

The AIPS Wishlist

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INTRODUCTION

I have been asked to convert the normal "Wishlist" maintained for *AIPS* into a document for discussion. In particular, I have attempted to assign some priorities to things. This is somewhat hard to do since some items are normally low priority but can become temporarily important for some reason. Others are intrinsically low priority, but, because they are easy or are part of a program being changed for other reasons, are more likely to get done. Rather than assign simple numbers to priorities, I have attempted to describe these other considerations.

I have added "*" before those items which I think are likely to be done in the next year and "?" before those upon which work might be done in the next year. Items not falling into one of these categories, are preceded by "." to make their lower priority more visible. I have also added tentative assignments. In general, I have taken on more in these than I can realistically do. It is my intention in some of these to do some detailed design plans and then to ask someone else to complete the coding.

Since its initial preparation as a public document, the Wishlist has undergone numerous changes and is being published periodically as an *AIPS* Memo. Items which have been added or revised since the last publication are marked "Nx" or "nx" (where "x" is " ", "?", "*", or "." and "N" means new and "n" means revised in a minor way) in the next publication. Similarly, items which have been completed, one way or another, since the last publication are marked with a "Dx". I hope that these conventions and the \TeX setting will make the changes in the document and the developments in *AIPS* easier to follow.

GENERAL MAINTENANCE

These items normally do not require much continuous effort. However, when they need doing, they receive more or less top priority.

1. ** Source code/library maintenance, version updating (Gary, all)
2. ** *AIPSLETTER*:
 - ** writing (Eric, Don, Alan)
 - ** type setting (Eric)
 - ** mailing (Nancy)
3. ** Gripes:
 - ** receipt (Nancy)
 - ** initial review (Eric)
 - ** first-pass responses (all)
 - ** "to-be-continued" (Nancy, all)
4. ** *COOKBOOK*:
 - ** maintain, publish (Eric, Alan, Nancy)
 - D* rewrite (for 15OCT85) including
 - ** some instructions for UNIX installations (Kerry)
 - D* proof read and correct (Alan, Eric)
5. ** *GOING AIPS*:
 - ** maintain, publish (Bill, Eric, Nancy)
 - n* check (for 15JUL86) including
 - ?? new *DCH.INC files and other *.INC's
 - n? new directory structure: general
 - n? new directory structure: Y, Q aspects
6. ** Source code export (all)
7. ** Simple bug corrections (all)

PROJECTS IN PROGRESS

These items do not require a high level of effort at this time. However, they are important and will be assigned all the man power needed to complete them in a timely fashion.

1. ** Code development and debugging: (Gary, Eric, Pat)
 - ** develop system for maintaining all code levels at VLA as well as in CV
 - N* extend system to maintain all code levels on the Convex as well as on CVAX
 - N. extend system to maintain all NEW code in Cray version
2. ** Cray Project:
 - D* finish and test Z's (Kerry)
 - D* get tapes to work, fix system problems (Kerry)
 - ** write Y's for TV by wire and Ramtek (Eric, Don)
 - ** special AP package: continue testing (Bill, Don, Kerry)
 - ?? move to 15JUL86 release (?? — Kerry)
 - N* move to 15JUL86 release Cray-2 Unix (Kerry)

