to spectral-line observers. It uses optional interactive displays on the graphics device (*e.g.* a Tektronix 4012) while fitting up to 4 Gaussians and a linear baseline to each row of an image and writes the results as a set of n-1 dimensional images. **XPLOT** provides a preview of the data to be fed to **XGAUS** by plotting selected rows of an image on the graphics device. The new verb **IMSTAT** determines the mean, rms, peak value, and pixel position of the peak value in a rectangular subimage and returns theses answers in appropriate adverbs. The verb **TVSTAT** performs the functions of **IMSTAT** on portions of the currently displayed TV image. The user selects polygonal regions of the image with the TV cursor and the function is performed only within those regions. The last new verb, **REBOX**, allows the values of **BOX** (set previously by **TVBOX** for example) to be reset with an interactive method similar to that of **TVBOX** and **TVWINDOW**.

The general area of display received significant attention during the period. To simplify the code, **TVALL** was made a procedure. This required the creation of a new verb to label only TV step wedges (**TVWLABEL**) and allowed us to convert **TVLABEL** and **TVNAME** to function only on displays of MA files. **CURVALUE** now understands about blanked pixels and the zooming algorithms in **TVZOOM** and **TVFIDDLE** allow the selection of a zoom center even when the magnification factor is one. **TVHUEINT** now offers an alternative, circular color scheme devised by Arnold Rots. **TVMOVIE** and **REMOVIE** have new uses for the TV cursor and buttons. Now, in still frame mode, the cursor selects which frame is displayed and button C selects an interactive enhancement mode for color contours and black and white. **APCLN** *et al.* now load images with the same linear scaling as **TVLOD**. Minor changes include correction of a bug in **TVINIT** which caused subsequent "printer" problems, revision of the graphics plotting package to provide better dynamic range, a minor revision of the image catalog format, and improved estimates of the space required for labeling to the left of plots. Task **PRTIM** was revised to support floating point input files, to display format overflows more clearly, and to

show alternative (approximate) brightness scales on clean maps. GNPLT was cleaned up some to make correct labels, to avoid plotting flagged antennas, and to provide information in the plot file for use by EXTLIST.

UVMAP and APCLN will now support maps up to 4096 pixels on the *x* axis. Because of memory limitations in the array processor, the limit of 2048 pixels on the *y* axis remains. (Note that one can rotate *uv* data before mapping.) SLICE now uses a high order polynomial interpolation rather than the inadequate linear one. CNVRT now converts slice files as well as the main images. PRTUV supports data selection on *uv* range, time range, and antenna or antenna pair and has a clearer definition of the print limit with no limits on the total number of visibility records. CLIP has new options to copy fully flagged records and to suppress the flagging of cross-hand polarizations when the corresponding parallel-hand polarizations are "clipped". A wide variety of bugs were squashed as well. Four-digit user numbers should now be displayed correctly throughout ЯIPS. CONVL can convolve two images with correct results. The sign of the rotation done by GEOM is finally correct and a variety of previously corrected bugs in UVLOD have been corrected again. UVFLG had an error which caused it to fail to flag the RL correlator when asked to flag the R polarization for all antennas (and the LR correlator for L polarization and all antennas). UVSUB now uses the correct number of clean components from the CC file rather than the number currently listed in the header.

A true queuing algorithm for the array processor has been added to ЯIPS. The algorithm gives considerable priority to ЯIPS number 1 and should allow the batch queues to run even in the daytime. The handling of the READ / WRITE statuses on files and the use of exclusive file opens were revised somewhat generally. In particular, tasks like CNTR will mark the file WRITE only briefly as they now update the header at the beginning and will then change the status to READ. TVLOD *et al.* will no longer attempt to read files marked with a WRITE status. The verb UNQUE now clears the batch work file before copying the text of the unqueued batch job. A RETURN is added automatically to all procedures by FINISH. Verbs like CATALOG which ask permission to proceed when the screen is full will now stop if anything other than a carriage return is typed. If this typing is not a 'Q ' or 'q ', then it is taken to be the next input line to AIPS. The computation of non-linear velocities (the FELOcity axis) had a serious bug corrected. Finally, large numbers of illegal characters (tabs, form feeds, back spaces, etc.) were removed from the code and long lines corrected.

CHANGE.DOC: 15Jul83–14Sep83

1423. *July 20, 1983*   UVLOD   *Gary*

Added some error messages to UVFDAT. The program could die when finding an unexpected EOF on tape without printing any messages.
Moved to OLD:, nowhere else.

1424. *July 25, 1983*   TVALL   *Eric*

TVALL has been made a procedure so that it will fit on the MODCOMP. Routines changed:

POPSDAT	— Change TVALL to a proc, add TVWLABEL verb.
TVFIND	— Add image type argument and scratch buffer – finds only requested type but will say if there are other images now on.
AU6C	— Drop all TVALL code leaving just TVFIDDLE code.
AU5	— On TVNAME – get for MA type only in call to TVFIND.
AU5B	— Add verb TVWLABEL to label wedges, change TVLABEL to label only type MA. This should reduce the number of requests to point at the image.
AU5C	— Change wedge verbs to apply only to type MA also.

Moved from MODCOMP this date, nowhere else.

1425. *July 25, 1983*   MODCOMP discovered   *Eric*

A variety of MODCOMP compiler-discovered errors:

XREFS	—	Variable RBLANK should have been called BLANK.
APGS	—	TAB characters all over, referred to K2BPA.
PRTGA	—	TAB characters all over.
TAFFY	—	HELP file referred to wrong directory.
NEWTASK	—	HELP file had typo.
AU5D	—	Referred to K8ALT, should have been K8ARV.
AU7	—	K4CIC mistyped as K4INC.
GETSTN	—	Declares out of order.
IMWIN	—	Left out declares of TVD includes.
FITTP	—	Declares out of order in s.r. FTUVHE.
IMLOD	—	Common variables DATAed in s.r. FITDA2, declares out of order in s.r. IMPARS.
PRTUV	—	Variables JLOCR and JLOCD misspelled as JLOCL and JLOCM.
TRANS	—	Pointer K4CTP misspelled as K4CTY.
XSUM	—	Blank line in s.r. XSMHED.
ICINIT	—	TAB characters all over.
POPSGN	—	Changed NLUSER to 1.
SETTVP	—	Ditto.
SETPAR	—	Ditto.
CATCHR	—	Ditto. Also did not handle the public catalog case properly.
NTERP	—	K4CTP misspelled as K4CTY again.
CANDY	—	Comma missing from FORMAT 2002.
BLOAT	—	Blank line in BLOGIN.

Moved from MODCOMP this date, to OLD: and VLA 3-Aug.

1426. *July 25, 1983*   VM   *Eric*

This task was filled with TAB characters which had to be replaced. It used an include file called DMAG1.INC which was illegal on 2 counts: its name was too long and it had both declares and DATA statements. It has been replaced with DMG1.INC and VMG1.INC. Some typing changes were made, but there is a vast amount left to do. FORTRAN errors on the MODCOMP included a blank line in RESID and illegal branches into DO loops in MOVE (284), GUESS (784), QRESID (140), and FLAT (140).
Moved to MODCOMP this date, to OLD: 3-Aug.

1427. *July 25, 1983*   IMFIT   *Eric*

The typing of this one was gross. It has been revised a lot, but there will still be trouble. Most declaration statements were out of order among other things. There were TAB characters all over (about 900 of them!).
Moved to MODCOMP this date, to VLA and OLD: 3-Aug.

1428. *July 25, 1983* GEOM (ModComp discovered) *Don/Bill*

K4CTY changed to K4CTP (undefined variable due to typo). Undefined variable NAX changed to K2CTPN. Both of these were in a piece of code added recently to support alternate axis types.
Moved to MODCOMP this date, to VLA and OLD: 3-Aug.

1429. *July 25, 1983* Cleanup *Don*

AIPMAN — fixed comment lines longer than 72.
FIXCAT — replaced TABS with blanks.
AU8 — Ditto.
Moved nowhere.

1430. *July 25, 1983* CONVL *Bill*

Corrected a typo in the history routine; added IN2NAME etc. to history file if a convolving
image was used. Added error checking in CONVOL.
Moved nowhere.

1431. *July 26, 1983* MODCOMP discovered *Eric*

More compiler found bugs:
PRTGA — Testing IERR $\neq$ the letter O rather than 0.
IMFIT — More of GO TO (n1, n2), x with x not a simple variable.
IMMOD — Used INT function, not IFIX and used it in an ENCODE, had a Form-Feed.
Moved to MODCOMP this date, to VLA and OLD: 3-Aug.

1432. *July 27, 1983* ZACTV9, ZACTV8 *Gary*

Bug introduced in the 15JUL83 version which has gone to the VLA but nowhere else. The
base priority in the call to the create process system service was not specified correctly.
All tasks, including those started by the batch process were running at priority 4. Now
batch initiated tasks run with base priority 3.
Moved to MODCOMP this date, to VLA and OLD: 3-Aug.

1433. *July 28, 1983* AUC *Eric*

Change to support 4-digit user numbers in Gripe file.
Moved to VLA and OLD: 3-Aug.

1434. *July 28, 1983* Big Cleanup Before UNIX Port *Don*

The reason for this cleanup is that I am writing yet another tape to port to UNIX and I
want to remove a variety of trash or objectionable deviations from AIPS standards from
the files. Certain garbage files were deleted from the directories (*e.g.*, all RUN files found in
the main directory [AIPS]).
Form-Feeds deleted:

| in [.NOTST.PGM]: | KONTR.FOR | SLOWMOMNT.FOR | SMOTH.FOR |
| | WSLOD.FOR | | |

Bad characters removed (almost all BS):

in [.15SEP83]:	CHANGED.81A	CHANGED.81C	
in [.APL.PGM]:	SLFIT.FOR		
in [.APL.SUB]:	HIOPEN.FOR		
in [.APL.ZSUB.VMS]:	ZESTEX.MAR		
in [.DOC.TEXT]:	MV2CO6CA.	UTILSUP.	
in [.HELP]:	BATFLINE.HLP	BATLIST.HLP	BATNLINE.HLP
	EXFND.HLP	IN2NAME.HLP	IN3NAME.HLP
	INNAME.HLP	JOBLIST.HLP	UNQUE.HLP
in [.NOTST.PGM]:	PRTDR.FOR	XXFIT.FOR	

Moved nowhere.

1435. *July 28, 1983*   Cleanup continued   *Don*

TABs removed:

in [.15SEP83]:	CHANGED.81A	CHANGED.81C	CHANGED.82F
	CHANGED.83B	CHANGED.83C	
in [.AIPS.PGM]:	FIXCAT.FOR		
in [.AIPS.SUB]:	AU8.FOR		
in [.AIPS.ZPGM.VMS]:	VLAMBX.MAR	ZSTOPA.MAR	
in [.AIPS.ZSUB.VMS]:	ZACTV9.MAR	ZTACT2.MAR	ZTQSPY.FOR
in [.APL.SUB]:	EXTIO.FOR	GETERR.FOR	
in [.APL.ZSUB.VMS]:	ZB2ASC.MAR	ZBYTFL.MAR	ZDCHIN.FOR
	ZDELA2.MAR	ZDESTR.MAR	ZDOPR2.MAR
	ZESTEX.MAR	ZEXIST.MAR	ZGETCH.MAR
	ZGTBIT.MAR	ZGTBYT.MAR	ZIIMC.MAR
	ZITOCH.MAR	ZMIO.FOR	ZMOVE.MAR
	ZOPEN.FOR	ZPTBIT.MAR	ZPTBYT.MAR
	ZPUTCH.MAR	ZQASSN.MAR	ZQCLOS.MAR
	ZQCREA.MAR	ZQDASS.MAR	ZQDEVN.MAR
	ZQEXP.MAR	ZQIO.MAR	ZQIOV.MAR
	ZQMSG.FOR	ZQOPEN.MAR	ZQRENA.MAR
	ZQTAPE.MAR	ZQTRUN.MAR	ZQWIO.MAR
	ZRENAM.MAR	ZSETL.MAR	ZTKQIO.MAR
	ZTRIM.MAR		
in [.DOC.TEXT]:	COOKBOOK.		
in [.HELP]:	RM.HLP	UVPLT.HLP	VM.HLP
in [.INC]:	CATDAT.INC	CATREC.INC	CONDAT.INC
	CONS.INC	SNDRCV.INC	
in [.NOTST.APGM]:	UVMAP.FOR		
in [.NOTST.PGM]:	KONTR.FOR	MOMNT.FOR	SMOTH.FOR
	TOAIP.FOR	TOVLB.FOR	VBCIT.FOR
	VBLIN.FOR	XXFIT.FOR	CCMOD.FOR
in [.NOTST.SUB]:	ATFPNT.FOR	GETSTN.FOR	GNSMO.FOR
	NUMCON.MAR	SYSACCT.MAR	TAPEIO.MAR
	TBLIO.FOR	ZEDIT.MAR	
in [.NOTST.ZSUB.VMS]:	NUMCON.MAR	SYSACCT.MAR	TAPEIO.MAR
	ZEDIT.MAR		
in [.PSAP.SUB]:	XFOUR.MAR		
in [.LOCAL.APGM]:	MCTAPE.MAR		
in [.RUN]:	CON20.RUN		
in [.AIPS.ZSUB.UTS]:	ZTQSPY.FOR		
in [.APL.ZSUB.UTS]:	ZCLOSE.FOR	ZCREAT.FOR	ZDCHIN.FOR
	ZEXIST.FOR	ZI8L8.FOR	ZLDFIL.FOR
	ZMSGOP.FOR	ZOPEN.FOR	ZPHFIL.FOR
	ZQTAPE.TEX	ZRENAM.FOR	ZTOPEN.FOR
in [.PSAP.ZSUB.UTS]:	ZCPLX.FOR	ZCPLX.TEX	

Trailing zero-bytes and "card-numbers" deleted from:

| in [.NOTST.PGM] | UVMOD.FOR |

Line lengths greater than 80 corrected:

| in [.DOC.TEXT]: | COOKBOOK. |

[.DOC.TEXT]COOKBOOK. was changed to state that it is an obsolete version (from 15 September 1982).
Moved nowhere.

1436. *July 28, 1983*   More Cleanup   *Don*

Comment lines longer than 72 characters fixed:

in [.AIPS.PGM]:	AIPMAN.FOR		
in [.INC]:	CATDAT.INC	CATREC.INC	CONDAT.INC
	CONS.INC		
in [.AIPS.ZPGM.MC4]:	ZPREP.FOR		
in [.APL.APGM]:	APCLN.FOR		
in [.APL.PGM]:	PRTAN.FOR	TAFFY.FOR	UVPLT.FOR
	XSMTH.FOR	XSUM.FOR	
in [.APL.SUB]:	GETVIS.FOR	MINSK.FOR	
in [.APL.ZSUB.UTS]:	ZDCHIN.FOR	ZMSGOP.FOR	ZOPEN.FOR
in [.INC]:	CONS.INC		
in [.NOTST.APGM]:	ASCAL.FOR	BSCAL.FOR	PHCLN.FOR
	UVMAP.FOR	VM.FOR	APGS.FOR
in [.NOTST.PGM]:	CANDY.FOR	IMMOD.FOR	NNLSQ.FOR
	SMOTH.FOR	TOVLB.FOR	VBCIT.FOR
	PRTGA.FOR		
in [.NOTST.SUB]:	ATFPNT.FOR	DSKFFT.FOR	TBLIO.FOR
	APROLL.FOR		
in [.PSAP.SUB]:	FINGRD.FOR	GRDMIX.FOR	

Notes: 1) A long line in an I*4 declaration in subroutine WRTHDR of TOVLB.FOR may have resulted in variables UT and ENDFLG not being declared, and "UENDFLG" being declared instead.The interpretation depends on how TABs are construed.

2) KONTR.FOR·has too many·lines with long comments·or with "card numbers" in 72-80. It was not corrected.

3) Line 467 of UVPLT.FOR is an arithmetic statement which ends with the constant 1.0. The zero was in column 73. It was good that it was a zero — if nonzero (*e.g.* 1.5) it would have produced a most mysterious bug!

Lines longer than 64 characters fixed:

in [.HELP]:	CEIL.HLP	MSGKILL.HLP	TKBOX.HLP
	UVMOD.HLP		

Moved nowhere.

1437. *August 1, 1983*   DBCON   *Bill*

Made comparison of uniform axis attributes not require an exact match, but allow a tolerance of 1.0D-12 times the first coordinate reference value and 1.0E-6 times the first data set value of the reference pixel, axis increment, etc.
Moved from MODCOMP this date.

