

# The AIPS Wishlist

Eric W. Greisen

31 August 1989

National Radio Astronomy Observatory  
Edgemont Road, Charlottesville, VA 22903-2475  
804-296-0211 (FTS 940-7211), x328; TWX 910-997-0174  
aipsmail@nrao.bitnet (or @nrao.arpa)

## INTRODUCTION

The Wishlist for *AIPS* appeared initially as *AIPS* Memo No. 34 (February 1985) and has appeared with revisions several times thereafter. The most recent previous edition was released as *AIPS* Memo No. 55 (October 1987). Entries in this edition were completed on 31 August, 1989, but the indications of completion on some of the entries were updated through most of October. A document like this is very hard to organize since programs, or the intended changes in them, often fit in more than one category and single types of changes often apply to more than one program. Nevertheless, it is still useful to maintain a somewhat disorganized document to record brief descriptions of the many suggestions and complaints received by the *AIPS* group. In previous editions, I indicated the names of individuals expected to work on the specific entries. These assignments have been removed from this edition.

I have chosen to divide the document into the categories: (1) General maintenance, (2) System code, (3), System-wide projects, (4) Tasks: UV, (5) Tasks: calibration and editing, (6) Tasks: image making, (7) Tasks: image, (8) Tasks: display, (9) Tasks: tape, (10) Tasks: extension files, (11) Verbs: application, (12) Verbs: system or *POPS*, and (13) Documentation.

A code is shown to the left of all items listed. The code is “\*\*” for those items which I think have a good chance 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 classes are preceded by “.” to make their lower priority more visible. The last publication of the Wishlist was on 15-October-1987 as *AIPS* Memo No. 55. Items which have been added or revised since the last publication have the codes “Nx” or “nx” (where “x” is “”, “?”, “\*”, or “.” and “N” means new and “n” means revised in a minor way). Similarly, items which have been completed, one way or another, since the last publication are marked with a “Dx”. Please note that the prioritization given here represents only my suggestions and should not be taken to be the actual policy of the NRAO or its *AIPS* group.

Numbers in parentheses in the text are references to gripes on the particular subject which provide additional comments expanding on the necessarily brief descriptions appearing in this document. The text of the gripes is found in DOCGRIP: on the Charlottesville Vax. In addition, notebooks containing the gripes are in the *AIPS* Caiges at the VLA and in Charlottesville.



## 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
2. \*\* *AIPSLATTER*:
  - \*\* writing
  - \*\* type setting
  - \*\* mailing
3. \*\* Gripes:
  - \*\* receipt
  - \*\* initial review
  - \*\* first-pass responses
  - \*\* "to-be-continued"
4. \*\* *COOKBOOK*:
  - \*\* maintain, publish
  - \*\* some instructions for Unix installations
5. \*\* *GOING AIPS*:
  - \*\* maintain, publish
  - DN convert to LaTeX
  - N\* rewrite to account for code overhaul
6. \*\* Certification and Benchmarking Package (DDT)
  - D\* 15JAN88 version, data and procedures
  - D\* 15OCT89 version, data and procedures
  - n\* develop version for VLBI data and procedures
  - N\* develop version for calibration data and procedures
  - N\* plan procurement-level test procedures and criteria
7. \*\* *AIPS* Site Survey
  - D\* analyze returns from 1987 survey
  - DN prepare and send out 1988 survey
  - DN analyze returns from 1988 survey
  - N\* prepare and send out 1989 survey
  - N\* analyze returns from 1989 survey
8. \*\* Source code export
  - \*\* several suggested improvements (2152–2160)
9. ?? Review *AIPS* coding standards.
  - D\* develop a plan for changes (if any).
  - \*\* memo re language standards
10. \*\* Simple bug corrections
11. \*\* Users' Group: meetings, software exchange, etc.
  - .. set up computer bulletin board — ???
12. .. Biannual *AIPS* Workshops