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3. ** VAX speed up:
 - ** try /OPTIMIZE and debug it this time (if possible) (Gary, Pat)
 - D* hierarchal directory structure (Gary, Pat)
 - ** "midnight" job on new directories, multiple CPUs (Gary, Pat, Kerry)
 - ?? try shared-image libraries and load modules (Gary, Pat)
 - .. speed up pseudo-AP (beyond /OPTIMIZE) ? (Pat?)
 4. ** Calibration and Editing project:
 - ** system support (Bill, Eric)
 - ** format design (Bill, Eric)
 - ** fundamental service routines (Bill)
 5. ** UNIX Project:
 - D* clean up installation (15JUL85 tapes) (Kerry)
 - N* convert Z's for 15JUL86 (Kerry, Gary)
 - N* convert procedures for 15JUL86 (Kerry, Gary)
 - ?? clean up Z's (Kerry)
 6. ** Image storage unit and control panel: (Arnold)
 7. ** Certification and Benchmarking Package (DDT) (Don, Eric)
 - D* 15APR86 version, data and procedures
 - ** 15JUL86 version, data and procedures
 8. n* AIPS Site Survey (Don, Nancy)
 - D. program to synthesize forms from WHOGETS.ADR, (Don)
 - D* make sense of current WHOGETS.ADR "contact" entries (Don, Nancy)
 - DN receive replies, prepare report (Don, Nancy, Alan)
 - ** organize files of all correspondence with users and sites (Nancy).
 9. ?? Portability improvements
 - ?? Remove complex arithmetic wherever possible (Bill, whoever)
 - ** Check VAX Z routines for more detailed comments and clarity (Kerry, Eric, Gary)
 - .. Make more Z routines generic — maybe not Z afterwards (Kerry, Eric, Gary)
 - n* Implement "path" concept of hierarchal host- and device-dependent libraries: partly done,
 - n* needs UNIX
 - Dn avoid overwriting on COMRPL a specific routine with a generic (Gary, Kerry)
 - N? Go to ANSI-standard Fortran 77 (Eric)
 - N? All variables, including in Z's, to standard
 - N? ENCODE to in-core WRITE
 - N? Hollerith to CHARACTER where possible
 - N? Use intrinsic functions without mixed mode
 - N? Turn on ANSI-standard switch in CVAX compilations
 - N? Better segregation of device-specific code: tape, TKs, ... (Eric)
 10. .. Add EXPLAIN files (non-programmers)
 - .. UVSEN (Tim)
 - .. XGAUS, BLANK, et al.
 - .. Many others
 11. N? Mysterious, non-repeatable problems
 - N? AP hangs up — maybe controller problem
 - N? Garbaged data on disk — VLA Unibus timing?

SYSTEM IMPROVEMENTS

These items are harder to prioritize because they tend to be system wide in their impact. We can get along for a while without doing them, but the work of doing them will then grow with time. They tend to be fairly easy to do, but to take some time because they are spread out over many modules. Also, some of them cannot be done a bit at a time since they involve converting all routines which call some routine (for example).

Higher priority:

1. ** Get new Z routines into everything: (Eric, all)
 - ** ZFIO, ZMIO
 - ** NSPG (in ZEXPNDs)
 - .. ZEXPND — make Zs and insert (???? -new needed ?)
2. N* Get complete control over map format (Eric, all)
 - N* Locate all tasks which can read only integer or write integer
 - N* Convert them to handle only floating
 - N? Fully remove integer from more flexible routines
3. ** Other temporary things removed: (Eric, Gary)
 - ** MINIT, MDISK, MINSK, MSKIP
 - ** COMOFF, FSWTCH
 - ** INTYPE, IN2TYPE, IN3TYPE
4. ** Documentation:
 - ** advertise 6250 bpi better (Cookbook, Helps, ...) (Eric)
 - ** Volume 2: what's left? Move it to Volume 3. (Eric)
 - N. Public display of HELP INDEX ??? (Eric, Pat)
 - ** Volume 1:
 - ** listing of all HELP/EXPLAINS most important, but probably ok, (Eric, Don)
 - ** discard Chapter 1, update Chapter 2, (Eric)
 - .. what needed for Chapter 3, (Pat ?)
 - ** maybe rename as "AIPS User Reference Manual"? (Eric)
 - ** do the printing with final AIPLAS (Eric)
5. ?? Backups of data to be faster and more selective
 - n? VAX BACKUP (i.e., host dependent) to allow file selection on write (Don, Gary, Pat)
 - n? VAX BACKUP (restore mode) to allow file selection, insertion in directory (Don, Gary, Pat)
 - n* FITTP, IML0D to do tables faster (Gary)
 - D* Fast tar backup for Unix machines (Kerry, Users' Group)
6. .. Intertask communication:
 - N* priority and CPU limit adverbs
 - .. level 1: leave "message" to APCLN, MX to quit at next major loop, etc.
 - .. level 2: return adverbs.
 - .. spawn and attach operations (? see Gripe 1421)
 - N. save ephemeral results in file and pick up in POPS
7. ** Go over all AP tasks:
 - ?? Develop better queue for AP — ASCAL admit it's done
 - ** Do they close the AP whenever possible (VM et al. suspect, also VBFIT)? (Pat, Bill)
 - ** Do they all use the roller where it might be needed? (Pat, Bill)
 - ?? Why does FPS AP hang up sometimes? (Bill, Pat, Gary)