1438. *August 1, 1983*   APCLN   *Bill/Jerry Hudson*

Made changes suggested by Jerry Hudson to run on FPS AP100s. Added two sets of calls to BPRLSE followed a call to BPINIT in the main program before calls to ADDMAP. Also made changes in the microcode AP routine CLNSUB which should allow it to work on FPS AP100 array processors.
Moved nowhere.

1439. *August 3, 1983*   BSTRT1   *Eric*

It was setting the version ID to. 'NEW ' rather than the correct 'NEW:'. Thus the AIPSB started by BSTRT1 could not find its MEmory files.
Moved to OLD: and the VLA this date.

1440. *August 3, 1983*   AJAX   *Al/Tim*

New Version of **AJAX.COM** — less output.
Moved nowhere.

1441. *August 5, 1983*   EXPND.HLP   *Don*

Inputs portion changed to say that **BAND='** ' means all.
Moved nowhere.

1442. *August 10, 1983*   SLICE   *Gary*

The interpolation for slices has been improved. **SLICE** now uses the Everett interpolation routines used by **GEOM**. Currently the order of the interpolation is set at 7. This is probably more than needed and may be reduced if we run into address space problems on the MODCOMP. **SLICE** also now works for both integer and real maps.
Moved nowhere.

1443. *August 10, 1983*   Installation procedures   *Gary*

IBUILD   —   Changed proc in message from **ILINKNS** to **ILINKAN**.
ICREATE   —   Removed line to create an **AIPS**.*new*.**RUN** directory.
MV2C1002   —   Added instructions on editing **AIPS** and **BATER** to change **OLD** to **NEW**, and instructions on running **DELSG**.
MV2C1008   —   Attempted to make it clear how many times each prompt would be asked
UP15JUL83   —   Placed misplaced comma.
Moved nowhere.

1444. *August 11, 1983*   PLNGET, CONVL   *Bill*

PLNGET   —   Fixed initialization and checking of map window.
CONVL   —   Fixed numerous bugs when convolving with an image.
Moved to VLA this date no where else.

1445. *August 11, 1983*   TKPOS   *Eric*

TKPOS was not displaying the full position information on transposed cubes. (Subroutine **AU9A** revised.)
Moved from the VLA this date, nowhere else.

1446. *August 11, 1983*   "Printer" bug   *Eric*

After using **AIPS** for a while, users were finding that **PRTMSG** and **PRTHI** were unable to open the printer. **EXIT**ing and restarting **AIPS** cured the problem. The current source of the problem turned out to be the verb **TVINIT**. Files corrected:
AU7   —   Use **POTERR** = 57 for printer open error.
PRTMSG   —   Ditto.
OERROR   —   Add message number 57 for "printer error".
YTVCIN   —   Was setting the TV **FTAB** pointer to one! Now set to (illegal) 0.
YINIT   —   Was calling **ZTVMC** before recovering protected TV file pointers. Reversed order.
Moved from VLA this date, nowhere else.

1447. *August 11, 1983*   Batch checking bug   *Eric*

AIPSC did not reduce the stack pointer when "checking" (actually ignoring) the GETNAME verbs. Add stripped version of AU8 called CU8 to AIPSC to do this and revise VERBSC to call it.
Moved from the VLA this date, nowhere else.

1448. *August 11, 1983*   XPLOT, XGAUS   *Eric*

New tasks: XPLOT plots rows in the TEK in sequence asking the user after each plot for permission to continue or to QUIT. It is designed to familiarize the user with his data before he/she runs XGAUS. The latter fits up to 4 one-dimensional Gaussians plus an optional linear baseline to each row of an image. It offers numerous plot options (on the graphics/TEK screen) including interactive entering of revised initial guesses (when NGAUSS > 1). New files: XPLOT.FOR, XGAUS.FOR, XPLOT.HLP, XGAUS.HLP, DGAU.INC, and CGAU.INC.
Moved from VLA this date, to MODCOMP 23-Aug, nowhere else.

1449. *August 11, 1983*   TK routines   *Eric*

The following TK routines were moved from AIPSUB: to APLSUB: for use by tasks XGAUS and XPLOT (and presumably more in future): TKCHAR, TKCURS, TKLAB, TKSLIN, TKTICS, and TKVECX.
Moved from the VLA this date, to MODCOMP 23-Aug, nowhere else.

1450. *August 11, 1983*   Ap queuing   *Eric*

Change BPINIT to look for a list of AP-using tasks of lower ЯIPS number and to delay a while and try again if any are running. The maximum total delay is a sharply increasing function of ЯIPS number. Routines changed:
AU2   —   Open more hours for batch AP use.
AIPSC   —   Ditto.
BPRLSE —   Drop all time delays.
BPINIT —   Add algorithm described above.
Moved from VLA this date, nowhere else.

1451. *August 11, 1983*   SETBSC   *Eric*

New subroutine to determine the scaling parameters for converting a floating map to an integer map. It attempts to have a true zero value come out as an exact integer.
Moved from the VLA this date, nowhere else.

1452. *August 11, 1983*   .E files   *Eric*

Revise all the MODCOMP .E files for all AP tasks so that they refer to ZTACTQ via an INCLUDE statement. This is required by BPINIT and avoids link library sequence problems.
Moved nowhere.

1453. *August 12, 1983*   PLNGET   *Bill*

Fixed bug which caused an incorrect block offset to be computed if several planes were read.
Moved VLA 13 July 1983 and to OLD:, nowhere else.

1454. *August 12, 1983*   FELO computation   *Eric*

Subroutine XYVAL was failing to correct a parameter back from "radians" which made the output FELOcities wrong by a factor of $\pi/180$. SETLOC did not check for a poor parameter in the alternate reference value before dividing by it. Relink AIPS and all plot tasks.
Moved to OLD: 15-Aug and VLA, nowhere else.

1455. *August 12, 1983*   Image catalog   *Eric*

The design of the extra parameters for the image catalog header was faulty — they wiped out parameters which were needed in labeling "alternate" axes. The format was revised to avoid this. The revision required that we place fewer "other" parameters in the header when describing slice plots. A minor addressing problem for the floating point parts of the other parameters was corrected. Routines revised:

SLOCIN   —   Change address of slice end point parameters.
AU9A   —   Compute actual sub-slice end points from IDROP and original end points.
AU8A   —   Ditto.
SL2PL   —   Other parameters no longer include the subslice end points.
XGAUS   —   Ditto.
XPLOT   —   Ditto.
TKSLIN   —   Ditto.
VHDRIN   —   Change computation of image catalog block pointers.
All had the addressing problem corrected. Routines requiring relinking include TVPL, TKPL, AIPS, APCLN, VM, PHCLN, and APGS.
Moved nowhere.

1456. *August 15, 1983*   Misc fixes   *Eric*

Change CURVALUE (s.r. AU6B) to recognize and display blanked pixels in both integer, floating, and TV-only images. Remove an extraneous line of minus signs from the HELP file for PRTMSG. This caused HELP to stop its display prematurely.
Moved from VLA this date and to OLD:, to MODCOMP 25-Aug, nowhere else.

1457. *August 15, 1983*   AU8A   *Gary*

Calculation of BLC and TRC of slice plot files modified to use parameters available after image catalog fix (entry 1455).
Moved nowhere.

1458. *August 15, 1983*   VBLIN   *JMB*

Added input parameters BDROP and EDROP. These may be used to pare off frequency channels at the edges of the rather distorted VLBI bandpasses. Better S/N and improved global fits will result, hopefully.
Moved nowhere.

1459. *August 16, 1983*   CITCC   *Bill*

Changed OUTNAME to OUTFILE to allow the user to write the CLEAN components into an arbitrary directory.
Moved nowhere.

1460. *August 17, 1983*   UVFIL   *Bill*

New task. UVFIL is the skeleton task to allow a user to create an AIPS *uv* data base and to fill it from data outside of AIPS. Also UVFIL.HLP.
Moved nowhere.

1461. *August 17, 1983*   PROFL   *Eric*

Bug in labeling axes: could lead to no numbers plotted on correct axes (wrong subscript in NONUM test).
Moved nowhere.

1462. *August 16-18, 1983*   User numbers   *Eric*

User numbers larger than 3 digits have been causing problems with many of the FORMATs in the software. A systematic search for these has begun. Corrected so far are, in NOTAPG:

APGS	APMAP	BBFIT	CONVL	FFT	UVMAP
UVSUB	VBBIG	VBFIT	VM		

In AIPPGM: corrections include setting NLUSER to 1 also:

AIPMAN	AIPSB	AIPSC	BATER	CATCHC	CATCHG
CATCHL	CATCHR	CATCHU	EXPTAP	FIXCAT	FIXFIL
GRIPR	GRITP	GRTOTEX	PRNTMN	PRTACC	RDFITS

In APLPGM:

CLIP	CORER	FITTP	FUDGE	PRTAN	PRTTP
SL2PL	TAFFY	UVCOP	UVEXP	UVLOD	UVSRT
XGAUS	XPLOT	XSMTH	XSUM		

In NOTPGM:

AVER	BLOAT	BTCOP	CANDY	DESCM	GNPLT
IMMOD	NNLSQ	PRTDR	PRTGA	RGBMP	STRIP
SUMSQ	TOAIP	TOVLB	UVDGP	UVFIX	UVMOD
VBCAL	VBCIT	VBCOR	VBLIN	VBMRG	VBPLT
VLBDR	WSLOD				

In AIPSUB:

AUB	LSTHDR	MSGHDR	AU8A

In APLSUB: fix bad format in I2TOR4.
Moved nowhere.

1463. *August 18, 1983*   GEOM   *Eric*

We find that the SIGN function is defined (at least in FORTRAN 77) such that SIGN (Y, X) = SIGN (ABS(Y), X). This is contrary to the definition assumed by GEOM in entering the rotation angle in the header. It is now correct and we're checking the other uses of SIGN.
Moved to VLA 19-Aug, nowhere else.

1464. *August 19, 1983*   VSCAL   *Bill/Fred*

New task. Yet another clone of ASCAL. This one is designed especially for VLBI in that it can individually constrain the amplitudes of the antenna gains and smooth the antenna gain amplitudes individually with a boxcar. It also has a better gain solution routine than ASCAL but it uses a lot of memory so this routine it not likely to run on the MODCOMP. Also added: VSCAL.HLP, CVCL.INC, DVCL.INC, and subroutines GNFSMO and BOXSMO.
Moved nowhere.

1465. *August 19, 1983*   ZTOPEN   *Gary/Kerry*

Fixed error in format for "file still busy" message. Also declared some previously undeclared variables.
Moved nowhere.

1466. *August 19, 1983*   To use SETBSC   *Eric*

The new routine **SETBSC** (entry number 1451 above) needed to be installed in the system. Routines revised to call **SETBSC** were **MSCALE, MSCALF, R4TOI2, PLNPUT, MAPFIX**, and **IMLOD**. Routines needing linking only were **CNVRT, TAFFY, NNLSQ, XSUM, XSMTH, XGAUS, APCLN, APGS, COMB, CONVL, CORMS, FFT, GEOM, VM, NTERP, PBCOR, PHCLN, RM, RMTST, SUMIM, SUMSQ, UVMAP**, and **CANDY**.

Moved nowhere.

1467. *August 22, 1983*   CNVRT   *Gary*

Corrected to rescale the slice file whenever the map files are converted to/from real maps. This is necessary because slice files use the scaling factor and offset found in the header.

Moved nowhere.

1468. *August 22, 1983*   APCLN   *Bill*

Added check in **HISTOB** for beam values greater than 1.0. Also added number of iterations actually used in **HI**story file.

Moved nowhere.

1469. *August 23, 1983*   EXTIO   *Bill*

Removed several expressions from function calls.

Moved nowhere.

1470. *August 23, 1983*   UVSRT   *Bill*

Added several return codes to help track down where the task is dying without messages.

Moved nowhere.

1471. *August 23, 1983*   PRTGA   *John*

PRTGA now recognizes flagged entries in the gain tables and prints -1.0 and -999.99 for flagged gain amplitudes and phases.

Moved nowhere.

1472. *August 23, 1983*   PRTPL   *Gary*

The lower halves of lower case letters were not printing properly.. The program was calculating the wrong sign for the offsets.

Moved nowhere.

1473. *August 24, 1983*   MERGE   *Bill*

Changed how the return error code is set. In **UVSRT** this routine was apparently returning a non-zero number without giving an error message. I can't find a path through the subroutine which allows this.

Moved nowhere.

1474. *August 24, 1983*   4096 x n maps   *Bill*

Modified **UVMAP** and **APCLN** to handle up to 4096 x 2048 maps. (We can't make 4096 points on the Y axis due to the limited size of the array processor except using a pillbox convolving function so I didn't bother). Many other tasks already appear to handle 4096 maps; in particular I've tried **SUBIM, CNTR** and **PRTIM** as well as the verb **IMVAL**. Affected by the change were: **UVMAP.FOR, APCLN.FOR, PASS1.FOR, PASS2.FOR**, and **UVMAP.HLP**.

Moved nowhere.

1475. *August 25, 1983*   MODCOMP discovered   *Eric*

Several more bugs have been pointed out by the MODCOMP:

ZCMPRS — (MC4 version) do a better test to see that a compression has actually been requested.

PRTMSG — Avoid ZCMPRS call if not needed.

BATER   — Arguments to PRTMSG not initialized.

TKTICS — RAD spelled TAD could make round-off errors.

PBCOR   — K4CTP spelled K4CTY again.

PRNTMN — Did not automatically put EOF between Volumes III and IV (as it did between other volumes).

Moved to VAX this date, nowhere else.

1476. *August 25, 1983*   IMSTAT, TVSTAT   *Eric*

New verbs to compute the mean, rms, peak, and position of the peak of a subimage and leave the results in adverbs. IMSTAT uses the standard file-naming adverbs plus BLC and TRC. TVSTAT uses the image on the TV and implements an interactive setting of the "blotch" region over which the values are to be computed. Files changed:

POPSDAT — Add verbs and the adverbs PIXAVG and PIXRMS.

DAPL.INC — Add the new adverbs.

CAPL.INC — Add the new adverbs.

AU6D   — (New) Verb subroutine to perform the functions.

VERBS   — Add call to AU6D.

VERBSB — Add call to AU6D for IMSTAT only.

VERBSC — Add dummy call to AU6D, legal for IMSTAT only.

GRPOLY — (New) Interactive routine sets vertices of blotch area polygons.

BLTFIL   — (New) Fills the interior of the blotch areas on the graphics plane.

BLTGLE   — (New) Computes the angle between 2 vertices and a test point (for finding what is interior to a blotch region).

IMSTAT   — (New) HELP file.

TVSTAT   — (New) HELP file with some EXPLAIN.

Moved nowhere.

1477. *August 26, 1983*   FITTP, UVEXP   *Eric*

Correct "no file found" error messages to show correct range of disk numbers.
Moved nowhere.

1478. *August 26, 1983*   XGAUS   *Eric*

The MODCOMP compiler found errors: 2 lower case Cs on comments, argument FC misspelled as FCUT in the guess routine cutoff check, and ECHAN misspelled as ECAHN in the history routine.
Moved from the MODCOMP this date, nowhere else.

1479. *August 26, 1983*   XREFS   *Eric*

TTYFND misspelled as TTYIND in part of the program caused an abort on the MODCOMP. The name buffer was too short also. In reading the HELP files it did not have RDASH defined and hence thought that all sorts of strange things were adverbs.
Moved from the MODCOMP this date, nowhere else.

1480. *August 26, 1983*   PRTACC   *Eric*

Strengthen the INIT opcode to really fix up the first record and to compress the file.
Moved nowhere.

1481. *August 26, 1983*   TOVLB   *John*

The user now specifies the output file through the 48-character input parameter OUTFILE.
Moved nowhere.

1482. *August 26, 1983*   AP code   *Eric*

Change BPINIT to release the AP initially just in case some dumb programmer keeps calling
BPINIT without intervening BPRLSE calls. Revise PHCLN to have more BPRLSE calls. The
batch PHCLN was getting the AP and then holding it for hours trying to yield to higher
priority AP jobs!
Moved BPINIT to VLA this date, nowhere else.

1483. *August 26, 1983*   XGAUS   *Eric*

Restructure it a bit and cut the x-buffer length to 800 to fit it on the MODCOMP. Revised
XGAUS.E also. The TK cursor reads did not work correctly on the VAX for some reason.
Adding ZCLOSE and ZOPEN again after each TKCURS call did the trick.
Moved nowhere.

