13 CURRENT *AIPS* SOFTWARE

The complete lists of software in *AIPS* are kept up-to-date in certain special files which may then be accessed with the AIPS verb ABOUT. Semi-automatic software makes these listing files using the primary and secondary keywords entered by *AIPS* programmers in the numerous help files. The explanations given for each symbol are also those entered by the programmers as the "one-liner" descriptions of the symbol for which the help file is written. The lists of primary and secondary keywords may be viewed directly by typing:

> HELP CATEGORY C_R — to view primary keywords

> HELP SECONDARY C_R — to view secondary keywords

The help file for ABOUT is more explanatory, however. The general help file (for HELP itself) lists a number of general help files which will be of interest. These are also mentioned in the section called INFORMATION below.

The following sections are verbatim reproductions of the various listing files used by ABOUT and are roughly current to the 15JAN95 release of *AIPS*. Each section title is the name of the keyword which is used as the ABOUT topic. Each line within a section lists a task, verb, pseudoverb, procedure, adverb, or RUN file with a very brief description of its function. Pseudoverbs come in two flavors: those that act roughly like verbs and those that must be treated specially, *i.e.*, that must appear alone on a line or only in certain contexts. The help file for each pseudoverb should clarify the its grammatical limits. Typing

> HELP *name* C_R

where *name* is one of the entries in the left-hand column, will give more useful information about that *AIPS* symbol.

13.1 ADVERB

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ADVERB
Type:  General type of POPS symbol
Use:   Adverbs are the symbols used to address values.  They
       may be REAL (single-precision floating point), ARRAY
       (multiply-dimensioned REALs), or STRING (character
       strings with or without subscripts).  The user may
       create new adverbs by defining them while typing or
       editing procedures.
Grammar:   Adverb names may be used either in compile mode
       or in regular execute mode.  In the former, their
       pointers are compiled with the procedure and their
       values, at the time the procedure is invoked, are
       used during the execution of the procedure.
Usage examples:
       ARRAY2 = ARRAY1
       ARRAY3(I,J) = 23.6
       CHAN = 4
       STRARRY = 'STR1','STR2','STR3',STRAR2
       DUM3 (24, I, STRARRY)
    =====>  Character string data must be enclosed in quotes!
    =====>  This allows the compiler to tell data from adverb
            names and allows embedded special characters.
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List of ADVERBs
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ALIAS     adverb to alias antenna numbers to one another
ANTENNAS  Antennas to include/exclude from the task or verb
ANTWT     Antenna Weights for UV data correction in Calibration
APARM     General numeric array adverb used many places
ARRAY1    General scratch array adverb
ARRAY2    General scratch array adverb
ARRAY3    General scratch array adverb
ASPMM     Plot scaling parameter - arc seconds per millimeter on plot
AX2REF    Second reference pixel number
AXINC     Axis increment - change in coordinate between pixels
AXREF     Reference pixel number
AXTYPE    Type of coordinate axis
AXVAL     Value of axis coordinate at reference pixel
BADDISK   specifies which disks are to be avoided for scratch files
BAND      specifies the approximate frequency of UV data to be selected
BASELINE  specifies which antenna pairs are to be selected/deselected
BATFLINE  specifies starting line in a batch work file
BATQUE    specifies the desired batch queue
BCHAN     sets the beginning channel number
BCOMP     gives beginning component number for multiple fields
BCOUNT    gives beginning location for start of a process
BDROP     gives number of pooints dropped at the beginning
BIF       gives first IF to be included
BITER     gives beginning point for some iterative process
BLC       gives lower-left-corner of selected subimage
BLOCKING  specifies blocking factor to use on e.g. tape records
BLVER     specifies the version of the baseline-calibration table used
BMAJ      gives major axis size of beam or component
BMIN      gives minor axis size of beam or component
BOX       specifies pixel coordinates of subarrays of an image
BOXFILE   specifies name of Clean box text file
BPA       gives position angle of major axis of beam or component
BPARM     general numeric array adverb used too many places
BPVER     specifies the version of the bandpass table to be applied
BWSMEAR   amount of bandwidth smearing correction to use
CALCODE   specifies the type of calibrator to be selected
CALSOUR   specifies source names to be included in calibration
CBPLOT    selects a display of a Clean beam full width at half maximum
CCBOX     specifies pixel coordinates of subarrays of an image
CELLSIZE  gives the pixel size in physical coordinates
CHANNEL   sets the spectral channel number
CHANSEL   Array of start, stop, increment channel numbers to average
CHINC     the increment between selected channels
CLBOX     specifies subarrays of an image for Clean to search
CLCORPRM  Parameter adverb array for task CLCOR
CLEV      Contour level multiplier in physical units
CLINT     CL table entry interval
CMETHOD   specifies the method by which the uv model is computed
CMODEL    specifies the method by which the uv model is computed
CODETYPE  specifies the desired operation type
COLORS    specifies the desired TV colors
COMMENT   64-character comment string
COORDINA  Array to hold coordinate values
COPIES    sets the number of copies to be made
CPARM     general numeric array adverb used many places
CTYPE     specifies type of component
CUTOFF    specifies a limit below or above which the operation ends
DDISK     Deterimins where input DDT data is found
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DDTSIZE    Deterimins which type of DDT is RUN.
DECSHIFT   gives Y-coordinate shift of an image center from reference
DELCORR    specifies whether VLBA delay corrections  are to be used
DENSITY    gives the desired tape density
DETIME     specifies a time interval for an operation (destroy, batch)
DIGICOR    specifies whether VLBA digital corrections are to be applied
DIST       gives a distance - PROFL uses as distance to observer
DO3DIMAG   specifies whether uvw's are reprojected to each field center
DOALIGN    specifies how two or more images are aligned in computations
DOALL      specifies if an operation is done once or for all matching
DOALPHA    specifies whether some list is alphabetized
DOARRAY    spcifies if subarrays are ignored or the information used
DOBAND     specifies if/how bandpass calibration is applied
DOBLANK    controls handling of blanking
DOCALIB    specifies whether a gain table is to be applied or not
DOCAT      specifies whether the output is saved (cataloged) or not
DOCELL     selects units of cells over angular unit
DOCENTER   selects a single, centered page or multiple pages of plots
DOCIRCLE   select a "circular" display (i.e. trace coordinates, ...)
DOCONCAT   selects concatenated or indivudual output files
DOCONFRM   selects user confirmation modes of repetitive operation
DOCONT     selects a display of contour lines
DOCRT      selects printer display or CRT display (giving width)
DODELAY    selects solution for phase/amplitude or delay rate/phase
DOEOF      selects end-of-file writing or reading until
DOEOT      selects tape positioning before operation: present or EOI
DOGREY     selects a display of a grey-scale image
DOGRIDCR   selects correction for gridding convolution function
DOHIST     selects a histogram display
DOHMS      selects sexagesimal (hours-mins-secs) display format
DOINVERS   selects opposite of normal function
DOMAX      selects solutions for maxima of models
DOMODEL    selects display of model function
DONEWTAB   do we make new tables, use a new table format, etc.
DOOUTPUT   selects whether output image or whatever is saved / discarded
DOPOL      selects application of any polarization calibration
DOPOS      selects solutions for positions of model components
DORESID    selects display of differences between model and data
DOSLICE    selects display of slice data
DOSTOKES   selects conversion from observed polarizations to Stokes
DOTABLE    selects use of table-format for data
DOTV       selects use of TV display option in operation
DOTWO      do we make two of something
DOUVCOMP   selects use of compression in writing UV data to disk
DOVECT     selects display of polarization vectors
DOWAIT     selects wait-for-completion mode for running tasks
DOWEDGE    selects display of intensity step wedge
DOWEIGHT   selects operations with data weights
DOWIDTH    selects solution for widths of model components
DPARM      General numeric array adverb used many places
ECHAN      define an end for a range of channel numbers
ECOUNT     give the highest count or iteration for some process
EDGSKP     Deterimins border excluded from comparision or use
EDROP      number of points/iterations to be omitted from end of process
EIF        last IF number to be included in operation
ERROR      was there an error
FACTOR     scales some display or CLEANing process
FLAGVER    selects version of the flagging table to be applied
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FLDSIZE	specifies size(s) of images to be processed
FLMCOMM	Comment for film recorder image.
FLUX	gives a total intensity value for image/component or to limit
FORMAT	gives a format code number: e.g. FITS accuracy required
FQTOL	Frequency tolerance with which FQ entries are accepted.
FREQID	Frequency Identifier for frequency, bandwidth combination
FUNCTYPE	specifies type of intensity transfer function
GAIN	specifies loop gain for deconvolutions
GAINERR	gives estimate of gain uncertainty for each antenna
GAINUSE	specifies output gain table or gain table applied to data
GAINVER	specifies the input gain table
GCVER	specifies the version of the gain curve table used
GMAX	specifies peak values of model components
GPOS	specifies pixel positions of model components
GRCHAN	specifies the TV graphics channel(s) to be used
GREMAIL	gives user's e-mail address name for reply to gripe entry
GRNAME	gives user's name for reply to gripe entry
GRPHONE	specifies phone number to call for questions about a gripe
GUARD	portion of UV plane to receive no data in gridding
GWIDTH	gives widths of model components
HIEND	End record number in a history-file operation
HISTART	Start record number in a history-file operation
I	spare scalar adverb for use in procedures
ICUT	specifies a cutoff level in units of the image
IMSIZE	specifies number of pixels on X and Y axis of an image
IN2CLASS	specifies the "class" of the 2nd input image or data base
IN2DISK	specifies the disk drive of the 2nd input image or data base
IN2EXT	specifies the type of the 2nd input extension file
IN2FILE	specifies name of a disk file, outside the regular catalog
IN2NAME	specifies the "name" of the 2nd input image or data base
IN2SEQ	specifies the sequence # of the 2nd input image or data base
IN2TYPE	specifies the type of the 2nd input image or data base
IN2VERS	specifies the version number of the 2nd input extension file
IN3CLASS	specifies the "class" of the 3rd input image or data base
IN3DISK	specifies the disk drive of the 3rd input image or data base
IN3EXT	specifies the type of the 3rd input extension file
IN3NAME	specifies the "name" of the 3rd input image or data base
IN3SEQ	specifies the sequence # of the 3rd input image or data base
IN3TYPE	specifies the type of the 3rd input image or data base
IN3VERS	specifies the version number of the 3rd input extension file
IN4CLASS	specifies the "class" of the 4th input image or data base
IN4DISK	specifies the disk drive of the 4th input image or data base
IN4NAME	specifies the "name" of the 4th input image or data base
IN4SEQ	specifies the sequence # of the 4th input image or data base
IN4TYPE	specifies the type of the 4th input image or data base
INCLASS	specifies the "class" of the 1st input image or data base
INDISK	specifies the disk drive of the 1st input image or data base
INEXT	specifies the type of the 1st input extension file
INFILE	specifies name of a disk file, outside the regular catalog
INNAME	specifies the "name" of the 1st input image or data base
INSEQ	specifies the sequence # of the 1st input image or data base
INTAPE	specifies the input tape drive number
INTERPOL	specifies the type of averaging done on the complex gains
INTPARM	specifies the parameters of the gain interpolation function
INTYPE	specifies the type of the 1st input image or data base
INVERS	specifies the version number of the 1st input extension file
IOTAPE	Deterimins which tape drive is used during a DDT RUN
J	spare scalar adverb for use in procedures

```
JOBNUM    specifies the batch job number
KEYSTRNG  gives contents of character-valued keyword parameter
KEYTYPE   Adverb giving the keyword data type code
KEYVALUE  gives contents of numeric-valued keyword parameter
KEYWORD   gives name of keyword parameter - i.e. name of header field
LABEL     selects a type of extra labeling for a plot
LEVS      list of multiples of the basic level to be contoured
LPEN      specifies the "pen width" code # => width of plotted lines
LTYPE     specifies the type and degree of axis labels on plots
MAPDIF    Records differences between DDT test results and standards
MAXPIXEL  maximum pixels searched for components in Clark CLEAN
MDISK     Deterimins where input DDT data is found
MINAMPER  specifies the minimum amplitude error prior to some action
MINPATCH  specifies the minimum size allowed for the center of the beam
MINPHSER  specifies the minimum phase error prior to some action
NAXIS     Axis number
NBOXES    Number of boxes
NCCBOX    Number of clean component boxes
NCOMP     Number of CLEAN components
NCOUNT    General adverb, usually a count of something
NDIG      Number of digits to display
NFIELD    The number of fields imaged
NFILES    The number of files to skip, usually on a tape.
NGAUSS    Number of Gaussians to fit
NITER     The number of iterations of a procedure
NMAPS     Number of maps (images) in an operation
NOISE     estimates the noise in images
NPIECE    The number of pieces to make
NPOINTS   General adverb giving the number of something
NUMTELL   selects POPS number of task which is the target of a TELL
NX        General adverb referring to a number of things in the Y direction
NY        General adverb referring to a number of things in the Y direction
OBJECT    The name of an object
OBOXFILE  specifies name of output Clean box text file
OFFSET    General adverb, the offset of something.
OFMFILE   specifies the name of a text file containing OFM values
OPCODE    General adverb, defines an operation
OPTELL    The operation to be passed to a task by TELL
OPTYPE    General adverb, defines a type of operation.
OUT2CLAS  The class of a secondary output file
OUT2DISK  The disk number of a secondary output file.
OUT2NAME  The name of a secondary output file.
OUT2SEQ   The sequence of a secondary output file.
OUTCLASS  The class of an output file
OUTDISK   The disk number of an output file.
OUTFILE   specifies name of output disk file, not in regular catalog
OUTNAME   The name of an output file.
OUTPRINT  specifies name of disk file to keep the printer output
OUTSEQ    The sequence of an output file.
OUTTAPE   The output tape drive number.
OUTVERS   The output version number of an table or extension file.
OVERLAP   specifies how overlaps are to be handled
PBSIZE    estimates the primary beam size in interferometer images
PCUT      Cutoff in polarized intensity
PHAT      Prussian hat size
PHSLIMIT  gives a phase value in degrees
PIX2VAL   An image value in the units specified in the header.
PIX2XY    Specifies a pixel in an image
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PIXAVG	Average image value
PIXRANGE	Range of pixel values to display
PIXSTD	RMS pixel deviation
PIXVAL	Value of a pixel
PIXXY	Specifies a pixel location.
PLEV	Percentage of peak to use for contour levels
PLVER	specifies the version number of a PL extension file
PMODEL	Polarization model parameters
POLPLOT	specifies the desired polarization ratio before plotting.
PRIORITY	Limits prioroty of messages printed
PRNUMBER	POPS number of messages
PRSTART	First record number in a print operation
PRTASK	Task name selected for printed information
PRTIME	Time limit
PRTLEV	Specified the amount of information requested.
QUAL	Source qualifier
QUANTIZE	Quantization level to use
RASHIFT	Shift in RA
REASON	The reason for an operation
REFANT	Reference antenna
REFDATE	To specify the initial or reference date of a data set
REMHOST	gives the name of another computer which will provide service
REMTAPE	gives the number of another computer's tape device
RESTFREQ	Rest frequency of a transition
REWEIGHT	Reweighting factors for UV data weights.
RGBCOLOR	specifies the desired TV graphics color
RGBGAMMA	specifies the desired color gamma corrections
ROBUST	Uniform weighting "robustness" parameter
ROMODE	Specified roam mode
ROTATE	Specifies a rotation
SAMPTYPE	Specifies sampling type
SCALR1	General adverb
SCALR2	General adverb
SCALR3	General adverb
SELBAND	Specified bandwidth
SELFREQ	Specified frequency
SHIFT	specifies a position shift
SKEW	Specifies a skew angle
SLOT	Specifies AIPS catalog slot number
SMODEL	Source model
SMOOTH	Specifies spectral smoothing
SMOTYPE	Specifies smoothing
SNCUT	Specifies minimum signal-to-noise ratio
SNVER	specifies the output solution table
SOLCON	Gain solution constraint factor
SOLINT	Solution interval
SOLMODE	Solution mode
SOLTYPE	Solution type
SORT	Specified desired sort order
SOURCES	A list of source names
SPARM	General string array adverb
STFACTOR	scales star display or SDI CLEANing process
STOKES	Stokes parameter
STORE	Store current POPS environment
STRA1	General string adverb
STRA2	General string adverb
STRA3	General string adverb
STRB1	General string adverb

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STRB2      General string adverb
STRB3      General string adverb
STRC1      General string adverb
STRC2      General string adverb
STRC3      General string adverb
SUBARRAY   Subarray number
SYMBOL     General adverb, probably defines a plotting symbol type
SYSVEL     Systemic velocity
TASK       Name of a task
TBLC       Gives the bottom left corner of an image to be displayed
TCODE      Deterimins which type of DDT is RUN.
TDISK      Deterimins where output DDT data is placed
TIMERANG   Specifies a timerange
TIMSMO     Specified smoothing times
TMASK      Deterimins which tasks are executed when a DDT is RUN.
TMODE      Deterimins which input is used when a DDT is RUN.
TNAMF      Deterimins which files are input to DDT.
TRANSCOD   Specified desired transposition of an image
TRC        Specified the top right corner of a subimage
TRIANGLE   specifies closure triangles to be selected/deselected
TTRC       Specifies the top right corner of a subimage to be displayed
TVBUT      Tells which AIPS TV button was pushed
TVCHAN     Specified a TV channel (plane)
TVCORN     Specified the TV pixel for the bottom left corner of an image
TVLEVS     Gives the peak intensity to be displayed in levels
TVXY       Pixel position on the TV screen
TXINC      TV X coordinate increment
TYINC      TV Y coordinate increment
TYVER      specifies the version of the system temperature table used
TZINC      TV Z coordinate increment
USERID     User number
UVBOX      radius of the smoothing box used for uniform weighting
UVBXFN     type of function used when counting for uniform weighting
UVCOPPRM   Parameter adverb array for task UVCOP
UVFIXPRM   Parameter adverb array for task UVFIX
UVRANGE    Specify range of projected baselines
UVSIZE     specifies number of pixels on X and Y axes of a UV image
UVTAPER    Widths in U and V of gaussian weighting taper function
UVWTFN     Specify weighting function, Uniform or Natural
VELDEF     Specifies velocity definition
VELTYP     Velocity frame of reference
VERSION    Specify AIPS version or local task area
VLAMODE    VLA observing mode
VLAOBS     Observing program or part of observer's name
WTTHRESH   defines the weight threshold for data acceptance
WTUV       Specifies the weight to use for UV data outside UVRANGE
XINC       increment associated with an array of numbers
XPARM      General adverb for up to 10 parameters, may refer to X coord
XTYPE      Specify type of process, often the X axis type of an image
XYRATIO    Ratio of X to Y units per pixel
YINC       Y axis increment
YPARM      Specifies Y axis convolving function
YTYPE      Y axis (V) convolving function type
ZEROSP     Specify how to include zero spacing fluxes in FT of UV data
ZINC       Set the increment of the third axis
ZXRATIO    Ratio between Z axis (pixel value) and X axis
```

13.2 ANALYSIS

ACTNOISE	puts estimate of actual image uncertainty in header
AHIST	Task to convert image intensities by adaptive histogram
BDEPO	computes depolarization due to rotation measure gradients
BLANK	blanks out selected, e.g. non-signal, portions of an image
BLSUM	sums images over irregular sub-images, displays spectra
BSCOR	Combines two beam-switched images
BSTST	Graphical display of solutions to frequency-switched data
BWSMEAR	amount of bandwidth smearing correction to use
COMB	combines two images by a variety of mathematical methods
CTYPE	specifies type of component
DOALIGN	specifies how two or more images are aligned in computations
DOINVERS	selects opposite of normal function
DOMAX	selects solutions for maxima of models
DOOUTPUT	selects whether output image or whatever is saved / discarded
DOPOS	selects solutions for positions of model components
DOWIDTH	selects solution for widths of model components
ECOUNT	give the highest count or iteration for some process
FLUX	gives a total intensity value for image/component or to limit
GAL	Determine parameters from a velocity field
GEOM	regrids images with rotation, shift using interpolation
GMAX	specifies peak values of model components
GPOS	specifies pixel positions of model components
GWIDTH	gives widths of model components
HGEOM	interpolates image to different gridding and/or geometry
HOLGR	Read & process holography visibility data to telescope images
IMEAN	displays the mean & extrema and plots histogram of an image
IMERG	merges images of different spatial resolutions
IMFIT	fits gaussians to portions of an image
IMLIN	Fits and removes continuum emission from cube
IMMOD	adds images of model objects to an image
IMSTAT	returns statistics of a sub-image
IMVAL	returns image intensity at specified pixel
IMVIM	plots one image's values against another's
IRING	integrates intensity / flux in rings / ellipses
JMFIT	fits gaussians to portions of an image
LGEOM	regrids images with rotation, shift using interpolation
MATHS	operates on an image with a choice of mathematical functions
MAXFIT	returns pixel position and image intensity at a maximum
MCUBE	collects n-dimensional images into n+1-dimensional image
MFPRT	prints MF tables in a format needed by modelling software
MINPATCH	specifies the minimum size allowed for the center of the beam
MOMFT	calculates images of moments of a sub-image
MOMNT	calculates images of moments along x-axis (vel, freq, ch)
MWFLT	applies linear & non-linear filters to images
NGAUSS	Number of Gaussians to fit
NINER	Applies various 3x3 area operaters to an image.
NNLSQ	Non-Negative-Least-Squares decomposition of spectrum
OMFIT	Fits sources and, optionally, a self-cal model to uv data
PBCOR	Task to apply or correct an image for a primary beam
PRTIM	prints image intensities from an MA catalog entry
QIMVAL	Verb to determine pixel value at specified position
RM	Task to calculate rotation measure and magnetic field
SAD	fits gaussians to portions of an image
SERCH	Finds line signals in transposed data cube
SET1DG	Verb to set 1D gaussian fitting initial guesses.
SLCOL	Task to collate slice data and models.
SLFIT	Task to fit gaussians to slice data.