8. ** Gain files to standard Table type: (Bill, John)
 - ** fix ASCAL, VBFIT (Bill)
 - ** fix ASCOR, VBCOR, VSCAL, BSCAL (Bill)
 - ** fix GNPLT, PRTGA (Bill)
 - ** fix FITTP, IMLOD, UVLOD to handle them (Gary)
 - ** all tasks which copy gain files (Eric, whoever)
9. N. Extend uv format to include linear polarization (Bill, Eric)
10. n* Remove INTYPE except where required (Eric, whoever)
11. ?? Debate default on OUTDISK = 0 re private packs. (Eric)
12. n* Tape dummy files (Gary, Eric, Kerry)
 - n? Keep track of current tape position (Eric, Gary, Kerry)
 - N* Rename from TA to something else (Gary)
13. ** Standardize KEYIN package of subroutines (Bill near done, Eric)
14. ?? Reduce global adverb conflict problems (Eric, whoever)
15. N. Code revisions:
 - N. Make update installation easier
 - N. Change TST/NEW/OLD nomenclature to date names ????
 - N. Paraforms for reading more than one image
 - N. GTPARM use Help file to get parms by name from TD file ????
 - N. Allow subdirectories in user catalogs ????
 - N. User catalogs to carry total file size ????

Lower Priority: Display

1. D? printer routines DOCRt option:
 - DN PRTTP, HELP, EXFND, PRTACC, PRTAN, PRTDR, PRTGA, CORER, IMFIT, JMFIT, XXFIT
2. D? printer routines system-dependent printer size:
 - D? PRTIM, PRTUV, PRTSD, UVFND, PRTTP, PRTAB, PRTCC, PRTMSG, PRTHI, EXPLAIN, HELP, EXFND, PRTACC, PRTAN, PRTDR, PRTGA, CORER, IMFIT, JMFIT, XXFIT
3. .. Printing tasks:
 - ?? PRTIM: change FACTOR to physical units / printed integer
 - D? PRTUV: bug — prints 1 too many lines on default number of lines
 - D* PRTCC: bug — can't find requested disk for some reason ????
 - DN PRTCC option(?) to show pixel coords too
4. ?? Star positions on plots (Eric, Don, Gary?)
 - ?? Task to build star table from star catalogs (Don)
 - ?? Subroutine to plot star table (Eric)
5. ?? Clean beams on plots (Eric, Gary?)
6. .. Adverb to limit plot file size: die if too much plot ?
7. .. UVPLT to average channels
 - ?? Bug: crashes Modcomp half the time
 - N? Binning options like INVIM
8. N* Plotting
 - DN Option to draw tick marks all the way across plots
 - N* error in GINIT disk space error message

Lower Priority: Source code maintenance

1. N* MSGWRT has problems with NINTRN > 10 ?
2. n. Scratch files:
 - .. some concept of preferred disk for scratch (???)
 - D* BADDISK more widespread (whoever, Has been started)
 - .. User number in task names (ignored sometimes, used others)?
3. ?? FUDGE, TAFFY (Eric, Gary, Bill)
 - ?? clean up declares (separate commons)
 - ?? isolate output file stuff (for easy removal)
 - ?? explain second input file better
4. .. Start standardizing things
 - .. CANDY important
 - ** Install MAT on CVAX and try it on the code
5. .. Documentation:
 - ?? WHATSUP and selective UPs files (Pat, Eric)
 - .. method for auto generation
 - .. install method in code
 - .. generate files
 - .. PRNTMN to pick them up
 - ?? AIPS Manager manual: (Eric, Gary, Kerry, Don)
 - ?? service programs
 - ?? magic places to change in code (TIMDEST, ...)
 - ?? System configuration recommendations
 - ?? implementing various peripherals
 - ?? AIPS memos to be finalized:
 - DN Memo re Convex, Alliant tests (Don)
 - DN Memo re VAX 8600 tests (Don)
 - DN Memo re directory structure (Pat, Gary)
 - ?? Use of EMACS editor with AIPS files (Don)
 - ?? Mailing List Package (Don)
 - ?? Checkout System (Gary)
 - .. XREFS:
 - ?? program to read Modcomp XREF tape, make sorted files, print
 - .. Vax version of XREFS
 - .. Vax cross reference by task rather than individual module
6. .. HI file access easier in WaWa package
7. ?? Havlen/Fomalont "DEMO" image file? (Eric)
 - ?? under the mythical user number 1? (Eric, Gary)
8. ?? Review AIPS coding standards. (Eric)
 - n* Develop a plan for changes (if any). (Eric, Bill)
 - N* Memo re language standards (Don)
 - DN Memo re I/O design (Pat)
 - DN Memo re modularity design, needs (Tim)
9. N? AIPS maintenance tools
 - N? Make into verbs/tasks for user 1 only ?
 - N. COPY to be able to do format conversion like UPDATE ?