## SYSTEM CODE

1. D\* Cray (COS) Project: now terminated
  - D\* write Y's for TV by wire
  - n. special AP package: continue testing
  - D\* move to 15JAN88 release
  - n. develop remote device handling: terminal, tape, TV
  - D\* install under Westinghouse COS at Pittsburgh
  - D\* export to "vanilla COS" sites
2. D\* Unix Project:
  - D\* clean up Z's
3. n? Source code/library maintenance, version updating:
  - D\* extend midnight job to maintain all NEW code in Cray version
  - D\* REMOVE/PUTBCK to delete from object libraries when needed on CVAX
  - N\* regularize Unix midnight job, put it back on CVAX
  - N? PUTBCK error messages to give file name (3059)
  - N? midnight job should check for one already running (3281)
  - N? PUTBCK to enforce precursor comments, ownership rules
  - N? document and reply to Sun 4.0 troubles (3682)
  - N? Alliant release missing WHNALT (3655)
  - ND troubles with QCLNSU on FX/n0 models (3658)
  - N? do not delete object code as planned in relation to Alliant (3705)
4. \*\* Portability improvements
  - D\* go to ANSI-standard Fortran 77
    - D\* all variables, including in Z's, to standard
    - D\* ENCODE to in-core WRITE
    - D\* HOLLERITH to CHARACTER where possible
    - D\* use intrinsic functions without mixed mode
    - D\* turn on ANSI-standard switch in CVAX compilations
  - ?? remove complex arithmetic wherever possible
  - D\* check Vax Z routines for more detailed comments and clarity
  - D\* make more Z routines generic — maybe not Z afterwards
  - D\* better segregation of device-specific code: tape, TKs, ...
5. N\* Z-routine problems:
  - N\* many programs call ZOPEN wrong: require exclusive on read, don't wait (e.g., 2318)
  - N\* Convex auto-tape-dismount can hang the terminal (3067, 3163, 3435, 3499)
  - ND Convex let batch run at higher priority? (3100)
  - N? TVFLG gets "niced" (3249)
  - N? Tektronix assignments etc. not work well under Unix (3152, 3275)
  - N? TK Sun window can't read inputs after close of plot (3384)
  - N? permission error reported by ZQMSCL (3306)
  - N\* ZAP very slow on Convex (3359, 3360, 3363, 3383, 3585)
  - N? "atomic" file creation causes real problems (3361)
  - N? accounting file was getting locked on Cholla (3453)
  - N? review abort handler: work? do we need core files? (3496)
  - N? test available POPS numbers before asking device questions (3689)
  - N? Unix (NRAO1 ?) print jobs put two blank pages at beginning (3723)
  - N. telnet entered job had task messages on message terminal (3729)

6. N Y-routine problems:
  - N\* IVAS cursor 2 pixels off in x again (3366)
7. N? Porting and benchmarking
  - N? get results/proofs from Alliant, Ardent, Stellar, Multiflow
  - N? assist port to IBM
  - N\* Cray (Unix) port and test — in progress
8. ?? Improve *AIPS* usage from private accounts
  - ?? VMS — what are the problems?
  - ?? Unix — what are the problems?
  - D? Unix — tapes
9. \*\* Vax speed up:
  - \*\* try /OPTIMIZE and debug it this time (if possible)
  - ?? try shared-image libraries and load modules
  - .. speed up pseudo-AP (beyond /OPTIMIZE)?
10. ?? (Vax) REWIND available as quick return (???)
11. ?? Installation procedures
  - D? VMS ILOAD limited to 6 interactive *AIPS* (2740)
  - \*\* VMS documentation needs more explanation
12. ?? Source-code export:
  - D? FITS version of EXPTAP (called EXPFIT currently) — done?
  - D? a reader program (requires text write routine!)
  - N? convert EXPFIT and IMPFIT to blocked tapes
13. D. Have Z routines report errors in blocks.
  - D? ZCREAT
  - D? ZEXPND, etc.
14. ?? *AIPS* maintenance tools
  - ?? make into verbs/tasks for user 1 only?
  - .. COPY to be able to do format conversion like UPDATE?
  - N? change SETPAR to release SP file most of the time (3297)
  - N? change SETTVP to release ID file most of the time
  - N? change PRTAC to release AC file some of the time

## SYSTEM-WIDE PROJECTS

### Higher priority:

1. D\* Get complete control over map format
  - D\* fully remove integer from more flexible routines
  - D\* PATGN still writes integer images (2800)
2. D\* Image scaling problems
  - D\* IMVAL fails to recognize blanks after scaling (2788)
  - D\* PUTVAL ignores scaling (2927)
3. \*\* MSGWRT has problems with NINTRN > 10?

4. \*\* Remove INTYPE except where required  
D\* PRTCC won't read uv files (2846)
5. D\* Get new Z routines into everything:  
D\* ZFIO, ZMIO  
D\* NSPG (in ZEXPNDs)  
D. ZEXPND
6. D\* Other temporary things removed:  
D\* MINIT, MDISK, MINSK, MSKIP  
D\* COMOFF, FSWTCH  
D\* INTYPE, IN2TYPE, IN3TYPE
7. ?? Mysterious, non-repeatable problems  
?? AP hangs up — maybe controller problem  
\*\* Tektronix 4012 cursor reading on the Convex (2570 and others)  
?? I<sup>2</sup>S interactive verbs hang CV Convex  
N? NRAO1 Convex aborts in MX, APCLN  
N? NRAO1 Convex aborts in VTESS (3721, 3763)  
N? NRAO1 Convex invents components with ASCAL (3694, 3761, 3762)
8. ?? Under VMS, page full locks terminal (2475, 2480)
9. n? Image units, fluxes, coordinates  
?? IMEAN, IMSTAT, etc. recognize JY/PIXEL units  
?? these routines convert to flux if NITER = 0, but clean beam okay?  
?? IMEAN: put mean and rms on plots  
N? more general all-sky coordinate systems  
N? more pleasing coordinate names (2347)
10. ?? Reduce global adverb conflict problems
11. ?? I/O buffers: system-dependent sizes  
?? through several "Z" includes?  
.. through dynamic memory allocation?