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SLICE     Task to make a slice file from an image
SMOTH     Task to smooth a subimage from upto a 7-dim. image
STFUN     Task to calculate a structure function image
SUMSQ     Task to sum the squared pixel values of overlapping,
TABGET    returns table entry for specified row, column and subscript.
TABPUT    replaces table entry for specified row, column and subscript.
TK1SET    Verb to reset 1D gaussian fitting initial guess.
TKAGUESS  Verb to re-plot slice model guess directly on TEK
TKAMODEL  Verb to add slice model display directly on TEK
TKASLICE  Verb to add a slice display on TEK from slice file
TKGUESS   Verb to display slice model guess directly on TEK
TKMODEL   Verb to display slice model directly on TEK
TKSET     Verb to set 1D gaussian fitting initial guesses.
TKSLICE   Verb to display slice file directly on TEK
TKVAL     Verb to obtain value under cursor from a slice
TKXY      Verb to obtain pixel value under cursor
TVBLINK   Verb which blinks 2 TV planes, can do enhancement also
TVCUBE    Verb to load a cube into tv channel(s) & run a movie
TVMAXFIT  displays fit pixel positions and intensity at maxima on TV
UVADC     Fourier transforms and corrects a model and adds to uv data.
UVCON     Generate sample UV coverage given a user defined array layout
UVFIT     Fits source models to uv data.
UVMOD     Modify UV database by adding a model or models
UVSEN     Determine RMS sidelobe level and brightness sensitivity
UVSIM     Generate sample UV coverage given a user defined array layout
WARP      Model warps in Galaxies
XBASL     Fits and subtracts nth-order baselines from cube (x axis)
XGAUS     Fits 1-dimensional Gaussians to images
XMOM      Fits one-dimensional moments to each row of an image
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13.3 AP

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APCLN     Deconvolves images with CLEAN algorithm
APGS      deconvolves image with Gerchberg-Saxton algorithm
APVC      Deconvolves images with van Cittert algorithm
BLING     find residual rate and delay on individual baselines
BPASS     computes spectral bandpass correction table
BSGRD     Task to image beam-switched single-dish data
CALIB     determines antenna calibration: complex gain
COMAP     Procedure to MAP and Self-Calibrate a UVDATA set
COMAP_NA  Procedure to MAP and Self-Calibrate a UVDATA set
COMAP_UV  Procedure to MAP and Self-Calibrate a UVDATA set
CONPL     Plots AIPS gridding convolution functions
CONVL     convolves an image with a gaussian or another image
CPASS     computes polynomial spectral bandpass correction table
EDITA     Interactive TV task to edit uv data based on TY/SN/CL tables
EDITR     Interactive baseline-oriented visibility editor using the TV
FFT       takes Fourier Transform of an image or images
FIXWT     Modify weights to reflect amplitude scatter of data
FRCAL     Faraday rotation self calibration task
FRING     fringe fit data to determine antenna calibration, delay, rate
GRIDR     makes an image from single-dish data
GUARD     portion of UV plane to receive no data in gridding
HLPCLEAN  Cleaning tasks  - internal help
HLPSCMAP  Cleaning tasks  - internal help
HORUS     makes images from unsorted UV data, applying any calibration
HYB       RUN to set parameters for HYBRID (CALIB/MX) self-cal imaging
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IM2UV      converts an image to a visibility data set
IMAGR      Wide-field and/or wide-frequency Cleaning / imaging task.
KRING      fringe fit data to determine antenna calibration, delay, rate
MAPIT      Procedure to MAP and Self-Calibrate a UVDATA set
MAPIT_NA   Procedure to MAP and Self-Calibrate a UVDATA set
MAPIT_UV   Procedure to MAP and Self-Calibrate a UVDATA set
MAXPIXEL   maximum pixels searched for components in Clark CLEAN
MX         makes images and deconvolves using UV data directly.
NOBAT      Task to lock lower priority users out of the AP
RSTOR      Restores a CC file to a map with a gaussian beam.
SCMAP      Imaging plus self-calibration loop
SDGRD      Task to select and image random-position single-dish data
SDIMG      Task to select and image random-position single-dish data
SNEDT      Interactive SN/CL table editor using the TV
UVADC      Fourier transforms and corrects a model and adds to uv data.
UVMAP      makes images from calibrated UV data.
WFCLN      Wide field and/or widefrequency  CLEANing/imaging task.
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13.4 ASTROMET

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ASTROMET   Describes the process of astrometric/geodetic reduction in AIPS
FRMAP      Task to build a map using fringe rate spectra
HF2SV      convert HF tables from FRING/MBDLY to form used by Calc/Solve
HFPRT      write HF tables from CL2HF
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13.5 BATCH

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Type:  Operations to prepare, submit, and monitor batch jobs
Use:   There are two batch streams of AIPS, each capable of
   processing a queue of jobs.  To run a batch job, one must
   first prepare the text of the job in a work file.  This text
   may contain any normal AIPS/POPS statement including RUN,
   except for verbs and tasks related to batch preparation, the
   TV, the TEK4012 green screen, and the tape drives.  When the
   text is ready, it may be submitted to the batch AIPS.  On
   the way, it is tested for errors and is submitted only if
   none are found.  After successful submission, the work file
   and any RUN files involved may be altered without affecting
   the job.  Array processor tasks are allowed only in queue
   #2 and only at night.  They may be submitted at any time,
   however.  Line printer output should be directed to a user
   chosen file (via adverb OUTPRINT).  If OUTPRINT = ' ', all
   tasks and AIPS itself will write to a file named
   PRTFIL:BATCHjjj.nnn, where jjj is the job number in hex and
   nnn is the user number in hex.  Note that all print jobs
   are concatenated into the specified file(s).
Adverbs:
   BATQUE     Number of queue to be used ( 1 or 2 or more )
   JOBNUM     Job number involved (101 - 164, 201 -264, ...)
   BATFLINE   First line number to be editted or listed
   BATNLINE   Number of lines to be listed
Verbs:
   BATCH     Add text to BATQUE work file
   BATCLEAR  Initiate and clear BATQUE work file
   BATLIST   List BATNLINE starting with BATFLINE from BATQUE
             work file
```

```
   BATEDIT   Edit text in BATQUE work file starting with line
             BATFLINE (or immediate argument)
   BAMODIFY  Edit text in BATQUE work file in line BATFLINE (or
             immediate argument), character-mode editing.
   SUBMIT    Submit text in BATQUE work file as job for queue
             BATQUE
   JOBLIST   List BATNLINE starting with BATFLINE from text file
             of job JOBNUM
   QUEUES    List jobs submitted, running, and completed in
             queue BATQUE
   UNQUE     Remove JOBNUM from queue, copy text of job to work
             file BATQUE
Batch jobs may also be prepared and submitted outside of AIPS,
using the program BATER.  See HELP BATER.
****************************************************************

AIPSB      AIPS main program for executing batch jobs
AIPSC      AIPS main program for testing and queuing batch jobs
BAMODIFY   edits characters in a line of a batch work file
BATCH      starts entry of commands into batch-job work file
BATCLEAR   removes all text from a batch work file
BATEDIT    starts an edit (replace, insert) session on a batch work file
BATER      stand-alone program to prepare and submit batch jobs
BATFLINE   specifies starting line in a batch work file
BATLIST    lists the contents of a batch work file
BATNLINE   specifies the number of lines to process in a batch work file
BATQUE     specifies the desired batch queue
ENDBATCH   terminates input to batch work file
JOBLIST    lists contents of a submitted and pending batch job
JOBNUM     specifies the batch job number
QUEUES     Verb to list all submitted jobs in the job queue
UNQUE      remove a given job from the job queue
```

13.6 CALIBRAT

```
For a lengthy description of the calibration of interferometric
data (VLA and VLB line and continuum) enter:
              HELP CALIBRAT
****************************************************************

ACCOR      Corrects cross amplitudes using auto correlation measurements
ACFIT      Determine antenna gains from autocorrelations
ANCAL      Places antenna-based Tsys and gain corrections in CL table
ANTAB      Read amplitude calibration information into AIPS
ANTENNAS   Antennas to include/exclude from the task or verb
ANTWT      Antenna Weights for UV data correction in Calibration
APCAL      Apply TY and GC tables to generate an SN table
APGPS      Apply GPS-derived ionospheric corrections
BASELINE   specifies which antenna pairs are to be selected/deselected
BLAPP      applies baseline-based fringe solutions
BLAVG      Average cross-polarized UV data over baselines.
BLCAL      Compute closure offset corrections
BLING      find residual rate and delay on individual baselines
BLVER      specifies the version of the baseline-calibration table used
BPASS      computes spectral bandpass correction table
BPCOR      Correct BP table.
BPERR      Print and plot BPASS closure outputs
```

BPLOT	Plots bandpass tables in 2 dimensions as function of time
BPSMO	Smooths or interpolates bandpass tables to regular times
BPVER	specifies the version of the bandpass table to be applied
BSPRT	print BS tables
BSROT	modifies SD beam-switch continuum data for error in throw
CALCODE	specifies the type of calibrator to be selected
CALIB	determines antenna calibration: complex gain
CALIBRAT	describes the process of data calibration in AIPS
CALSOUR	specifies source names to be included in calibration
CHANSEL	Array of start, stop, increment channel numbers to average
CLCAL	merges and smoothes SN tables, applies them to CL tables
CLCOR	applies user-selected corrections to the calibration CL table
CLCORPRM	Parameter adverb array for task CLCOR
CLINT	CL table entry interval
CLINV	copy CL/SN file inverting the calibration
CLSMO	smooths a calibration CL table
CMETHOD	specifies the method by which the uv model is computed
CMODEL	specifies the method by which the uv model is computed
CONFI	Optimize array configuration by minimum side lobes
CPASS	computes polynomial spectral bandpass correction table
CSCOR	applies specified corrections to CS tables
CVEL	shifts spectral-line UV data to a given velocity
DECOR	Measures the decorrelation between channels and IF of uv data
DELCORR	specifies whether VLBA delay corrections are to be used
DIGICOR	specifies whether VLBA digital corrections are to be applied
DOBAND	specifies if/how bandpass calibration is applied
DOCALIB	specifies whether a gain table is to be applied or not
DODELAY	selects solution for phase/amplitude or delay rate/phase
DOPOL	selects application of any polarization calibration
DTSIM	Generate fake UV data
EDITA	Interactive TV task to edit uv data based on TY/SN/CL tables
EDITR	Interactive baseline-oriented visibility editor using the TV
ELINT	Determines and removes gain dependence on elevation
FARAD	add ionospheric Faraday rotation to CL table
FIXWT	Modify weights to reflect amplitude scatter of data
FLAGVER	selects version of the flagging table to be applied
FLGIT	flags data based on the rms of the spectrum
FQTOL	Frequency tolerance with which FQ entries are accepted.
FRCAL	Faraday rotation self calibration task
FREQID	Frequency Identifier for frequency, bandwidth combination
FRING	fringe fit data to determine antenna calibration, delay, rate
GAINERR	gives estimate of gain uncertainty for each antenna
GAINUSE	specifies output gain table or gain table applied to data
GAINVER	specifies the input gain table
GCVER	specifies the version of the gain curve table used
GETJY	determines calibrator flux densities
GPHAS	Produces one effective baseline by averaging selected baselines
GPSDL	Calculate ionospheric delay and Faraday rotation corrections
HLPCLEAN	Cleaning tasks - internal help
HLPEDICL	Interactive SN/CL table uv-data editor - internal help
HLPEDISN	Interactive SN/CL table (not UV) editor - internal help
HLPEDITY	Interactive TY table uv-data editor - internal help
HLPEDIUV	Interactive uv-data editor - internal help
HLPIBLED	Interactive Baseline based visibility Editor - internal help
HLPSCMAP	Cleaning tasks - internal help
HLPSPFLG	Interactive time-channel visibility Editor - internal help
HLPTVFLG	Interactive time-baseline visibility Editor - internal help
HYB	RUN to set parameters for HYBRID (CALIB/MX) self-cal imaging

```
IBLED      Interactive BaseLine based visibility EDitor
IMAGR      Wide-field and/or wide-frequency Cleaning / imaging task.
INDXH      writes index file describing contents of UV data base
INDXR      writes index file describing contents of UV data base
INTERPOL   specifies the type of averaging done on the complex gains
INTPARM    specifies the parameters of the gain interpolation function
KRING      fringe fit data to determine antenna calibration, delay, rate
LDGPS      load GPS data from an ASCII file
LISTR      prints contents of UV data sets and assoc. calibration tables
LPCAL      Determines instrumental polarization for UV data
MAPBM      Map VLA beam polarization
MBDLY      Fits multiband delays from IF phases, updates SN table
MINAMPER   specifies the minimum amplitude error prior to some action
MINPHSER   specifies the minimum phase error prior to some action
MSORT      Sort a UV dataset into a specified order
MULTI      Task to convert single-source to multi-source UV data
OMFIT      Fits sources and, optionally, a self-cal model to uv data
PCAL       Determines instrumental polarization for UV data
PCCOR      Corrects phases using  PCAL tones data from PC table
PCLOD      Reads ascii file containing pulse-cal info to PC table.
POLSN      Make a SN table from cross polarized fringe fit
REFANT     Reference antenna
REFREQ     Allows changing of reference pixel
RESEQ      Resequence antennas
RFI        Look for RFI in uv data
SCMAP      Imaging plus self-calibration loop
SDCAL      Task to apply single dish calibration
SDVEL      shifts spectral-line single-dish data to a given velocity
SELBAND    Specified bandwidth
SELFREQ    Specified frequency
SETJY      Task to enter source info into source (SU) table.
SHOUV      displays uv data in various ways.
SMODEL     Source model
SMOTYPE    Specifies smoothing
SNCOR      applies user-selected corrections to the calibration SN table
SNDUP      copies and duplicates SN table from single pol file to dual pol
SNEDT      Interactive SN/CL table editor using the TV
SNPLT      Plots selected contents of SN, TY, PC or CL files
SNSMO      smooths and filters a calibration SN table
SNVER      specifies the output solution table
SOLCL      adjust gains for solar data according to nominal sensitivity
SOLCON     Gain solution constraint factor
SOLINT     Solution interval
SOLMODE    Solution mode
SOLTYPE    Solution type
SPCAL      Determines instrumental polzn. for spec. line UV data
SPFLG      interactive flagging of UV data in channel-TB using the TV
SPLAT      Applies calibration and splits or assemble selected sources.
SPLIT      converts multi-source to single-source UV files w calibration
TASAV      Task to copy all extension tables to a dummy uv-file
TECOR      Calculate ionospheric delay and Faraday rotation corrections
TIMSMO     Specified smoothing times
TRIANGLE   specifies closure triangles to be selected/deselected
TVFLG      interactive flagging of UV data using the TV
TYVER      specifies the version of the system temperature table used
UNCAL      sets up tables for uncalibrating Australia Telescope data
USUBA      Assign subarrays within a uv-data file
UVCRS      Finds the crossing points of UV-ellipses.
```

UVFIT	Fits source models to uv data.
UVFLG	Flags UV-data
UVHOL	prints holography data from a UV data base with calibration
UVMLN	edits data based on the rms of the spectrum
UVPRT	prints data from a UV data base with calibration
UVSRT	Sort a UV dataset into a specified order
UVSUB	Subtracts/divides a model from/into a uv data base
VBCAL	Scale visibility amplitudes by antenna based constants
VLABP	VLA antenna beam polarization correction for snapshot images
VLACALIB	Runs CALIB and LISTR for VLA observation
VLACLCAL	Runs CLCAL and prints the results with LISTR
VLAMODE	VLA observing mode
VLAOBS	Observing program or part of observer's name
VLARESET	Reset calibration tables to a virginal state
VLOG	Pre-process external VLBA calibration files
WTTHRESH	defines the weight threshold for data acceptance
WTUV	Specifies the weight to use for UV data outside UVRANGE

13.7 CATALOG

ABACKUP	VMS procedure to back up data on tape
ACTNOISE	puts estimate of actual image uncertainty in header
ADDBEAM	Inserts clean beam parameters in image header
ALLDEST	Delete a group or all of a users data files
ALTDEF	Sets frequency vs velocity relationship into image header
ALTSWTCH	Switches between frequency and velocity in image header
ARESTORE	Restores back up tapes of users data
AX2REF	Second reference pixel number
AXDEFINE	Define or modify an image axis description
AXINC	Axis increment - change in coordinate between pixels
AXREF	Reference pixel number
AXTYPE	Type of coordinate axis
AXVAL	Value of axis coordinate at reference pixel
BAKLD	reads all files of a catalog entry from BAKTP tape
BAKTP	writes all files of a catalog entry to tape in host format
CATALOG	list one or more entries in the user's data directory
CELGAL	switches header between celestial and galactic coordinates
CHKNAME	Checks for existence of the specified image name
CLR2NAME	clears adverbs specifying the second input image
CLR3NAME	clears adverbs specifying the third input image
CLR4NAME	clears adverbs specifying the fourth input image
CLRNAME	clears adverbs specifying the first input image
CLRONAME	clears adverbs specifying the first output image
CLRSTAT	remove any read or write status flags on a directory entry
DISKU	shows disk use by one or all users
DOALPHA	specifies whether some list is alphabetized
DOCAT	specifies whether the output is saved (cataloged) or not
DOOUTPUT	selects whether output image or whatever is saved / discarded
EGETNAME	fills in input name adverbs by catalog slot number, w error
EPOSWTCH	Switches between B1950 and J2000 coordinates in header
ERROR	was there an error
EXTDEST	deletes one or more extension files
EXTLIST	lists detailed information about contents of extension files
GEOM	regrids images with rotation, shift using interpolation
GET2NAME	fills 2nd input image name parameters by catalog slot number
GET3NAME	fills 3rd input image name parameters by catalog slot number
GET4NAME	fills 4th input image name parameters by catalog slot number