1484. *August 27, 1983*   XPLOT   *Eric*

Bad branch address on error opening the terminal. Need to improve the XPLOT.R and
XGAUS.R files to declare the terminals.
Moved from MODCOMP, nowhere else.

1485. *August 27, 1983*   TV load range   *Eric*

The range of TV intensities used for non-blanked pixels was set some time ago to 1 -
MAXINT (255 for us). Now revised APCLN, APGS, PHCLN, MX, and VM to support this. The
linear look-up table routine for TVTRAN etc. (s.r. IENHNS) was also revised to have a
minimum output value of 1.
Moved nowhere.

1486. *August 29, 1983*   XPLOT, XGAUS   *Eric*

Revise TKCURS to blank any high bits (value > 31) which may come from the TEK interface.
(The MODCOMP was filling in parity bits on one of its 2 TEKs.) Revise XGAUS to check
the size of the argument to DEXP before invoking it. Some math libraries (*e.g.* IBM,
MODCOMP) do not like to compute e^{-100} for some odd reason. Also move the trapping
of the output maxima until after the user has decided to accept the answers.
Moved nowhere.

1487. *August 29, 1983*   SNDY   *Eric*

Fix string handling in error message.
Moved nowhere.

1488. *August 30, 1983*   UVFLG   *Eric*

Found bug: It did not flag LR when told to do all baselines and the L polarization. (RL
would have survived an all baseline R polarization flagging.) Logic error relating to all
baselines (APARM(9) = 0) corrected.
Moved nowhere.

1489. *August 30, 1983*   CLIP   *Eric*

Add two options: to write fully-flagged vis records anyway and to avoid flagging cross-hand polarizations just because the corresponding parallel-hand ones were flagged. Both have a default of FALSE. Fixed HELP file also.
Moved nowhere.

1490. *August 30, 1983*   PCNTR   *Eric*

Change limit on FACTOR to 999.9 from 99.0 in the Inputs part of the HELP file.
Moved nowhere.

1491. *August 30, 1983*   PRTIM   *Eric*

Change to support both floating and integer input images. Have it print + signs on positive overflow and – signs on negative overflow pixels. Clean up code a bit and get rid of the now useless SNCUT adverb. Revise HELP file for this.
Moved nowhere.

1492. *September 1, 1983*   VBMRG   *Bill*

Changed to compare amplitudes when deciding which data point to take only if the weights are equal.
Moved nowhere.

1493. *September 1, 1983*   VBCIT   *John*

Fixed bug that caused antenna numbers in vis. records to be the antenna numbers in the CIT Merge header even when an IN2FILE list was specified.
Moved nowhere.

1494. *September 1, 1983* GRDFLT, CONVFN, GRDTAB *Bill*

Added these routines from the mapping tasks to the subroutine library as they are all identical and removed them from APMAP and UVMAP.
GRDFLT — Sets convolving function defaults.
CONVFN — Computes the convolving function and stuffs it into the AP.
GRDTAB — Computes, in the AP, the correction for the convolving function.
Moved nowhere.

1495. *September 1, 1983*   UVLOD   *Eric*

Found that several corrections made in June had been lost. Evidently, the code was under development in a private area then and was moved to the main libraries without the *required* checking of CHANGE.DOC *et al.* The corrections added again are: (1) Use the actual disk number in the call to ZCMPRS. (2) Use the actual output name, class, and disk in the history file. (3) For Export format, use the listed RA and Dec as the "observed" RA and Dec. (4) Change the comments to show that BCOUNT and NCOUNT are the adverbs now used to specify a range of sources on the Export tape. (5) Prevent data from being concatenated unless SOURCE, BAND, *and* QUAL are specified. Add remarks to HELP file to show that BCOUNT and NCOUNT are used only when DOALL is true.
Moved nowhere.

1496. *September 1, 1983*   MAPOPN   *Eric*

Revised to prohibit an open for READ when the file is marked WRITE, to take file exclusive on open for WRITE, and to support an new OPCODE called HDWR which marks the file WRITE but opens as if for read only. These will prevent inappropriate access to busy files.
Moved nowhere.

1497. *September 1, 1983*   Extension files   *Eric*

The change to MAPOPN makes it no longer appropriate to leave a file marked WRITE just because an extension file is being added to the header. It must be marked WRITE briefly to change the header, but it should then be marked READ while the data file is simply being read. Routines changed:

MADDEX	— Correct the option to switch from WRITE to READ status on the main file.
DELEXT	— Change call sequence adding the expected current file status and using the VERsion number to specify which version is deleted (rather than just the present highest). Allow input READ status and clear the main file status.
CONDRW	— Drop SNCUT from the call sequence.
HICREA	— Change call sequence to DELEXT, add call to CATDIR to leave status as WRITE.
CNTR	— Drop SNCUT from the adverbs, call DELEXT at the end on error, change call to MAPOPN to HDWR, change call to MADDEX to save the header and change the status to READ.
PCNTR	— As CNTR.
GREYS	— As CNTR.
DGRY.INC	— Remove SNCUT.
CGRY.INC	— Ditto.
CNTR.HLP	— Remove SNCUT.
PCNTR.HLP	— Ditto.
GREYS.HLP	— Ditto.
SL2PL	— Revise error handling, change calls to MAPOPN and MADDEX, add DELEXT call on error.
PROFL	— As CNTR.
PROFL.HLP	— Drop SNCUT.
VBPLT	— Minor typing revisions.
UVPLT	— As SL2PL. Move the MADDEX call to the setup routine from the actual plot routine.
DUVP.INC	— Add VER to commons.
CUVP.INC	— Ditto.
GNPLT	— There's not much hope for this one. Revised typing, changed ADDEXT to leave a READ status on the file, added a DELEXT call on error.
ASCAL	— Change DELEXT call sequence and add a CATIO call so that the file status will remain WRITE.
BSCAL	— As ASCAL.
VSCAL	— As ASCAL.

Moved nowhere.

1498. *September 1, 1983*   IMEAN   *Eric*

As part of this revision for MAPOPN, I changed the calls to MAPOPN and MADDEX in IMEAN and added a call to DELEXT on error. Further, I removed SNCUT from the adverbs and dropped the whole section of code which would have tried to do weighted sums on the multi-bit blanking format. The task is now a whole lot simpler. Change HELP also.
Moved nowhere.

1499. *September 1, 1983*   Axis labels   *Eric*

Create a new subroutine CHNTIC (out of CTICS) to compute the maximum number of characters required in the Y axis numeric tick labels. This will reduce the excess white space on the left of the plots. Revise LABINI and SLBINI to call CHNTIC rather than use hard-coded guesses. Forces relink of AIPS, GREYS, PROFL, CNTR, PCNTR, XGAUS, XPLOT, SL2PL, and SLFIT. Also rearranged UVPLT and added a call to CHNTIC to get correct spacing.
Moved nowhere.

1500. *September 1, 1983*   CATCHR   *Eric*

Correct looping for public catalog files.
Moved nowhere.

1501. *September 2, 1983*   FITTP   *Eric*

The DOTABLE option, when set FALSE, was causing the TABLES parameter to be omitted from the header but the CC tables were being written anyway. Also, the extension writing routines were returning error codes even when the errors were semi-correctable (*e.g.* a missing CC file). These were corrected and the error handling cleaned up.
Moved nowhere.

1502. *September 2, 1983*   TV routines   *Eric*

As the result of some Gripes, I looked over the TV routines and found some vulnerable to user requests for non-existent channels. The TV loading buffers could be 520 words larger so that the TV can be double buffered for rows of 2048 integer pixels. Changed are:

TVLOAD	—	Test buffer size rather than having MINIT do it for us (with the consequent confusing message).
AU5A	—	Raise buffer size.
AU5D	—	Raise buffer size.
POPSDAT	—	Reorder verbs in TVALL procedure.
AU6	—	Better test on user channel numbers for TVHUEINT.
AU6A	—	Better test on user channel numbers for TV blinks.
AU6C	—	Fix typing.
DECBIT	—	Fix typing.
TVWIND	—	Check user channel numbers carefully, choose either horizontal or vertical mode depending on which is needed more for roaming.
ITICS	—	Don't let ticks get quite so small on small images.
IAXIS1	—	Revise test for when Y-axis tick values must go inside the image.

Moved nowhere.

1503. *September 5, 1983*   TEK plotting   *Eric*

The plot routines for the TEK graphics device were too sensitive to integer overflow. Change some of the parms to floating point and declare the basic TK common in INCLUDE files. Changes are:

DTKS.INC — New INCLUDE file for TKSPCL common.
CTKS.INC — Ditto.
TEKFLS — Use the INCLUDEs.
TKCURS — Ditto.
ZTKBUF — Ditto (VMS and MC4 revised).
AU9A — Ditto.
AU9B — Ditto.
AU9C — Ditto.
TKSLAC — Ditto.
TEKVEC — Change call sequence to take floating X and Y positions, use INCLUDEs, revise tests for off-plot positions.
TKCHAR — Call TEKVEC rather than TKVECX.
TKSLIN — Revise computation of reference position of plot using new INCLUDEs and floating parms.
TKDVEC — Clean up typing.
TKLAB — Call TEKVEC rather than TKVECX.
TKTICS — Ditto.
TKRSPL — Ditto.
TKGGPL — Ditto.
TKGMPL — Ditto.
TKSLPL — Ditto.
TKPL — Change arguments to TEKVEC to floating, use new INCLUDEs.
XPLOT — Use new INCLUDEs, revise computation of plot reference position to floating.
XGAUS — Ditto. Correct test on cursor inside plot.
SLBINI — Bug in labeling (caused by entry # 1499) squashed.
Moved nowhere.

1504. *September 5, 1983*   SLICE   *Eric*

The new version of SLICE was issuing 2 resumptions to AIPS when DOWAIT was FALSE. The variable name was wrong for using the CFIL.INC common.
Moved nowhere.

1505. *September 5, 1983*   UVEXP   *Eric*

Add tests for no valid data after call to MAXFND. The scaling parms come out 0 and cause the program to blow up otherwise.
Moved nowhere.

1506. *September 6, 1983*   PRNUMBER, PRTMSG   *Eric*

Expand the description of "AIPS number" in the PRNUMBER HELP file and put DOCRT in the HELPs for PRTMSG.
Moved nowhere.

1507. *September 6, 1983*   UNQUE   *Eric*

Revise subroutine **AUB** and the **HELP** file so that **UNQUE** clears the destination work file in all cases before copying the text of the unqueued batch job. This does remove an extra capability to append text to other text, but also removes a significant cause of confusion and supports the normal usage.
Moved nowhere.

1508. *September 6, 1983*   UVFLG   *Bill*

Changed to subtract 2 seconds from the start time and to add 2 seconds to the end time under all circumstances, not just when start = end $\neq$ 0.0.
Moved nowhere.

1509. *September 6, 1983*   APCLN   *Bill*

Fixed a bug in **GRIDER** / **CMPCRM** which caused the CLEAN components to be improperly summed when restarting with a large number of components.
Moved nowhere.

1510. *September 6, 1983*   UVSUB   *Bill*

Fixed a bug which caused **UVSUB** to use only the number of components given in the **CATBLK** rather than the number actually in a CC file.
Moved nowhere.

1511. *September 6, 1983*   GNPLT   *Eric*

Fix 2 bugs: there was no label filled in for the X axis except when the time range was < 0.1 days and the header was getting messed up by the non-standard **ADDEXT**. The latter was introduced in the **MAPOPN** revision round. Also fix typing some.
Moved nowhere.

1512. *September 6, 1983*   RETURN   *Eric*

Revise **PSEUDO** to add a **RETURN** verb automatically when the **FINISH** operator is executed. Thus, all procs will have at least one **RETURN** in them. This "spare" **RETURN** does not seem to hurt anything when the user remembers to use **RETURN** in either its simple or value returning modes and helps when the user forgets to put one in.
Moved nowhere.

1513. *September 7, 1983*   GNPLT, EXTLIST   *Eric*

Rearrange code in **GNPLT** to open Gain file before creating the plot file. Then fill in all the defaults in the input parms and get them into the call sequence to **GINIT** correctly. (Nothing went into record 1 of the plot file before!) Fix the top string in the plot to avoid running the name and title together. Do not plot flagged antennas. Try to fix typing some more. For **EXTLIST** (subroutine **AU8A**): revise to take plot file type 9 as Gain file plots and display the antenna range, time range, and correlators plotted. Also change the extension file open to "impatient" to avoid hanging up when trying to access a file currently being written. Fix **HELP** for **GNPLT** to explain how the antenna numbers are used better.
Moved nowhere.

1514. *September 7, 1983*   UVFLG   *Eric*

The change to MAPOPN locked up UVFLG. Opening the file for WRIT with exclusive use makes the VAX refuse to open it as well for read under a second LUN. Change to the HDWR code in MAPOPN to mark the file WRIT, but open it non-exclusive.
Moved nowhere.

1515. *September 7, 1983*   GNFSMO   *Bill*

Fixed bugs which caused only 200 points rather than 2000 to be smoothed and no message to be written.
Moved nowhere.

1516. *September 8, 1983*   VBLIN   *John*

Users may now specify a reference day number with respect to which the visibility record times are referred (APARM(8)). This should prevent negative record times which cause various tasks grief.
Moved nowhere.

1517. *September 9, 1983*   UVMAP   *Bill*

Fixed bug in MAPOUT introduced during the upgrade to 4096 maps. Failure would occur for VPOL maps or the last of an even number of line maps.
Moved nowhere.

1518. *September 12, 1983*   TVHUEINT   *Eric*

Change Red table slightly and add a circular set of colors suggested by Arnold Rots. Put the selection of spectrum vs. circular colors on the new adverb DOCIRCLE (default false). Changed: HIENH to support 2 color types, POPSDAT.HLP to declare the new adverb, DAPL.INC and CAPL.INC to put the new adverb in the common, AU6 to pick up the adverb value and send it to HIENH, and TVHUEINT.HLP to explain the change.
Moved nowhere.

1519. *September 12, 1983*   TVMOVIE   *Eric*

Change the algorithm: in still-frame mode the cursor X position selects the frame. Button C is now assigned to perform enhancement functions similar to TVFIDDLE in color or black and white. Change the Y frame origin to account more correctly for shifts due to zooming. Change the adverb DOINVERS to DOCIRCLE for reversing the movie at the ends (by default). Changed: DOCIRCLE.HLP (new) adverb for TVMOVIE, REMOVIE, and TVHUEINT, TVMOVIE and REMOVIE HELP files for new adverb and algorithm, AU5D to pick up new adverb and change the Y origin, and TVMOVI to implement the new algorithm and Y origin.
Moved nowhere.

1520. *September 12, 1983*   TV zooming   *Eric*

No longer forces the cursor back to the center of the screen at zero magnification. Instead, one may select the pixel about which the next jump in zoom will be done. Changes in AU6 (TVZOOM) and AU6C (TVFIDDLE).
Moved nowhere.

1521. *September 12, 1983*   PRTUV   *Eric*

Change **NITER** to **NCOUNT** to mean true number of vis. lines printed and remove any limit
to number of vis. records examined in any one execution. Add **UVRANGE** and **CPARM** to
limit *uv* range, time range, and antenna selection. Change **HELP** as well.
Moved nowhere.

1522. *September 12, 1983*   COMB   *Eric*

The program should be restructured for speed sometime. Meanwhile, generalized the **OPTD**
algorithm to be
APARM(1) * LN (APARM(3) * MAP(1) / MAP(2) + APARM(4)) + APARM(2)
and made appropriate changes to **HELP COMB** and **COMBCODE**.
Moved nowhere.

1523. *September 12, 1983*   Type ahead   *Eric*

The pause for screen full on **CATALOG, UCAT, MCAT, PRTMSG**, *et al.* has caused some confusion.
Now anything typed in on the pause causes the verb to stop and anything so typed except
a **'Q '** or **'q '** will be taken to be the next line of input. Routines revised:

DIO.INC	—	Declare a buffer to hold the new line.
CIO.INC	—	Ditto.
PREAD	—	Remove reference to *RANCID*! Support new input mode number 4.
SCHOLD	—	Revise tests for stopping, save text in new buffer.
AU3A	—	Do not use saved buffer for the YES/NO answers when double checking **TIMDEST** and the like.
AUB	—	Save the input mode ID before changing to "batch" on **UNQUE**.
STORES	—	Make all modes but interactive (including the saved buffer mode) illegal for **MODIFY**.

Moved nowhere.