## Lower priority:

1. N. Catalogs:  
N? display image sequence number with up to 5 digits (3717)
2. ?? GETERR:  
?? 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. .. Scratch files:  
.. some concept of preferred disk for scratch (???)  
D? some concept of scratch-only disks (???)  
.. user number in task names (ignored sometimes, used others)?
4. ?? FUDGE, TAFFY  
D? clean up declares (separate commons)  
?? isolate output file stuff (for easy removal)  
?? explain second input file better  
\*\* bug in windowing in TAFFY (2636)

5. .. One-dimensional data:
  - .. "front-end" to read in single-dish data
  - .. better handling methods (multi-source *uv* format?)
6. .. Start standardizing things
  - .. **CANDY** important
  - .. install **MAT** on **CVAX** and try it on the code
7. .. Intertask communication:
  - \*\*** priority and CPU limit adverbs
  - ??** add **SHOW** and **TELL** to more tasks
  - .. level 2: return adverbs.
  - .. spawn and attach operations (1421)
  - .. save ephemeral results in file and pick up in *POPS*
8. ?? Debate default on **OUTDISK** = 0 re private packs.
9. .. Header: shift parameters to more user-oriented meaning
10. **D\*** Standardize **KEYIN** package of subroutines
  - N?** problems parsing comments (3309)
11. **\*\*** 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**)?
  - \*\*** do they all use the roller where it might be needed?
  - ??** why does **FPS** AP hang up sometimes?
  - N?** use **APWAIT** after all **APPUTs**? (3347)
12. .. Code revisions:
  - .. make update installation easier
  - .. change **TST/NEW/OLD** nomenclature to date names ????
  - .. paraforms for reading more than one image
  - .. **GTPARM** use Help file to get parms by name from TD file????
  - .. allow subdirectories in user catalogs (2308)
  - .. user catalogs to carry total file size????
  - .. user catalogs to carry file creation date????
13. .. **HI** file access easier in **WaWa** package

## TASKS: UV

### Higher priority:

1. ?? **PRTUV**
  - \*\*** fails on **DOCRT** = 79 (2968, 2970)
  - N?** displays flagged data? (3193)
  - ND** add ability to display 2<sup>nd</sup> IF (3252)
  - N?** invent method to displays weights < 1 — also **UVFND** (3370)
2. ?? **UVDIF**
  - \*\*** fails whenever **BIF** > 0 (2969)

- 
3. \*\* UVSUB
    - \*\* troubles with multiple CC files (2519–2520, 2627)
    - N\* incorrect when field being subtracted offset from map center (3053)
    - N\* rotation not handled correctly, subtracts at wrong place (3502, 3618)
    - N\* fails using an image as the source model (3167)
    - N\* SMODEL method zeros the full data set (3503)
    - N? problems dividing *uv* data by image (3687)
    - ?? problem subtracting LL correlator (2565)
    - .. allow multiplication by model as well as division
    - N? should check all Stokes at start, not much later (3151)
    - N? serious differences detailed between subtraction methods (3352)
    - N? history file incorrect as to method used (3501)
  4. ?? UVFND
    - \*\* fails on DOCRT = 79 (2968, 2970)
    - N\* fails on VCLP option (3122, 3462)
    - .. add opcode to display flagged data
    - ?? add SOURCES, FLAGVER, etc. options (2942)
    - ND includes *w* in computing the baseline length (shouldn't) (3031)
  5. .. UVCOP, DESCN
    - N\* make interpretation of ANTENNAS and BASELINE smarter (3417)
    - .. DOALL option, different user option
    - ?? recompute time range before writing to history file (2764)
    - .. option to start with smaller output file (disk-full problems)
    - N? add BIF and EIF option (3308)
    - N? DESCN copies wrong visibilities by one (3381)
  6. ?? CLIP: strange flux clipped on Convex (2219)
    - \*\* EXTIO errors reported (2534, ...)
    - ?? option of separate U, Q, V, or correlator clip levels (3015)
  7. .. UVAVG
    - .. bugs: apparently reporting times out of order
    - ?? fails sometimes with overflow (2694)
    - ?? in MERG mode, deletes some baselines (2888)
    - N? add calibration package, at least handle new random parms (3571)
  8. .. VLBI improvements:
    - .. VBLIN shouldn't be case-sensitive in station names
    - n. interactive edit of SN files
    - .. *uv* plots with error bars
    - N. CalTech antenna locations read in wrong units (3635)
  9. ?? VBCIT: error testing needed on DATAN2
    - \*\* antenna file not correct on output (2827)
  10. .. DBCON:
    - N\* loses observation dates for arrays  $\geq 2$  (3491)
    - N? should check compatibility of AN tables (3700)
    - n. check times (DOARRAY set for no arrays)
    - .. correct position shift (including *u*, *v*, *w*)
    - .. clarify or change subarray handling (2085)
  11. D. Extend *uv* format to include linear polarization.



## Lower priority:

1. ?? Check buffer size for *uv* tasks: enough for line?  
D? UVPLT (1478)
2. .. UVFIX  
.. several good suggestions for code and explain (2460)  
?? conversion error (2649)  
?? errors at high declination (2905)  
?? does only one subarray in an execution (2905)  
N? uses wrong coordinate rotation computation (3346)  
N? default IAT-UTC default value (3634)  
N? explanation of sign conventions needed in help (3634)
3. ?? BLOAT: generalize to build 16 chan from 2 8-chan, etc.  
?? add to *COOKBOOK*
4. .. Create VLA Observ files with *AIPS* (???)