```
GETHEAD    returns parameter value from image header
GETNAME    fills 1st input image name parameters by catalog slot number
GETONAME   fills 1st output image name parameters by catalog slot number
HGEOM      interpolates image to different gridding and/or geometry
HIEND      End record number in a history-file operation
HINOTE     adds user-generated lines to the history extension file
HISTART    Start record number in a history-file operation
HITEXT     writes lines from history extension file to text file
IMHEADER   displays the image header contents to terminal, message file
IMPOS      displays celestial coordinates selected by the TV cursor
IMVAL      returns image intensity at specified pixel
IN2CLASS   specifies the "class" of the 2nd input image or data base
IN2DISK    specifies the disk drive of the 2nd input image or data base
IN2EXT     specifies the type of the 2nd input extension file
IN2NAME    specifies the "name" of the 2nd input image or data base
IN2SEQ     specifies the sequence # of the 2nd input image or data base
IN2TYPE    specifies the type of the 2nd input image or data base
IN2VERS    specifies the version number of the 2nd input extension file
IN3CLASS   specifies the "class" of the 3rd input image or data base
IN3DISK    specifies the disk drive of the 3rd input image or data base
IN3EXT     specifies the type of the 3rd input extension file
IN3NAME    specifies the "name" of the 3rd input image or data base
IN3SEQ     specifies the sequence # of the 3rd input image or data base
IN3TYPE    specifies the type of the 3rd input image or data base
IN3VERS    specifies the version number of the 3rd input extension file
IN4CLASS   specifies the "class" of the 4th input image or data base
IN4DISK    specifies the disk drive of the 4th input image or data base
IN4NAME    specifies the "name" of the 4th input image or data base
IN4SEQ     specifies the sequence # of the 4th input image or data base
IN4TYPE    specifies the type of the 4th input image or data base
INCLASS    specifies the "class" of the 1st input image or data base
INDISK     specifies the disk drive of the 1st input image or data base
INEXT      specifies the type of the 1st input extension file
INNAME     specifies the "name" of the 1st input image or data base
INSEQ      specifies the sequence # of the 1st input image or data base
INTYPE     specifies the type of the 1st input image or data base
INVERS     specifies the version number of the 1st input extension file
KEYSTRNG   gives contents of character-valued keyword parameter
KEYTYPE    Adverb giving the keyword data type code
KEYVALUE   gives contents of numeric-valued keyword parameter
KEYWORD    gives name of keyword parameter - i.e. name of header field
LGEOM      regrids images with rotation, shift using interpolation
MCAT       displays images in the user's catalog directory
MOVE       Task to copy or move data from one user to another
OUT2CLAS   The class of a secondary output file
OUT2DISK   The disk number of a secondary output file.
OUT2NAME   The name of a secondary output file.
OUT2SEQ    The sequence of a secondary output file.
OUTCLASS   The class of an output file
OUTDISK    The disk number of an output file.
OUTNAME    The name of an output file.
OUTSEQ     The sequence of an output file.
OUTVERS    The output version number of an table or extension file.
PCAT       Verb to list entries in the user's catalog (no log file).
PLVER      specifies the version number of a PL extension file
PRTHI      prints selected contents of the history extension file
PUTHEAD    Verb to modify image header parameters.
QHEADER    Verb to summarize the image header: positions at center
```

QUAL	Source qualifier
REASON	The reason for an operation
RECAT	Verb to compress the entries in a catalog file
RENAME	Rename a file (UV or Image)
RENUMBER	Verb to change the catalog number of an image.
RESCALE	Verb to modify image scale factor and offset
SCRDEST	Verb to destroy scratch files left by bombed tasks.
SLOT	Specifies AIPS catalog slot number
STALIN	revises history by deleting lines from history extension file
UCAT	list a user's UV and scratch files on one or more data areas
USERID	User number
ZAP	Delete a catalog entry and its extension files

13.8 COORDINA

ALTDEF	Sets frequency vs velocity relationship into image header
ALTSWTCH	Switches between frequency and velocity in image header
COORDINA	Array to hold coordinate values
COSTAR	Verb to plot a symbol at given position on top of a TV image
COTVLOD	Proc to load an image into a TV channel about a coordinate
COWINDOW	Set a window based on coordinates
EPOSWTCH	Switches between B1950 and J2000 coordinates in header
FRMAP	Task to build a map using fringe rate spectra
NAXIS	Axis number
OBEDT	Task to flag data of orbiting antennas
OBTAB	Recalculate orbit parameters and other spacecraft info
PIX2VAL	An image value in the units specified in the header.
PIX2XY	Specifies a pixel in an image
RASHIFT	Shift in RA
REGRD	Regrids an image from one co-ordinate frame to another
RESTFREQ	Rest frequency of a transition
ROTATE	Specifies a rotation
SHIFT	specifies a position shift
SKYVE	Regrids a DSS image from one co-ordinate frame to another
SYSVEL	Systemic velocity
VELDEF	Specifies velocity definition
VELTYP	Velocity frame of reference
XINC	increment associated with an array of numbers
XPARM	General adverb for up to 10 parameters, may refer to X coord
XTYPE	Specify type of process, often the X axis type of an image
XYRATIO	Ratio of X to Y units per pixel
ZINC	Set the increment of the third axis
ZXRATIO	Ratio between Z axis (pixel value) and X axis

13.9 EDITING

EDITA	Interactive TV task to edit uv data based on TY/SN/CL tables
EDITR	Interactive baseline-oriented visibility editor using the TV
FLGIT	flags data based on the rms of the spectrum
HLPEDICL	Interactive SN/CL table uv-data editor - internal help
HLPEDISN	Interactive SN/CL table (not UV) editor - internal help
HLPEDITY	Interactive TY table uv-data editor - internal help
HLPEDIUV	Interactive uv-data editor - internal help
IBLED	Interactive BaseLine based visibility EDitor
RFI	Look for RFI in uv data
SDLSF	least squares fit to channels and subtracts from SD uv data

SNEDT	Interactive SN/CL table editor using the TV
SPFLG	interactive flagging of UV data in channel-TB using the TV
TABED	Task to edit tables
TABEX	Edit Ancillary tables on UV or Image data
TAFLG	Flags data in a Table extension file
TVFLG	interactive flagging of UV data using the TV
UVFLG	Flags UV-data
UVFND	prints selected data from UV data set to search for problems
UVLIN	Fits and removes continuum visibility spectrum, also can flag
UVLSD	least squares fit to channels and divides the uv data.
UVLSF	least squares fit to channels and subtracts from uv data.
UVMLN	edits data based on the rms of the spectrum

13.10 EXT-APPL

BSPRT	print BS tables
GETTHEAD	returns keyword and other values value from a table header
MF2ST	Task to generate an ST ext. file from Model Fit ext. file
PUTTHEAD	inserts a given value into a table keyword/value pair
TABGET	returns table entry for specified row, column and subscript.
TABPUT	replaces table entry for specified row, column and subscript.

13.11 FITS

FITAB	writes images / uv data w extensions to tape in FITS format
FITLD	reads tape to load FITS images or FITS UV files to disk
FITTP	writes images / uv data w extensions to tape in FITS format
IMLOD	reads tape to load images to disk
TCOPY	Tape to tape copy with some disk FITS support
UVLOD	Read export or FITS data from a tape or disk

13.12 GENERAL

ABORTASK	stops a running task
ABOUT	displays lists and information on tasks, verbs, adverbs
AIPS	AIPS main program for interactive use
AIPSB	AIPS main program for executing batch jobs
APARM	General numeric array adverb used many places
BADDISK	specifies which disks are to be avoided for scratch files
BCOUNT	gives beginning location for start of a process
BITER	gives beginning point for some iterative process
BLC	gives lower-left-corner of selected subimage
BPARM	general numeric array adverb used too many places
CATEGORY	List of allowed primary keywords in HELP files
CLRMSG	deletes messages from the user's message file
COMMENT	64-character comment string
CPARM	general numeric array adverb used many places
CPUTIME	displays curren tcpu and real time usage of the AIPS task
DDISK	Deterimins where input DDT data is found
DDT	verifies correctness and performance using standard problems
DDTSAVE	verifies correctness and performance using standard problems
DDTSIZE	Deterimins which type of DDT is RUN.
DETIME	specifies a time interval for an operation (destroy, batch)
DISKU	shows disk use by one or all users
DOALL	specifies if an operation is done once or for all matching

```
DOCONFRM   selects user confirmation modes of repetitive operation
DOWAIT     selects wait-for-completion mode for running tasks
DOWEIGHT   selects operations with data weights
DPARM      General numeric array adverb used many places
ECOUNT     give the highest count or iteration for some process
EDGSKP     Deterimins border excluded from comparision or use
EHEX       converts decimal to extended hex
EXPLAIN    displays help + extended information describing a task/symbol
FREESPAC   displays available disk space for AIPS in local system
GET        restores previously SAVEd full POPS environment
GNUGPL     Information about GNU General Public License for AIPS
GO         starts a task, detaching it from AIPS or AIPSB
GRADDRES   specifies user's home address for replies to gripes
GRDROP     deletes the specified gripe entry
GREMAIL    gives user's e-mail address name for reply to gripe entry
GRINDEX    lists users and time of all gripe entries
GRIPE      enter a suggestion or bug report for the AIPS programmers
GRIPR      standalone program to enter suggestions/complaints to AIPS
GRLIST     lists contents of specified gripe entry
GRNAME     gives user's name for reply to gripe entry
GRPHONE    specifies phone number to call for questions about a gripe
HELP       displays information on tasks, verbs, adverbs
HINOTE     adds user-generated lines to the history extension file
HITEXT     writes lines from history extension file to text file
IN2FILE    specifies name of a disk file, outside the regular catalog
INFILE     specifies name of a disk file, outside the regular catalog
IOTAPE     Deterimins which tape drive is used during a DDT RUN
LSAPROPO   Data input to APROPO to find what uses what words
MAPDIF     Records differences between DDT test results and standards
MDISK      Deterimins where input DDT data is found
MSGKILL    turns on/off the recording of messages in the message file
MSGSERVER  Information about the X11-based message server
MSGSRV     Information about the X11-based message server
NBOXES     Number of boxes
NCCBOX     Number of clean component boxes
NCOUNT     General adverb, usually a count of something
NITER      The number of iterations of a procedure
NPOINTS    General adverb giving the number of something
OBJECT     The name of an object
OFFSET     General adverb, the offset of something.
OPCODE     General adverb, defines an operation
OPTELL     The operation to be passed to a task by TELL
OPTYPE     General adverb, defines a type of operation.
OTFBS      Translates on-the-fly continuum SDD format to AIPS UV file
OTFUV      Translates on-the-fly single-dish SDD format to AIPS UV file
OUTFILE    specifies name of output disk file, not in regular catalog
OUTVERS    The output version number of an table or extension file.
PANIC      Instructions for what to do when things go wrong
PIX2VAL    An image value in the units specified in the header.
PIXRANGE   Range of pixel values to display
PIXVAL     Value of a pixel
PRTAC      prints contents and summaries of the accounting file
PRTASK     Task name selected for printed information
PRTHI      prints selected contents of the history extension file
PRTMSG     prints selected contents of the user's message file
QUAL       Source qualifier
READLINE   Information about AIPS use of the GNU readline library.
REASON      The reason for an operation
```

REHEX	converts extended hex string to decimal
ROTATE	Specifies a rotation
RTIME	Task to test compute times
SCALR1	General adverb
SCALR2	General adverb
SCALR3	General adverb
SECONDARY	List of allowed secondary keywords in HELP files
SECONDRY	List of allowed secondary keywords in HELP files
SOURCES	A list of source names
SPARM	General string array adverb
STALIN	revises history by deleting lines from history extension file
STRA1	General string adverb
STRA2	General string adverb
STRA3	General string adverb
STRB1	General string adverb
STRB2	General string adverb
STRB3	General string adverb
STRC1	General string adverb
STRC2	General string adverb
STRC3	General string adverb
SUBARRAY	Subarray number
SYMBOL	General adverb, probably defines a plotting symbol type
TCODE	Deterimins which type of DDT is RUN.
TDISK	Deterimins where output DDT data is placed
TELL	Send parameters to tasks that know to read them on the fly
TIMERANG	Specifies a timerange
TMASK	Deterimins which tasks are executed when a DDT is RUN.
TMODE	Deterimins which input is used when a DDT is RUN.
TNAMF	Deterimins which files are input to DDT.
TPMON	Information about the TPMON "Daemon"
VLAC	verifies correctness of continuum calibration software
VLACSAVE	verifies correctness of continuum calibration
VLAL	verifies correctness of spectral line calibration software
VLALSAVE	verifies correctness of continuum calibration
VLBDDT	Verification tests using simulated data
WHATSNEW	lists changes and new code in the last several AIPS releases
XHELP	Accesses hypertext help system
XPARM	General adverb for up to 10 parameters, may refer to X coord
XTYPE	Specify type of process, often the X axis type of an image
YINC	Y axis increment
YTYPE	Y axis (V) convolving function type

13.13 HARDCOPY

BSPRT	print BS tables
FACTOR	scales some display or CLEANing process
FLMCOMM	Comment for film recorder image.
HIEND	End record number in a history-file operation
HISTART	Start record number in a history-file operation
ISPEC	Plots and prints spectrum of region of a cube
OTFIN	Lists on-the-fly single-dish SDD format data files
OUTFILE	specifies name of output disk file, not in regular catalog
OUTPRINT	specifies name of disk file to keep the printer output
PRINTER	Verb to set or show the printer(s) used
PRIORITY	Limits prioroty of messages printed
PRNUMBER	POPS number of messages
PRSTART	First record number in a print operation

```
PRTASK    Task name selected for printed information
PRTIME    Time limit
PRTLEV    Specified the amount of information requested.
PRTSD     prints contents of AIPS single-dish data sets
PRTUV     prints contents of a visibility (UV) data set
RGBGAMMA  specifies the desired color gamma corrections
TVCPS     Task to copy a TV screen-image to a PostScript file.
TVDIC     Task to copy a TV screen-image to a Dicomed film recorder.
UVFND     prints selected data from UV data set to search for problems
UVHOL     prints holography data from a UV data base with calibration
UVPRT     prints data from a UV data base with calibration
```

13.14 IMAGE-UT

```
BDROP     gives number of points dropped at the beginning
BSGEO     Beam-switched Az-El image to RA-Dec image translation
DOMODEL   selects display of model function
DORESID   selects display of differences between model and data
DOSLICE   selects display of slice data
EDROP     number of points/iterations to be omitted from end of process
FITAB     writes images / uv data w extensions to tape in FITS format
FITTP     writes images / uv data w extensions to tape in FITS format
HLPTVHUI  Interactive intensity-hue-saturation display - on-line help
HLPTVRGB  Interactive red-green-blue display - on-line help
IMCLP     Clip an image to a specified range.
IMLOD     reads tape to load images to disk
OGEOM     Simple image rotation, scaling, and translation
OHGEO     Geometric interpolation with correction for 3-D effects
```

13.15 IMAGE

```
CPYRT     replaces history with Survey readme file, inserts copyright
IMRMS     Plot IMEAN rms answers
MAPBM     Map VLA beam polarization
PROFL     Generates plot file for a profile display.
STRAN     Task compares ST tables, find image coordinates (e.g. guide star )
VLABP     VLA antenna beam polarization correction for snapshot images
XSMTH     Smooth data along the x axis
XSUM      Sum or average images on the x axis
XTRAN     Create an image with transformed coodinates
```

13.16 IMAGING

```
AHIST     Task to convert image intensities by adaptive histogram
APCLN     Deconvolves images with CLEAN algorithm
APGS      deconvolves image with Gerchberg-Saxton algorithm
APVC      Deconvolves images with van Cittert algorithm
BCOMP     gives beginning component number for multiple fields
BLC       gives lower-left-corner of selected subimage
BLWUP     Blow up an image by any positive integer factor.
BMAJ      gives major axis size of beam or component
BMIN      gives minor axis size of beam or component
BOX       specifies pixel coordinates of subarrays of an image
BOXFILE   specifies name of Clean box text file
BPA       gives position angle of major axis of beam or component
```

BSAVG	Task to do an FFT-weighted sum of beam-switched images
BSGRD	Task to image beam-switched single-dish data
BSMAP	images weak sources with closure phases
CANDY	user-definable (paraform) task to create an AIPS image
CCBOX	specifies pixel coordinates of subarrays of an image
CCEDT	Select CC components in BOXes and above mininum flux.
CCFND	prints the contents of a Clean Components extension file.
CCGAU	Converts point CLEAN components to Gaussians
CCMOD	generates clean components to fit specified source model
CCMRG	sums all clean components at the same pixel
CELLSIZE	gives the pixel size in physical coordinates
CLBOX	specifies subarrays of an image for Clean to search
CMETHOD	specifies the method by which the uv model is computed
CMODEL	specifies the method by which the uv model is computed
COHER	Baseline Phase coherence measurement
COMAP	Procedure to MAP and Self-Calibrate a UVDATA set
COMAP_DO	MX adverbs not changed by COMAP
COMAP_MX	MX adverbs not changed by COMAP
COMAP_NA	Procedure to MAP and Self-Calibrate a UVDATA set
COMAP_UV	Procedure to MAP and Self-Calibrate a UVDATA set
CONPL	Plots AIPS gridding convolution functions
CONVL	convolves an image with a gaussian or another image
CUTOFF	specifies a limit below or above which the operation ends
CXCLN	Complex Hogbom CLEAN
DCONV	deconvolves a gaussian from an image
DECSHIFT	gives Y-coordinate shift of an image center from reference
DO3DIMAG	specifies whether uvw's are reprojected to each field center
DOGRIDCR	selects correction for gridding convolution function
DTSUM	Task to provide a summary of the contents of a dataset
FACTOR	scales some display or CLEANing process
FETCH	Reads an image from an external text file.
FFT	takes Fourier Transform of an image or images
FILEBOX	Verb to reset Clean boxes with TV cursor & write to file
FLATN	Re-grid multiple fields into one image
FLDSIZE	specifies size(s) of images to be processed
FLUX	gives a total intensity value for image/component or to limit
GAIN	specifies loop gain for deconvolutions
GRIDR	makes an image from single-dish data
GUARD	portion of UV plane to receive no data in gridding
HISEQ	task to translate image by histogram equalization
HLPCLEAN	Cleaning tasks - internal help
HLPSCMAP	Cleaning tasks - internal help
HOLGR	Read & process holography visibility data to telescope images
HORUS	makes images from unsorted UV data, applying any calibration
HYB	RUN to set parameters for HYBRID (CALIB/MX) self-cal imaging
IM2UV	converts an image to a visibility data set
IMAGR	Wide-field and/or wide-frequency Cleaning / imaging task.
IMERG	merges images of different spatial resolutions
IMSIZE	specifies number of pixels on X and Y axis of an image
IMTXT	Write an image to an external text file.
LTESS	makes mosaic images by linear combination
MANDL	creates an image of a subset of the Mandlebrot Set
MAPIT	Procedure to MAP and Self-Calibrate a UVDATA set
MAPIT_MX	MX adverbs not changed by MAPIT
MAPIT_NA	Procedure to MAP and Self-Calibrate a UVDATA set
MAPIT_UV	Procedure to MAP and Self-Calibrate a UVDATA set
MAXPIXEL	maximum pixels searched for components in Clark CLEAN
MODVF	task to create a warped velocity field