1524. *September 13, 1983*   TV characters   *Eric*

Modify **IMCHAR** (typing only) and **IMCHRW** to set the background of characters to 1 rather
than 0 when they are written into a gray-scale memory. Then the reverse slope transfer
functions will not wipe out the contrast between character and background. (Remember
that 0 in the TV remains 0 in all look-up tables.) Relink **AIPS** and **TVPL**.
Moved nowhere.

1525. *September 13, 1983*   PRTIM   *Eric*

For clean maps, add lines to show the brightness scaling in units of Janskys per arcsec
squared and Kelvins. Clean up the position display to use the correct methods of non-linear
computation (swiped from **QIKHDR**).
Moved nowhere.

1526. *September 14, 1983*   PHCLN, APCLN   *Bill*

Modified to look at the number of CLEAN cycles in the dirty map header and to use
these, if any, in the computation of the minor cycle minimum residual strength. This
should speed up gonzo (>32768) CLEANs.
Moved nowhere.

1527. *September 14, 1983* Installation procedure *Gary*

The procedure was assuming a TV device with 4 image planes and 4 graphics planes. These parameters are now input by the installer.

IPROMPTP.COM ISYSPARM.COM FILAI2.FOR MV2C1004

Moved nowhere.

1528. *September 14, 1983* UVMAP *Bill*

Fixed bug in MAPOUT causing an integer overflow for VPOL. The problem was introduced when upgrading UVMAP to handle 4096 images.

Moved nowhere.

1529. *September 14, 1983* Catalog bug *Eric*

CATDIR was using user number 1 as the default user number when creating a new slot entry! This was corrected to be the login user. Note that the "WaWa" IO system made this an easy situation to arise (*e.g.* when USERID = 32000). Write a new service program FIXUSR to convert all user numbers to the login one for private catalog systems.

Moved to the VLA this date, nowhere else.

1530. *September 14, 1983* TV cursor *Eric*

Create a version of YCURSE to convert cursor positions without the IO to the TV and then to convert them further to actual map positions. New routine is called YCUCOR. Revise GRBOXS (verbs TVBOX, TVWINDOW) and GRPOLY (verb TVSTAT) to use YCUCOR.

Moved nowhere.

1531. *September 15, 1983* REBOX *Eric*

New verb to display the current values of BOX as boxes on the TV screen and allow the corners to be reset in a manner similar to TVBOX. Files changed: add verb to POPSDAT, add code to AU5C to pick up the adverbs and call GRBOXS and TVLOCA, revise GRBOXS to accept initial boxes and use primarily the search/revise modes, create TVLOCA to attempt to convert image pixels to TV pixels using the image catalog, and create REBOX.HLP to describe this mess.

Moved nowhere.

1532. *September 15, 1983* WHATSNEW *Eric*

Update this file to list new things.

Moved nowhere.

1533. *September 15, 1983* GETHEAD, PUTHEAD *Eric*

Add a note about units to the Explain file area of these HELP files.

Moved nowhere.

1534. *September 15, 1983* UVLOD *Eric*

Add code to delete files with no vis records rather than just appending the next source data to it.

Moved nowhere.

1535. *September 15, 1983* Inputs files *Eric*

Revise AU1A so that a blank line in the Inputs file causes the remaining values in the previous array adverb to be displayed before proceeding.

Moved nowhere.

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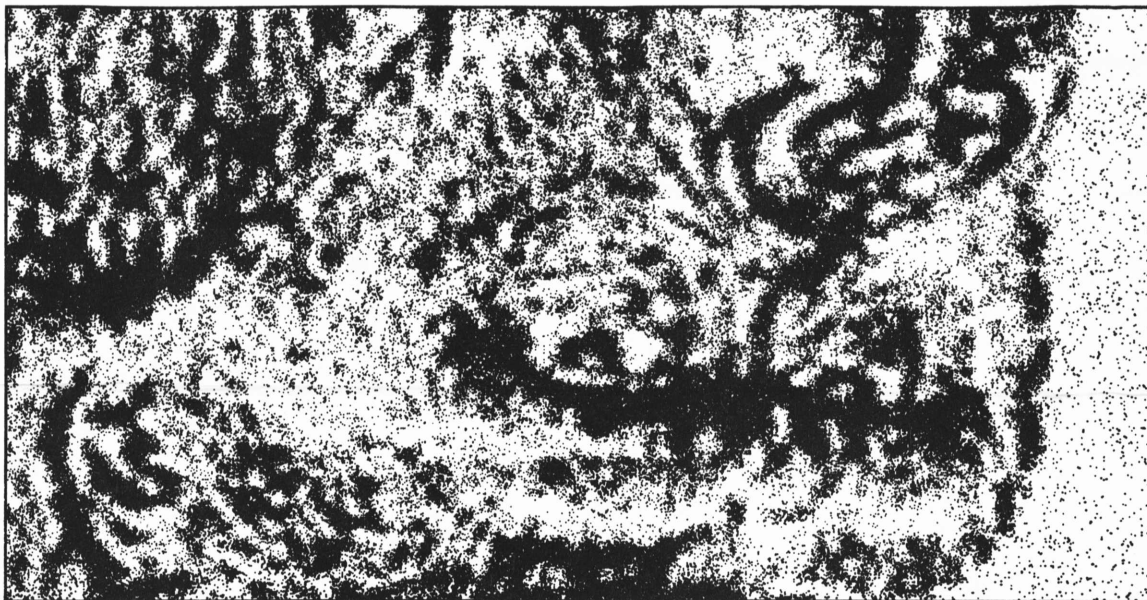
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TEXset by EWG

AIPS Release Statistics

As this AIPSLETTER is being edited we have received 5 requests for 15NOV83, plus one request for the Unix release when it becomes available (this site wants to run it on an HP9000). Our records show the following distribution of last versions sent to sites (if a site received both 15MAY83 and 15SEP83 it is counted only under 15SEP83): 15SEP83(7), 15JUL83(11), 15MAY83(8). Our records are recorded currently by contact person only and, because this is ambiguous, our records are not necessarily exact. So, copies of AIPS have been mailed to approximately 26 separate non-NRAO sites in the last six months. The vast majority are running VMS (only 2 of the copies have gone to non-VMS sites). There are several other non-VMS sites (about 4) which are not represented in these statistics. NRAO itself is currently running 3 VMS Vaxes and a ModComp Classic. The 15SEP83 AIPSLETTER was mailed to 107 people in the United States and 44 people in foreign countries as well as to 32 addresses within the NRAO.

AIPS Under Unix, II.

In the last AIPSLETTER (15SEP83) we summarized the status on our project to prepare a version of AIPS to run under the Unix operating system. Further developments have occurred.

A week ago Amdahl sent us the latest version of their Fortran compiler for their UTS operating system on our IBM4341. Some more bugs were fixed, but new ones were created, and some old ones remain. If this installation of AIPS could be certified it would make almost all IBM and Amdahl 370-architecture CPUs available for use with AIPS. We still think that this is a worthwhile goal and we will continue our efforts to install our Unix version under UTS even though the work is quite frustrating.

Late in October Kerry visited Austin and installed an experimental version of ЯIPS on the Texas Vax operating under Berkeley 4.1 Unix. The initial installation did not function fully in the brief time available and David Garrett continued tracking down the remaining bugs. As this *AIPSLETTER* was being prepared David informed us that the experimental version was operational. He is currently preparing to make an installation under the new 4.2 release of Berkeley Unix, which includes a new release of the Fortran compiler. The ЯIPS that David has is not a true **15SEP83** release because the code actually dates from about 1 August.

Kerry is continuing the development work. In particular, he intends to prepare automated installation procedures (the experimental installations involve too much manual entry of command language syntax). We expect to begin offering a Unix "tar" tape option on our order forms in a future release, maybe for the **15JAN83** release. We believe that our new Unix implementation is machine independent and will be making tests to verify this. In particular, we hope to certify portability to the MC68000 architecture during the next three months. We also believe that it is easily portable to most (if not all) dialects of Unix. We intend to make further tests to verify this. Our current implementation assumes certain "standard" features of old Version-7 Unix: the "Bourne" shell, program "sed", and the "f77" compiler (with the "-I2" option).

The Gripes Column

During the last sixty days we received 79 gripes (our numbers 662 through 740), or an average rate of 1.3 per day. The majority of these are answered and the changes are in the **15NOV83** release. We expect to mail the responses·soon after this *AIPSLETTER*·goes to press. Some which were received late in the cycle and could not be implemented in time for the release will be marked "to be continued" and the provisional response returned with the rest. (Up to now no responses were returned until *all* gripes in a large batch had been answered.) The intent of this procedural change is that it will cause all outstanding gripes to be reviewed *before* the freeze date of each release and that it will return a written response to all new gripes within 60 days. This continues the general trend of the ЯIPS project to bring more and more project activities into synchronism with the 60-day release cycle, with various activities having different phase delays.

Until now we have sent the *AIPSLETTER* only to the contact persons for ЯIPS sites and to people who have specifically asked to be on the mailing list. We have decided that anyone who submits a gripe is using ЯIPS in a serious enough way that he or she probably should be receiving the *AIPSLETTER*. Accordingly, beginning with this *AIPSLETTER* we will gradually add the new names to the mailing list. Anyone who receives this *AIPSLETTER* and would like to be removed from the list can notify us.

The original prototype for the Gripes mechanism in ЯIPS was devised by Tim Cornwell. We saw that it was badly needed and adopted it formally. We think that the term "Gripes" was an unfortunate choice, but we inherited it from Tim and are reluctant to change it now. If we were choosing now we might prefer "Suggestions" because we think that ideas for design changes are as important as simple bug reports. We want to encourage ЯIPS users to enter such suggestions by means of the Gripe mechanism.

We take all gripes very seriously. We do not object to incorrect spelling, poorly formed syntax, or user uncertainty about how ЯIPS works. We make a determined attempt to infer what the user really means and we gently edit the text to correct spelling, punctuation, and syntax. At least two people in Charlottesville read every gripe (they read each one at least *twice*) and many gripes are read by three people. Users sometimes have second thoughts after they enter a gripe. We encourage the entry of second gripes which are intended to revise or supplement previous gripes. We merge the text during the editing process. Gripes are public documents — copies of the final versions of all gripes are placed in the Charlottesville and VLA ЯIPS Caiges for examination by users.

The Charlottesville ЯIPS programmers *very* much prefer to receive problem reports and suggestions by means of the Gripe mechanism. Although we do our best, verbal remarks have a high probability of being lost. Letters, notes, and network mail messages are also frequently mislaid or are entered by hand into the formal Gripe mechanism as time permits, often after lengthy delays. We like for wholly different subjects to be entered as separate gripes. If they are entered as one long gripe, we often break them up anyway and the extra work just wastes time.

We prefer that non-NRAO sites use the GRITP stand-alone program to write their gripes onto tape when they send a tape back for a new release of ЯIPS. GRITP has not yet been documented very well. Here is a recipe for its use at a VMS installation:

```
SET DEFAULT NEW
@[-]MOUNT                (mount tape on drive 1)
RUN [.LOAD]GRITP
1                        (drive number)
WRIT                     (WRITe or VERIfy?)
YES                      (do verify pass?)
@[-]DISMOUNT             (dismount drive 1)
```

Our handling of the gripes is highly automated. The costs in time and effort are less than many people would guess. Program GRITP writes the information in a FITS-like tape format. Program GRTOTEX reads the tapes (or disk files for sites on the NRAO network) and writes the information to disk already formatted for typesetting with TEX. We have installed special code in the screen-oriented editor which we use (EMACS) which greatly aids in cleanup of the text, automatic numbering of gripes, selection of fonts by single keystrokes, uppercase/lowercase changes, etc. We have code which automatically separates "tbc" gripes from fully answered ones. We are continuing to strengthen our tools because the rate of arrival of gripes is steadily increasing and we wish to keep up, and indeed to even improve our responsiveness.

Not all gripes are bug reports or suggestions. The best example received to date arrived in Charlottesville on 11 October:

> "The tape drive (number 2) ate my tape, which took many hours to produce. Not only did it eat my tape, but it obviously enjoyed doing it. Afterwards, with the mangled shreds dangling from its obscene maw, it leered at me very suggestively, daring me to try to remove the tape in one piece and keep both my hands at the same time. I naturally wanted to smash it into components with the club I keep handy for just such purposes, but I refrained. The above was my gripe. My suggestion is to sprinkle it liberally with lamb's blood and burn it under a full moon."

Many gripes raise questions about ЯIPS which are too subtle to be covered in detail in the standard documentation, but which are useful for ЯIPS users to hear about. We intend to publish some of these in this column in the *AIPSLETTER* from time to time as an educational mechanism. Our choice for this release is two gripes on the subtleties of *POPS* syntax:

> **Gripe 660:** "AIPS will not accept a minus number as a parameter value unless the assignment is written with an equal sign. For example,
> APARM(10) -2
> does not work ("STACK LIMITS") but
> APARM(10)=-2
> works. This is stupid and is inconsistent with the rest of AIPS."

Answer: "*POPS* originally *required* the use of the equal sign as the store operator (the equal sign is also used as the equality operator in expressions). Users requested that the syntactic rules be relaxed to interpret a missing equal sign as an implied store operator, and this was done. But the logic which was used for this purpose, while amazingly powerful in most cases, can lead to apparent inconsistencies in certain other cases. The two unary operators, plus and minus, are the biggest source of trouble. The unary minus in your first example caused the trouble, and required that the equal sign be supplied to resolve the syntactic ambiguity. Surprisingly, the subscript is also involved: you will find that the input line I -2 will work. Note: contrary to the impression many users may have formed, the store operator is *not* implied by the presence of the blank space (you will find that the line I-2 will work also!). Blanks are not generally significant in *POPS*. As a result of your gripe we have reviewed this situation once again, have considered several suggested changes for the *POPS* logic, and, once again, have concluded that they are insufficient to solve the problem."

Additional note: Item 3 in section 12.1 ("AIPS Syntax") of the *COOKBOOK* says "... the equals sign may be replaced by a space in almost all cases. The exception arises when the variable on the left is a subscripted array element and the expression on the right involves a unary minus or other function reference (*i.e.*, SIN)."

Gripe 709: "*POPS* allows expressions such as X=3=7 and puts −1 into X."

Answer: "The equal sign is used in *POPS* as both the store operator and the equality test operator. Because 3 is not equal to 7 the expression on the right-hand side has the logical value false (−1). This apparent ambiguity does not exist in several frequently used computer languages: Fortran uses "=" for store and ".EQ." for equality testing while Pascal uses ":=" for store and "=" for equality testing. *POPS* tolerates this ambiguity because we judge it is more convenient for users, even though occasionally they are confused by it. Your gripe would make more sense if the example quoted were:

BMAJ=BMIN=7

The implied multiple replacement interpretation of this syntax would be very nice to have, but *POPS* as it is presently implemented just inexorably applies the same logic that it used for your example (*i.e.*, the result will be that BMIN is unchanged and usually BMAJ = −1)."

The Hardware Column

The design of 𝔸IPS is fundamentally machine, operating system, and device independent. This is obviously an enormous asset for both NRAO and its user community. The asset should be exploited systematically in order to free us all from any unnecessary dependencies on particular vendors or on obsolete hardware. Our work on Unix (discussed above) is intended to allow NRAO and its users to purchase from any CPU vendor who offers Unix software for his CPU. In this column we will discuss "nonstandard" CPUs and devices which 𝔸IPS supports or might be made to support. (The "standard" configuration of 𝔸IPS is a VAX under VMS with an I^2S model 70 image display, a Versatec printer/plotter, and an FPS AP120B array processor.) The reason why this column has been started with this release is that during the last few months we have begun to see significant motion away from the standard configuration, both inside and outside of NRAO. We want our users to be aware of new options for system configuration as they become available.

CPUs

NRAO has placed a purchase order for a model MC500 computer manufactured by MassComp, Inc. (Littleton, MA, 617-486-9425) for delivery to Green Bank in January. This supermicro uses Motorola 68000 chips. It has been purchased for use as a timesharing system at Green Bank and to investigate its suitability for use in realtime control and data acquisition applications at Green Bank. The 𝒜IPS Group expects to make an experimental installation of 𝒜IPS on this machine when it becomes available. A proposal to order another MassComp machine for Charlottesville has received favorable internal reviews but funds have not yet been authorized for procurement. *Please note that, although the NRAO may support 𝒜IPS on Masscomp computers some day, we do not do so now and make no promise to do so in the future. If you purchase a MassComp for running 𝒜IPS at this time, you must be prepared to do any necessary software development yourself.*

Several months ago we received word from Sweden that 𝒜IPS was up and running on an SEL machine. It would be nice to have more details about the success of this installation because SEL currently offers a very high performance supermini which might be of interest to other sites.