## TASKS: CALIBRATION AND EDITING

## Higher priority:

1. N\* FQ tables and FREQID:  
N\* FREQID = 0 not accepted by many tasks (3733)  
N\* FREQID changes when appended to table (3733)  
N\* too many FREQIDs created (3733)  
N\* tasks fail when FREQID, but not frequency, changes (3733)  
N\* wrong frequency with a FREQID (3733)  
N\* more explanation of FREQID required (3733)
2. \*\* CALIB  
N\* solutions fail more than with ASCAL and differ (3764)  
\*\* flux bootstrap failing with no error messages (2903)  
\*\* problem reported with only one source in file (2951)  
N\* fails on single-source file (3423)  
N\* fails using gaussian components (3166)  
N\* has problems in source selection (3145, 3173)  
N? amplitude scale shifts despite option to hold it fixed (3376)  
N? solutions fail when UVRANGE tight, but adequate (3433)  
N? response poor when UVRANGE drop most data for some time (3012)  
N? problems doing self-cal of spectral line (3442, 3444)  
\*\* add BIF and EIF (2952)  
ND add option to use amp-scalar averaging (3263)  
N? help file describe NCOMP < 0 (3557)  
N? add help/explain on how to self-cal with CALIB (3601)  
N? SOLMODE confusion for VLB users (3609)  
N\* displays of closure errors fail (3266)  
D\* give source name as well as time on closure errors (2957)  
N? clarify and display info about "failed solutions" (3543)  
N? display version number of SN table as it is created (3545)  
?? add line printer/DOCRT option (2953)  
ND add option to generate list of SN table gains (3396) — in procedure

3. \*\* General:

- \*\* system support
- N\* clarify the meaning of time ranges (3196)
- N\* standardize/clarify the defaulting of extension version numbers (3202, 3253)
- N? SU table too confining (FQ solution?) (3391)
- N? add ability to edit SN tables easily (3429)

4. \*\* LISTR

- n. include user scale factor (2544, 3256, 3426, 3551) — in progress
- N? scale factor changes hide bad data — stay fixed for a scan (3538, 3566, 3622)
- N? add choice of number of digits (3566)
- \*\* ignores SOURCES in some cases (2900)
- \*\* doesn't handle STOKES as advertised (2901)
- \*\* incorrect times listed sometimes (2937)
- \*\* problems display IFs (2955, 2956)
- \*\* problem getting both amp and phase of gains (2959)
- \*\* error initializing (*sic.*) baseline file (2960)
- N\* doesn't do all requested channels (3230)
- N\* scan averaging and autoscaling problems (3180)
- N\* add option list weights (3180)
- N\* fails when requested data is absent (3228)
- N\* failed to list phase when expected on DPARM(1)=5 (3231)
- N\* bad combinations appear on reasonable ANTENNAS and BASELINE, use REQBAS? (3232, 3523)
- N\* would not omit antenna as requested (3546)
- N? allow amp plus phase display on OPTYP 'GAIN' (3247)
- N\* display of amp and phase together doesn't really work (3426, 3448)
- N? allow unaltered display of any 2 correlators (3448)
- N? add display of difference of RR and LL phase (3247)
- N. listing of SN could be more readable (3256) — in progress
- N? add option to reduce header displays (3426)
- N? TIMERANG misapplied in MATX listing (3345)
- N? change averaging time to seconds rather than minutes (3348)
- N\* MATX has problems averaging phases near 180 (3353)
- N. add display of RMS of phases, *e.g.*, MATX (3426, 3544)
- ND lists 2<sup>nd</sup> IF frequency incorrectly (3477)
- N\* gives nonsense when start and stop time are same (3509)
- N\* unnecessary error message re STOKES = ' ' (3532)
- N. multiple sub-functions confuse the use of the adverbs — need procs to simplify (3535)
- N\* MATX header fails on page 3 (3536)
- N? pagination could be improved some (3539)
- N? MATX to loop over all requested IFs (3567)
- N? GAIN does not include date, time, user number, ... (3589, 3639)
- N\* GAIN claims units are JY, but they aren't (3590)
- ND SCAN should list channel separation also (3738)
- N\* SCAN aborts on single-source file (3756)

5. N\* MULTI

- N\* make it less sensitive to number of random parameters (3050)