```
MWFLT      applies linear & non-linear filters to images
MX         makes images and deconvolves using UV data directly.
NBOXES     Number of boxes
NCCBOX     Number of clean component boxes
NCOMP      Number of CLEAN components
NDIG       Number of digits to display
NFIELD     The number of fields imaged
NMAPS      Number of maps (images) in an operation
NOISE      estimates the noise in images
OBOXFILE   specifies name of output Clean box text file
OUT2CLAS   The class of a secondary output file
OUT2DISK   The disk number of a secondary output file.
OUT2NAME   The name of a secondary output file.
OUT2SEQ    The sequence of a secondary output file.
OVERLAP    specifies how overlaps are to be handled
PADIM      Task to increase image size by padding with some value
PASTE      Pastes a selected subimage of one image into another.
PATGN      Task to create a user specified test or primary-beam pattern
PBCOR      Task to apply or correct an image for a primary beam
PBSIZE     estimates the primary beam size in interferometer images
PGEOM      Task to transform an image into polar coordinates.
PHASE      Baseline Phase coherence measurement
PHAT       Prussian hat size
PIX2VAL    An image value in the units specified in the header.
PIX2XY     Specifies a pixel in an image
PIXAVG     Average image value
PIXRANGE   Range of pixel values to display
PIXSTD     RMS pixel deviation
PIXVAL     Value of a pixel
PIXXY      Specifies a pixel location.
PRTCC      prints the contents of a Clean Components extension file.
PUTVALUE   Verb to store a pixel value at specified position
QUANTIZE   Quantization level to use
REBOX      Verb to reset boxes with TV cursor & graphics display.
REGRD      Regrids an image from one co-ordinate frame to another
REMAG      Task to replace magic blanks with a user specified value
ROBUST     Uniform weighting "robustness" parameter
RSTOR      Restores a CC file to a map with a gaussian beam.
SCMAP      Imaging plus self-calibration loop
SDCLN      deconvolves image by Clark and then "SDI" cleaning methods
SDGRD      Task to select and image random-position single-dish data
SDIMG      Task to select and image random-position single-dish data
SHADW      Generates the "shadowed" representation of an image
SHIFT      specifies a position shift
SKEW       Specifies a skew angle
SKYVE      Regrids a DSS image from one co-ordinate frame to another
SMODEL     Source model
SNCUT      Specifies minimum signal-to-noise ratio
SPECR      Spectral regridding task for UV data
STEER      Task which deconvolves the David Steer way.
STESS      Task which finds sensitivity in mosaicing
STFACTOR   scales star display or SDI CLEANing process
SUBIM      Task to select a subimage from up to a 7-dim. image
SUMIM      Task to sum overlapping, sequentially-numbered images
TKBOX      Procedure to set a Clean box with the TK cursor
TKNBOXS    Procedure to set Clean boxes 1 - n with the TK cursor
TRANS      Task to transpose a subimage of an up to 7-dim. image
TRANSCOD   Specified desired transposition of an image
```

TRC	Specified the top right corner of a subimage
TVBOX	Verb to set boxes with TV cursor & graphics display.
UBAVG	Baseline dependent time averaging of uv data
UTESS	deconvolves images by maximizing emptiness
UVBOX	radius of the smoothing box used for uniform weighting
UVBXFN	type of function used when counting for uniform weighting
UVIMG	Grid UV data into an "image"
UVMAP	makes images from calibrated UV data.
UVPOL	modifies UV data to make complex image and beam
UVSIZE	specifies number of pixels on X and Y axes of a UV image
UVSUB	Subtracts/divides a model from/into a uv data base
UVWTFN	Specify weighting function, Uniform or Natural
VTESS	Deconvolves sets of images by the Maximum Entropy Method
WFCLN	Wide field and/or widefrequency CLEANing/imaging task.
WTSUM	Task to do a a sum of images weighted by other images
XMOM	Fits one-dimensional moments to each row of an image
YPARM	Specifies Y axis convolving function
ZEROSP	Specify how to include zero spacing fluxes in FT of UV data

13.17 INFORMAT

ASTROMET	Describes the process of astrometric/geodetic reduction in AIPS
CALIBRAT	describes the process of data calibration in AIPS
CATEGORY	List of allowed primary keywords in HELP files
GNUGPL	Information about GNU General Public License for AIPS
LSAPROPO	Data input to APROPO to find what uses what words
MSGSERVER	Information about the X11-based message server
MSGSRV	Information about the X11-based message server
NEWTASK	Information about installing a new task
NOADVERB	Information about the lack of a defined adverb or verb
PANIC	Instructions for what to do when things go wrong
POPSDAT	lists all POPS symbols, used to create them in MEmory files
POPSYM	Describes the symbols used in POPS
PSEUDO	Description of POPS pseudoverbs - obsolete list file
READLINE	Information about AIPS use of the GNU readline library.
SECONDARY	List of allowed secondary keywords in HELP files
SECONDRY	List of allowed secondary keywords in HELP files
TEKSERVER	Information about the X-11 Tektronix emulation server
TEKSRV	Information about the X-11 Tektronix emulation server
TPMON	Information about the TPMON "Daemon"
USERLIST	Alphabetic and numeric list of VLA users, points to real list
UV1TYPE	Convolving function type 1, pillbox or square wave
UV2TYPE	Convolving function type 2, exponential function
UV3TYPE	Convolving function type 3, sinc function
UV4TYPE	Convolving function type 4, exponent times sinc function
UV5TYPE	Convolving function type 5, spheroidal function
UV6TYPE	Convolving function type 6, exponent times BessJ1(x) / x
WHATSNEW	lists changes and new code in the last several AIPS releases
XAS	Information about TV-Servers
XVSS	Information about older Sun OpenWindows-specific TV-Server

13.18 INTERACT

AIPS	AIPS main program for interactive use
EDITA	Interactive TV task to edit uv data based on TY/SN/CL tables
EDITR	Interactive baseline-oriented visibility editor using the TV

```
FILEBOX    Verb to reset Clean boxes with TV cursor & write to file
HLPCLEAN   Cleaning tasks  - internal help
HLPEDICL   Interactive SN/CL table uv-data editor - internal help
HLPEDISN   Interactive SN/CL table (not UV) editor - internal help
HLPEDITY   Interactive TY table uv-data editor - internal help
HLPEDIUV   Interactive uv-data editor - internal help
HLPIBLED   Interactive Baseline based visibility Editor - internal help
HLPPLAYR   OOP TV class demonstration task - internal (on-line) help
HLPSCMAP   Cleaning tasks  - internal help
HLPSPFLG   Interactive time-channel visibility Editor - internal help
HLPTVFLG   Interactive time-baseline visibility Editor - internal help
HLPTVHUI   Interactive intensity-hue-saturation display - on-line help
HLPTVRGB   Interactive red-green-blue display - on-line help
IBLED      Interactive BaseLine based visibility EDitor
IMAGR      Wide-field and/or wide-frequency Cleaning / imaging task.
OPTELL     The operation to be passed to a task by TELL
PLAYR      Verb to load an image into a TV channel
READ       Read a value from the users terminal
READLINE   Information about AIPS use of the GNU readline library.
REBOX      Verb to reset boxes with TV cursor & graphics display.
SNEDT      Interactive SN/CL table editor using the TV
SPFLG      interactive flagging of UV data in channel-TB using the TV
TK1SET     Verb to reset 1D gaussian fitting initial guess.
TKBOX      Procedure to set a Clean box with the TK cursor
TKNBOXS    Procedure to set Clean boxes 1 - n with the TK cursor
TKPOS      Read a position from the graphics screen or window
TKSET      Verb to set 1D gaussian fitting initial guesses.
TKWIN      Procedure to set BLC and TRC with Graphics cursor
TVBOX      Verb to set boxes with TV cursor & graphics display.
TVFLG      interactive flagging of UV data using the TV
TVSCROL    Shift position of image on the TV screen
TVSLICE    Set slice endpoints on the TV interactively
TVSPLIT    Compare two TV image planes, showing halves
TVSTAT     Find the mean and RMS in a blotch region on the TV
TVTRANSF   Interactively alters the TV image plane transfer function
TVWINDOW   Set a window on the TV with the cursor
TVZOOM     Activate the TV zoom
WEDERASE   Load a wedge portion of the TV with zeros
```

13.19 MODELING

```
ACTNOISE   puts estimate of actual image uncertainty in header
BSTST      Graphical display of solutions to frequency-switched data
CMETHOD    specifies the method by which the uv model is computed
CMODEL     specifies the method by which the uv model is computed
DIFUV      Outputs the difference of two matching input uv data sets
DOMODEL    selects display of model function
DORESID    selects display of differences between model and data
GLENS      models galaxy gravitational lens acting on 3 component source
IMFIT      fits gaussians to portions of an image
IMMOD      adds images of model objects to an image
JMFIT      fits gaussians to portions of an image
MFPRT      prints MF tables in a format needed by modelling software
MODVF      task to create a warped velocity field
OMFIT      Fits sources and, optionally, a self-cal model to uv data
SAD        fits gaussians to portions of an image
SDMOD      modifies single-dish UV data with model sources
```

```
SLFIT     Task to fit gaussians to slice data.
TK1SET    Verb to reset 1D gaussian fitting initial guess.
TKAMODEL  Verb to add slice model display directly on TEK
TKARESID  Verb to add slice model residuals directly on TEK
TKGUESS   Verb to display slice model guess directly on TEK
TKMODEL   Verb to display slice model directly on TEK
TKRESID   Verb to display slice model residuals directly on TEK
TKSET     Verb to set 1D gaussian fitting initial guesses.
TKSLICE   Verb to display slice file directly on TEK
UVFIT     Fits source models to uv data.
UVMOD     Modify UV database by adding a model or models
UVSUB     Subtracts/divides a model from/into a uv data base
XGAUS     Fits 1-dimensional Gaussians to images
```

13.20 OBSOLETE

```
ABACKUP   VMS procedure to back up data on tape
ARESTORE  Restores back up tapes of users data
CODETYPE  specifies the desired operation type
PFT       The Perley-Feigelson Test; see PFTLOAD.RUN, PFTEXEC.RUN
PHCLN     PHCLN has been removed, use PHAT adverb in APCLN.
PSEUDO    Description of POPS pseudoverbs - obsolete list file
SAMPTYPE  Specifies sampling type
SNCUT     Specifies minimum signal-to-noise ratio
XVSS      Information about older Sun OpenWindows-specific TV-Server
```

13.21 ONED

```
PFPL2     Paraform Task to generate a plot file: (slice intensity)
PLCUB     Task to plot intensity vs x panels on grid of y,z pixels
PLROW     Plot intensity of a series of rows with an offset.
SL2PL     Task to convert a Slice File to a Plot File
SLFIT     Task to fit gaussians to slice data.
SLICE     Task to make a slice file from an image
TK1SET    Verb to reset 1D gaussian fitting initial guess.
TKAMODEL  Verb to add slice model display directly on TEK
TKARESID  Verb to add slice model residuals directly on TEK
TKASLICE  Verb to add a slice display on TEK from slice file
TKGUESS   Verb to display slice model guess directly on TEK
TKMODEL   Verb to display slice model directly on TEK
TKRESID   Verb to display slice model residuals directly on TEK
TKSET     Verb to set 1D gaussian fitting initial guesses.
TKSLICE   Verb to display slice file directly on TEK
XGAUS     Fits 1-dimensional Gaussians to images
XPLOT     Plots image rows one at a time on the graphics screen
```

13.22 OOP

```
BLING     find residual rate and delay on individual baselines
BSCOR     Combines two beam-switched images
BSGEO     Beam-switched Az-El image to RA-Dec image translation
BSGRD     Task to image beam-switched single-dish data
CCEDT     Select CC components in BOXes and above mininum flux.
CCSEL     Select signifigant CC components
EDITA     Interactive TV task to edit uv data based on TY/SN/CL tables
```

EDITR	Interactive baseline-oriented visibility editor using the TV
FIXWT	Modify weights to reflect amplitude scatter of data
FLATN	Re-grid multiple fields into one image
FRCAL	Faraday rotation self calibration task
GPHAS	Produces one effective baseline by averaging selected baselines
HLPCLEAN	Cleaning tasks - internal help
HLPEDICL	Interactive SN/CL table uv-data editor - internal help
HLPEDISN	Interactive SN/CL table (not UV) editor - internal help
HLPEDITY	Interactive TY table uv-data editor - internal help
HLPEDIUV	Interactive uv-data editor - internal help
HLPPLAYR	OOP TV class demonstration task - internal (on-line) help
HLPSCMAP	Cleaning tasks - internal help
IMAGR	Wide-field and/or wide-frequency Cleaning / imaging task.
IMCLP	Clip an image to a specified range.
MAPBM	Map VLA beam polarization
MBDLY	Fits multiband delays from IF phases, updates SN table
MULIF	Change number of IFs in output
OGEOM	Simple image rotation, scaling, and translation
OHGEO	Geometric interpolation with correction for 3-D effects
OMFIT	Fits sources and, optionally, a self-cal model to uv data
PASTE	Pastes a selected subimage of one image into another.
PLAYR	Verb to load an image into a TV channel
RFI	Look for RFI in uv data
SDGRD	Task to select and image random-position single-dish data
SNEDT	Interactive SN/CL table editor using the TV
UV2MS	Append single source file to multisource file.
VLABP	VLA antenna beam polarization correction for snapshot images
WFCLN	Wide field and/or widefrequency CLEANing/imaging task.

13.23 OPTICAL

COSTAR	Verb to plot a symbol at given position on top of a TV image
GSTAR	Task to read a Guide Star (UK) table and create an ST table.
IMFLT	fits and removes a background intensity plane from an image
STFND	Task to find stars in an image and generate an ST table.
STRAN	Task compares ST tables, find image coordinates (e.g. guide star)
TVSTAR	Verb to plot star positions on top of a TV image

13.24 PARAFORM

DTCHK	Task to check results of a test using simulated data.
FUDGE	modifies UV data with user's algorithm: paraform task
NEWTASK	Information about installing a new task
PFPL1	Paraform Task to generate a plot file: (does grey scale)
PFPL2	Paraform Task to generate a plot file: (slice intensity)
PFPL3	Paraform Task to generate a plot file: (does histogram)
TAFFY	User definable task to operate on an image
TBTSK	Paraform OOP task for tables

13.25 PLOT

ALIAS	adverb to alias antenna numbers to one another
ASPMM	Plot scaling parameter - arc seconds per millimeter on plot
BDROP	gives number of pooints dropped at the beginning
BPERR	Print and plot BPASS closure outputs

BPLOT	Plots bandpass tables in 2 dimensions as function of time
CANPL	translates a plot file to a Canon printer/plotter
CBPLOT	selects a display of a Clean beam full width at half maximum
CCNTR	generate a contour plot file from an image
CLEV	Contour level multiplier in physical units
CLPLT	plots closure phase and model from CC file
CNTR	generate a contour plot file or TV plot from an image
CONPL	Plots AIPS gridding convolution functions
COPIES	sets the number of copies to be made
COSTAR	Verb to plot a symbol at given position on top of a TV image
DFTPL	plots DFT of a UV data set at arbitrary point versus time
DIST	gives a distance - PROFL uses as distance to observer
DOALIGN	specifies how two or more images are aligned in computations
DOBLANK	controls handling of blanking
DOCELL	selects units of cells over angular unit
DOCENTER	selects a single, centered page or multiple pages of plots
DOCIRCLE	select a "circular" display (i.e. trace coordinates, ...)
DOCONT	selects a display of contour lines
DOCRT	selects printer display or CRT display (giving width)
DOGREY	selects a display of a grey-scale image
DOHIST	selects a histogram display
DOHMS	selects sexagesimal (hours-mins-secs) display format
DOMODEL	selects display of model function
DORESID	selects display of differences between model and data
DOSLICE	selects display of slice data
DOVECT	selects display of polarization vectors
DOWEDGE	selects display of intensity step wedge
EDROP	number of points/iterations to be omitted from end of process
EXTLIST	lists detailed information about contents of extension files
FACTOR	scales some display or CLEANing process
FRPLT	Task to plot fringe rate spectra
FUNCTYPE	specifies type of intensity transfer function
GREYS	plots images as contours over multi-level grey
GSTAR	Task to read a Guide Star (UK) table and create an ST table.
ICUT	specifies a cutoff level in units of the image
IMEAN	displays the mean & extrema and plots histogram of an image
IMRMS	Plot IMEAN rms answers
IMVIM	plots one image's values against another's
IRING	integrates intensity / flux in rings / ellipses
ISPEC	Plots and prints spectrum of region of a cube
KNTR	make a contour/grey plot file from an image w multiple panels
LABEL	selects a type of extra labeling for a plot
LEVS	list of multiples of the basic level to be contoured
LPEN	specifies the "pen width" code # => width of plotted lines
LTYPE	specifies the type and degree of axis labels on plots
LWPLA	translates a plot file to a PostScript printer (LaserWriter?)
MF2ST	Task to generate an ST ext. file from Model Fit ext. file
NX	General adverb referring to a number of things in the Y direction
NY	General adverb referring to a number of things in the Y direction
OBPLT	Plot columns of an OB table.
PCNTR	Generate plot file with contours plus polarization vectors
PCUT	Cutoff in polarized intensity
PFPL1	Paraform Task to generate a plot file: (does grey scale)
PFPL2	Paraform Task to generate a plot file: (slice intensity)
PFPL3	Paraform Task to generate a plot file: (does histogram)
PLCUB	Task to plot intensity vs x panels on grid of y,z pixels
PLEV	Percentage of peak to use for contour levels
PLROW	Plot intensity of a series of rows with an offset.