TASKS

These are tasks which are likely to be a lot of work, but they will require only one person at a time per task. All of these need doing.

High priority (important tasks):

1. ** MX (Bill, Pat?)
 - D* bug: restart with old work file message appears twice
 - ** put PHAT value and # components / field in HI file — latter done
 - ** problem with grid correction (also UVMAP) → clean failure
 - ** display all or selected dirty fields on TV
 - ** TXINC, TYINC option
 - ** NITER < 0 implies stop at first negative
 - ** turn off “write” flag when image is stable (and be patient about setting it busy again)
 - ?? output both clean and residual image
 - N* On NITER=0, do not set clean beam — confuses CONVL ??
 - N* Check handling of BOX — 10th unused, funny ordering, ...
 - N* Make it work with STOKES 'R' and 'L'
 - N* Drop XPARM and YPARM inputs
 - .. rename shift parameters
2. ** APCLN (Bill, Pat?)
 - .. better beam fit (also MX)
 - D* stop on first negative option
 - ** save residuals and cleaned image option (???)
3. ** UVMAP (Bill, Pat?)
 - D* Bug: fails to do natural weighting ??
 - D* (PSAP version) bugs re GRIDAP call, sign of DXCOR/DYCOR
 - .. Sum weights near center (guide for ZEROSP)
 - .. Zero spacing for multiple channels
 - ** TXINC, TYINC option
 - N* Drop XPARM and YPARM inputs
4. ** ASCAL (maybe redone via Calibration package) (Bill)
 - D* Bug: fails on BPARM(1) = -1 option
 - D? ignores NCOMP ???
 - .. remove READ status on model file when done with CC file
 - .. option to feed sky coordinates for point model
 - .. summary statistics on bad solutions (i.e., > 10%) and on rms, mean for each antenna/IF
 - .. self-contained plot option (???)
 - N* DOCAT option failing in VSCAL
5. ** UVSUB (Bill, Pat?)
 - ?? ignores NCOMP ???
 - N? ignores CMETHOD ???
 - .. point and Gaussian options
 - .. allow multiplication by model as well as division
 - ** (UVMSUB) recognize STOKES < 0 images (and matching data)