6. N? CLCOR:
  - N? questions about sign conventions (3254)
  - N\* changes amplitude, not phase, on RL offset (3350)
  - N? confusion generated on versions of CL table (3372)
  - N? fails on CL file version 3 (3734)
7. N? CLCAL:
  - N? doesn't work when applied twice to same SN table (3397)
  - N? has problems interpolating rapidly changing phases (3418)
  - N? needs EXPLAIN file (3517)
  - N? should renumber output extension file to 1? (3518)
  - N? bad selectivity of calibrator sources (3591)
  - N? problems locating CL tables (3650)
  - ND add option to create new, version 1 null CL table (3688) — in INDXR
  - N? add ANTENNAS option to deal with discontinuities (3737)
8. N? ANCAL:
  - ND fails to close TY file before deletion (3294, 3310)
  - N? details of NRAO-standard gain curves should be in help (3633)
9. N? SPLIT:
  - N? several errors in splitting multi-IF file (3255)
  - N\* wrong source coordinates in output file (3349)
  - ND wrong frequency and  $u, v, w$  values for 2<sup>nd</sup> IF (3374, 3456, 3565, 3638, 3684)
  - N? change default SUBARRAY to all, be forgiving on STOKES (3465)
  - N? CL table version number to HI file (3519)
  - N\* messes up header alternate axis, rest frequency, etc. (3529)
  - N\* not delete output due to catalog CLRD status problems (3549)
  - N\* aborts on Convex when doing two IFs (3638)
  - N? DOBAND = 3 mode had problems with flagged antennas (3651)
  - N? add option to skip copying of history file (3668)
  - N? missing data that should have been output (3727)
10. N? PCAL:
  - N? overrides the user-installed polarization parameters (3269)
  - N\* doesn't handle multi-IF correctly (3371)
  - N? loop over IFs or drop EIF from adverbs (3567)
  - N? improve the help and explain info (3592)
  - N? make SOLINT give worst case, program should use longer where possible (3602)
11. N? BPASS:
  - ND MAPCLR excess message (3329)
  - ND fails on second polarization (3739)
12. N? GETJY, SETJY:
  - N\* work? (3329, 3356)
  - ND GETJY doesn't report entered flux, troubles with multi-IF (3389)
  - N? GETJY needs clarification of use of SN table (3431)
  - N? extend usage to solve for fluxes from uncalibrated data (3432)
  - N? SETJY conventions confusing — clarify (3430)
  - N? default IFs do only one IF, not all (3515)
  - N? didn't change SN table for STOKES = 'R' (3736)
  - N? dies on "already open" file (3749)

13. ?? UVFLG

- n? change to accept APARM(9) = 400 as = 4.
- ?? clarify the confusing array of options (2437, ...)
- ?? be more communicative (2530)
- \*\* failing on Convex (*e.g.*, 2174) and Vax (2243)
- N\* problems describing the desired antenna pairs — use REQBAS? (3065, 3181)
- N\* troubles with unflagging (3183, 3184)
- N? print IF number also (3556)
- N? add option to flag in a box in *uv* coordinates (3029)
- N? add option to record commands in history file (3623)
- N? add more explanation of defaults to help (3633)

14. N? TVFLG

- N? menu display very slow at least on IVAS TVs
- N\* make writing of history file a user option
- N\* add option to simply build work file and exit (3092)
- N? option to make a single-source FG table (3051, 3129)
- N? keep flag command on disk with work file: checkpoint (3118)
- N? time ranges listed strangely in FG table (3276)
- N\* problems displaying 2<sup>nd</sup> subarray on DBCON'd data (3289)
- N\* sort by baseline length fails (3330, 3392, 3441)
- N? need easier exit from flag antenna section (3344, 3439)
- N? need do-nothing exit from clip section (3443)
- N\* problem loading only a single source (3357)
- N? redesign work file to allow unflag, drop flags options (3393, 3427)
- N? add option to load only cal or only non-cal sources (3412)
- N? fails to load all channels by default (3443)
- N? add option to apply same clip operation to all other IFs and channels (3443)
- N. create method to display data despite gaps in time (3443)
- N? window setting unforgiving about being off the image (3510)
- N\* failed to die on GTBWRT error (3516)
- N? times in history in sexagesimal (3531)
- N? too many RMSes are zero (3547)
- N? source name carries into blank area (3547)
- N\* loses or misorders data on multiple subarrays (3624)
- N? go to time as non-regular grid (3666)
- N? data not flagged? (3669)
- N\* antenna-DT option aborts program on misplaced cursor (3735)
- N\* fails to rewrite menu after set-window-load operation (3751)
- N. add option to allow multiple Stokes, like IFs, channels (3754)

15. .. Calibration and Editing project: applications software

- D\* spectral bandpass calibration
- D? task to display spectra from set of maps
- D\* task to index raw Modcomp data tapes
- .. task to be clone of Dec-10 VISPLT (2772)
- D? corrections for atmospheric Faraday rotation
- D. handle linearly polarized inputs
- N? sparse-data interactive editor (3307)
- N? TVFLG-like editor with channels vs. time axes

## Lower priority:

1. \*\* ASCAL (maybe redone via Calibration package)
  - \*\* gain file open error (2126)
  - .. 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 (???)
  - \*\* DOCAT option failing in VSCAL
  - ?? improve help file re BITER (2635)
  - ?? VSCAL doesn't work (2655)
  - \*\* format error abort (2842)
  - N? apparently can destroy AN files (3206)
  - N\* change NMAP to NFIELD (2301)
  - N? add FLUX cutoff to the number of clean components used (2301)
  - N? failure related to LUN 17 (3128)
  - N. Convex NRAO1 creates extra sources (3694, 3761, 3762)
  - N? history file lacks number of components from images > 1 (3726)
2. .. Gain files to standard table type or replace:
  - .. fix ASCAL, VBFIT
  - .. fix ASCOR, VBCOR, VSCAL
  - .. fix GNPLT, PRTGA
3. .. VBFIT — may be replaced by CALIB
  - .. 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??
  - .. option not to write an output uv file
    - .. keep DR files with input uv file, recognize by version #
  - .. option to give list of reference antennas (1813)
  - ?? add info to help/COOKBOOK per gripe 2077
4. ?? PRTGA:
  - ?? error-handling in formats is needed (2675)
5. N? WTMOD:
  - N? handles flagged data badly (3283)