```
PLVER      specifies the version number of a PL extension file
POLPLOT    specifies the desired polarization ratio before plotting.
PRINTER    Verb to set or show the printer(s) used
PROFL      Generates plot file for a profile display.
PRTAB      prints any table-format extension file
PRTIM      prints image intensities from an MA catalog entry
PRTPL      Task to send a plot file to the line printer
QMSPL      Task to send a plot file to the QMS printer/plotter
SL2PL      Task to convert a Slice File to a Plot File
SNPLT      Plots selected contents of SN, TY, PC or CL files
STARS      Task to generate an ST ext. file with star positions
STFND      Task to find stars in an image and generate an ST table.
SYMBOL     General adverb, probably defines a plotting symbol type
TAPLT      Plots data from a Table extension file
TEKSERVER  Information about the X-11 Tektronix emulation server
TEKSRV     Information about the X-11 Tektronix emulation server
TKAMODEL   Verb to add slice model display directly on TEK
TKARESID   Verb to add slice model residuals directly on TEK
TKASLICE   Verb to add a slice display on TEK from slice file
TKBOX      Procedure to set a Clean box with the TK cursor
TKGUESS    Verb to display slice model guess directly on TEK
TKMODEL    Verb to display slice model directly on TEK
TKNBOXS    Procedure to set Clean boxes 1 - n with the TK cursor
TKPL       Task to send a plot file to the TEK
TKPOS      Read a position from the graphics screen or window
TKRESID    Verb to display slice model residuals directly on TEK
TKSLICE    Verb to display slice file directly on TEK
TKWIN      Procedure to set BLC and TRC with Graphics cursor
TVPL       Display a plot file on the TV
TVSTAR     Verb to plot star positions on top of a TV image
TXPL       Displays a plot (PL) file on a terminal or line printer
UVHGM      Plots statistics of uv data files.
UVPLT      plots data from a UV data base
UVPRM      measures parameters from a UV data base
VPLOT      plots uv data and model from CC file (the fast version ov VBPLT)
XBASL      Fits and subtracts nth-order baselines from cube (x axis)
XGAUS      Fits 1-dimensional Gaussians to images
XPLOT      Plots image rows one at a time on the graphics screen
```

13.26 POLARIZA

```
BDEPO      computes depolarization due to rotation measure gradients
COMB       combines two images by a variety of mathematical methods
DOPOL      selects application of any polarization calibration
FARAD      add ionospheric Faraday rotation to CL table
LPCAL      Determines instrumental polarization for UV data
MAPBM      Map VLA beam polarization
PCAL       Determines instrumental polarization for UV data
PCNTR      Generate plot file with contours plus polarization vectors
PCUT       Cutoff in polarized intensity
PMODEL     Polarization model parameters
POLCO      Task to correct polarization maps for Ricean bias
POLPLOT    specifies the desired polarization ratio before plotting.
RM         Task to calculate rotation measure and magnetic field
SWPOL      Swap polarizations in a UV data base
VLABP      VLA antenna beam polarization correction for snapshot images
```

13.27 POPS

ABOUT	displays lists and information on tasks, verbs, adverbs
ABS	returns absolute value of argument
APROPOS	displays all help 1-line summaries containing specified words
ARRAY	Declares POPS symbol name and dimensions
ARRAY1	General scratch array adverb
ARRAY2	General scratch array adverb
ARRAY3	General scratch array adverb
ATAN	Returns arc tangent of argument (half-circle)
ATAN2	Returns arc tangent of two arguments (full circle)
BY	gives increment to use in FOR loops in POPS language
CEIL	returns smallest integer greater than or equal the argument
CHAR	converts number to character string
CLRTEMP	clears the temporary literal area during a procedure
COMPRESS	recovers unused POPS address space and new symbols
CORE	displays the used and total space used by parts of POPS table
COS	returns cosine of the argument in degrees
DEBUG	turns on/off the POPS-language's debug messages
DPARM	General numeric array adverb used many places
DUMP	displays portions of the POPS symbol table in all formats
EDIT	enter edit-a-procedure mode in the POPS language
EHEX	converts decimal to extended hex
ELSE	starts POPS code done if an IF condition is false (IF-THEN..)
END	marks end of block (FOR, WHILE, IF) of POPS code
ENDEDIT	terminates procedure edit mode of POPS input
ERASE	removes one or more lines from a POPS procedure
ERROR	was there an error
EXIT	ends an AIPS batch or interactive session
EXP	returns the exponential of the argument
EXPLAIN	displays help + extended information describing a task/symbol
FINISH	terminates the entry and compilation of a procedure
FLOOR	returns largest integer <= argument
FOR	starts an iterative sequence of operations in POPS language
GET	restores previously SAVEd full POPS environment
HELP	displays information on tasks, verbs, adverbs
I	spare scalar adverb for use in procedures
IF	causes conditional execution of a set of POPS statements
INP	displays adverb values for task, verb, or proc - quick form
INPUTS	displays adverb values for task, verb, or proc - to msg file
ISBATCH	declares current AIPS to be, or not to be, batch-like
J	spare scalar adverb for use in procedures
KLEENEX	ends an AIPS interactive session wiping the slate klean
LENGTH	returns length of string to last non-blank character
LIST	displays the source code text for a POPS procedure
LN	returns the natural logarithm of the argument
LOG	returns the base-10 logarithm of the argument
MAX	returns the maximum of its two arguments
MIN	returns the minimum of its two arguments
MOD	returns remainder after division of 1st argument by 2nd
MODIFY	modifies the text of a line of a procedure and recompiles
MODULUS	returns square root of sum of squares of its two arguments
NOADVERB	Information about the lack of a defined adverb or verb
NUMTELL	selects POPS number of task which is the target of a TELL
NX	General adverb referring to a number of things in the Y direction
NY	General adverb referring to a number of things in the Y direction
PARALLEL	Verb to set or show degree of parallelism
PASSWORD	Verb to change the current password for the login user
PCAT	Verb to list entries in the user's catalog (no log file).

POPSDAT	lists all POPS symbols, used to create them in MEmory files
POPSYM	Describes the symbols used in POPS
PRINT	Print the value of an expression
PRINTER	Verb to set or show the printer(s) used
PROC	Define a POPS procedure using procedure editor.
PROCEDUR	Define a POPS procedure using procedure editor
PSEUDO	Description of POPS pseudoverbs - obsolete list file
PSEUDOVB	Declares a name to be a symbol of type pseudoverb
READ	Read a value from the users terminal
REHEX	converts extended hex string to decimal
RENAME	Rename a file (UV or Image)
RESTART	Verb to trim the message log file and restart AIPS
RESTORE	Read POPS memory file from a common area.
RETURN	Exit a procedure allowing a higher level proc to continue.
RUN	Pseudoverb to read an external RUN files into AIPS.
SAVDEST	Verb to destroy all save files of a user.
SAVE	Pseudoverb to save full POPS environment in named file
SCALAR	Declares a variable to be a scalar in a procedure
SCRATCH	delete a procedure from the symbol table.
SETDEBUG	Verb to set the debug print and execution level
SGDESTR	Verb-like to destroy named POPS environment save file
SGINDEX	Verb lists SAVE areas by name and time of last SAVE.
SIN	Compute the sine of a value
SLOT	Specifies AIPS catalog slot number
SPY	Verb to determine the execution status of all AIPS tasks
SQRT	Square root function
STORE	Store current POPS environment
STQUEUE	Verb to list pending TELL operations
STRING	Declare a symbol to be a string variable in POPS
SUBMIT	Verb which submits a batch work file to the job queue
SUBSTR	Function verb to specify a portion of a STRING variable
T1VERB	Temporary verb for testing (also T2VERB...T9VERB)
TAN	Tangent function
TAPES	Verb to show the TAPES(s) available
TASK	Name of a task
TGET	Verb-like gets adverbs from last GO of a task
TGINDEX	Verb lists those tasks for which TGET will work.
THEN	Specified the action if an IF test is true
TIMDEST	Verb to destroy all files which are too old
TO	Specifies upper limit of a FOR loop
TPUT	Verb-like puts adverbs from a task in file for TGETs
TYPE	Type the value of an expression
VALUE	Convert a string to a numeric value
VERB	Declares a name to be a symbol of type verb
VERSION	Specify AIPS version or local task area
WAITTASK	halt AIPS until specified task is finished
WHILE	Start a conditional statement
XHELP	Accesses hypertext help system

13.28 PROCEDUR

BREAK	procedure to TELL FILLM to break all current uv files, start new
COTVLOD	Proc to load an image into a TV channel about a coordinate
CROSSPOL	Procedure to make complex poln. images and beam.
CRSFRING	Procedure to calibrate cross pol. delay and phase offsets
CXPOLN	Procedure to make complex poln. images and beam.
FEW	procedure to TELL FILLM to append incoming data to existing uv files

```
FXAVG      Procedure to enable VLBA delay de-correlation corrections
MANY       procedure to TELL FILLM to start new uv files on each scan
MERGECAL   Procedure to merge calibration records after concatenation
PFT        The Perley-Feigelson Test; see PFTLOAD.RUN, PFTEXEC.RUN
QUIT       procedure to TELL FILLM to stop at the end of the current scan
REFREQ     Allows changing of reference pixel
SETXWIN    Procedure to set BLC and TRC with TV cursor
STOP       procedure to TELL FILLM to break all current uv files and stop
TELFLM     procedure to TELL real-time FILLM a new APARM(1) value
TKBOX      Procedure to set a Clean box with the TK cursor
TKNBOXS    Procedure to set Clean boxes 1 - n with the TK cursor
TKWIN      Procedure to set BLC and TRC with Graphics cursor
TVALL      Procedure loads image to TV, shows labeled wedge, enhances
TVFLUX     displays coordinates and values selected with the TV cursor
TVMAXFIT   displays fit pixel positions and intensity at maxima on TV
TVRESET    Reset the TV without erasing the image planes
VLACALIB   Runs CALIB and LISTR for VLA observation
VLACLCAL   Runs CLCAL and prints the results with LISTR
VLARESET   Reset calibration tables to a virginal state
VLBA       Procedure to read and process VLBA data (Phil Diamond)
```

13.29 PSEUDOVE

```
Type:  General type of POPS symbol
Use:   Pseudoverbs are magic symbols which cause FORTRAN routines to
       carry out specific actions.  Unlike verbs, pseudoverbs are
       executed as soon as they are encountered by the compiler even
       in compile mode.  In general, the FORTRAN routines which are
       invoked will parse the remainder of the input line under
       special, non-standard rules.  Any normal code typed on the line
       ahead of the pseudoverb will not be executed.
Grammar:  See the HELP listings for the specific pseudoverb.
Examples:    HELP  HELP
             ARRAY   JUNK(4, -7 TO 9)
             PROC DUMMY (I,J)
             LIST DUMMY
             DEBUG TRUE
             INPUTS MLOAD
****************************************************************

ABORTASK   stops a running task
ARRAY      Declares POPS symbol name and dimensions
COMPRESS   recovers unused POPS address space and new symbols
CORE       displays the used and total space used by parts of POPS table
DEBUG      turns on/off the POPS-language's debug messages
EDIT       enter edit-a-procedure mode in the POPS language
ELSE       starts POPS code done if an IF condition is false (IF-THEN..)
ENDBATCH   terminates input to batch work file
ENDEDIT    terminates procedure edit mode of POPS input
ERASE      removes one or more lines from a POPS procedure
FINISH     terminates the entry and compilation of a procedure
GET        restores previously SAVEd full POPS environment
IF         causes conditional execution of a set of POPS statements
ISBATCH    declares current AIPS to be, or not to be, batch-like
LIST       displays the source code text for a POPS procedure
MODIFY     modifies the text of a line of a procedure and recompiles
MSGKILL    turns on/off the recording of messages in the message file
```

```
TELL      Send parameters to tasks that know to read them on the fly
WHILE     Start a conditional statement
```

13.30 RUN

```
DDT       verifies correctness and performance using standard problems
DDTSAVE   verifies correctness and performance using standard problems
HYB       RUN to set parameters for HYBRID (CALIB/MX) self-cal imaging
VLAC      verifies correctness of continuum calibration software
VLACSAVE  verifies correctness of continuum calibration
VLAL      verifies correctness of spectral line calibration software
VLALSAVE  verifies correctness of continuum calibration
VLBDDT    Verification tests using simulated data
```

13.31 SINGLEDI

```
BSAVG     Task to do an FFT-weighted sum of beam-switched images
BSCOR     Combines two beam-switched images
BSFIX     Corrects the ra/dec offsets recorded by the 12m
BSGRD     Task to image beam-switched single-dish data
BSROT     modifies SD beam-switch continuum data for error in throw
BSTST     Graphical display of solutions to frequency-switched data
CSCOR     applies specified corrections to CS tables
DIFUV     Outputs the difference of two matching input uv data sets
GRIDR     makes an image from single-dish data
INDXH     writes index file describing contents of UV data base
INDXR     writes index file describing contents of UV data base
OTFBS     Translates on-the-fly continuum SDD format to AIPS UV file
OTFIN     Lists on-the-fly single-dish SDD format data files
OTFUV     Translates on-the-fly single-dish SDD format to AIPS UV file
PRTSD     prints contents of AIPS single-dish data sets
SDCAL     Task to apply single dish calibration
SDGRD     Task to select and image random-position single-dish data
SDIMG     Task to select and image random-position single-dish data
SDLSF     least squares fit to channels and subtracts from SD uv data
SDMOD     modifies single-dish UV data with model sources
SDTUV     Task to convert SD table files to UV like data.
SDVEL     shifts spectral-line single-dish data to a given velocity
SELSD     Task to select random position single dish measurments
VTEST     Measures velocity discrepancy across fields
WTSUM     Task to do a a sum of images weighted by other images
```

13.32 SPECTRAL

```
Almost all parts of AIPS are general enough to handle mutiple
dimensions of data including multiple frequency channels in the
uv domain and 3 or more dimensional "cubes" in the image domain.
*************************************************************

ACFIT     Determine antenna gains from autocorrelations
ALTDEF    Sets frequency vs velocity relationship into image header
ALTSWTCH  Switches between frequency and velocity in image header
AVSPC     Averages uv-data in the frequency domain
BASRM     Task to remove a spectral baseline from total power spectra
BCHAN     sets the beginning channel number
```

```
BLOAT     converts pseudo-continuum to proper line UV data set
BLSUM     sums images over irregular sub-images, displays spectra
BPASS     computes spectral bandpass correction table
BPERR     Print and plot BPASS closure outputs
BPLOT     Plots bandpass tables in 2 dimensions as function of time
BPSMO     Smooths or interpolates bandpass tables to regular times
BPVER     specifies the version of the bandpass table to be applied
CHANNEL   sets the spectral channel number
CHANSEL   Array of start, stop, increment channel numbers to average
CHINC     the increment between selected channels
CPASS     computes polynomial spectral bandpass correction table
CVEL      shifts spectral-line UV data to a given velocity
ECHAN     define an end for a range of channel numbers
FLGIT     flags data based on the rms of the spectrum
FRMAP     Task to build a map using fringe rate spectra
FRPLT     Task to plot fringe rate spectra
HLPSPFLG  Interactive time-channel visibility Editor - internal help
HLPTVHUI  Interactive intensity-hue-saturation display - on-line help
HLPTVRGB  Interactive red-green-blue display - on-line help
IMLIN     Fits and removes continuum emission from cube
IRING     integrates intensity / flux in rings / ellipses
ISPEC     Plots and prints spectrum of region of a cube
MCUBE     collects n-dimensional images into n+1-dimensional image
PLCUB     Task to plot intensity vs x panels on grid of y,z pixels
POSSM     Task to plot total and cross-power spectra.
SDLSF     least squares fit to channels and subtracts from SD uv data
SDVEL     shifts spectral-line single-dish data to a given velocity
SERCH     Finds line signals in transposed data cube
SMOTH     Task to smooth a subimage from upto a 7-dim. image
SPFLG     interactive flagging of UV data in channel-TB using the TV
SQASH     Task to collapse several planes in a cube into one plane
SYSVEL    Systemic velocity
UJOIN     modifies UV data converting IFs to spectral channels
UV2TB     Converts UV autocorrelation spectra to tables
UVBAS     averages several channels and subtracts from uv data.
UVGLU     Glues UV data frequency blocks back together
UVLIN     Fits and removes continuum visibility spectrum, also can flag
UVLSD     least squares fit to channels and divides the uv data.
UVLSF     least squares fit to channels and subtracts from uv data.
UVMLN     edits data based on the rms of the spectrum
VBGLU     Glues together data from multiple passes thru the VLBA corr.
VTEST     Measures velocity discrepancy across fields
WTSUM     Task to do a a sum of images weighted by other images
XBASL     Fits and subtracts nth-order baselines from cube (x axis)
XGAUS     Fits 1-dimensional Gaussians to images
XPLOT     Plots image rows one at a time on the graphics screen
```

13.33 TABLE

```
BSPRT     print BS tables
CLINV     copy CL/SN file inverting the calibration
DOTABLE   selects use of table-format for data
HF2SV     convert HF tables from FRING/MBDLY to form used by Calc/Solve
HFPRT     write HF tables from CL2HF
HLPEDICL  Interactive SN/CL table uv-data editor - internal help
HLPEDISN  Interactive SN/CL table (not UV) editor - internal help
HLPEDITY  Interactive TY table uv-data editor - internal help
```

MFPRT	prints MF tables in a format needed by modelling software
OBEDT	Task to flag data of orbiting antennas
OBTAB	Recalculate orbit parameters and other spacecraft info
PRTAB	prints any table-format extension file
TABED	Task to edit tables
TABEX	Edit Ancillary tables on UV or Image data
TACOP	task to copy tables
TAFLG	Flags data in a Table extension file
TAMRG	Task to merge table rows under specified conditions
TAPLT	Plots data from a Table extension file
TAPQL	Convert an AIPS table to a POSTQUEL script
TASAV	Task to copy all extension tables to a dummy uv-file
TASRT	Task to sort extension tables.
TBDIF	Compare entries in two tables
TBIN	Reads a text file AIPS table into AIPS
TBOUT	Writes an AIPS table into a text file for user editting.

13.34 TAPE

AVEOT	Advances tape to end-of-information point
AVFILE	Moves tape forward or back to end-of-file marks
AVMAP	Advance tape by one image (IBM-CV = obsolete tape file)
AVTP	Positions tape to desired file
BAKLD	reads all files of a catalog entry from BAKTP tape
BAKTP	writes all files of a catalog entry to tape in host format
BLOCKING	specifies blocking factor to use on e.g. tape records
DENSITY	gives the desired tape density
DISMOUNT	disables a magnetic tape and dismounts it from the tape drive
DOEOF	selects end-of-file writing or reading until
DOEOT	selects tape positioning before operation: present or EOI
DONEWTAB	do we make new tables, use a new table format, etc.
DOTABLE	selects use of table-format for data
DOTWO	do we make two of something
FILLM	reads VLA on-line/archive format uv data tapes (post Jan 88)
FILLR	reads old VLA on-line-system tapes into AIPS
FITAB	writes images / uv data w extensions to tape in FITS format
FITLD	reads tape to load FITS images or FITS UV files to disk
FITTP	writes images / uv data w extensions to tape in FITS format
FORMAT	gives a format code number: e.g. FITS accuracy required
GSCAT	reads Fits Guide star catalog file
IMLOD	reads tape to load images to disk
INTAPE	specifies the input tape drive number
MOUNT	makes a tape drive available to user's AIPS and tasks
NFILES	The number of files to skip, usually on a tape.
NPIECE	The number of pieces to make
OUTTAPE	The output tape drive number.
PRTTP	prints contents of tapes, all supported formats
QUANTIZE	Quantization level to use
REMHOST	gives the name of another computer which will provide service
REMTAPE	gives the number of another computer's tape device
REWIND	Verb to rewind a tape
TAPES	Verb to show the TAPES(s) available
TCOPY	Tape to tape copy with some disk FITS support
TPHEAD	Verb to list image header from FITS or IBM-CV tape
TPMON	Information about the TPMON "Daemon"
UVLOD	Read export or FITS data from a tape or disk
VLAMODE	VLA observing mode

```
VLAOBS     Observing program or part of observer's name
```

13.35 TASK

```
TASKS
Type:  General type of POPS symbol (not in symbol table)
Use:   Tasks are separate programs which may be started by
       AIPS and which receive their input parameters from
       AIPS.  In the interactive AIPS, tasks run
       asynchronously from AIPS.  In the batch AIPS,
       the language processor waits for each task to finish
       before starting another one.
Grammar:    TASK = 'name' ;   GO
       will cause the task whose name is assigned to the
       string adverb TASK to be started.  Note: the name
       should have no leading blanks and should be no longer
       than 5 characters.
Alternative grammar:    GO  name ;
       where name is the name of the task to be run.
Related adverbs:
   TASK       Task name
   DOWAIT     On "GO", wait for task completion before returning
                 to AIPS control
   VERSION    Version of task to be executed.
Related verbs:
   GO         Initiate a shed task
   HELP       List information about a task
   INP        List adverb values for a task
   INPUTS     Same as INP but also written to MSG file
   SPY        Inquire which tasks are active
   WAITTASK   Suspend AIPS operation until a specific task
                 is complete
   ABORTASK   Kill a task immediately
   TGET       Get adverb values from last execution of TASK
   TPUT       Save adverb values without execution of TASK
   TGINDEX    List all TGET/SAVE files
****************************************************************