Image Displays

Users who have attempted to order I^2S model 70s in recent months have learned that I^2S is no longer manufacturing that model. Their new model 75 is somewhat different from the 70. Recently I^2S informed us that they have prepared a version of the 𝒜IPS "Y-routines" which supports the model 75, and they invited us to visit them and certify the correct functioning of the code. We prefer not to become involved in the certification of 𝒜IPS on equipment which the NRAO does not own and operate. If an institution purchases such equipment and makes the successful running of 𝒜IPS an acceptance requirement, the institution itself must take responsibility for the acceptance test. The NRAO cannot become formally involved, although we will give what informal help we can. Of course, we will be glad to report the results in this newsletter.

Recently Walter Jaffe at the STScI informed us that he has an implementation of the Y-routines for the de Anza model 8500. His code includes several improvements to the Y-routine specifications which are believed to improve their portability to yet other displays. We hope to acquire his code for the 15JAN84 release. We have received code for Grinnell displays from one of our sites and are reviewing it. Several of our sites have Grinnells and we would like to be able to support them officially in some future release.

The image storage unit, which we discussed in the 15MAY82 *AIPSLETTER*, has been constructed. The specifications are even more impressive than we anticipated: more than 600 frames of storage and a maximum of 7 frames per second in movieloop mode. As this *AIPSLETTER* goes to press, Ray Escoffier is almost ready to release the hardware to the 𝒜IPS group. When he does, we will begin software implementation, including a control panel. Once the software for the prototype system is completed and accepted, NRAO plans to build several more of these devices for the 𝒜IPS systems and for the "Pipeline" at the VLA. The present design is only useful with the I^2S model 70 display.

Printer/Plotters

In August we prepared an 𝒜IPS task called QMSPL. This task substitutes for the rôle of TKPL, but prepares output in a form suitable for use with the QMS Lasergrafix 1200 printer/plotter (Quality Micro Systems, Mobile, AL, 205-343-2767). The specifications of the device are: dry toner on 8.5 x 11 ordinary paper, 300 dots/inch resolution, 10 pages/minute (based on the Xerox XP-12 engine). We tested the code on a Lasergrafix 1200 in Maryland and generated lovely contour plots and ruled surface perspective plots. The fact that our code worked on the first try, except for minor problems with the spacing of the surrounding text, suggests that this device has an entirely rational and well-documented interface to the host machine. We have submitted an internal proposal to purchase one of these machines for installation and further evaluation

in Charlottesville. The proposal has not yet been funded. We will be happy to supply the source for QMSPL to any site which acquires a Lasergrafix 1200. The code might also be a useful paradigm for development of code for other laser printers which support graphics operations.

APs

Change 1438 in the **15SEP83** release appears to certify FPS AP100 processors for use with ꓮIPS. We are grateful to Jerry Hudson of the Berkeley Astronomy Department for his energetic pursuit of the AP100 implementation.

Several months ago FPS announced a new series of models, the AP5000 series, which replace their older models, with a substantial reduction in price. About this time Sandia Labs acquired an "AP120B". Their machine would not execute our code correctly. We suspect that it is in fact an AP5205 and that the addresses of constants in the table memory have been changed. Bill reassembled and relinked an experimental version of the microcode for Sandia and it worked. We hope that this test certifies the 5205 so that other ꓮIPS sites may order this machine. We hope it also certifies the 5105, the model which replaces the AP100. At this time we are not absolutely certain of the answers to either of these questions. Presumably we will soon be able to arrange some mechanism for distribution of the code to support the 5000 series.

Because of the rather peculiar structure of the FPS5000 machines ꓮIPS can only use the first page (64K words) of memory and cannot use the coprocessors. It follows that the appropriate models for use with ꓮIPS are the 5105 (like the AP100) and 5205 (like the AP120B) with minimum memory, which is four pages. With present ꓮIPS code the extra three pages will not be used. Theoretically the 5205 should be about 50 percent faster than the 5105 for about $10K more. Due to I/O overheads much of this advantage may be lost. ꓮIPS uses only the standard FPS math library routines. No advanced libraries are used. The FPS·names of the libraries are: **BAALIB**, **BABLIB**, **APFLIB**, **UTLLIB**, and **SYMLIB**. We use the vector function chainer (this may be a separate charge item). We don't use the FPS Fortran compiler.

The speed of ꓮIPS on a Vax with an FPS AP varies from task to task and depends on the loading on the Vax. On an otherwise empty Vax the use of an AP120B rather than the pseudo-AP typically reduces CPU time by a factor of about ten and real time by a factor of about three. On a heavily loaded Vax the use of the AP may improve real time ratios even more because the AP is an independent processor. In general we think that the AP is worth the money for VLA mapping, especially now that FPS has reduced the price.

During the past six months the ꓮIPS Group has been seriously searching for alternatives to the FPS AP120B. We need to find a lower cost AP and we also need to develop system configurations with higher performance and larger addressable memories. This area of hardware development is frustrating because the code for APs is so specialized and so costly to develop. The performance of ꓮIPS depends critically on the APs and so we must pursue this subject. We are currently in the process of evaluating three different APs: the Analogic AP500, the Numerix MARS432, and the MassComp AP-501. The Analogic has an addressable memory of one million FP words and is very attractively priced. However its software and hardware architecture are substantially different from those of the 120B. We are not yet sure whether these differences can be overcome. The software architecture of the Numerix machine looks quite similar to that of the 120B. We are fairly sure that it would be straightforward for us to implement the MARS432 for ꓮIPS. The 432 appears to be *much* more powerful than the 120B (both in speed and in memory size) but it is also much more expensive. The MassComp AP is programmable and is surprisingly cheap, but its suitability for ꓮIPS is far from clear. (Another problem is that it is usable only with the MassComp CPUs.) In summary, at present we have no proven alternative to the FPS AP architecture which FPS currently markets as their 5000 series. *Please note that, although the NRAO may support* ꓮIPS *on additional APs some day, we do not do so now and make no promise to do so in the future. If you purchase an AP other than the FPS models 100, 120B, 5105, and 5205 for running* ꓮIPS *at this time, you must be prepared to do any necessary software development yourself.*

Summary of Changes: 15 Sep – 14 Nov

These changes are listed in detail in the CHANGE.DOC file reproduced later in the *AIPSLETTER*. It has been an important and productive two-month period. There are several new tasks, two of which, at least, are significant. And there were several changes made uniformly through ΠIPS which will be visible to all users and which may affect how some people use the system.

Probably the most important new task is MX. It is capable of mapping and cleaning up to 16 subfields from each of 256 spectral channels in a single execution. The component subtraction is performed from the ungridded *uv* data. This and the multiple subfields mean that smaller numeric fields of view may be mapped, making MX faster than the usual combination of UVMAP and APCLN in many cases. Another large new task is BLANK. It provides four windowing, two clipping, and an interactive TV algorithm for blanking unwanted portions (*e.g.* source-free areas) of an image. The other new tasks are XMOM, GAL, VBANT, and GAPLT. XMOM produces *n*–1 dimensional images of the first axis moments of an image. It is faster than MOMNT because it uses a much simpler clipping algorithm. GAL fits models of galactic rotation to maps of the predominant velocity (*e.g.* 1st moment maps from XMOM). VBANT applies a table of system temperatures and other antenna gain factors to VLBI *uv* data. And GAPLT plots gain tables baseline-by-baseline with more than one baseline per page. There are also two new verbs — CLR2NAME and CLR3NAME — which are the obvious extensions of CLRNAME. All three clear the appropriate disk number as well as the other name parameters.

The system-wide changes include having the system release name (*e.g.* 15NOV83) appear in the task-begins messages, the history files, and Gripes among other places. The copying of previous history files has been made stronger against various error conditions. All character-string adverb values are converted to upper case letters on input. This will prohibit lower-case names in catalog files, but will eliminate the confusion over when the case is, or is not, significant. The meaning of INSEQ = 0 has been changed to be the highest sequence number matching the other name parameters. Similarly, OUTSEQ = 0 means to use the highest matching sequence number plus one. Additionally, OUTSEQ = -1 means to use the actual value of INSEQ. The adverbs INNAME, INCLASS, and the like are now interpreted under "wildcard" rules. These rules determine which test strings (*i.e.* image names in the catalog) match the user-specified string. Except for *, ?, and trailing blanks (when an * is present), all characters specified, for example, in INNAME must match exactly the corresponding characters in the test string. A ? in INNAME matches any single character in the test string, while an * matches any 0 or more characters. In like manner, OUTNAME and OUTCLASS support wildcard rules for merging the default output name fields with those specified by the user. A ? in OUTNAME causes the corresponding character in the default name to be used. An * causes as many characters as possible ($\geq$ 0) from the default name to be used beginning at the character position of the *. The default for OUTNAME is INNAME and the default for OUTCLASS is almost always the task name. A back-slash (\) as the first character in OUTCLASS specifies, however, that the default should be INCLASS.

The 15NOV83 release also contains a variety of improvements and corrections. The relation between frequency and velocity is determined with fully relativistic formulæ. The mystery adverb SNCUT is finally gone. Several tasks now use a catalogued, floating-point output map file rather than a scratch file. The output file is converted to integer at the end of the task if disk space is available. However, the output is not lost if the space is unavailable. The task VM has been revised to improve convergence and to allow an optional, "model" image to be used as the starting point in the process. Task PHCLN is no longer and its "Prussian hat" has been added as an option to APCLN. The performance of APCLN has been improved in several technical ways including preventing the end of a major cycle from occurring with only a few iterations left to go. CONVL is now more understanding about non-VLA images and offers the option of dividing by a Gaussian in the transform space (a form of deconvolution).

Several *uv* tasks have become smarter. UVFND offers a STOKES = 'CORR' option to check correlators individually rather than after conversion to true Stokes parameters. CORER will optionally make a second

pass through the data writing an output file in which all "bad" (printed) correlators have been flagged. The flag levels are now set in a more meaningful way. UVCOP can remove all subarray information including the 5-day time increments added by DBCON. And PRTGA performs gain normalization and has new print selection options. The VLB tasks VLBDR and VBCC use the 48-character OUTFILE adverb rather than OUTNAME.

The verb GO now handles "misleading" values of VERSION more intelligently and uses the system limits for the number of tape and disk drives rather than the limits recorded in the Inputs files. TVALL will now work inside FOR and WHILE loops. The verb TVPOS returns an adverb TVBUT containing the value of the button(s) pushed. This adverb offers interesting possibilities for interactive procedures. All interactive TV routines now inhibit the cursor from "wrapping around" the edges of the TV screen. And the zoom algorithms are friendlier about the selection of the zoom center when the magnification returns to one.

The relatively new task XGAUS creates its output files at the beginning, applies reasonableness tests to its answers, and allows a retry capability. XSMTH has an additional parameter permitting the user to control the effects of edges and blanked pixels on the results of the convolutions. RGBMP has a revised weighting for the three colors and is much friendlier about blanked pixels. PRTIM handles floating-point images correctly and IMEAN has improvements in the histogram labeling and the interpretation of PIXRANGE. IMFIT, VBFIT, and VBCOR now handle logical adverbs in the standard manner (namely 0 is false). The output option in IMFIT now works and is under the control of the new adverb DOOUTPUT, which is normally false.

CHANGE.DOC: 15Sep83–14Nov83

1536. *September 22, 1983*   Release name   *Eric*

To make the AIPS release name available to the software we've created a subroutine GETRLS to contain that information in a DATA statement (which we will update each time we create a new release). GETRLS may be called at any time, but that should not be necessary since we've put calls to it in ZDCHIN. Add parameter RLSNAM to the DCH common (unpacked in format A4,A3) to hold the parameter set by GETRLS. Revised, so far, are IDCH.INC, DDCH.INC, CDCH.INC, GETRLS (New), and ZDCHIN (VMS, MC4, and UTS versions). The UTS version of ZDCHIN was way out of date, missing several other useful parameters as well.
Moved nowhere.

1537. *September 22, 1983*   Use RLSNAM   *Eric*

Change GTPARM to display the release name on task start-up messages, which also goes to the message file. Change HISCOP, CANDY, UVFIL, COMB, CORMS, UVLOD, IMLOD, and APMAP to add release info to the history file. Change SUBIM to call HISCOP. Change MCUBE to use HISCOP on new output files and add release info to old ones. Change AUC to add AIPS release string to Gripe file in the user number field. Change APCLN, APGS, VM, PHCLN, and MX to add release info on restarted "cleans". Change FITTP to put release info in the ORIGIN field.
Moved nowhere.

1538. *September 23, 1983*   General HELPs   *Eric*

Revise *all* of the General HELP files to bring them up to date with the new *COOKBOOK*.
Moved nowhere.

1539. *September 23, 1983*   DFIL.INC, CFIL.INC   *Bill*

Changed to handle up to 20 scratch files and 20 catalogued files. Also now includes a list
of the highest scratch file version numbers on each disk.
Moved nowhere.

1540. *September 23, 1983*   XGAUS   *Eric*

Add some stuff to check if the fit parameters are crazy and warn the user if they are. Allow
a RETRy option when NGAUSS > 1 with a forced cursor entry of the initial guess. Have it
write out the "flux" of each component (amp times width times constant) as well. Change
also XGAUS.HLP and DGAU.INC.
Moved nowhere.

1541. *September 26, 1983*   SNCRC   *Bill*

New scratch file creation routine. Does much more of the bookkeeping than SNCR or SNCRB.
Also keeps track of highest numbered scratch file on each disk to prevent the flood of "file
already exists" messages that sometimes appears. Assumes the use of the DFIL.INC and
CFIL.INC.
Moved nowhere.

1542. *September 26, 1983*   MX   *Bill*

New mapping and CLEANing task. A MIRVed battery powered CLEAN (full field) that
can handle up to 16 fields each up to 4096 x 4096. Does line cubes up to 255 channels and
can average after gridding multiple channels to reduce bandwidth smearing. Appears to
be significantly faster than UVMAP and APCLN for snapshots with less than a few thousand
CLEAN components. Right now AP version only is installed. Also added: MX.HLP,
AP1GRD.VFC, AP1FIN.VFC, APGRD4.AP (added to WDC.AP) MULCLN.VFC, and the include files
DMX and CMX.
Moved nowhere.

1543. *September 27, 1983* UVLOD, IMLOD, SKPBLK *Gary*

These programs now allow a few blank cards to be found between the required cards.
Moved nowhere.

1544. *September 27, 1983*   GNPLT   *Eric*

Allow negative times (though one would hope they don't occur).
Moved nowhere.

1545. *September 28, 1983*   MX - Pseudo AP   *Bill*

Installed Pseudo AP routines for MX: AP1GRD, AP1FIN, APGRD4, and MULCLN.
Moved nowhere.

1546. *September 28, 1983*   Scratch files   *Eric*

Fix SNCRC to begin creating with version number 1 rather than 2. Revise DESCR to look
for additional versions until 5 in a row are not found. It used to quit on the first one not
found.
Moved nowhere.

1547. *September 28, 1989*   XGAUS   *Eric*

Correct the computation of the sum map. Add tests for reasonable answers and flag very unreasonable ones automatically when not in interactive mode.
Moved nowhere.

1548. *September 28, 1989*   IMFIT   *Eric*

Revise handling of all logical adverbs to meet the current AIPS rules (namely 0 is now regarded as "false"). Fill in defaults for OUTNAME and OUTCLASS and allow the task to write out the residual map when so requested. That option had been commented out. Fix HELP file accordingly.
Moved nowhere.

1549. *September 28, 1989*   Tick routines   *Gary*

Integer overflow was possible in the calculation to test the proper tic mark increment. Subroutines changed were TKTICS, ITICS, CTICS, and CHNTIC.
Moved nowhere.

1550. *September 30, 1989*   Installation Procedure   *Gary*

IPROMPTL.COM — Was not recovering correctly when a user entered an invalid disk name.
ILINKAN.COM — Added an extra APL:SUBLIB after the FPS:SUBLIB in the link statement so BPINIT could find ZTACTQ.
ILINKAP.COM. — Same as ILINKAN.
Moved nowhere.

1551. *September 30, 1989*   CVCONJ (Psap version)   *Bill*

Added pseudo AP routine CVCONJ to PSAP library. Takes the conjugate of a complex vector.
Moved nowhere.