## TASKS: IMAGE MAKING

1. ?? CCMERG — improve handling of flagged components
  - ?? message to reflect number unflagged in/out
  - ?? message to say omitted (or lost) number components due to flags
  - N? add option to CCMRG to limit number components used (3046)
2. N? HORUS:
  - N? give user more control over output name (3525)
  - N? add DOBAND, BPVER, ... to history file (3753)
  - ND ignores weighting type except for 1<sup>st</sup> channel of each 8 (3742)

3. \*\* MX

- \*\* locks on one component: (Convex many gripes, Vax too (2124))
- \*\* beam-patch troubles → clean divergence (2128)
- \*\* Stokes V is actually Stokes I on Convex
- \*\* 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 (3004)
- \*\* on NITER=0, do not set clean beam — confuses CONVL??
- \*\* check handling of BOX — 10<sup>th</sup> unused, funny ordering, ...
- D\* make it work with STOKES 'R' and 'L'
- \*\* drop XPARM and YPARM inputs
- .. rename shift parameters
- ?? adapt to handle wider fields such as 327 MHz
- D\* GETCTL bug affecting production of RR or LL maps (2554)
- \*\* aborting for overflow in gridding (2806)
- ?? ignores alternate velocity axis parameters (2926)
- ?? output naming problems, overwriting current files (2933)
- N\* artifacts caused by restart with existing work file (3148, 3204)
- N? output channel addressing problem when input channels averaged (3052)
- N. option to use different disks for image and beam (3101)
- ND DDT fails on Suns to get correct answers after overhaul.
- N. reconsider definitions of zero-spacing flux (2261, 2272)
- N? add peak residual to output history file (2269)
- N. zero spacing for multiple channels (2320)
- N? serious differences detailed between subtraction methods (3352, 3420)
- N? Convex aborts when FACTOR significantly negative (3413)
- N. fails on miniscule images (3436)
- N\* STOKES 'V' does not work (3447)
- N\* does not handle multiple IFs (3375, 3683)
- N\* rotation causes subfields to be incorrectly positioned (3488)
- N? CHINC default behavior inconsiderate (3548)
- N? give message, or better, handle overlapped fields (3561)
- N\* MXSEL sets beginning component to 0 for channels 2 and beyond (3573)
- N? data missorted messages with spectral-line data (3575)
- N? add option to make work file a temporary SC to use SC disk (3605)
- N? gridding error when FLDSIZE greater than IMSIZE (3670)
- N. history files are confusing for multiple fields (3724)

4. .. Single dish to *AIPS*:

- D? pseudo-*uv* gridding to allow other geometries (SELSD)
- D\* define random parameters correctly and document
- D? upgrade SELSD, GRIDR, PRTSD to match
- .. single-dish CLEAN

5. \*\* UVMAP
  - \*\* produces artifacts in images on Convex (2193)?
  - .. sum weights near center (guide for ZEROSP)
  - .. zero spacing for multiple channels
  - \*\* TXINC, TYINC option
  - \*\* drop XPARM and YPARM inputs
  - \*\* UVWTFN option not working (2882)
  - N. option to use different disks for image and beam (3101)
  - N? cannot handle 2<sup>nd</sup> IF (3264, 3375)
  - ND DDT test fails on VMS pseudo-AP after overhaul
  - N\* defects in corners of images — bad gridding? (3563, 3568)
  - N? bad beam peaks with images apparently okay (3024)
6. \*\* APCLN, SDCLN
  - .. better beam fit (also MX)
  - \*\* save residuals and cleaned image option (???)
  - .. other clean-area options, *i.e.*, mask image (2489)
  - D\* ignores any scaling given in header (2503, 2671)
  - n\* fails if AP is rolled in restore step (2381 among others)
  - \*\* better error handling on ZEXPND error (2544)
  - ?? failed on a 4096x2048 image (2710)
  - \*\* restart problems on cubes (2756)
  - N? bugs affecting rectangular images with  $N_y > N_x$  (3207)
  - N\* BITER < 0 option fails on residual image (3214)
  - N? discontinuity on restart in flux levels (3214)
  - N\* fix to create CC files of version equal to plane number (3236)
  - N? create output files ahead of scratch files (3130)
  - N? Alliant troubles with WHNALT and QCLNSU (3658, 3659)
  - N? blew up putting too many residuals in the "AP" (3702)
7. n? VTESS, UTESS, LTESS:
  - ?? scale clean image correctly to be usable initial guess
  - ?? VTESS leaves image status set
  - \*\* fix to do standard handling of BLC/TRC (2572)
  - ?? zero spacing flux not used (2573)
  - N? UTESS loses information about relative shifts of images (3291)
  - N? UTESS aborts if an image is blanked (3317)
  - N\* VTESS sometimes aborts just after displaying inputs (3326)
  - N\* VTESS cataloged output files under user = sequence number (3454)
  - N? change to make output files ahead of scratch files (3701)
  - N. LTESS explain file ends in mid sentence (3718)
  - N? LTESS needs option to limit lowest usable primary beam level (3719)
  - N? map type header parameter often wrong on output images (3765)
8. ?? Two-resolution clean, based in APCLN
9. .. APCLN-like task for non-symmetric beams: done to 1<sup>st</sup>-order
10. N. APCLN-like task for scalar and non-AP applications (2331)
11. D? Task to put CC's from one file into another image (2581) — RSTOR
12. .. Task to remove current clean comps from image and put back with another size.
13. .. Task to do direct Fourier transform mapping

- 14. ?? Difference mapping
- 15. .. changes to handle 8000 spectral channels??