ACCOR      Corrects cross amplitudes using auto correlation measurements
ACFIT      Determine antenna gains from autocorrelations
ADDIF      Adds an IF axis to a uv data set
AFILE      sorts and edits MkIII correlator A-file.
AHIST      Task to convert image intensities by adaptive histogram
AIPS       AIPS main program for interactive use
AIPSB      AIPS main program for executing batch jobs
AIPSC      AIPS main program for testing and queuing batch jobs
ANCAL      Places antenna-based Tsys and gain corrections in CL table
ANTAB      Read amplitude calibration information into AIPS
APCAL      Apply TY and GC tables to generate an SN table
APCLN      Deconvolves images with CLEAN algorithm
APGPS      Apply GPS-derived ionospheric corrections
APGS       deconvolves image with Gerchberg-Saxton algorithm
APVC       Deconvolves images with van Cittert algorithm
AVER       Averages over time UV data sets in 'BT' order
AVSPC      Averages uv-data in the frequency domain
AVTP       Positions tape to desired file
BAKLD      reads all files of a catalog entry from BAKTP tape
```

BAKTP	writes all files of a catalog entry to tape in host format
BASRM	Task to remove a spectral baseline from total power spectra
BATER	stand-alone program to prepare and submit batch jobs
BDEPO	computes depolarization due to rotation measure gradients
BLANK	blanks out selected, e.g. non-signal, portions of an image
BLAPP	applies baseline-based fringe solutions
BLAVG	Average cross-polarized UV data over baselines.
BLCAL	Compute closure offset corrections
BLING	find residual rate and delay on individual baselines
BLOAT	converts pseudo-continuum to proper line UV data set
BLSUM	sums images over irregular sub-images, displays spectra
BLWUP	Blow up an image by any positive integer factor.
BPASS	computes spectral bandpass correction table
BPCOR	Correct BP table.
BPERR	Print and plot BPASS closure outputs
BPLOT	Plots bandpass tables in 2 dimensions as function of time
BPSMO	Smooths or interpolates bandpass tables to regular times
BSAVG	Task to do an FFT-weighted sum of beam-switched images
BSCOR	Combines two beam-switched images
BSFIX	Corrects the ra/dec offsets recorded by the 12m
BSGEO	Beam-switched Az-El image to RA-Dec image translation
BSGRD	Task to image beam-switched single-dish data
BSMAP	images weak sources with closure phases
BSPRT	print BS tables
BSROT	modifies SD beam-switch continuum data for error in throw
BSTST	Graphical display of solutions to frequency-switched data
CALIB	determines antenna calibration: complex gain
CANDY	user-definable (paraform) task to create an AIPS image
CANPL	translates a plot file to a Canon printer/plotter
CCEDT	Select CC components in BOXes and above mininum flux.
CCFND	prints the contents of a Clean Components extension file.
CCGAU	Converts point CLEAN components to Gaussians
CCMOD	generates clean components to fit specified source model
CCMRG	sums all clean components at the same pixel
CCNTR	generate a contour plot file from an image
CCSEL	Select signifigant CC components
CL2HF	Convert CL table to HF table
CLCAL	merges and smoothes SN tables, applies them to CL tables
CLCOR	applies user-selected corrections to the calibration CL table
CLINV	copy CL/SN file inverting the calibration
CLIP	deletes UV data with amplitudes outside specified range
CLPLT	plots closure phase and model from CC file
CLSMO	smooths a calibration CL table
CNTR	generate a contour plot file or TV plot from an image
COHER	Baseline Phase coherence measurement
COMAP	Procedure to MAP and Self-Calibrate a UVDATA set
COMAP_DO	MX adverbs not changed by COMAP
COMAP_MX	MX adverbs not changed by COMAP
COMAP_NA	Procedure to MAP and Self-Calibrate a UVDATA set
COMAP_UV	Procedure to MAP and Self-Calibrate a UVDATA set
COMB	combines two images by a variety of mathematical methods
CONFI	Optimize array configuration by minimum side lobes
CONPL	Plots AIPS gridding convolution functions
CONVL	convolves an image with a gaussian or another image
CORER	calculates correlator statistics and flags bad ones
CORFQ	corrects uvw for incorrect observing frequency
CPASS	computes polynomial spectral bandpass correction table
CPYRT	replaces history with Survey readme file, inserts copyright

```
CSCOR      applies specified corrections to CS tables
CVEL       shifts spectral-line UV data to a given velocity
CXCLN      Complex Hogbom CLEAN
DAYFX      Fixes day number problems left by FILLM
DBCON      concatenates two UV data sets
DCONV      deconvolves a gaussian from an image
DECOR      Measures the decorrelation between channels and IF of uv data
DESCM      copies a portion of a UV data set
DFTPL      plots DFT of a UV data set at arbitrary point versus time
DIFRL      divides the RR data by LL data
DIFUV      Outputs the difference of two matching input uv data sets
DISKU      shows disk use by one or all users
DTCHK      Task to check results of a test using simulated data.
DTSIM      Generate fake UV data
DTSUM      Task to provide a summary of the contents of a dataset
EDITA      Interactive TV task to edit uv data based on TY/SN/CL tables
EDITR      Interactive baseline-oriented visibility editor using the TV
ELINT      Determines and removes gain dependence on elevation
FARAD      add ionospheric Faraday rotation to CL table
FETCH      Reads an image from an external text file.
FFT        takes Fourier Transform of an image or images
FILLM      reads VLA on-line/archive format uv data tapes (post Jan 88)
FILLR      reads old VLA on-line-system tapes into AIPS
FITAB      writes images / uv data w extensions to tape in FITS format
FITLD      reads tape to load FITS images or FITS UV files to disk
FITTP      writes images / uv data w extensions to tape in FITS format
FIXWT      Modify weights to reflect amplitude scatter of data
FLATN      Re-grid multiple fields into one image
FLGIT      flags data based on the rms of the spectrum
FRCAL      Faraday rotation self calibration task
FRING      fringe fit data to determine antenna calibration, delay, rate
FRMAP      Task to build a map using fringe rate spectra
FRPLT      Task to plot fringe rate spectra
FUDGE      modifies UV data with user's algorithm: paraform task
FXPOL      Fixes up header for wrongly labelled polzn axes
FXTIM      fixes start date so all times are positive
FXVLA      Task to correct VLA data for on-line errors in special cases.
FXVLB      Builds a CQ table to enable VLBA correlator loss corrections
GAL        Determine parameters from a velocity field
GEOM       regrids images with rotation, shift using interpolation
GETJY      determines calibrator flux densities
GLENS      models galaxy gravitational lens acting on 3 component source
GPHAS      Produces one effective baseline by averaging selected baselines
GPSDL      Calculate ionospheric delay and Faraday rotation corrections
GREYS      plots images as contours over multi-level grey
GRIDR      makes an image from single-dish data
GRIPR      standalone program to enter suggestions/complaints to AIPS
GSCAT      reads Fits Guide star catalog file
GSTAR      Task to read a Guide Star (UK) table and create an ST table.
HF2SV      convert HF tables from FRING/MBDLY to form used by Calc/Solve
HFPRT      write HF tables from CL2HF
HGEOM      interpolates image to different gridding and/or geometry
HISEQ      task to translate image by histogram equalization
HLPCLEAN   Cleaning tasks  - internal help
HLPEDICL   Interactive SN/CL table uv-data editor - internal help
HLPEDISN   Interactive SN/CL table (not UV) editor - internal help
HLPEDITY   Interactive TY table uv-data editor - internal help
HLPEDIUV   Interactive uv-data editor - internal help
```

HLPIBLED	Interactive Baseline based visibility Editor - internal help
HLPPLAYR	OOP TV class demonstration task - internal (on-line) help
HLPSCMAP	Cleaning tasks - internal help
HLPSPFLG	Interactive time-channel visibility Editor - internal help
HLPTVFLG	Interactive time-baseline visibility Editor - internal help
HLPTVHUI	Interactive intensity-hue-saturation display - on-line help
HLPTVRGB	Interactive red-green-blue display - on-line help
HOLGR	Read & process holography visibility data to telescope images
HORUS	makes images from unsorted UV data, applying any calibration
IBLED	Interactive BaseLine based visibility EDitor
IM2UV	converts an image to a visibility data set
IMAGR	Wide-field and/or wide-frequency Cleaning / imaging task.
IMCLP	Clip an image to a specified range.
IMEAN	displays the mean & extrema and plots histogram of an image
IMERG	merges images of different spatial resolutions
IMFIT	fits gaussians to portions of an image
IMFLT	fits and removes a background intensity plane from an image
IMLHS	converts images to luminosity/hue TV display
IMLIN	Fits and removes continuum emission from cube
IMLOD	reads tape to load images to disk
IMMOD	adds images of model objects to an image
IMRMS	Plot IMEAN rms answers
IMTXT	Write an image to an external text file.
IMVIM	plots one image's values against another's
INDXH	writes index file describing contents of UV data base
INDXR	writes index file describing contents of UV data base
IRING	integrates intensity / flux in rings / ellipses
ISPEC	Plots and prints spectrum of region of a cube
JMFIT	fits gaussians to portions of an image
KNTR	make a contour/grey plot file from an image w multiple panels
KRING	fringe fit data to determine antenna calibration, delay, rate
LDGPS	load GPS data from an ASCII file
LGEOM	regrids images with rotation, shift using interpolation
LISTR	prints contents of UV data sets and assoc. calibration tables
LPCAL	Determines instrumental polarization for UV data
LTESS	makes mosaic images by linear combination
LWPLA	translates a plot file to a PostScript printer (LaserWriter?)
M3TAR	translate Haystack MKIII VLBI format "A" TAR's into AIPS
MANDL	creates an image of a subset of the Mandlebrot Set
MAPBM	Map VLA beam polarization
MAPIT	Procedure to MAP and Self-Calibrate a UVDATA set
MAPIT_MX	MX adverbs not changed by MAPIT
MAPIT_NA	Procedure to MAP and Self-Calibrate a UVDATA set
MAPIT_UV	Procedure to MAP and Self-Calibrate a UVDATA set
MATHS	operates on an image with a choice of mathematical functions
MBDLY	Fits multiband delays from IF phases, updates SN table
MCUBE	collects n-dimensional images into n+1-dimensional image
MF2ST	Task to generate an ST ext. file from Model Fit ext. file
MFPRT	prints MF tables in a format needed by modelling software
MK3IN	translate Haystack MKIII VLBI format "A" tapes into AIPS
MK3TX	extract text files from a MKIII VLBI archive tape
MODVF	task to create a warped velocity field
MOMFT	calculates images of moments of a sub-image
MOMNT	calculates images of moments along x-axis (vel, freq, ch)
MOVE	Task to copy or move data from one user to another
MSORT	Sort a UV dataset into a specified order
MULIF	Change number of IFs in output
MULTI	Task to convert single-source to multi-source UV data

MWFLT	applies linear & non-linear filters to images
MX	makes images and deconvolves using UV data directly.
NINER	Applies various 3x3 area operaters to an image.
NNLSQ	Non-Negative-Least-Squares decomposition of spectrum
NOBAT	Task to lock lower priority users out of the AP
OBEDT	Task to flag data of orbiting antennas
OBPLT	Plot columns of an OB table.
OBTAB	Recalculate orbit parameters and other spacecraft info
OGEOM	Simple image rotation, scaling, and translation
OHGEO	Geometric interpolation with correction for 3-D effects
OMFIT	Fits sources and, optionally, a self-cal model to uv data
OTFBS	Translates on-the-fly continuum SDD format to AIPS UV file
OTFIN	Lists on-the-fly single-dish SDD format data files
OTFUV	Translates on-the-fly single-dish SDD format to AIPS UV file
PADIM	Task to increase image size by padding with some value
PASTE	Pastes a selected subimage of one image into another.
PATGN	Task to create a user specified test or primary-beam pattern
PBCOR	Task to apply or correct an image for a primary beam
PCAL	Determines instrumental polarization for UV data
PCCOR	Corrects phases using PCAL tones data from PC table
PCLOD	Reads ascii file containing pulse-cal info to PC table.
PCNTR	Generate plot file with contours plus polarization vectors
PFPL1	Paraform Task to generate a plot file: (does grey scale)
PFPL2	Paraform Task to generate a plot file: (slice intensity)
PFPL3	Paraform Task to generate a plot file: (does histogram)
PGEOM	Task to transform an image into polar coordinates.
PHASE	Baseline Phase coherence measurement
PHCLN	PHCLN has been removed, use PHAT adverb in APCLN.
PHSRF	Perform phase-referencing within a spectral line database.
PLAYR	Verb to load an image into a TV channel
PLCUB	Task to plot intensity vs x panels on grid of y,z pixels
PLROW	Plot intensity of a series of rows with an offset.
POLCO	Task to correct polarization maps for Ricean bias
POLSN	Make a SN table from cross polarized fringe fit
POSSM	Task to plot total and cross-power spectra.
PROFL	Generates plot file for a profile display.
PRTAB	prints any table-format extension file
PRTAC	prints contents and summaries of the accounting file
PRTAN	prints the contents of the ANtenna extension file
PRTCC	prints the contents of a Clean Components extension file.
PRTIM	prints image intensities from an MA catalog entry
PRTPL	Task to send a plot file to the line printer
PRTSD	prints contents of AIPS single-dish data sets
PRTTP	prints contents of tapes, all supported formats
PRTUV	prints contents of a visibility (UV) data set
QMSPL	Task to send a plot file to the QMS printer/plotter
QUACK	Flags beginning or end portions of UV-data scans
REGRD	Regrids an image from one co-ordinate frame to another
REMAG	Task to replace magic blanks with a user specified value
RESEQ	Resequence antennas
RFI	Look for RFI in uv data
RGBMP	Task to create an RGB image from the 3rd dim of an image
RM	Task to calculate rotation measure and magnetic field
RSTOR	Restores a CC file to a map with a gaussian beam.
RTIME	Task to test compute times
SAD	fits gaussians to portions of an image
SBCOR	Task to correct VLBA data for phase shift between USB & LSB
SCMAP	Imaging plus self-calibration loop

```
SDCAL    Task to apply single dish calibration
SDCLN    deconvolves image by Clark and then "SDI" cleaning methods
SDGRD    Task to select and image random-position single-dish data
SDIMG    Task to select and image random-position single-dish data
SDLSF    least squares fit to channels and subtracts from SD uv data
SDMOD    modifies single-dish UV data with model sources
SDTUV    Task to convert SD table files to UV like data.
SDVEL    shifts spectral-line single-dish data to a given velocity
SELSD    Task to select random position single dish measurments
SERCH    Finds line signals in transposed data cube
SETAN    Reads an ANtenna file info from a text file
SETJY    Task to enter source info into source (SU) table.
SHADW    Generates the "shadowed" representation of an image
SHOUV    displays uv data in various ways.
SKYVE    Regrids a DSS image from one co-ordinate frame to another
SL2PL    Task to convert a Slice File to a Plot File
SLCOL    Task to collate slice data and models.
SLFIT    Task to fit gaussians to slice data.
SLICE    Task to make a slice file from an image
SMOTH    Task to smooth a subimage from upto a 7-dim. image
SNCOR    applies user-selected corrections to the calibration SN table
SNDUP    copies and duplicates SN table from single pol file to dual pol
SNEDT    Interactive SN/CL table editor using the TV
SNPLT    Plots selected contents of SN, TY, PC or CL files
SNSMO    smooths and filters a calibration SN table
SOLCL    adjust gains for solar data according to nominal sensitivity
SPCAL    Determines instrumental polzn. for spec. line UV data
SPECR    Spectral regridding task for UV data
SPFLG    interactive flagging of UV data in channel-TB using the TV
SPLAT    Applies calibration and splits or assemble selected sources.
SPLIT    converts multi-source to single-source UV files w calibration
SQASH    Task to collapse several planes in a cube into one plane
STARS    Task to generate an ST ext. file with star positions
STEER    Task which deconvolves the David Steer way.
STESS    Task which finds sensitivity in mosaicing
STFND    Task to find stars in an image and generate an ST table.
STFUN    Task to calculate a structure function image
STRAN    Task compares ST tables, find image coordinates (e.g. guide star )
SUBIM    Task to select a subimage from up to a 7-dim. image
SUMIM    Task to sum overlapping, sequentially-numbered images
SUMSQ    Task to sum the squared pixel values of overlapping,
SWPOL    Swap polarizations in a UV data base
TABED    Task to edit tables
TABEX    Edit Ancillary tables on UV or Image data
TACOP    task to copy tables
TAFFY    User definable task to operate on an image
TAFLG    Flags data in a Table extension file
TAMRG    Task to merge table rows under specified conditions
TAPLT    Plots data from a Table extension file
TAPQL    Convert an AIPS table to a POSTQUEL script
TASAV    Task to copy all extension tables to a dummy uv-file
TASRT    Task to sort extension tables.
TBAVG    Time averages data on all baselines.
TBDIF    Compare entries in two tables
TBIN     Reads a text file AIPS table into AIPS
TBOUT    Writes an AIPS table into a text file for user editting.
TBSUB    Make a new table from a subset of an old table
TBTSK    Paraform OOP task for tables
```

```
TCOPY     Tape to tape copy with some disk FITS support
TECOR     Calculate ionospheric delay and Faraday rotation corrections
TFILE     sorts and edits MkIII correlator UNIX-based A-file.
TI2HA     modifies times in UV data to hour angles
TKPL      Task to send a plot file to the TEK
TRANS     Task to transpose a subimage of an up to 7-dim. image
TVCPS     Task to copy a TV screen-image to a PostScript file.
TVDIC     Task to copy a TV screen-image to a Dicomed film recorder.
TVFLG     interactive flagging of UV data using the TV
TVHLD     Task to load a map with histogram equalization
TVHUI     make TV image from images of intensity, hue, saturation
TVHXF     Task to calculate transfer function based on histogram
TVPL      Display a plot file on the TV
TVRGB     make TV image from images of true color (RGB) images
TXPL      Displays a plot (PL) file on a terminal or line printer
UBAVG     Baseline dependent time averaging of uv data
UJOIN     modifies UV data converting IFs to spectral channels
UNCAL     sets up tables for uncalibrating Australia Telescope data
USUBA     Assign subarrays within a uv-data file
UTESS     deconvolves images by maximizing emptiness
UV2MS     Append single source file to multisource file.
UV2TB     Converts UV autocorrelation spectra to tables
UVADC     Fourier transforms and corrects a model and adds to uv data.
UVAVG     Average or merge a sorted (BT, TB) uv database
UVBAS     averages several channels and subtracts from uv data.
UVCMP     Convert a UV database to or from compressed format
UVCON     Generate sample UV coverage given a user defined array layout
UVCOP     Task to copy a subset of a UV data file
UVCRS     Finds the crossing points of UV-ellipses.
UVDGP     Copy a UV data file, deleting a portion of it
UVDIF     prints differences between two UV data sets
UVFIL     Create, fill a uv database from user supplied information
UVFIT     Fits source models to uv data.
UVFIX     Recomputes u,v,w for a uv database
UVFLG     Flags UV-data
UVFND     prints selected data from UV data set to search for problems
UVGLU     Glues UV data frequency blocks back together
UVHGM     Plots statistics of uv data files.
UVHOL     prints holography data from a UV data base with calibration
UVIMG     Grid UV data into an "image"
UVLIN     Fits and removes continuum visibility spectrum, also can flag
UVLOD     Read export or FITS data from a tape or disk
UVLSD     least squares fit to channels and divides the uv data.
UVLSF     least squares fit to channels and subtracts from uv data.
UVMAP     makes images from calibrated UV data.
UVMLN     edits data based on the rms of the spectrum
UVMOD     Modify UV database by adding a model or models
UVMTH      Averages one data set and applied it to another.
UVNOU     flags uv samples near the U,V  axes to reduce interference
UVPLT     plots data from a UV data base
UVPOL     modifies UV data to make complex image and beam
UVPRM     measures parameters from a UV data base
UVPRT     prints data from a UV data base with calibration
UVSEN     Determine RMS sidelobe level and brightness sensitivity
UVSIM     Generate sample UV coverage given a user defined array layout
UVSRT     Sort a UV dataset into a specified order
UVSUB     Subtracts/divides a model from/into a uv data base
VBCAL     Scale visibility amplitudes by antenna based constants
```

VBGLU	Glues together data from multiple passes thru the VLBA corr.
VBMRG	Merge VLBI data, eliminate duplicate correlations
VLABP	VLA antenna beam polarization correction for snapshot images
VLBIN	Task to read VLBI data from an NRAO/MPI MkII correlator
VLOG	Pre-process external VLBA calibration files
VPLOT	plots uv data and model from CC file (the fast version ov VBPLT)
VTESS	Deconvolves sets of images by the Maximum Entropy Method
VTEST	Measures velocity discrepancy across fields
WARP	Model warps in Galaxies
WFCLN	Wide field and/or widefrequency CLEANing/imaging task.
WTMOD	modifies weights in a UV data set
WTSUM	Task to do a a sum of images weighted by other images
XBASL	Fits and subtracts nth-order baselines from cube (x axis)
XGAUS	Fits 1-dimensional Gaussians to images
XMOM	Fits one-dimensional moments to each row of an image
XPLOT	Plots image rows one at a time on the graphics screen
XSMTH	Smooth data along the x axis
XSUM	Sum or average images on the x axis
XTRAN	Create an image with transformed coodinates

13.36 TV

BLANK	blanks out selected, e.g. non-signal, portions of an image
CNTR	generate a contour plot file or TV plot from an image
COLORS	specifies the desired TV colors
COSTAR	Verb to plot a symbol at given position on top of a TV image
COTVLOD	Proc to load an image into a TV channel about a coordinate
CURBLINK	switch TV cursor between steady and blinking displays
CURVALUE	displays image intensities selected via the TV cursor
DONEWTAB	do we make new tables, use a new table format, etc.
DOTV	selects use of TV display option in operation
FACTOR	scales some display or CLEANing process
FILEBOX	Verb to reset Clean boxes with TV cursor & write to file
GRCHAN	specifies the TV graphics channel(s) to be used
GRCLEAR	clears the contents of the specified TV graphics channels
GREAD	reads the colors of the specified TV graphics channel
GROFF	turns off specified TV graphics channels
GRON	turns on specified TV graphics channels
GWRITE	reads the colors of the specified TV graphics channel
IMERASE	replaces an image portion of the TV screen with zeros
IMLHS	converts images to luminosity/hue TV display
IMPOS	displays celestial coordinates selected by the TV cursor
IMWEDGE	load step wedge of full range of image values to TV
IMXY	returns pixel coordinates selected by the TV cursor
NBOXES	Number of boxes
NCCBOX	Number of clean component boxes
OFFHUINT	Proc which restores TV functions to normal after TVHUE
OFFPSEUD	Verb which deactivates all pseudo-color displays
OFFROAM	Procedure to clear the TV from a Roam condition
OFFSCROL	Verb which deactivates scroll of an image
OFFTRAN	Verb which restores transfer function to normal
OFFZOOM	Verb which returns the hardware IIS zoom to normal
OFMFILE	specifies the name of a text file containing OFM values
PCNTR	Generate plot file with contours plus polarization vectors
PIX2XY	Specifies a pixel in an image
PIXAVG	Average image value
PIXRANGE	Range of pixel values to display