1552. *September 30, 1989*   ZACTV8, ZACTV9   *Gary*

ZACTV9 was not returning an error code when task activation failed. This could cause AIPS to hang waiting for a resumption from the task. ZACTV8 is now smarter about finding tasks when VERSION equals NEWPSAP or OLDPSAP. First it looks for the PSAP version, and if it does not find an executable module then it looks in NEW if version equals NEWPSAP or OLD if version equals OLDPSAP. For other directories, if a HELP file for the task is found for the task but no executable module then a "task does not exist" message is returned.
Moved nowhere.

1553. *September 30, 1989*   CFILES common   *Eric*

In planning XMOM and a revision of XGAUS, I made some minor useful revisions:
DFIL.INC — Allows up to 50 catalogued files in the task.
MAPCLR — Understands that FRW(*file number*) $\neq$ 0, 1, or 2 means that there is no status flag to clear.
DIE — Change comments to reflect change in MAPCLR.
SCRATCH.COM — Include TF (TAFFY) files in check for scratch files.
CONS.INC — A grossly non-standard INCLUDE file was messed up in the TAB correction of the last release.
Moved CONS.INC to OLD:, rest nowhere.

1554. *September 30, 1983*   XMOM   *Eric*

New task: finds moments 0 through 3 of each row of an image. It cannot replace MOMNT (yet) since the only blanking it does is by simple flux cutoffs. However, it will be faster than MOMNT when the image has been blanked by other means or when the simple cutoffs will do. New files created: XMOM.FOR, XMOM.HLP, DXMO.INC, CXMO.INC, and EXMO.INC.
Moved nowhere.

1555. *October 1, 1983*   XGAUS   *Eric*

Change it to create all of its output files at the beginning and make other minor corrections.
Moved nowhere.

1556. *October 4, 1983*   TVSTAT   *Eric*

The Inputs section had comments too far to the left. They were taken to be unknown adverbs as a result.
Moved to OLD this date, nowhere else.

1557. *October 4, 1983*   MOMNT   *Eric*

Add a line to allow it to function on FELOcity axes as well as VELOcity axes.
Moved nowhere.

1558. *October 7, 1983*   IMFIT   *Ed*

Revised definition of excess rms level in IMFERR to produce errors which are more reasonable (smaller).
Moved nowhere.

1559. *October 11, 1983*   GAL   *Gustaaf*

Task GAL is included in the test area. It finds a least squares fit to an observed frequency field (*e.g.* of a galaxy). New files created: GAL.FOR, GAL.HLP.
Moved nowhere.

1560. *October 11,1983*   AP routines for MX   *Bill*

Added several AP routines to be used in the gridded subtraction to be added to MX; includes both FPS and Pseudo AP: UVINTP.VFC, GRDCC.VFC, APINTP.AP plus PSAP versions.
Moved nowhere.

1561. *October 11,1983*   MX   *Bill*

Added gridded-FFT routine as an option controlled by the new adverb DOCAT. For now it doesn't make the decision about the method. Also changed: DMX.INC, CMX.INC, MX.HLP, MX.E.
Moved nowhere.

1562. *October 12, 1983*   BPINIT   *Bill*

Added MX to the list of AP tasks to look for.
Moved nowhere.

1563. *October 12, 1983*   PHCLN   *Bill*

Fixed bug in flux density count when restarting.
Moved nowhere.

1564. *October 12, 1983*   SVESQ, VNL   *Bill*

Added **PSAP** versions needed by **VM**.
Moved nowhere.

1565. *October 12, 1983*   CONVRT   *Gary*

New general purpose subroutine to convert maps from integer to floating or vice versa. It is done "in place" using **RENAME** so that the image remains catalogued at all times. This will, when it is installed in the appropriate tasks, remove the need for many of the scratch files now used by **TAFFY**, **COMB** *et al.*
Moved nowhere.

1566. *October 12, 1983*   CNVRT   *Gary*

This task was modified to use the new **CONVRT** subroutine. Also the code was re-worked some to make the task more modular.
Moved nowhere.

1567. *October 13, 1983*   TVFIDDLE   *Eric*

Break out the algorithm to a separate routine in **APLSUB**: called **TVFIDL**. Revise **AU6C** to be simply a calling routine.
Moved nowhere.

1568. *October 14, 1983*   BLANK   *Eric*

New task to blank out purportedly source-free regions of an image. It offers 2 forms of clipping, 4 windowing algorithms, and a TV interactive algorithm. The windowing algorithms are of interest primarily to spectral-line users. The others will have wider applications. New files: **BLANK.FOR**, **BLANK.HLP**, **DBLK.INC**, **CBLK.INC**, and **CBLK.INC**. Files moved from **AIPSUB**: to **APLSUB**: without revision are **BLTGLE**, **TVLOAD**, **IENHNS**, and **IMCCLR**. File **BLTFIL** was moved and strengthened to handle vertices outside the TV image area. **GRPOLY** remains in **AIPSUB**: but had an unDATAed variable corrected.
Moved nowhere.

1569. *October 14, 1983*   FITTP.HLP   *Don*

Added additional comment about use of **DOEOT** in help section: "Note: set **DOEOT** true *only* if you think that there are already FITS data files on the tape *and* if you wish to preserve them."
Moved nowhere.

1570. *October 14, 1983*   AVFILE Help   *Don*

Added additional explanation about the meaning of **NFILES**.
Moved nowhere.

1571. *October 14, 1983*   IMFIT Help   *Don/Eric*

Changed range of adverb **GWIDTH** to allow range of position angles to be -180 to $+180$.
Moved nowhere.

1572. *October 17, 1983*   Adverbs for VSCAL and MX   *Bill*

Added the additional adverbs for **VSCAL** (**GAINERR** and **TIMSMO**) and **MX** (**CHINC**, **NFIELD**, **FLDSIZE**, **RASHIFT**, **DECSHIFT**, and **PHAT**). Changed/added: adverb help files, **POPSDAT.HLP**, **INCS:DAPL.INC**, and **INCS:CAPL.INC**.
Moved nowhere.

1573. *October 17, 1983*   DESCR   *Bill*

Added **MX** to the list of tasks for which **SCRDES** will destroy scratch files.
Moved nowhere.

1574. *October 17, 1983*   MX   *Bill*

Changed scratch files types to **'MX'** and added routine to decide which model subtraction to use.
Moved nowhere.

1575. *October 17, 1983*   UVMAP   *Don*

Added comment to Help file to indicate that **SHIFT** adverb causes shift "down and right".
Moved nowhere.

1576. *October 17, 1983*   VM   *Tim*

New super-duper **VM** which should converge in cases where the old **VM** would not. **GAIN** now has a different meaning and **OPCODE** has disappeared since we have standardised on $-f*\log(f)$. New adverb **NPOINTS** determines the (approximate) scaling used internally. **VM** will converge rather more quickly if this is chosen properly. Also new **INCS:** and **HELP** file.
Moved nowhere.

1577. *October 18, 1983*   CONVRT, CNVRT   *Gary*

CONVRT subroutine modified to make it easier to use with existing tasks. Buffer sizes are now passed to the routine and **CONVRT** expects a closed map instead of an open map.
Moved nowhere.

1578. *October 18, 1983*   PRTIM   *Eric*

Correct bug which caused floating point inputs to appear as all 0.
Moved nowhere.

1579. *October 18, 1983*   FITTP   *Eric*

Revise usage of buffer for reading and converting map file data. This will take advantage of the full buffer size for IO efficiency and will allow 4096 maps to be written.
Moved nowhere.

1580. *October 19, 1983*   UVFND   *Eric*

Add new **STOKES** value called **'CORR'** to test the correlators individually (*i.e.* as is done by **CLIP**). Revise also **SETVIS** to accept a MODE 8 input and set the pointers appropriately and **UVFND.HLP** to explain the addition to the users.
Moved nowhere.

1581. *October 19, 1983*   MOMFT   *Eric*

Correct the handling of the clean beam dimensions. They were very wrong for non-square images.
Moved nowhere.

1582. *October 19, 1983*   GO, INPUTS   *Eric*

Change AU1A and AU2 to trap the special adverbs INTAPE, OUTTAPE, INDISK, IN2DISK, IN3DISK, and OUTDISK. For these, the value limits are the appropriate system values (NTAPED and NVOL) rather than whatever limits are typed into the Inputs files. Thus, a new disk or tape drive may be added without modifying the Inputs.
Moved nowhere.

1583. *October 19, 1983*   PIXRMS   *Eric*

Because of a min-match conflict with PIXRANGE, this adverb has been renamed PIXSTD. Help files for PIXSTD and PIXAVG, the new output adverbs of IMSTAT and TVSTAT, were created and the Help files POPSDAT, IMSTAT, and TVSTAT were revised.
Moved nowhere.

1584. *October 19, 1983*   MX   *Bill*

Added IMSIZE (minimum image size) adverb to the inputs. Also changed MX.HLP, DMX.INC, and CMX.INC.
Moved nowhere.

1585. *October 19, 1983*   CLEAN model and shifts   *Bill*

Various tasks have had an error in the way they handle a position shift of a CLEAN map which caused them not to do the shift. This error has been present since we started using the tangent point rather than the phase center as the CLEAN map reference position. Corrected tasks are: ASCAL, BSCAL, VSCAL, VBFIT, VBBIG, and UVSUB.
Moved nowhere.

1586. *October 20, 1983*   ASCAL   *Bill*

Fixed bug in VISDIV which caused the AP roller to crash. Also fixed clones BSCAL and VSCAL.
Moved nowhere.

1587. *October 21, 1983*   VM, APGS, PHCLN   *Eric*

The FPS routine VFIX rounds the numbers rather than truncating them to integers. Change the constant in the TV scaling to get the desired truncation. Also fix a line which was too long in VM.
Moved nowhere.

1588. *October 21, 1983*   DOOUTPUT   *Eric*

New adverb to request an output file of some sort with an initial value of false. Revise POPSDAT, DAPL.INC, CAPL.INC to declare the adverb. Revise inputs and helps for IMFIT, XGAUSS, and BLANK to use this new adverb rather than DOCAT (which has initial value true). Create a HELP file.
Moved nowhere.

1589. *October 21, 1983*   CORER   *Eric*

Extensive revision: add UVRANGE option, change print cutoff level to 4 parameters, add option to write an output file with all printed correlators flagged. The cutoffs are based on the mean > CPARM(1) * expected error in the mean (*i.e.* the rms / $\sqrt{(N)}$) and on the rms * CPARM(3) Jy. For cross-hand polarizations CPARM(2) and CPARM(4) are used. Create DCRR.INC and CCRR.INC and revise CORER.HLP. Bring WHATSNEW up to date.
Moved nowhere.

1590. *October 21, 1983*   FUDGE   *Eric*

Correct it to fill in the input adverbs with the values actually used. Otherwise the history file will contain blanks for file names and the like.
Moved nowhere.

1591. *October 21, 1983*   CONVRT   *Eric*

Revise XGAUS, XSUM, and XSMTH to use the subroutine CONVRT to convert the output images to integer if needed. This avoids the use of scratch files and will survive a shortage of disk space more easily.
Moved nowhere.

1592. *October 21, 1983*   XMOM   *Eric*

Revise to put out a map of the number of pixels used in each computed moment. This should help in estimating the noise of the moment maps.
Moved nowhere.

1593. *October 22, 1983*   Drop SNCUT   *Eric*

Since this mode of blanking imagery seems to be rarely supported and of no interest to people, I have removed it from a variety of places before and now. Things changed today:

TVLOAD	—	Change call sequence, drop SNEVAL call.
AU5A	—	Don't use SNCUT, change calls to TVLOAD.
AU5D	—	Don't use SNCUT, change calls to TVLOAD.
BLANK	—	Change call to TVLOAD.
TVROAM.HLP	—	Drop SNCUT from HELP file.
WRPLAN	—	Change call sequence dropping SN arguments and drop call to SNEVAL.
MCUBE	—	Change call to WRPLAN, drop input SNCUT.
DMCU.INC	—	Drop SNCUT.
CMCU.INC	—	Drop SNCUT.
MCUBE.HLP	—	Drop SNCUT, correct misstatements which implied that the input data files had to be integer.
MSCALI	—	Change call sequence, drop call to SNEVAL.
CONVRT	—	Change call to MSCALI, standardize typing, correct problems with error messages.
CNVRT	—	Standardize the typing some. Needs more checking.
CNVRT.HLP	—	Drop SNCUT (it wasn't even picked up before).
COMB	—	Drop input SNCUT, drop call to SNEVAL.
CORMS	—	Ditto.
DCOM.INC	—	Drop variable ISNCUT.
CCOM.INC	—	Ditto.
COMB.HLP	—	Drop SNCUT.
CORMS.HLP	—	Ditto.
MAPIO	—	Drop call to SNEVAL. WaWa tasks which use this should be relinked, but it's not important.
SLICE	—	Fix up typing some. The Everett interpolation stuff should be cleaned up between GEOM, SLICE, and XSMTH and made into standard subroutines.

Moved nowhere.

1594. *October 24, 1983*   UVMAP   *Bill*

Added peak flux density to history file.
Moved nowhere.

1595. *October 24, 1983* APCLN, PHCLN *Bill*

APCLN now has the adverb PHAT and the function of PHCLN. PHCLN is being removed. APCLN also has the following changes:
(1) 32 CLEAN components are found at a time in the in-AP CLEAN,
(2) If at the end of a major cycle it is within 5% of the total number of components, the major cycle is extended until all components are done,
(3) If DOTV is true, then the displayed portion of the map is centered on the first CLEAN box if the entire image will not fit on the TV.
Also affected: DCLN.INC, CCLN.INC, APCLN.HLP, PHCLN.HLP.
Moved nowhere.

1596. *October 25, 1983* CONVL *Bill*

Now traps nonstandard input images. If the units are not JY/BEAM, then it assumes that the image units are per pixel rather than per beam. If it cannot find the standard axis type for the rotation, it assumes that the axis increments are pixels rather than degrees. If the input image units are determined to be per pixel, it will now scale the output image so that the units are per beam unless FACTOR is set to 1.0, in which case the units are per pixel. Also fixed a bug which caused the program to bomb if it was fed a shifted subimage. Also changed CONVL.HLP.
Moved nowhere.

1597. *October 25, 1983* PASS1, PASS2 *Bill*

Fixed to give message and quit if asked to do an FFT in which one dimension is less than 4.
Moved nowhere.

1598. *October 25, 1983* VM *Tim/Eric*

Inserted Eric's TV code from old VM into new VM. Required additional correction for change # 1587 (Eric).
Also in 15SEP83 at VLA.

1599. *October 25, 1983* APGRD4 *Bill*

Fixed bug in this microcode routine for MX; it was using the same convolving function sequence in u and v.
Moved nowhere.

1600. *October 26, 1983* CONVL *Bill*

Changed default FACTOR for maps with input units per pixel and with nonstandard axis types and a gaussian convolving function to 1.0.
Moved nowhere.

1601. *October 26, 1983* Velocity computations *Eric*

Change computation of velocities to account for relativistic terms in the summation of velocities. This affects very slightly the relationship between the velocity increment and the frequency increment on an axis. Subroutines revised: SETLOC and AU5D (compute AXDENU $= \delta_\nu/\nu_x$ for FELOcity axes) and AU7 (verbs ALTDEF and ALTSWTCH). Relinked AIPS, but have not done all the others yet.
Moved nowhere.

1602. *October 26, 1983*   TVALL   *Eric*

Revise procedure in POPSDAT.HLP to provide the immediate argument allowed for the verb TVWEDGE. Without this, TVALL does not work inside FOR loops because TVWEDGE picks up the loop variables as its immediate arguments. This is another example of why immediate scalar arguments are not desirable.
Moved nowhere.

1603. *October 26, 1983*   CONVL   *Bill*

Now gives message telling FACTOR.
Moved nowhere.

1604. *October 26, 1983*   CONVL   *Bill*

Added adverb OPCODE and a new function. On OPCODE 'DGAU' it will divide the transform of the specified gaussian by the transform of the convolving image. Don thinks this may be of some use in processing optical images. Also changed: CONVL.HLP, DCVL.INC, CCVL.INC.
Moved nowhere.

1605. *October 27, 1983*   XSMTH   *Eric*

Add user control over the minimum acceptable sum of the convolving function weights to each pixel. The user can employ this to insist on a true convolution (1.0) or to smooth over blanked pixels (near 0). Also correct the smoothing to check for blanked pixels correctly.
Moved nowhere.