## TASKS: IMAGE

- 1. ?? FFT
  - ?? option: output amplitude, phase images
  - .. option: clipping output to user-specified value(s)
  - ?? fails on galactic coordinates (2750)
- 2. \*\* COMB:
  - ?? documentation confusing (may be better a bit now)
  - ?? cannot combine partly overlapped cubes (2462)?
  - .. generalized operators (more than 2 images, many ops incl. FFT)
  - .. pixel-weighted averages ...
  - .. check OPCODE list against *TPPS* operators
  - ?? poor default for maximum error (2607)
  - ?? put shifts for alignment into history file (2731)
  - \*\* update POLC correction method (2757)
  - N? RM gets incorrect results (3034)
- 3. D? PBCOR
  - D? ignores users' input and OBS positions (2580)
  - ND crashes with coordinate error message (3055, 3494, 3671, 3743)
- 4. ?? MCUBE reported alignment problems (2763)
  - N. inconsistent in header lists clean components, but no CC file (3212)
- 5. ND TRANS:
  - ND aborts on a 3412 ordering (3143)
  - ND gets wrong results on VMS when disk-based  $x - y$  transpose (3337)
  - ND very slow on Convex (3335, 3419)
  - ND fails if  $x$ -axis more than 2048 points (3027)
- 6. .. SUBIM
  - .. DOALL option
  - .. ZINC option, but over all dimensions 3-7 or just 3?
  - .. option to sum/average over the XINC by YINC box
- 7. .. CONVL:
  - .. compare CONVL and SMOTH
  - .. add progress messages, decimation of output (2483)
  - ?? input file marked write (2485, 2507)
  - ?? trouble with small windows (2670)
  - \*\* random bad lines on Convex?? (2895)
  - N\* convolution of 2 images is not interchangeable (3066)
  - N\* fails when using an input image (3213)
  - N\* FACTOR incorrect and not in history as other than 1.0 (3003, 3238, 3714)
  - N? correct units, scaling from JY/PIXEL on output (2374)
  - N? appears to make images noisier (3713)
- 8. ND XSUM:
  - ND fails if there are > 2048 points on  $x$  axis (3027)



9. .. **BLANK**
  - .. option: blank other maps same as current one (*i.e.*, imag. part)
  - .. option: non-magic and non-zero blank values
  - .. option: fill in blanked from surround
  - \*\* **DOINVERS** "reversed" from **TVSTAT** (2863, ...)
  - ?? display values interactively as one goes (2904)
  - N? not handling window corners correctly (3673)
10. .. **SUMIM**:
  - ?? other ways to get input images besides DO loop on **INSEQ**
  - ?? images taken as planes of one input cube: task or option
  - .. bug? (reported  $10^{31}$  peak from it)
  - N? excludes scratch disk for **SC** file (3572)
11. .. **BLSUM**
  - .. option to catalog results (???)
  - .. improve help, output data (2463-4, 2485)
  - .. go to table method like **XGAUS** (below)
  - ?? display, explain units, show rms (2728)
12. ?? **XGAUS**
  - .. 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"
  - ?? test **EDROP**, **BDROP** for bad values (no pixels left)
13. ?? **XBASL**
  - \*\* Convex finds bugs in **XBASL** (2038)
  - .. rewrite in table form as for **XGAUS** (2700)
  - ?? selection by **FLUX** not good if mean of image is zero (2922)
14. N? **XPLOT**:
  - N? flux limit setting confusing, suggestions in (3285, 3286)
15. N? **NINER**
  - N? operator **KRSH** fails (2314)
  - N? help file badly spelled (2315)
  - N? operator **WALL** ends with bad minimum value (2316)
16. ?? **IMMOD**, **UVMOD**, **CCMOD** — Clean up:
  - ?? **IMMOD**: **BMAJ**, **BMIN** = radii in asec, not axes
  - ?? **UVMOD**: divide by 0.0 in **BESSEL** for **DISK** option??
  - ?? **CCMOD** doesn't handle input table correctly (2206)
  - .. rewrite **CCMOD** (see Benson's version); pixels may be better than asec (???)
  - ?? error in position angle input, **POINT** mode confusing, inputs get integerized (2775)
17. .. **IMFLT** fails? (2433)
18. .. Rewrite **XTRAN** to use **ST** extension files
  - ?? explain what **NPOINTS** is used for
  - ?? documentation confusing (2676)
19. ?? Task to find, fit and classify sources.
  - ?? use methods, *et al.* from fitting tasks