6. N? VM, VTESS (Tim, Bill)
 - N? Scale clean image correctly to be usable initial guess
 - DN Increase scratch file common for VTESS
7. N? FFT (Bill, Eric?)
 - N? Option: output amplitude, phase images
 - N? Option: output *uv* data base (what level to be considered 0, *i.e.*, unsampled?)
 - N. Option: clipping output to user-specified value(s)
8. N. BLANK (Eric)
 - N. Option: blank other maps same as current one (*i.e.*, imag. part)
 - N. Option: non-magic and non-zero blank values
 - N. Option: fill in blanked from surround
9. n* Rewrite COMB: (Eric)
 - D* faster
 - D* floating and/or integer inputs ok
 - ?? Documentation confusing (may be better a bit now)
 - n. Generalized operators (more than 2 images, many ops incl. FFT)
 - N. Pixel-weighted averages ...
 - .. check OPCODE list against *IPPS* operators
 - D? Remove bias in $\sqrt{A^2 + B^2}$ images (option)
 - D? include CORMS options
10. ** RUN files:
 - ** user number 1 = Manager — provide RUN procs for transport (Gary)
 - DN System RUN files in separate, dated area (Gary)
 - .. RUN files to/from FITS tape (requires a text file writing routine!)
 - .. Machine-independent editor for RUN files — a dream, we don't have the time
11. .. IMLOD, UVLOD, FITTP, PRTP (Gary)
 - ** bug: DOTABLE fails between FITTP and UVLOD at least
 - ** bug: map processing level lost between FITTP and IMLOD
 - ** bug: MX map of 0 iterations has unknown records on FITTP
 - D* bug: OUTSEQ = -1 option fails on IMLOD, maybe UVLOD too.
 - DN IMLOD bug: rename lists type as M8
 - N* change to new adverbs the BLC, TRC option (FITTP)
 - N* rename NFILES adverb to avoid conflict
 - n* DOALL option for FITS files (IMLOD done, UVLOD)
 - D* Option to ignore tables extensions (IMLOD only)
 - .. combine UVLOD and IMLOD
 - N* PRTP doesn't detect 'Pipeline' image names, IMLOD does ???
 - N* For UVLOD etc., replace SOURCE with OBJECT
12. .. Check times in DBCON (Doarray set for no arrays)
 - .. Correct position shift (including *u*, *v*, *w*)
13. ?? BLOAT: generalize to build 16 chan from 2 8-chan, etc.

New, significant tasks:

1. ?? AIPS table files; what next: (Eric, Bill, whoever)
 - D* sort/merge/resort in one task
 - ?? flag
 - ?? plot
 - ?? histogram
 - N. convert ≥ 1 image to table
 - N? convert table to ≥ 1 image — see XGAUS
 - n? translate between table and ASCII or spread-sheet formats
 - .. others: check IPPS AUTOPHOT list.
 - .. interactive editing task (spread sheet ?)
2. N* uv gridding task (Bill, Eric, ?)
 - N* Subroutine package to grid data to file in current sort
 - N* Task wrapped around to build cataloged file
 - N* Options: smoothing to grid, cell sizes
 - N* Option: real and imaginary vs amplitude and phase
3. ?? Interactive (TV) visibility data editing: (Eric, Bill)
 - ?? display in current sort order
 - ?? allow (software) zoom
 - ?? flagging
 - ?? enhancement functions (of TV display)
4. .. Calibration and Editing project: applications software
 - .. Task to compute scan averages and rms for print and autoedit
5. ?? Dicomed tasks — DICPL, DICTV, DICTP? (Eric, Pat?)
6. N? Map vs map plotting:
 - DN First: 2 images in, plot points as scatter, XINC, YINC, ...
 - N. Later: allow rms images, plot points with error bars
 - DN Later: binning options: convolve with pill box
 - N. Later: binning options: convolve with rms gaussian ???
7. ?? Improved Geometric Capabilities: (Don, Thad)
 - ?? finish cleanup of PGEOM
 - N* *GEO programs to record BLC, TRC, IMSIZE in history file
 - N* HGEOM missing adverbs in help file
 - N* HGEOM takes too many parms from 2nd header (see gripe 1884)
 - DN HGEOM fails with rotations near $\pm 90^\circ$
 - N* HGEOM fails has errors on floating input
 - N? HGEOM to handle conversions between celestial, galactic, ... coords
 - ?? speed up LGEOM
 - .. Combine LGEOM, PGEOM, and HGEOM tasks into one?
 - .. task to "feather" re-projected images into giant mosaics
 - .. Design new "LGEOM":
 - .. avoid virtual memory
 - .. utilize vector hardware (both PSAP and 120B)
8. .. Combine single-dish and interferometer data
9. N. Task to fill in blanked pixels: interpolate, extrapolate

10. ?? "UNARY" operator task (Don, Thad)
?? check *IPPS* "unary minus" menu
11. ?? Simple task to make image by gridding *uv* data
12. .. APCLN-like task for non-symmetric beams: done to 1st-order
13. N. *AIPS* version of PASSUM
14. .. Rebuild Measuring Engine as *AIPS* Task (Don)
 - .. integrated into *AIPS*
 - .. catalogs and measurements as tables files
 - .. solve plate constants against multiple catalogs
 - .. measurement process driven by tables of coordinates
 - n? image capture with precise geometry: 1st part done
 - .. digital/analog image registration using two TVs