1606. *October 27, 1983*   Tick labels   *Eric*

Add more possible tick intervals to handle the very small and very large cases. Revised are CTICS, TKTICS, ITICS, and CHNTIC. Lots of things should be linked.
Moved nowhere.

1607. *October 27, 1983*   IMLOD   *Eric*

Zero the temporary sequence number in the header as well as blanking the other temporary names.
Moved nowhere.

1608. *October 27, 1983*   TVPOS   *Eric*

Add new output adverb to TVPOS called TVBUT and giving the value of the button(s) pushed. Change TVWHER to return the button value, change call sequence to TVWHER in AU5C and TVFIND, and change AU5 to return the value in the adverb. Also change POPSDAT.HLP, DAPL.INC, and CAPL.INC for the new adverb (replacing the obsolete SNCUT), modify TVPOS.HLP, and create a new TVBUT HLP.
Moved nowhere.

1609. *October 27, 1983*   SL2PL   *Eric*

Remove references to SNCUT from Help and Fortran files. It was not used anywhere anyway.
Moved nowhere.

1610. *October 27, 1983*   Roam   *Eric*

Expand remarks in the Help files TVROAM and ROAM about which verbs work and which don't on the split screen left by TVROAM, REROAM, *et al.*
Moved nowhere.

1611. *October 28, 1983*   MCUBE   *Eric*

The axis alignment routine required that there be a 1-pixel axis even in the output cube.
Remove the requirement.
Moved nowhere.

1612. *October 28, 1983*   IPROMPTL.COM   *Gary*

This installation procedure contained a bug that was introduced when I fixed the problem
with invalid user entries for disks. See entry 1550. Lines that used to read
```
I = I + 1
DATA'I' :== 'DIRECT'.[DATA]
```
were corrected to read
```
DATA'I' :== 'DIRECT'.[DATA]
I = I + 1
```
This problem would cause IPROMPTL to bomb when a user tried to set up an AIPS system
with more than one disk.
Moved to 15SEP83 tape.

1613. *October 29, 1983*   History files   *Eric*

In working on the wildcard development, I found a problem in handling error conditions
related to history files. Changed are:
HICREA — Do not change status of catalogued image, return history table pointer value.
HISCOP — Fix comments to point out the real meaning of error codes, several of which
are mere warnings. If old file causes error, reset new file to no entries.
HICOPY — Differentiate read and write error codes.
MADDEX — Allow STAT of update which does not clear the write catalog status on errors.
Moved nowhere.

1614. *October 29, 1983*   History copying   *Eric*

In checking the tasks, many were found to be deficient in the handling of errors from HISCOP
and HICOPY. Tasks revised simply by changing error tests and branch points following
HISCOP calls were:

APCLN	MCUBE	SUBIM	SUMIM	TRANS	APGS
ASCAL	BSCAL	MX	REGLR	UVMAP	VM
VSCAL	ASCOR	GEOM	RGBMP	SUMSQ	

Tasks invoking HICOPY for a second input file needed to protect themselves from errors in
the copy due to the input history file(s). Changed were:

COMB	CORMS	CONVL	FFT	VBBIG	VBFIT
DBCON	VBCOR				

Moved nowhere.

1615. *October 31, 1983*   TAFFY, NNLSQ, IMMOD   *Gary*

Updated TAFFY and these programs generated from TAFFY to make a floating point map
and then use the new CONVRT subroutine to convert to integer, instead of using a floating
point scratch file.
Moved nowhere.

1616. *October 31, 1983*   MX   *Bill*

Removed extraneous argument from UVDISK call sequence in MXGSUB.
Moved from MODCOMP this date.

1617. *November 2, 1983*   RM   *Rick/Ed*

Corrected some errors in RM and recompiled it. *Editors' note: This change was in fact the installation of code more than one year old! Many corrections to it were thereby "lost". Fortunately, a good copy was in Eric's area for developing the new name handling. Whatever "errors" are referenced above will have to be corrected in the modern version.*
Moved to VAX1 and VAX3.

1618. *November 3, 1983*   VSCAL   *Fred*

Added a 'lack of convergence' flag (IER = 2) in NCALC.
Moved nowhere.

1619. *November 4, 1983*   BTCOP   *Eric*

Delete BTCOP Fortran and Help files. Add option to UVCOP to delete subarray references to replace the function of BTCOP. Change also the Help file.
Moved nowhere.

1620. *November 4, 1983*   String adverbs   *Eric*

String adverbs may no longer have lower-case values. This will avoid problems in string matching throughout AIPS. This is implemented by creating STLTOU which converts any characters between single quotes to upper case. The input routine PREAD calls this before returning the input command line to the parsers.
Moved nowhere.

1621. *November 4, 1983*   Wildcard names   *Eric*

The long awaited implementation of wildcard characters in the name adverbs has arrived. For INNAME and INCLASS and their cousins, a '*' means any number of characters of any type and a '?' means a single character of any type. For OUTNAME and OUTCLASS, a fully blank value means to use the basic defaults (INNAME for OUTNAME, the task name or some task-specific value for OUTCLASS). A value containing an asterisk, means use the basic defaults, but overlay some of the character positions with the user-specified values. For example, OUTN = 'A B?C*D??EF ' means use OUTN = INNAME with the first 3 character positions replaced by 'A B', the fifth character position replaced by 'C', the eighth position by 'D', and the last 2 positions by 'EF'. Additionally, INSEQ *et al.* = 0 now means to take the highest sequence number and OUTSEQ = 0 means to take the highest sequence number plus one. Also OUTSEQ ≤ -1.0 means use OUTSEQ = INSEQ. Needless to say, these changes in function require numerous changes in code. These will be listed in later entries.

1622. *November 4, 1983*   Wildcards continued   *Eric*

In the AIPSUB: subdirectory, the following changes were made
DESCR   — WaWa scratch files use 2 digits now for AIPS number.
CATLST   — Support wildcards on INNAME and INCLAS (if INSEQ = 0, report all sequence numbers which match not just the highest).
AU3   — Change call to CATDIR to avoid changing adverb values.
AU7A   — Ditto.
AU3A   — Support wildcard names in ALLDEST.
AU7   — Protect input adverbs with local variables, use MAKOUT in RENAME verb with default OUTCLASS = actual INCLASS.
Moved nowhere.

1623. *November 4, 1983*   Wildcards continued   *Eric*

In the APLSUB: subdirectory, the following changes were made

MAKOUT — (New) Create proper output names using actual input names.

PSFORM — (New) Analyse the input name strings for their wild card structure.

CHWMAT — (New) Do a real and a wildcard string match (uses output of PSFORM).

CATDIR — Change the meaning of the SRCH opcode and add 3 other search-like op-codes. Apply wildcard matching. Seak highest matching sequence number if requested. Input sequence numbers $\leq$ 0 mean any or highest.

OPENCF — Change name field to be input/output argument.

MAPFIX — Ditto for both name fields. Change call sequence to include a "pattern name" (*e.g.* the input image name) to provide the defaults for the output name.

FILOPN — Ditto.

SCRNAM — WaWa scratch files must use 2 characters for ЯIPS number. Fill with zero character and change copy.

MAPCR — Return actual name used, applies standard defaults to output names, new call sequence.

MDESTR — Correct error in comments (HDR is an output, not an input array).

MAPOPN — Drop now redundant code filling in the In/Out parameters.

PRTNAM — Drop redundant INFO call to CATDIR.

NXTMAP — Change call to CATDIR to avoid changing input arguments. Use call for highest sequence number if input SEQ < 0, else go for next matching. Don't allow a write-busy file to be read!

MCREAT — Drop retry loop on sequence number and just find the current highest instead and then add 1.

UVCREA — Ditto.

UNSCR — Change to quicker opcode in call to CATDIR.

Moved nowhere.

1624. *November 4, 1983*   Input-Output names   *Eric*

Change tasks to call MAKOUT to set the output names and to get the correct input names via MAPOPN or CATDIR. These lists are for those tasks changed in straightforward ways.
Changed in APLPGM: are

SUBIM	TAFFY	XSMTH	XSUM	XGAUS	XMOM
BLANK	FUDGE	CORER	CLIP	MCUBE	UVSRT
TRANS	UVLOD	PRTPL	TVPL	TKPL	

Changed in NOTPGM: (includes some standardization, subroutine renaming for uniqueness, and the like)

NNLSQ	IMMOD	AVER	DESCM	STRIP	UVDGP
VBCAL	VBMRG	UVFIX	DBCON	BLOAT	ASCOR
UVMOD	VBCOR	CANDY	WSLOD	CITCC	KONTR
CCMOD	PRTCC	PRTDR	PRTGA		

Changed in APLAPG:
APCLN

Changed in NOTAPG:

REGLR	NTERP	FFT	CONVL	UVSUB	UVMAP
APGS	VM	ASCAL	BSCAL	VSCAL	UVDIS
MX					

Moved nowhere.

1625. *November 4, 1983*   NXTMAP   *Eric*

Routines which call **NXTMAP** need to tell it whether to get the highest sequence number (**DOALL** false effectively) or the next matching sequence number (**DOALL** true). Changed are **FITTP** and **UVEXP**. Also Help files.
Moved nowhere.

1626. *November 4, 1983*   WaWa IO file names   *Eric*

The WaWa IO routines have new call sequences for **MAPCR** and **MAPFIX** especially although **FILOPN** now also revises the input namestring. There should be fewer problems with file names (such as those that plagued **IMFIT**) henceforth. Tasks changed are:

SUMIM	SUMSQ	GEOM	PBCOR	RM	RMTST
RGBMP	IMFIT				

Moved nowhere.

1627. *November 4, 1983*   RGBMP   *Eric*

Change it so that input blanked pixels are treated as zero for the purpose of summing. A pixel will be blanked on output only if all channels are blanked at that pixel. Also fix scaling of planes so that the integral of the weights is equal for all 3 colors.
Moved nowhere.

1628. *November 4, 1983*   Calls to CHLTOU   *Eric*

Calls to make character string values upper case are not needed any longer for adverb values. Remove calls to **CHLTOU** from **AIPSUB**:

AU1A	AU2	AU2A	AU3A	AU7	AU8
AU8A	AUA	HELPS	PRTMSG		

From **APLSUB**:
TVLOAD
From **APLPGM**:

AVTP	BLANK	COMB	DISKU	EXFND	TAFFY
UVFND	UVLOD	UVSRT	XSUM		

From **NOTPGM**:

CCMOD	CORMS	IMMOD	NNLSQ

From **NOTAPG**:
FFT
From **AIPPGM**:
AIPSC
Moved nowhere.

1629. *November 4, 1983*   Help files   *Eric*

Most Help files require some modification. Done in minor ways so far:

APCLN	APGS	ASCAL	CONVL	NTERP	REGLR
VM	VSCAL	BSCAL	WSLOD	CITCC	KONTR
TOVLB	VBCIT	VBLIN	PRTCC	CCMOD	

Moved nowhere.

1630. *November 4, 1983* VBFIT et al. *Eric*

Revise **VBFIT**, **VBBIG**, and **VBCOR** and their Help files to reflect the new name handling. Clean up confusion on the meaning of logical parameters **BPARM(1)** and **BPARM(2)**. The Help files asserted that **BPARM(2)** = 0 meant use a point model, but the code worked otherwise (except for history files). Reverse meaning of **BPARM(1)** so that $\leq$ 0 means to do frequency averaging.
Moved nowhere.

1631. *November 4, 1983* OUTFILE *Eric*

Some rather nonstandard tasks write output files which are outside the normal ΑΙΡS system. Some of these used to use **OUTNAME** which has too few characters to specify a real VAX file name. Changed **VLBDR** and **VBCC** and their Help files to use **OUTFILE** (with no default directory or disk) rather than **OUTNAME**.
Moved nowhere.

1632. *November 4, 1983* Delete junk *Eric*

Several old special-purpose versions of things have been lying around. Deleted are **BBFIT** (Help and Fortran), **LBCAL** (Help), **TOAIP** (Help and Fortran - replaced by **VBLIN** and **VBCIT**), and unsupported Help files for **BPCLN**, **COROF**, **GAUS1**, and **XXCAL**. Also **CTRIA** (Help and load modules were all I could find).
Moved nowhere.

1633. *November 4, 1983* GNPLT *Eric*

Drop excess call to **MAPOPN** and preserve the adverbs other ways. Change **CATIO** call to mark file WRITE. Drop subroutine **ADDEXT** and replace with standard call to **MADDEX**.
Moved nowhere.

1634. *November 4, 1983* HELP for this *Eric*

Revise Help files for **INNAME**, **INCLASS**, **INSEQ**, **IN2NAME**, **IN2CLASS**, **IN2SEQ**, **IN2NAME**, **IN3CLASS**, **IN3SEQ**, **OUTNAME**, **OUTCLASS**, and **OUTSEQ** to try to explain all this mess.
Moved nowhere.

1635. *November 5-7, 1983* XMOM *Eric*

Change the place where the potentially large bias of the coordinate reference value is added to the first moments. The intermediate files are floating, but can lose accuracy if the variation in first moment is << than the center value. This bias is now simply applied to the header before finishing the history. Also found a severe error in reading the scratch file for conversion to the output files. All answers have been wrong since I added the fifth output file (count of pixels used). Also add a test for absurd first moments (possible if fluxes < 0 are allowed) and blank those pixels.
Moved nowhere.

1636. *November 5-7, 1983* IMEAN *Eric*

Change the meaning of **PIXRANGE** so that it applies to the separation between the center of histogram box 1 and the center of histogram box **NBOXES**. Call **RNGSET** to apply the standard defaults to handling **PIXRANGE**. Make the axis labeling smarter so that it can handle cases with a large central value and small increment.
Moved nowhere.

1637. November 5–9, 1983   More Helps   Eric

Revise Help files to describe the name handling correctly. The phrase "Standard defaults." is being used a lot. This means the full wildcard and default mechanisms specified in the Help files for the relevant adverbs. Helps changed:

ADDBEAM	ALLDEST	ALTDEF	ALTSWTCH	ASCOR	AVER
AXDEFINE	BLANK	BLOAT	CANDY	CATALOG	CELGAL
CLIP	CLRSTAT	CNTR	CNVRT	COMB	CORER
CORFQ	CORMS	DBCON	DESCM	EXTDEST	EXTLIST
FFT	FUDGE	GAL	GEOM	GETHEAD	GNPLT
GREYS	IBMTP	IMEAN	IMHEADER	IMLHS	IMMOD
IMSTAT	IMLOD	IMVAL	MAXFIT	MCUBE	MOMFT
MOMNT	MX	NEWTB	NNLSQ	PBCOR	PCNTR
PROFL	PRTAN	PRTCC	PRTDR	PRTGA	PRTHI
PRTIM	PRTPL	PRTUV	PUTHEAD	QHEADER	QIMVAL
REBOX	RESCALE	RGBMP	RM	RMTST	SL2PL
SLFIT	SLICE	SMOTH	STRIP	SUBIM	SUMIM
SUMSQ	TAFFY	TKAGUESS	TKAMODEL	TKARESID	TKGUESS
TKMODEL	TKPL	TKRESID	TKSLICE	TRANS	TVALL
TVLOD	TVMOVIE	TVPL	TVROAM	UVCOP	UVDGP
UVDIS	UVFIL	UVFIX	UVFLG	UVFND	UVLOD
UVMAP	UVMOD	UVPLT	UVSRT	UVSUB	VBCAL
VBMRG	VBPLT	VLBDR	XGAUS	XMOM	XPLOT
XSMTH	XSUM	XXFIT	ZAP		

Moved nowhere.

1638. November 7, 1983   Miscellaneous   Eric

In reviewing routines to check the Help files for their name handling, I've run across a variety of misc. bugs. Corrected have been:

CNVRT   —   Handling of USERID was non-standard.
UVFIL   —   Give it a default OUTNAME and standard name handling.
COMB   —   Simplify the default OUTCLASS a bit.
CORMS   —   Ditto.
CORFQ   —   Handling of USERID was non-standard.
DESTEXT   —   Delete ancient version of EXTDEST Help file.
Moved nowhere.

1639. November 7, 1983   APGRID   John Spencer/Bill

Fixed error in call sequence to CVMUL which caused Pseudo AP version to bomb if the position was shifted. The true AP version appears to have worked correctly in spite of this bug.
Moved nowhere.

1640. November 7, 1983   VBANT   John

A new task VBANT has been released into AIPS. VBANT applies T_{sys} and antenna gain calibrations to VLBI data in AIPS. VBANT reads a text file in the runfile subdirectory which contains the VLBI T_{sys}'s and gain curves.
Moved nowhere.