```
PIXSTD    RMS pixel deviation
PIXVAL    Value of a pixel
PROFL     Generates plot file for a profile display.
REBOX     Verb to reset boxes with TV cursor & graphics display.
REMOVIE   Verb to rerun a previously loaded (TVMOVIE) movie
REROAM    Verb to use previous roam image mode, then does roam
RGBCOLOR  specifies the desired TV graphics color
RGBGAMMA  specifies the desired color gamma corrections
RGBMP     Task to create an RGB image from the 3rd dim of an image
ROAM      Roam around an image too large for the display.
ROMODE    Specified roam mode
SETROAM   Verb to set roam image mode, then does roam
SETXWIN   Procedure to set BLC and TRC with TV cursor
TBLC      Gives the bottom left corner of an image to be displayed
TTRC      Specifies the top right corner of a subimage to be displayed
TV3COLOR  Verb to initiate 3-color display using 3 TV channels
TVALL     Procedure loads image to TV, shows labeled wedge, enhances
TVANOT    Verb to load anotation to the TV image or graphics
TVBLINK   Verb which blinks 2 TV planes, can do enhancement also
TVBOX     Verb to set boxes with TV cursor & graphics display.
TVBUT     Tells which AIPS TV button was pushed
TVCHAN    Specified a TV channel (plane)
TVCLEAR   Verb to clear image from TV channel(s)
TVCORN    Specified the TV pixel for the bottom left corner of an image
TVCPS     Task to copy a TV screen-image to a PostScript file.
TVCUBE    Verb to load a cube into tv channel(s) & run a movie
TVDIC     Task to copy a TV screen-image to a Dicomed film recorder.
TVFIDDLE  Verb enhances B/W or color TV image with zooms
TVFLUX    displays coordinates and values selected with the TV cursor
TVHLD     Task to load a map with histogram equalization
TVHUEINT  Verb to make hue/intensity display from 2 TV channels
TVHUI     make TV image from images of intensity, hue, saturation
TVHXF     Task to calculate transfer function based on histogram
TVINIT    Verb to return TV display to a virgin state
TVLABEL   Verb to label the (map) image on the TV
TVLEVS    Gives the peak intensity to be displayed in levels
TVLINE    Verb to load a straight line to the TV image or graphics
TVLOD     Verb to load an image into a TV channel
TVLUT     Verb which modifies the transfer function of the image
TVMAXFIT  displays fit pixel positions and intensity at maxima on TV
TVMBLINK  Verb which blinks 2 TV planes either auto or manually
TVMLUT    Verb which modifies the transfer function of the image
TVMOVIE   Verb to load a cube into tv channel(s) & run a movie
TVNAME    Verb to fill image name of that under cursor
TVOFF     Verb which turns off TV channel(s).
TVON      Turns on one or all TV image planes
TVPHLAME  Verb to activate "flame-like" pseudo-color displays
TVPL      Display a plot file on the TV
TVPOS     Read a TV screen position using cursor
TVPSEUDO  Verb to activate three types of pseudo-color displays
TVRESET   Reset the TV without erasing the image planes
TVRGB     make TV image from images of true color (RGB) images
TVROAM    Load up to 4 TV image planes and roam a subset thereof
TVSCROL   Shift position of image on the TV screen
TVSLICE   Set slice endpoints on the TV interactively
TVSPLIT   Compare two TV image planes, showing halves
TVSTAR    Verb to plot star positions on top of a TV image
TVSTAT    Find the mean and RMS in a blotch region on the TV
```

TVTRANSF	Interactively alters the TV image plane transfer function
TVWEDGE	Show a linear wedge on the TV
TVWINDOW	Set a window on the TV with the cursor
TVWLABEL	Put a label on the wedge that you just put on the TV
TVXY	Pixel position on the TV screen
TVZOOM	Activate the TV zoom
TXINC	TV X coordinate increment
TYINC	TV Y coordinate increment
TZINC	TV Z coordinate increment
WEDERASE	Load a wedge portion of the TV with zeros
XAS	Information about TV-Servers
XVSS	Information about older Sun OpenWindows-specific TV-Server

13.37 TV-APPL

BLSUM	sums images over irregular sub-images, displays spectra
EDITA	Interactive TV task to edit uv data based on TY/SN/CL tables
EDITR	Interactive baseline-oriented visibility editor using the TV
GAMMASET	changes the gamma-correction exponent used in the TV OFM
HLPCLEAN	Cleaning tasks - internal help
HLPEDICL	Interactive SN/CL table uv-data editor - internal help
HLPEDISN	Interactive SN/CL table (not UV) editor - internal help
HLPEDITY	Interactive TY table uv-data editor - internal help
HLPEDIUV	Interactive uv-data editor - internal help
HLPIBLED	Interactive Baseline based visibility Editor - internal help
HLPPLAYR	OOP TV class demonstration task - internal (on-line) help
HLPSCMAP	Cleaning tasks - internal help
HLPSPFLG	Interactive time-channel visibility Editor - internal help
HLPTVFLG	Interactive time-baseline visibility Editor - internal help
HLPTVHUI	Interactive intensity-hue-saturation display - on-line help
HLPTVRGB	Interactive red-green-blue display - on-line help
IBLED	Interactive BaseLine based visibility EDitor
IMAGR	Wide-field and/or wide-frequency Cleaning / imaging task.
OFMADJUS	interactive linear adjustment of current TV OFM lookup tables
OFMCONT	creates/modifies TV color OFMs with level or wedged contours
OFMDIR	lists names of the user's and system's OFM files from OFMFIL
OFMGET	loads TV OFMS from an OFM save file
OFMLIST	lists the current TV OFM table(s) on the terminal or printer
OFMSAVE	saves the TV's current OFM lookup table in a text file
OFMTWEAK	interactive modification of current TV OFM lookup tables
OFMZAP	deletes an OFM lookup table save file
PLAYR	Verb to load an image into a TV channel
SNEDT	Interactive SN/CL table editor using the TV
SPFLG	interactive flagging of UV data in channel-TB using the TV
TVFLG	interactive flagging of UV data using the TV

13.38 UTILITY

CCEDT	Select CC components in BOXes and above mininum flux.
CCSEL	Select signifigant CC components
CL2HF	Convert CL table to HF table
MBDLY	Fits multiband delays from IF phases, updates SN table
MK3TX	extract text files from a MKIII VLBI archive tape
MOVE	Task to copy or move data from one user to another
OPCODE	General adverb, defines an operation
OPTELL	The operation to be passed to a task by TELL

```
PRNUMBER  POPS number of messages
PRTIME    Time limit
SHOW      Verblike to display the TELL adverbs of a task.
SORT      Specified desired sort order
SQASH     Task to collapse several planes in a cube into one plane
STRAN     Task compares ST tables, find image coordinates (e.g. guide star )
TBDIF     Compare entries in two tables
TBIN      Reads a text file AIPS table into AIPS
TBOUT     Writes an AIPS table into a text file for user editting.
TBSUB     Make a new table from a subset of an old table
TBTSK     Paraform OOP task for tables
TCOPY     Tape to tape copy with some disk FITS support
UVAVG     Average or merge a sorted (BT, TB) uv database
UVCMP     Convert a UV database to or from compressed format
UVNOU     flags uv samples near the U,V  axes to reduce interference
```

13.39 UV

```
ACCOR     Corrects cross amplitudes using auto correlation measurements
ADDIF     Adds an IF axis to a uv data set
AFILE     sorts and edits MkIII correlator A-file.
ALIAS     adverb to alias antenna numbers to one another
AVER      Averages over time UV data sets in 'BT' order
AVSPC     Averages uv-data in the frequency domain
BAND      specifies the approximate frequency of UV data to be selected
BASRM     Task to remove a spectral baseline from total power spectra
BIF       gives first IF to be included
BLAVG     Average cross-polarized UV data over baselines.
BLOAT     converts pseudo-continuum to proper line UV data set
BPLOT     Plots bandpass tables in 2 dimensions as function of time
BPSMO     Smooths or interpolates bandpass tables to regular times
BREAK     procedure to TELL FILLM to break all current uv files, start new
BSROT     modifies SD beam-switch continuum data for error in throw
CALIB     determines antenna calibration: complex gain
CLIP      deletes UV data with amplitudes outside specified range
CLPLT     plots closure phase and model from CC file
CMETHOD   specifies the method by which the uv model is computed
CMODEL    specifies the method by which the uv model is computed
COHER     Baseline Phase coherence measurement
CORER     calculates correlator statistics and flags bad ones
CORFQ     corrects uvw for incorrect observing frequency
CVEL      shifts spectral-line UV data to a given velocity
DAYFX     Fixes day number problems left by FILLM
DBCON     concatenates two UV data sets
DECOR     Measures the decorrelation between channels and IF of uv data
DESCM     copies a portion of a UV data set
DFTPL     plots DFT of a UV data set at arbitrary point versus time
DIFRL     divides the RR data by LL data
DIFUV     Outputs the difference of two matching input uv data sets
DOARRAY   spcifies if subarrays are ignored or the information used
DOCONCAT  selects concatenated or indivudual output files
DOSTOKES  selects conversion from observed polarizations to Stokes
DOUVCOMP  selects use of compression in writing UV data to disk
DTCHK     Task to check results of a test using simulated data.
DTSUM     Task to provide a summary of the contents of a dataset
EDITA     Interactive TV task to edit uv data based on TY/SN/CL tables
EDITR     Interactive baseline-oriented visibility editor using the TV
```

EIF	last IF number to be included in operation
FEW	procedure to TELL FILLM to append incoming data to existing uv files
FILLM	reads VLA on-line/archive format uv data tapes (post Jan 88)
FILLR	reads old VLA on-line-system tapes into AIPS
FITAB	writes images / uv data w extensions to tape in FITS format
FITTP	writes images / uv data w extensions to tape in FITS format
FIXWT	Modify weights to reflect amplitude scatter of data
FLGIT	flags data based on the rms of the spectrum
FRMAP	Task to build a map using fringe rate spectra
FRPLT	Task to plot fringe rate spectra
FUDGE	modifies UV data with user's algorithm: paraform task
FXPOL	Fixes up header for wrongly labelled polzn axes
FXTIM	fixes start date so all times are positive
FXVLA	Task to correct VLA data for on-line errors in special cases.
FXVLB	Builds a CQ table to enable VLBA correlator loss corrections
GPHAS	Produces one effective baseline by averaging selected baselines
HLPEDICL	Interactive SN/CL table uv-data editor - internal help
HLPEDISN	Interactive SN/CL table (not UV) editor - internal help
HLPEDITY	Interactive TY table uv-data editor - internal help
HLPEDIUV	Interactive uv-data editor - internal help
HLPIBLED	Interactive Baseline based visibility Editor - internal help
HLPSPFLG	Interactive time-channel visibility Editor - internal help
HLPTVFLG	Interactive time-baseline visibility Editor - internal help
HOLGR	Read & process holography visibility data to telescope images
IBLED	Interactive BaseLine based visibility EDitor
IM2UV	converts an image to a visibility data set
LISTR	prints contents of UV data sets and assoc. calibration tables
LPCAL	Determines instrumental polarization for UV data
M3TAR	translate Haystack MKIII VLBI format "A" TAR's into AIPS
MANY	procedure to TELL FILLM to start new uv files on each scan
MAPBM	Map VLA beam polarization
MK3IN	translate Haystack MKIII VLBI format "A" tapes into AIPS
MSORT	Sort a UV dataset into a specified order
MULIF	Change number of IFs in output
MULTI	Task to convert single-source to multi-source UV data
NPIECE	The number of pieces to make
OBJECT	The name of an object
OBPLT	Plot columns of an OB table.
OMFIT	Fits sources and, optionally, a self-cal model to uv data
PCAL	Determines instrumental polarization for UV data
PCCOR	Corrects phases using PCAL tones data from PC table
PHASE	Baseline Phase coherence measurement
PHSLIMIT	gives a phase value in degrees
PHSRF	Perform phase-referencing within a spectral line database.
POSSM	Task to plot total and cross-power spectra.
PRTAN	prints the contents of the ANtenna extension file
PRTUV	prints contents of a visibility (UV) data set
QUACK	Flags beginning or end portions of UV-data scans
QUAL	Source qualifier
QUIT	procedure to TELL FILLM to stop at the end of the current scan
REFDATE	To specify the initial or reference date of a data set
REFREQ	Allows changing of reference pixel
RESEQ	Resequence antennas
REWEIGHT	Reweighting factors for UV data weights.
ROBUST	Uniform weighting "robustness" parameter
SBCOR	Task to correct VLBA data for phase shift between USB & LSB
SDLSF	least squares fit to channels and subtracts from SD uv data
SDMOD	modifies single-dish UV data with model sources

SDVEL	shifts spectral-line single-dish data to a given velocity
SETAN	Reads an ANtenna file info from a text file
SHOUV	displays uv data in various ways.
SMOOTH	Specifies spectral smoothing
SNEDT	Interactive SN/CL table editor using the TV
SNPLT	Plots selected contents of SN, TY, PC or CL files
SORT	Specified desired sort order
SPCAL	Determines instrumental polzn. for spec. line UV data
SPECR	Spectral regridding task for UV data
SPFLG	interactive flagging of UV data in channel-TB using the TV
SPLAT	Applies calibration and splits or assemble selected sources.
SPLIT	converts multi-source to single-source UV files w calibration
STOKES	Stokes parameter
STOP	procedure to TELL FILLM to break all current uv files and stop
SWPOL	Swap polarizations in a UV data base
TBAVG	Time averages data on all baselines.
TELFLM	procedure to TELL real-time FILLM a new APARM(1) value
TFILE	sorts and edits MkIII correlator UNIX-based A-file.
TI2HA	modifies times in UV data to hour angles
TVFLG	interactive flagging of UV data using the TV
UBAVG	Baseline dependent time averaging of uv data
UCAT	list a user's UV and scratch files on one or more data areas
UJOIN	modifies UV data converting IFs to spectral channels
USUBA	Assign subarrays within a uv-data file
UV1TYPE	Convolving function type 1, pillbox or square wave
UV2MS	Append single source file to multisource file.
UV2TB	Converts UV autocorrelation spectra to tables
UV2TYPE	Convolving function type 2, exponential function
UV3TYPE	Convolving function type 3, sinc function
UV4TYPE	Convolving function type 4, exponent times sinc function
UV5TYPE	Convolving function type 5, spheroidal function
UV6TYPE	Convolving function type 6, exponent times BessJ1(x) / x
UVADC	Fourier transforms and corrects a model and adds to uv data.
UVAVG	Average or merge a sorted (BT, TB) uv database
UVBAS	averages several channels and subtracts from uv data.
UVBOX	radius of the smoothing box used for uniform weighting
UVBXFN	type of function used when counting for uniform weighting
UVCMP	Convert a UV database to or from compressed format
UVCON	Generate sample UV coverage given a user defined array layout
UVCOP	Task to copy a subset of a UV data file
UVCOPPRM	Parameter adverb array for task UVCOP
UVCRS	Finds the crossing points of UV-ellipses.
UVDGP	Copy a UV data file, deleting a portion of it
UVDIF	prints differences between two UV data sets
UVFIL	Create, fill a uv database from user supplied information
UVFIT	Fits source models to uv data.
UVFIX	Recomputes u,v,w for a uv database
UVFIXPRM	Parameter adverb array for task UVFIX
UVFLG	Flags UV-data
UVFND	prints selected data from UV data set to search for problems
UVGLU	Glues UV data frequency blocks back together
UVHGM	Plots statistics of uv data files.
UVHOL	prints holography data from a UV data base with calibration
UVIMG	Grid UV data into an "image"
UVLIN	Fits and removes continuum visibility spectrum, also can flag
UVLOD	Read export or FITS data from a tape or disk
UVLSD	least squares fit to channels and divides the uv data.
UVLSF	least squares fit to channels and subtracts from uv data.