Medium priority (lots of work, less used programs)

1. .. GREYS:
 - .. use TV LUT as option
 - .. load with functype (?? — QMSPL offers this)
 - N. use white contour line over black grey pixel ??? very hard
2. ?? GETERR: (Eric, Gary)
 - ?? drop NGAUSS argument, inside NGAUSS → MGAUSS
 - ?? Fix SLFIT (also test on DEXP, TOL to GETERR)
 - ?? add baseline fitting to SLFIT — how to store answers?
 - ?? Fix new IMFIT
3. ?? Slices (Eric design, Gary)
 - ?? print out values (verb?)
 - ?? convert to tables format
 - .. plot multiple offset slices
 - .. Moment fit slices
 - .. BLSUM: option to catalog results (???)
 - .. Find along curved tracks
 - ?? SLICE:
 - N? Option to limit interpolation order to 0, linear, ...
 - ?? make 2-d image from cube.
 - ?? fails on XGAUS (.CENTR) images ?
 - ?? SLFIT:
 - ?? clean up units, display
 - ?? fit a baseline
4. ?? XGAUS (Eric)
 - .. various restart options: use table, separate task to build output images, ...
 - ?? error ? on NGAUS = 4
 - ?? 2-d in, 1-d out fails ?
 - ?? bug in CENTR maps (NGAU=2)
 - ?? "no plot when fitting 1 profile"
 - N* Convex finds bugs in XBASL — see gripe 2038
5. N? *POPS*
 - .. Continuation line (or something) for long ADVERB = *, *, *, ... statements.
 - N? Bug leads to procedures being concatanated ???

6. .. GNPLT — (do after gain file format change):
 - .. Capabilities of GAPLT
 - .. Alternate plot symbols
 - .. other axis types and scalings (esp. "scan number")
 - N? clear READ status
 - N? alternate plot method — see gripe 2055
7. ?? IMMOD — Clean up: (Eric)
 - ?? BMAJ, BMIN = radii in asec, not axes
8. ?? UVMOD — Clean up. (Eric)
 - N? Divide by 0.0 in BESSEL for DISK option ??
9. ?? PBCOR: (Eric, Gary, Ed)
 - ?? rewrite to standards
 - ?? allow non-VLA antennas
 - ?? tell true cutoff (3%) in help file
 - N* correct error in FILDES in WaWa IO - see gripe 2037
 - N? GPOS negative fails
10. .. VBPLT:
 - .. check use of JULDAY
 - .. speed it up
 - D. ignore deleted antennas
 - .. average channels option
 - .. all baselines on one plot option with/without data
 - N. plot points with error bars
11. .. Rewrite RM:
 - .. easy inputs
 - .. standard or user-friendly units and code
12. .. Header: shift parameters to more user-oriented meaning
13. n. Read/write FITS files from/to disk (port, user save).
14. .. Rewrite IMFIT, JMFIT:
 - N? JMFIT convergence criteria too lenient (see gripe 1763)
 - ND Display time, date, plane of cube for print outs
 - .. to standards
 - D. to write components in a CC file
 - D. print rms before fit
 - .. accept initial guesses for 0-level, slope
 - D. print scaling of units with answer as well as at start
15. .. Clean up Gustaaf's line tasks
 - .. to standards and to work as advertised
 - .. generalize
 - .. IRING: fix help (see gripe 1566)
 - ?? GAL: bugs (Don)

16. .. Clean up other line tasks: (MOMNT, SMOTH, ...)
 - D* to standards in units
 - D* produce a history file
 - n. generalize, to standards in coding
 - N? SMOTH, MOMNT cannot handle blanked pixels ???
 - N? MOMNT message re history gives wrong moment number
 - .. ????

MISCELLANEOUS

These items are easier to do and need doing. Some are simply in the nature of bug checking, others are responses to Gripes.