1641. *November 7, 1983*   GAPLT   *John*

A new task **GAPLT** has been released. **GAPLT** plots **GA** extension files created by **ASCAL**, **VSCAL**, or **VBANT**. **GAPLT** allows more than one plot per page.
Moved nowhere.

1642. *November 8, 1983*   VSCAL   *Fred*

Made a minor change in **NCALC**, which may improve the convergence properties in problem cases.
Moved nowhere.

1643. *November 8, 1983*   More misc.   *Eric*

Continuing the saga here: some bugs were found in basic subroutines and some minor corrections made in various tasks while checking them against their Help files:

UVCREA — Correct 2 bugs: format error in announcing new UV file and setting sequence number on **OUTSEQ** = 0.
MOMFT — Check all characters not just 2 for default **IN2NAME** and **IN2CLASS**.
NEWTB — Use standard rules on **USERID** handling.
PCNTR — Test all characters in names and classes for blank before applying defaults.
PRTAN — Use standard rules for **USERID** handling.
PRTUV — Use standard rules for **USERID** handling.
CATLST — Test all characters for blank before treating name and class as "any" (not just 1st four).
CATDIR — Ditto.
TVLOCA — Apply wild card matching and test all characters for pure blank.
SLFIT — Use standard rules for **USERID** handling.
SUBIM — Use standard rules for **USERID** handling and fix round off (esp. of **OUTSEQ**).
TRANS — Correct error in handling names.
Moved nowhere.

1644. *November 9, 1983*   PRTGA   *John*

Fixed a bug which caused the gain amplitudes printed by the task not to be normalized by the mean gain modulus. Thus the gains printed were not exactly the gain amplitudes applied in correcting the data.
Moved nowhere.

1645. *November 9, 1983*   PRTGA   *John*

A gain range to print option has been added. Thus one may list only those gains which might have abnormally large or small values out of a very large **GA** file.
Moved nowhere.

1646. *November 9, 1983*   Even more misc.   *Eric*

Continuing to check code while doing Help files:
UVFLG — Change to standard handling of **USERID**.
UVFND — Change to standard handling of **USERID**.
UVLOD — Revise order of default names.
VBPLT — Correct typos on user number for 2nd input image.
XXFIT — Change to standard handling of **USERID**.
Moved nowhere.

1647. *November 9, 1983*   VSCAL   *Fred*

I made a fairly substantial modification to **NCALC**. Now, before solving for simultaneous phase and amplitude corrections, it first attempts to converge upon the "phase-only" solution. This ought to rescue any of the problem cases for which there is any shred of hope.
Moved nowhere.

1648. *November 9, 1983*   VBANT, GAPLT   *Eric*

Fix these two up to use the new naming conventions including revising the Help files. Change meaning of 0 for one of the logical adverbs in **VBANT**. Use **NLUSER** not the undefined **USERID** in **GAPLT**.
Moved nowhere.

1649. *November 10, 1983*   IMFIT   *Ed*

Corrected minor bug in subroutine **IMFERR**. **CBAREA** was not initialized correctly.
Moved nowhere.

1650. *November 10, 1983*   Bugs   *Eric*

Correct **IMLOD** for errors in the new routine for renaming the temporary FITS image file. Correct **GNPLT** for its handling of the default time range. It was getting confused on long intervals and using 0.0 days as the upper bound. Correct **EXTLIST** (subroutine **AU8A**) to display negative times correctly for plot files from **UVPLT** and **GNPLT**.
Moved nowhere.

1651. *November 11, 1983*   VM   *Eric/Tim*

Brought Tim's latest version of **VM** with its Help and Include (**DVMN.INC** and **CVMN.INC**) files to Charlottesville. Revised them to support the new name conventions and released them. The added capability in **VM** appears to be the use of a "default" image to constrain the starting point of the algorithm.
Moved nowhere.

1652. *November 11, 1983*   TKSLIN   *Eric*

Add test for **PIXRANGE** being so small that a single integer value has been specified. In this case, the routine will now use the full range of the input image. Relink **AIPS**, **XPLOT**, and **XGAUS**.
Moved nowhere.

1653. *November 11, 1983*   CLRNAME   *Eric*

Change subroutine **AU8** to have **CLRNAME** also clear **INDISK**. Add verbs **CLR2NAME** and **CLR3NAME** for the obvious uses. Write proper Help files for all 3. Revise **POPSDAT.HLP** to reference the new verbs.
Moved nowhere.

1654. *November 11, 1983*   RENAME   *Eric*

Add messages at level 2 giving the old and new names (subroutine **AU7**).
Moved nowhere.

1655. *November 11, 1983*   TV cursor and zoom   *Eric*

Revise all interactive TV routines to prohibit movement of the cursor off the edge of the screen. Primarily this was implemented by putting a test in DLINTR and returning the cursor (in the offending coordinate only) to its previous value. The call sequence to DLINTR was changed requiring changes in AU6, AU6B, TVFIDL, GRBOXS, GRLUTS, HIENH, IENHNS, TVROAM, TVMOVI, GRPOLY, and BLANK. TVMOVI was also changed in the parts which do not use DLINTR. The routines TVFIDL and AU6 were also revised so that the cursor position is not centered while zooming if the magnification factor ends up being 1 (because of a button push or because it started that way).
Moved nowhere.

1656. *November 12, 1983*   MX   *Bill*

Changed gridded subtraction to use twice as many cells for the interpolation grid as for the map (for dimensions up to 2048). This takes a bit longer, but significantly improves the accuracy of the interpolation for bright points far from the map center.
Moved nowhere.

1657. *November 12, 1983*   Today's changes   *Eric*

Some corrections:

NTERP   — Fix up several bugs including providing defaults for BLC and TRC and clearing the output file status. Do a bit for the typing.

MAKOUT   — Change OUTCLASS handling to allow a back slash ('\') to change the default from the task name to INCLASS.

OUTCLASS   — Change Help file to reflect this.

MAPOPN   — Clear READ status when map too busy to read.

NXTMAP   — Ditto.

Moved nowhere.

1658. *November 13, 1983*   VBLIN   *John*

Fixed a bug in VBLIN that caused it to die horribly at the end-of-file on an IBM tape. VBLIN will now read one or more IBM tape files as advertised.
Moved nowhere.

1659. *November 14, 1983*   GAL   *Gustaaf*

Entered new version of GAL, featuring (1) a choice of rotation curves, and (2) an output map with the residual velocity field.
Moved nowhere.

1660. *November 14, 1983*   AIPS command procedures   *Gary*

Logical names are now used in these procedures instead of device names.

AIPSTR.COM	DMOUNT.COM	DMOUNT1.COM (new)
DMOUNT2.COM (new)	DMOUNT3.COM (new)	MOUNT.COM
MOUNT1.COM (new)	MOUNT2.COM	MOUNT3.COM (new)

Moved nowhere.

1661. *November 14, 1983*   PRTPL   *Gary*

There were some bugs in the scaling if PRTPL was used to print to a device with a different number of pips horizontally than vertically.
Moved nowhere.

Changes: 15-Nov-1983 version of AIPS

This publication is intended to provide corrections and updates to the *AIPS COOKBOOK* in order to fill the gap between publication dates. We also hope that users will annotate their current copies of the *COOKBOOK* rather than request a new copy at each publication date.

This Section will provide details of the changes to the 15-Sep-1983 *COOKBOOK* caused by changes in software between the 15-Sep-1983 and 15-Nov-1983 versions of *AIPS*. The changes during this period, although numerous, are minor and mostly have little affect on the *COOKBOOK*. The most significant changes, the task MX and the wildcard naming conventions, are too technical for inclusion in the *COOKBOOK*. The new task BLANK merits a short paragraph in the Spectral-line chapter.

Page 11, § 4.2.

Replace text at bottom of page 11 with:

A summary record of your *AIPS* data sets (UV data, maps, beams) is kept in a disk file called the catalog file. To interrogate your disk catalog, use:

> INDI 0 ; MCAT C_R   to list all maps.

> INDI 0 ; UCAT C_R   to list all UV data sets.

A complete listing of the catalog file, which may be printed with PRTMSG, can be generated by:

> CLRNAME C_R   to reset adverbs INNAME, INCLASS, INSEQ, INTYPE, INDISK.

> CAT C_R   to generate the listing.

which will list all of your disk data sets. To limit the listing to a particular name, class, sequence number, type, and/or disk, use an appropriate combination of the parameters INNAME, INCLASS, INSEQ, INTYPE, and INDISK, respectively. Unless a hard copy or a limited part of the catalog is desired, it is faster to use MCAT and UCAT. A typical listing looks like:

Page 20, § 5.3.

Replace first paragraph of § 5.3. with:

There are many programs which aid in the processing, display, and editing of UV data. A summary of this software is listed by:

> HELP UVPR C_R

and in § 13 of the *COOKBOOK*. In particular, there are facilities in ASCAL, CLIP, and CORER to flag UV data in *AIPS* based on deviations from specified norms. There is also a task, UVFLG, which allows flagging and unflagging by antenna-IF or by correlator. Type HELP ASCAL, HELP CLIP, or HELP UVFLG for details. The task UVPLT plots various combinations of UV data—type HELP UVPLT C_R for details. The task UVFND is also recommended for printing out suspicious portions of the data base. Note that CLIP examines the data correlator by correlator, but UVFND normally converts the data to Stokes components (using the same criteria as UVMAP) before checking that the amplitudes are in range. To examine the correlators individually, use STOKES 'CORR' in UVFND.

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Page 31 § 8.2.

Change the last paragraph to:

The verbs **TVSTAT** and **IMSTAT** provide similar functions to **IMEAN** without the histogram option. Both return their results as AIPS parameters **PIXAVG** (mean), **PIXSTD** (rms), **PIXVAL** (maximum), and **PIXXY** (pixel position of the maximum). **IMSTAT** uses the same file name, **BLC**, and **TRC** parameters as **IMEAN**. **TVSTAT**, however, works on the image plane currently displayed on the TV and is not limited to a single rectangular area. Instead, the TV cursor is used to mark one or more polygonal regions over which the function is to be performed. type EXPLAIN TVSTAT C_R for a description of the operation.

Page 36 § 9.5

Change the fourth paragraph to two paragraphs:

The task **BLANK** offers a variety of algorithms for "blanking" out regions of bad data or source-free regions in spectral-line cubes. Among the algorithms are four batch ones designed primarily to work on transposed cubes which allow the specification of different forms of spectral windows. There are two versions of clipping which are more flexible than the 'CLIP' opcode in **COMB**. And, probably of greatest interest, there is an interactive algorithm which allows the "good" regions of the image to be indicated via the television display and cursor. Note that regions which are free of sources contribute only noise in analysis programs such as those listed below.

There are several spectral-line analysis tasks in *AIPS* some of which may be of interest for other kinds of data. The task **XMOM** calculates a set of $n-1$ dimensional maps of the weight and moments 0 through 3 from a data cube. Task **MOMNT** is similar, but uses a more powerful and expensive blanking method. **NNLSQ** performs a constrained non-linear deconvolution of the spectra. **XGAUS** is an interactive task to fit up to four Gaussians to each row of a cube (see § 8.3.4). **XSUM** sums or averages each row to produce an $n-1$ dimensional image. **GAL** fits models of galaxy rotation to images of the predominant velocity (*e.g.* the first moment maps written by **XMOM**, **XGAUS**, and **MOMNT**).

Page 42 § 12.1.

Replace item 6. with:

6. Both upper and lower case letters may be used in *AIPS*. However, adverb character string values are converted to upper case before being stored and used.

Section 13

Add to UVPR, Page 52:

VBBIG	T	Global fringe fitting for VLBI (>10 antennas)	§
VBANT	T	Apply tables of antenna gains for VLBI	§

Delete from MAPETC, Page 53 PHCLN *entry.*

Add to MAPETC, Page 53:

MX	T	Multi-field and channel map and clean	§
GAPLT	T	Plot gain files antenna by antenna	§
VBBIG	T	Global fringe fitting for VLBI (>10 antennas)	§

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Add to CATINFO, Page 55:

CLR2NAME	V	Fill IN2NAME *et al.* with null values	§
CLR3NAME	V	Fill IN3NAME *et al.* with null values	§

Add to ANALYSIS, Page 59:

GAL	T	Fit model rotation curve to velocity image	§ 9.5
XMOM	T	Find moments along *x* axis	§ 9.5
BLANK	V	Delete regions from images	§ 9.5

Add to CUBE, Page 60:

BLANK	V	Delete regions from images	§ 9.5
XMOM	T	Find moments along *x* axis	§ 9.5

Add to VLBI, Page 61:

VBANT	T	Apply tables of antenna gains for VLBI	§
VBBIG	T	Global fringe fitting for VLBI (>10 antennas)	§

Delete from APTASKS, Page 61 PHCLN *entry:*

Add to APTASKS, Page 50:

MX	T	Multi-field and channel map and clean	§

Add to INDEX, Page 64:

BLANK	V	Delete regions from images	§ 9.5

Add to INDEX, Page 65:

CLR2NAME	V	Set IN2NAME etc. to null	§
CLR3NAME	V	Set IN3NAME etc. to null	§

Add to INDEX, Page 66:

GAL	T	Fit model rotation curve to velocity image	§ 9.5
GAPLT	T	Plot gain files antenna by antenna	§

Delete from INDEX, Page 67 the PHCLN *entry:*

Add to INDEX, Page 67:

MX	T	Multi-field and channel map and clean	§

Add to INDEX, Page 70:

VBANT	T	Apply tables of antenna gains for VLBI	§
VBBIG	T	Global fringe fitting for VLBI (>10 antennas)	§

Add to INDEX, Page 71:

XMOM	T	Find moments along *x* axis	§ 9.5

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AIPS Order Form

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   (*N.B.*: If you have received a plastic mailing container from us, we insist that you use it for a reorder.)
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3. Tape type desired:
   ☐ VAX/VMS **BACKUP**
   ☐ Simple blocked card images
   ☐ FITS compressed text format

4. **AIPS** version desired:
   ☐ 15-Nov-1983
   ☐ 15-Jan-1984

5. Tape density desired:
   ☐ 800 bpi
   ☐ 1600 bpi
   ☐ 6250 bpi

6. There are Gripes on the tape:
   ☐ Yes
   ☐ No

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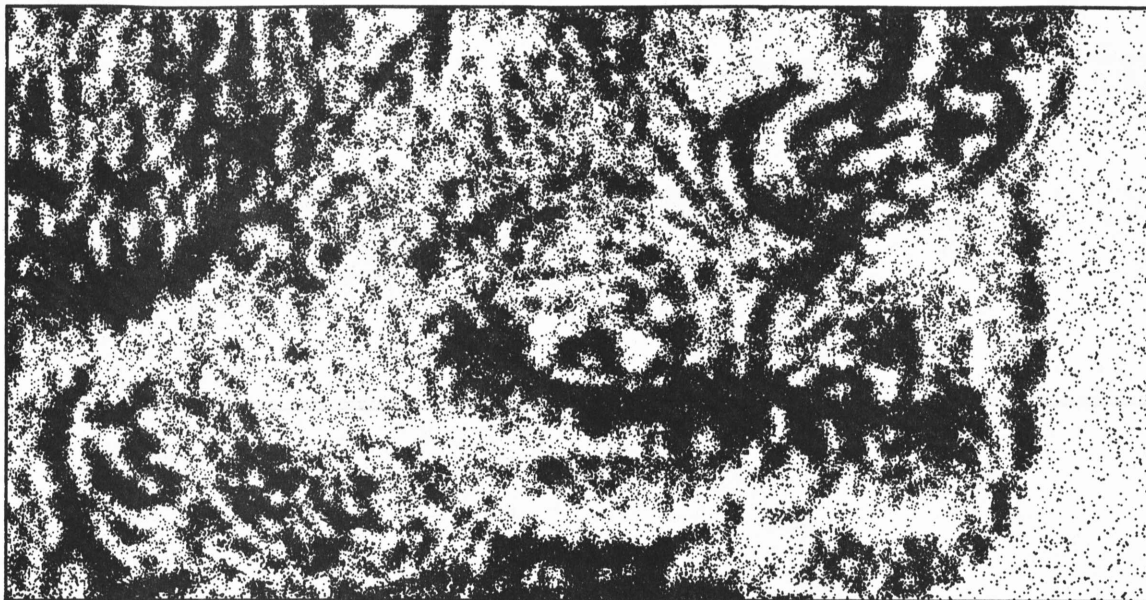
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