```
UVMLN      edits data based on the rms of the spectrum
UVMOD      Modify UV database by adding a model or models
UVMTH       Averages one data set and applied it to another.
UVNOU      flags uv samples near the U,V  axes to reduce interference
UVPLT      plots data from a UV data base
UVPOL      modifies UV data to make complex image and beam
UVPRM      measures parameters from a UV data base
UVPRT      prints data from a UV data base with calibration
UVRANGE    Specify range of projected baselines
UVSEN      Determine RMS sidelobe level and brightness sensitivity
UVSIM      Generate sample UV coverage given a user defined array layout
UVSIZE     specifies number of pixels on X and Y axes of a UV image
UVSRT      Sort a UV dataset into a specified order
UVSUB      Subtracts/divides a model from/into a uv data base
UVTAPER    Widths in U and V of gaussian weighting taper function
UVWTFN     Specify weighting function, Uniform or Natural
VBGLU      Glues together data from multiple passes thru the VLBA corr.
VLBIN      Task to read VLBI data from an NRAO/MPI MkII correlator
VPLOT      plots uv data and model from CC file (the fast version ov VBPLT)
VTEST      Measures velocity discrepancy across fields
WTMOD      modifies weights in a UV data set
WTUV       Specifies the weight to use for UV data outside UVRANGE
ZEROSP     Specify how to include zero spacing fluxes in FT of UV data
```

13.40 VERB

```
VERB
Type:  General type of POPS symbol
Use:   Verbs are the magic words which cause FORTRAN code to
       execute some function.  They are compiled into AIPS
       by the programmers and their meaning remains fixed
       at least until the programmers change their minds.
Grammar:   Verbs may be given either in compile mode or in
       regular execute mode.  In the former, their pointers
       are stored with the procedure and they are executed
       when the procedure is invoked.  In the latter, they
       are compiled with the other statements and parameters
       on the input line and then executed before a new
       input line is read.
Execution:  Verbs are executed when the line in which they
       appear is executed and are simply referenced by their
       name.  The syntax "GO verb_name" is converted by AIPS to
       "TPUT verb_name ; verb_name" which saves the adverbs of
       "verb_name" for a later TGET and then executes
       "verb_name".  The syntax "TASK = 'verb_name' ; GO" will
       not work.
****************************************************************

ABOUT      displays lists and information on tasks, verbs, adverbs
ABS        returns absolute value of argument
ACTNOISE   puts estimate of actual image uncertainty in header
ADDBEAM    Inserts clean beam parameters in image header
ALLDEST    Delete a group or all of a users data files
ALTDEF     Sets frequency vs velocity relationship into image header
ALTSWTCH   Switches between frequency and velocity in image header
APROPOS    displays all help 1-line summaries containing specified words
ATAN       Returns arc tangent of argument (half-circle)
```

ATAN2	Returns arc tangent of two arguments (full circle)
AVEOT	Advances tape to end-of-information point
AVFILE	Moves tape forward or back to end-of-file marks
AVMAP	Advance tape by one image (IBM-CV = obsolete tape file)
AXDEFINE	Define or modify an image axis description
BAMODIFY	edits characters in a line of a batch work file
BATCH	starts entry of commands into batch-job work file
BATCLEAR	removes all text from a batch work file
BATEDIT	starts an edit (replace, insert) session on a batch work file
BATLIST	lists the contents of a batch work file
BATNLINE	specifies the number of lines to process in a batch work file
BY	gives increment to use in FOR loops in POPS language
CATALOG	list one or more entries in the user's data directory
CEIL	returns smallest integer greater than or equal the argument
CELGAL	switches header between celestial and galactic coordinates
CHAR	converts number to character string
CHKNAME	Checks for existence of the specified image name
CLR2NAME	clears adverbs specifying the second input image
CLR3NAME	clears adverbs specifying the third input image
CLR4NAME	clears adverbs specifying the fourth input image
CLRMSG	deletes messages from the user's message file
CLRNAME	clears adverbs specifying the first input image
CLRONAME	clears adverbs specifying the first output image
CLRSTAT	remove any read or write status flags on a directory entry
CLRTEMP	clears the temporary literal area during a procedure
COS	returns cosine of the argument in degrees
COSTAR	Verb to plot a symbol at given position on top of a TV image
COWINDOW	Set a window based on coordinates
CPUTIME	displays curren tcpu and real time usage of the AIPS task
CURBLINK	switch TV cursor between steady and blinking displays
CURVALUE	displays image intensities selected via the TV cursor
DISMOUNT	disables a magnetic tape and dismounts it from the tape drive
DUMP	displays portions of the POPS symbol table in all formats
EGETNAME	fills in input name adverbs by catalog slot number, w error
EHEX	converts decimal to extended hex
END	marks end of block (FOR, WHILE, IF) of POPS code
EPOSWTCH	Switches between B1950 and J2000 coordinates in header
EXIT	ends an AIPS batch or interactive session
EXP	returns the exponential of the argument
EXPLAIN	displays help + extended information describing a task/symbol
EXTDEST	deletes one or more extension files
EXTLIST	lists detailed information about contents of extension files
FILEBOX	Verb to reset Clean boxes with TV cursor & write to file
FLOOR	returns largest integer <= argument
FOR	starts an iterative sequence of operations in POPS language
FREESPAC	displays available disk space for AIPS in local system
GAMMASET	changes the gamma-correction exponent used in the TV OFM
GET2NAME	fills 2nd input image name parameters by catalog slot number
GET3NAME	fills 3rd input image name parameters by catalog slot number
GET4NAME	fills 4th input image name parameters by catalog slot number
GETHEAD	returns parameter value from image header
GETNAME	fills 1st input image name parameters by catalog slot number
GETONAME	fills 1st output image name parameters by catalog slot number
GETTHEAD	returns keyword and other values value from a table header
GO	starts a task, detaching it from AIPS or AIPSB
GRADDRES	specifies user's home address for replies to gripes
GRCLEAR	clears the contents of the specified TV graphics channels
GRDROP	deletes the specified gripe entry

```
GREAD      reads the colors of the specified TV graphics channel
GRINDEX    lists users and time of all gripe entries
GRIPE      enter a suggestion or bug report for the AIPS programmers
GRLIST     lists contents of specified gripe entry
GROFF      turns off specified TV graphics channels
GRON       turns on specified TV graphics channels
GWRITE     reads the colors of the specified TV graphics channel
HELP       displays information on tasks, verbs, adverbs
HINOTE     adds user-generated lines to the history extension file
HITEXT     writes lines from history extension file to text file
IMERASE    replaces an image portion of the TV screen with zeros
IMHEADER   displays the image header contents to terminal, message file
IMPOS      displays celestial coordinates selected by the TV cursor
IMSTAT     returns statistics of a sub-image
IMVAL      returns image intensity at specified pixel
IMWEDGE    load step wedge of full range of image values to TV
IMXY       returns pixel coordinates selected by the TV cursor
INP        displays adverb values for task, verb, or proc - quick form
INPUTS     displays adverb values for task, verb, or proc - to msg file
JOBLIST    lists contents of a submitted and pending batch job
KLEENEX    ends an AIPS interactive session wiping the slate klean
LENGTH     returns length of string to last non-blank character
LN         returns the natural logarithm of the argument
LOG        returns the base-10 logarithm of the argument
MAX        returns the maximum of its two arguments
MAXFIT     returns pixel position and image intensity at a maximum
MCAT       displays images in the user's catalog directory
MIN        returns the minimum of its two arguments
MOD        returns remainder after division of 1st argument by 2nd
MODULUS    returns square root of sum of squares of its two arguments
MOUNT      makes a tape drive available to user's AIPS and tasks
OFFHUINT   Proc which restores TV functions to normal after TVHUE
OFFPSEUD   Verb which deactivates all pseudo-color displays
OFFROAM    Procedure to clear the TV from a Roam condition
OFFSCROL   Verb which deactivates scroll of an image
OFFTRAN    Verb which restores transfer function to normal
OFFZOOM    Verb which returns the hardware IIS zoom to normal
OFMADJUS   interactive linear adjustment of current TV OFM lookup tables
OFMCONT    creates/modifies TV color OFMs with level or wedged contours
OFMDIR     lists names of the user's and system's OFM files from OFMFIL
OFMGET     loads TV OFMS from an OFM save file
OFMLIST    lists the current TV OFM table(s) on the terminal or printer
OFMSAVE    saves the TV's current OFM lookup table in a text file
OFMTWEAK   interactive modification of current TV OFM lookup tables
OFMZAP     deletes an OFM lookup table save file
PARALLEL   Verb to set or show degree of parallelism
PASSWORD   Verb to change the current password for the login user
PCAT       Verb to list entries in the user's catalog (no log file).
PRINT      Print the value of an expression
PRINTER    Verb to set or show the printer(s) used
PROC       Define a POPS procedure using procedure editor.
PROCEDUR   Define a POPS procedure using procedure editor
PRTHI      prints selected contents of the history extension file
PRTMSG     prints selected contents of the user's message file
PSEUDOVB   Declares a name to be a symbol of type pseudoverb
PUTHEAD    Verb to modify image header parameters.
PUTTHEAD   inserts a given value into a table keyword/value pair
PUTVALUE   Verb to store a pixel value at specified position
```

QHEADER	Verb to summarize the image header: positions at center
QIMVAL	Verb to determine pixel value at specified position
QUEUES	Verb to list all submitted jobs in the job queue
READ	Read a value from the users terminal
REBOX	Verb to reset boxes with TV cursor & graphics display.
RECAT	Verb to compress the entries in a catalog file
REHEX	converts extended hex string to decimal
REMOVIE	Verb to rerun a previously loaded (TVMOVIE) movie
RENAME	Rename a file (UV or Image)
RENUMBER	Verb to change the catalog number of an image.
REROAM	Verb to use previous roam image mode, then does roam
RESCALE	Verb to modify image scale factor and offset
RESTART	Verb to trim the message log file and restart AIPS
RESTORE	Read POPS memory file from a common area.
RETURN	Exit a procedure allowing a higher level proc to continue.
REWIND	Verb to rewind a tape
ROAM	Roam around an image too large for the display.
RUN	Pseudoverb to read an external RUN files into AIPS.
SAVDEST	Verb to destroy all save files of a user.
SAVE	Pseudoverb to save full POPS environment in named file
SCALAR	Declares a variable to be a scalar in a procedure
SCRATCH	delete a procedure from the symbol table.
SCRDEST	Verb to destroy scratch files left by bombed tasks.
SET1DG	Verb to set 1D gaussian fitting initial guesses.
SETDEBUG	Verb to set the debug print and execution level
SETROAM	Verb to set roam image mode, then does roam
SGDESTR	Verb-like to destroy named POPS environment save file
SGINDEX	Verb lists SAVE areas by name and time of last SAVE.
SHOW	Verblike to display the TELL adverbs of a task.
SIN	Compute the sine of a value
SPY	Verb to determine the execution status of all AIPS tasks
SQRT	Square root function
STALIN	revises history by deleting lines from history extension file
STQUEUE	Verb to list pending TELL operations
STRING	Declare a symbol to be a string variable in POPS
SUBMIT	Verb which submits a batch work file to the job queue
SUBSTR	Function verb to specify a portion of a STRING variable
T1VERB	Temporary verb for testing (also T2VERB...T9VERB)
TABGET	returns table entry for specified row, column and subscript.
TABPUT	replaces table entry for specified row, column and subscript.
TAN	Tangent function
TAPES	Verb to show the TAPES(s) available
TGET	Verb-like gets adverbs from last GO of a task
TGINDEX	Verb lists those tasks for which TGET will work.
THEN	Specified the action if an IF test is true
TIMDEST	Verb to destroy all files which are too old
TK1SET	Verb to reset 1D gaussian fitting initial guess.
TKAGUESS	Verb to re-plot slice model guess directly on TEK
TKAMODEL	Verb to add slice model display directly on TEK
TKARESID	Verb to add slice model residuals directly on TEK
TKASLICE	Verb to add a slice display on TEK from slice file
TKGUESS	Verb to display slice model guess directly on TEK
TKMODEL	Verb to display slice model directly on TEK
TKPOS	Read a position from the graphics screen or window
TKRESID	Verb to display slice model residuals directly on TEK
TKSET	Verb to set 1D gaussian fitting initial guesses.
TKSLICE	Verb to display slice file directly on TEK
TKVAL	Verb to obtain value under cursor from a slice

```
TKXY      Verb to obtain pixel value under cursor
TO        Specifies upper limit of a FOR loop
TPHEAD    Verb to list image header from FITS or IBM-CV tape
TPUT      Verb-like puts adverbs from a task in file for TGETs
TV3COLOR  Verb to initiate 3-color display using 3 TV channels
TVANOT    Verb to load anotation to the TV image or graphics
TVBLINK   Verb which blinks 2 TV planes, can do enhancement also
TVBOX     Verb to set boxes with TV cursor & graphics display.
TVCLEAR   Verb to clear image from TV channel(s)
TVCUBE    Verb to load a cube into tv channel(s) & run a movie
TVFIDDLE  Verb enhances B/W or color TV image with zooms
TVHUEINT  Verb to make hue/intensity display from 2 TV channels
TVINIT    Verb to return TV display to a virgin state
TVLABEL   Verb to label the (map) image on the TV
TVLINE    Verb to load a straight line to the TV image or graphics
TVLOD     Verb to load an image into a TV channel
TVLUT     Verb which modifies the transfer function of the image
TVMBLINK  Verb which blinks 2 TV planes either auto or manually
TVMLUT    Verb which modifies the transfer function of the image
TVMOVIE   Verb to load a cube into tv channel(s) & run a movie
TVNAME    Verb to fill image name of that under cursor
TVOFF     Verb which turns off TV channel(s).
TVON      Turns on one or all TV image planes
TVPHLAME  Verb to activate "flame-like" pseudo-color displays
TVPOS     Read a TV screen position using cursor
TVPSEUDO  Verb to activate three types of pseudo-color displays
TVROAM    Load up to 4 TV image planes and roam a subset thereof
TVSCROL   Shift position of image on the TV screen
TVSLICE   Set slice endpoints on the TV interactively
TVSPLIT   Compare two TV image planes, showing halves
TVSTAR    Verb to plot star positions on top of a TV image
TVSTAT    Find the mean and RMS in a blotch region on the TV
TVTRANSF  Interactively alters the TV image plane transfer function
TVWEDGE   Show a linear wedge on the TV
TVWINDOW  Set a window on the TV with the cursor
TVWLABEL  Put a label on the wedge that you just put on the TV
TVZOOM    Activate the TV zoom
TYPE      Type the value of an expression
UCAT      list a user's UV and scratch files on one or more data areas
UNQUE     remove a given job from the job queue
VALUE     Convert a string to a numeric value
VERB      Declares a name to be a symbol of type verb
WAITTASK  halt AIPS until specified task is finished
WEDERASE  Load a wedge portion of the TV with zeros
XHELP     Accesses hypertext help system
ZAP       Delete a catalog entry and its extension files
```

13.41 VLA

```
APGPS     Apply GPS-derived ionospheric corrections
BREAK     procedure to TELL FILLM to break all current uv files, start new
CLCOR     applies user-selected corrections to the calibration CL table
CVEL      shifts spectral-line UV data to a given velocity
DAYFX     Fixes day number problems left by FILLM
FARAD     add ionospheric Faraday rotation to CL table
FEW       procedure to TELL FILLM to append incoming data to existing uv files
FILLM     reads VLA on-line/archive format uv data tapes (post Jan 88)
```

```
FRMAP     Task to build a map using fringe rate spectra
GPSDL     Calculate ionospheric delay and Faraday rotation corrections
LDGPS     load GPS data from an ASCII file
MANY      procedure to TELL FILLM to start new uv files on each scan
MAPBM     Map VLA beam polarization
QUIT      procedure to TELL FILLM to stop at the end of the current scan
STOP      procedure to TELL FILLM to break all current uv files and stop
TECOR     Calculate ionospheric delay and Faraday rotation corrections
TELFLM    procedure to TELL real-time FILLM a new APARM(1) value
USERLIST  Alphabetic and numeric list of VLA users, points to real list
VLABP     VLA antenna beam polarization correction for snapshot images
```

13.42 VLBI

```
ACCOR     Corrects cross amplitudes using auto correlation measurements
ACFIT     Determine antenna gains from autocorrelations
AFILE     sorts and edits MkIII correlator A-file.
ALIAS     adverb to alias antenna numbers to one another
ANCAL     Places antenna-based Tsys and gain corrections in CL table
ANTAB     Read amplitude calibration information into AIPS
APCAL     Apply TY and GC tables to generate an SN table
BLING     find residual rate and delay on individual baselines
BSPRT     print BS tables
CL2HF     Convert CL table to HF table
CLCOR     applies user-selected corrections to the calibration CL table
CLPLT     plots closure phase and model from CC file
CROSSPOL  Procedure to make complex poln. images and beam.
CRSFRING  Procedure to calibrate cross pol. delay and phase offsets
CVEL      shifts spectral-line UV data to a given velocity
CXPOLN    Procedure to make complex poln. images and beam.
DTSIM     Generate fake UV data
EDITR     Interactive baseline-oriented visibility editor using the TV
FRING     fringe fit data to determine antenna calibration, delay, rate
FRMAP     Task to build a map using fringe rate spectra
FRPLT     Task to plot fringe rate spectra
FXAVG     Procedure to enable VLBA delay de-correlation corrections
GPHAS     Produces one effective baseline by averaging selected baselines
HF2SV     convert HF tables from FRING/MBDLY to form used by Calc/Solve
HFPRT     write HF tables from CL2HF
HLPIBLED  Interactive Baseline based visibility Editor - internal help
HLPSCMAP  Cleaning tasks  - internal help
HYB       RUN to set parameters for HYBRID (CALIB/MX) self-cal imaging
IBLED     Interactive BaseLine based visibility EDitor
KRING     fringe fit data to determine antenna calibration, delay, rate
M3TAR     translate Haystack MKIII VLBI format "A" TAR's into AIPS
MBDLY     Fits multiband delays from IF phases, updates SN table
MERGECAL  Procedure to merge calibration records after concatenation
MK3IN     translate Haystack MKIII VLBI format "A" tapes into AIPS
MK3TX     extract text files from a MKIII VLBI archive tape
OBPLT     Plot columns of an OB table.
PCCOR     Corrects phases using  PCAL tones data from PC table
PCLOD     Reads ascii file containing pulse-cal info to PC table.
PHSLIMIT  gives a phase value in degrees
POLSN     Make a SN table from cross polarized fringe fit
RESEQ     Resequence antennas
SNEDT     Interactive SN/CL table editor using the TV
TECOR     Calculate ionospheric delay and Faraday rotation corrections
```

```
TFILE      sorts and edits MkIII correlator UNIX-based A-file.
UVPOL      modifies UV data to make complex image and beam
VBCAL      Scale visibility amplitudes by antenna based constants
VBGLU      Glues together data from multiple passes thru the VLBA corr.
VBMRG      Merge VLBI data, eliminate duplicate correlations
VLBA       Procedure to read and process VLBA data (Phil Diamond)
VLBIN      Task to read VLBI data from an NRAO/MPI MkII correlator
VLOG       Pre-process external VLBA calibration files
VPLOT      plots uv data and model from CC file (the fast version ov VBPLT)
```

13.43 Additional recipes

13.43.1 Banana bran muffins

1. Preheat oven to 400 deg.
2. Grease 12 2.75-inch muffin cups.
3. In bowl, combine 1/2 cup crushed `cereal` (1.5 cups un-crushed Multi-Bran Chex recommended), 1.5 cups all-purpose `flour`, 1/2 cup `sugar`, 1/3 cup chopped `nuts` (optional), 2.5 teaspoons `baking powder`, and 1/2 teaspoon `baking soda`.
4. In a separate bowl, combine 3 large mashed `bananas` (1.5 cups), 1 `egg` slightly beaten, 1/4 cup vegetable `oil`, 2 tablespoons `water`, and 1 teaspoon `vanilla extract`.
5. Add to cereal mixture and stir just until moistened. Do not over-mix.
6. Divide evenly among muffin cups.
7. Bake 18–20 minutes, or until tester inserted in center comes out clean.

Thanks to Ralston Purina Company.

13.43.2 Golden mousse

1. Combine 1 cup mashed ripe `bananas`, 2 tablespoons `orange juice`, 1/4 cup shredded `coconut`, 3 tablespoons `brown sugar`, a few grains `salt`, and 1/8 teaspoon grated `orange rind`.
2. Whip until stiff 1 cup `heavy cream`.
3. Fold whipped cream into fruit mixture and turn into freezing tray. Freeze rapidly without stirring until firm.

13.43.3 Dulce Zacatecaño

1. Peel 3 large not-too-ripe `bananas` and slice lengthwise. Saute in 5 tablespoons `butter` until golden brown. Drain on paper, place in a shallow baking dish, and sprinkle with a little `sugar`.
2. Whip 1/2 cup `heavy sweet cream`. Add 1/4 cup `sugar`, 1/4 cup `dry sherry wine`, and 1 teaspoon `vanilla`. Pour over bananas covering them completely. Chill and serve very cold.

Thanks to Ruth Mulvey and Luisa Alvarez *Good Food from Mexico*.