Verbs:

1. DN Add DOEXIT to GO to allow EXIT on task failure for interactive AIPS run in batch (Eric)
 - DN Or better — global parm “this is batch job”
 - DN Pseudoverb like MSGKIL to set it, init at start AIPS and AIPSB
 - DN GO and GTPARM to pass it to everybody
 - DN Everybody tests on this parm rather than NINTRN
2. ?? How to pick up new adverbs easily despite LASTEXIT (Eric)
 - DN System RUN file with new adverbs defined
 - N? User DEFAULT RUN file, if present, instead of loading LASTEXIT
 - N? Autoload RUN NEWPARMS to make sure new adverbs present (??)
 - N? Adverb to suppress saving LASTEXIT on EXIT, RESTART
 - N? Drop RESTART
3. N? RUN files:
 - N? User/system RUN file index verb
 - N? RUN file form for SAVE operation
4. N? Verb to display HELP INDEX by keyword(s) match. (Eric)
5. ?? Verb to insert a pixel value in an image. (Eric)
6. n? History file manipulation (Eric)
 - ?? Verb to insert a comment in the history file. (Eric)
 - N? Verb to edit history file — delete by task, line numbers (Eric)
7. D? INPUTS, HELP, EXPLAIN should use SCHOLD for screen full (Eric)
 - D? HELP to have line printer option too ??? (Eric)
8. ?? Verb to “set TV cursor on RA,Dec” — i.e., graphics box (Eric)
9. ?? TKSET — clarify cursor positioning in the Help file (Don)
10. ?? EXTLIST: (Eric, Gary)
 - ?? display slice fit results
 - N* FACTOR, ICUT, PCUT in PCNTR have too limited a format
 - N* not be real patient waiting for a file
 - N* INVERS adverb
 - N* help file refers to CT files
11. N? ZAP to deal with bad headers, missing CB files

12. .. Verb to catalog extension files
.. (Add tests for primary type = desired extension type to TKSL verb, SL2PL, PRTAB, ...)
13. N? Image units, fluxes (Eric)
N? IMEAN, IMSTAT, etc. recognize JY/PIXEL units
N? these routines convert to flux if NITER = 0, but clean beam okay?
14. ?? (VAX) REWIND available as quick return (???) (Gary)
15. N? Clarify *POPS* environment in GET help file — procs can be lost
16. N? ALLDEST apply DOCONFIRM to SAVE/GET files
17. ?? TKSLICE (Gary)
?? display y axis even if undefined units
?? y-axis label often fails actually
D? poor choice of defaults (also SL2PL)
N* extend plot range a bit for clarity
18. .. TV labeling:
.. include user character string
.. clean beam
.. new LYPES: source name, angular scale, freq
19. .. TV:
D? graphics images that are off affect cursor image
.. anti-wrap algorithm causes strange behavior at high zoom
.. new spiral hue/intensity LUT (see gripe 1218)
D? TVBLNK change Button C to do both LUTs together
.. TVBOX-like to set up inputs to MX
N. TV version of TKSLICE
N* Change DOPOS to something else in TVMOVI
20. .. Convert FRMT to a Z routine.
21. .. Have Z routines report errors in blocks. (Eric, Gary?)
?? ZCREAT
?? ZEXPND, etc.
22. .. Verbs:
.. FINDSPACE — find disk number with most space
.. FINDNAME — find image with some name parms.
23. .. Catalog: NEXT
.. return array of catalog numbers (???)
.. rename a set of maps to sequence the SEQ numbers (???)

Tasks

1. ?? batch problems (Eric)
?? AIPSC : option to turn off checking (some procs get 0 divide?) or make response to errors optionally less drastic (Eric)
** reduce delay times at start up; first loops in QMNGR (Eric)
N? batch jobs not delete CA files, messages
2. ?? Source code import
D? Check in COMTAL Y routines (Eric)
.. Other submitted programs: ???

3. ?? Check buffer size for *uv* tasks: enough for line? (Bill)
?? UVPLT (see gripe 1478)
4. ?? UVFLG — Change to accept APARM(9) = 400 as = 4.
N? clarify the confusing array of options
5. D? PRTAN — spelling of “FEED”, null Sidebands not blank (Bill)
6. D? VBCOR — Explain differs from Help on meaning of BPARM (Bill)
7. n? TVHXF, TVHLD problems
D? YIMGIO error 2 (Eric)
N? Differ between Charlottesville and VLA ??
8. .. SUBIM
.. DOALL option
N. ZINC option, but over all dimensions 3–7 or just 3?
N. Option to sum/average over the XINC by YINC box
9. ?? Tape handling (Eric)
?? Does PRTTP count label files as files — it should.
.. OR: change AVFILE (incl. in tasks) to skip label files without counting them.
10. n. Contouring, plotting
N? Better dashed contours for large images
N? Better handling of narrow x axes (labels overlap)
.. PCNTR accept and convert I, Q, U images also
11. D. Upgrade EXFND to be like UVFND in STOKES and output format
12. .. UVEXP — error leading to apparent loss of sort order ?
13. .. VBFIT (Bill)
.. print accounting of flagged/blown solutions (like ASCAL)
?? Explain refers to non-existent table for APARM(3)
.. Option to print delay, rate, S/N, oversampling used.
?? Inputs has default for solution interval in wrong place.
?? Ignores BADDISK ??
N. Option not to write an output *uv* file
N. Keep DR files with input *uv* file, recognize by version #
N. Option to give list of reference antennas (see gripe 1813)
N? Add info to help/COOKBOOK per grip 2077
14. .. UVCOP
D? Copy from *time1* > 0 to end if *time2* = 0
.. DOALL option, different user option
.. option to start with smaller output file (disk-full problems)
15. .. UVAVG
?? Delete AVER (???)
.. Bugs: apparently reporting times out of order
16. D. CLIP
D. Support STOKES (à la UVFND) — how? if V too large, flag RR, LL?
D? Explain APARM defaults better
D* Fails to clip all points below lower limit (???)
17. .. Rewrite CCMOD (see Benson’s version); pixels may be better than asec (???)

18. .. SUMIM:
 - n? Other ways to get input images besides DO loop on INSEQ
 - N? Images taken as planes of one input cube: task or option
 - .. Bug? (reported 10^{31} peak from it)
 - N* Bug? fails to use BADDISK
19. N. One-dimensional data:
 - N. "Front-end" to read in single-dish data
 - N. Better handling methods (multi-source *uv* format?)
20. ?? Source-code export: (Eric, Kerry, Gary)
 - ?? FITS version of EXPTAP (called EXPFIT currently)
 - ?? a reader program (requires text write routine!)
21. ?? VBCIT: error testing needed on DATAN2
22. ?? NTERP: error access violation line 225 or so

OTHER THINGS

These are other suggestions, some good and some bad, recorded here so they will not be lost. We might get to these some day.

1. n* Users' Group: meetings, software exchange, etc. (???)
 - N* Set up computer bulletin board (Don, Alan)
 - N? Bug fixes on computer bulletin board
2. .. Improve the computation of the vertical scaling of PROFL plots.
3. .. False color usage in areas of:
 - .. polarization
 - .. spectral index
 - .. *uv*
 - .. spectral-line: sum(I), velocity, width
4. .. Fancier contouring:
 - .. bold, labeled contours
 - .. ingoing ticks for minima
 - .. follow contour
5. D. Other axis types:
 - D. Mercator
 - D. Aitoff projection
 - DN Global sinusoid
6. ?? PRTP (Gary, Eric)
 - ?? speed — new bit routine, quick grey-scale
 - ?? line width control (for low-resolution devices)
 - ?? better grey scale options and algorithm (like QMSPL)
7. .. Compare CONVL and SMOTH

8. D. APMAP: this task deleted
 - .. DOALL option
 - .. bad sort (???)
 - .. Could we replace it with a procedure that would "pipeline" UVL0D, UVSRT, and UVMAP, maybe as a "task" which would initiate them as sub-sub-processes? (????)
9. .. Task to do direct Fourier transform mapping
10. .. Task to remove current clean comps from image and put back with another size.
11. .. Grid to output image (*e.g.*, time-baseline) (extend GRIDR ?)
12. .. Task to find, fit and classify sources.
13. .. FINISH should be ok at end of any line in proc
14. .. PROC(*array*) should work when called as PROC(*scalar*)
15. .. IMHEADER(*n*) ; QHEADER(*n*) (???)
16. .. Investigate troubles with blank tapes on DOEOT.
 - N* Add to help files: DOEOT, FITTP, etc. (Gary)
 - N* Get VLA blank-tape fixup method for all VAXes (Gary, Pat)
17. .. An AIPS Tee-Shirt!?
18. .. Annual AIPS Workshops?!?