- 20. ?? **IMFIT, JMFIT:**
  - ?? combine two tasks into one
  - ?? **DOWID(2-n)** ignored on Convex?
  - ?? **JMFIT** convergence criteria too lenient (1763)
  - ?? raise coding to standards
  - ?? accept initial guesses for 0-level, slope
  - ?? solution outside field (2425)
  - ?? **JMFIT** bad errors, answers at low S/N (2592, ...)
  - n?** add **PRTLEV**, bigger field (2425, 3112, 3468)
  - N?** poor response to bad window (3645)
  - N?** fits center position despite **DOPDS** (3745)
  - N\*** extra garbage characters in display (3675, 3745)
- 21. ?? Improved Geometric Capabilities:
  - ?? **HGEOM** blows up on high ( $10^9$ ) brightnesses
  - N?** **HGEOM** too verbose on progress messages (3299)
  - ?? speed up **LGEOM**
  - ?? **LGEOM** shifts zero point 0.5 pixels (2502)
  - .. 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**)
  - ?? add "spherical cube" geometry (from COBE project)
  - N.** should correct fluxes in Jy/pixel cases (3222)
- 22. .. Rewrite **RM**:
  - .. easy inputs
  - .. standard or user-friendly units and code
  - N.** inconsistent failure (3339)
- 23. .. Task to fill in blanked pixels: interpolate, extrapolate
- 24. **D?** "**UNARY**" operator task
  - ?? check **IPPS** "unary minus" menu
- 25. .. Clean up Gustaaf's line tasks
  - .. to standards and to work as advertised
  - .. generalize
  - .. **IRING**: fix help (1566)
  - .. **IRING**: format for number points too small (2549)
  - ?? **GAL**: bugs
- 26. .. Clean up other line tasks: (**MOMNT**, **SMOTH**, ...)
  - .. generalize, to standards in coding
  - ?? **SMOTH**, **MOMNT** cannot handle blanked pixels???
  - ?? **MOMNT** message re history gives wrong moment number
- 27. .. Rebuild Measuring Engine as *AIPS* Task
  - .. integrated into *AIPS*
  - .. catalogs and measurements as tables files
  - .. solve plate constants against multiple catalogs
  - .. measurement process driven by tables of coordinates
  - ?? image capture with precise geometry: 1<sup>st</sup> part done
  - .. digital/analog image registration using two TVs

## TASKS: DISPLAY

### General:

1. .. Printing tasks:
  - ?? option to go to file rather than printer (2845, 2863)
  - N? allow concatenation of print job to previous file (3492)
  - N? force all tasks to put date/time on page 1 (3424)
2. \*\* Plotting — to devices
  - ?? plot labels overlap; fix TKPL, TVPL, QMSPL to try to avoid
  - N? fix TVPL and others to handle strings that are too long (3521, 3485)
  - D\* ASPMM message appears even when using input value
  - N? TXPL needs batch-like mode for HI file with no user prompt (3479)
3. ?? Star positions on plots
  - ?? add search of star catalogs to STARS
4. n? Plotting — plot-file creation
  - ?? coordinate routines can abort on bad coordinates (2438)
  - ?? allow user string to be added to plot (2648)
  - ?? clean beams on plots
  - N. overlay plotted numbers on contours (2303)
  - ?? to put their parameters in history file also?
  - ?? option to put BLC/TRC on the plot
5. .. Fancier contouring:
  - .. bold, labeled contours (3463, others)
  - .. ingoing ticks for minima
  - D. follow contour
  - N? redefine plot to go to edges of pixel as in GREYS (3042)
  - N. better interpolation (3043)
6. .. False color usage in areas of:
  - .. polarization
  - .. spectral index
  - .. *uv*
  - .. spectral-line: sum(I), velocity, width
7. .. Disk space problems
  - .. seek disk with room for print files in line printer and QMSPL
  - .. adverb to limit plot file size: die if too much plot?

### Higher priority specifics:

1. N\* POSSM:
  - N\* clarify ANTENNAS usage in help file (3409)
  - N\* reverse logical for scalar averaging — differs from LISTR (3524)
  - N? needs better *x*-axis labeling including relative coordinate (3616)
  - N? DOBAND = 3 doesn't work right (3750, 3752)
  - N? failed to exclude ANTENNAS as desired (3747)

- 
2. N? IMEAN:
    - N\* add Gaussian fit curve to mean/rms of histogram plot (3062)
    - N. write histogram values out as an extension table (2317)
  3. n. PRTIM
    - .. change FACTOR to physical units per printed integer
    - N\* add option to override FACTOR giving value printed as 1 (3095)
    - D\* inputs limits on INC, FACTOR too low (2697, 2698)
    - D\* limit to 4 digits too small (2695)
    - D\* error on images with only 2 axes (2659)
    - D\* ignores current image scaling (2671)
  4. ?? QMSPL
    - ?? get blanked pixels to be pure white (2643, 3040)
    - ?? clear fonts from printer memory??? (2976)
    - N\* convex landscape contours and grey do not align (3039)
    - N\* add option to limit number of grey levels used (3044)
    - N? update the form of QUIC commands used (3073)
    - N\* add option to force a page eject (3588)
    - N. change to use relative plot coordinates (3035)
    - N. change to make output file more readable (3035)
  5. .. GREYS:
    - .. use TV LUT as option
    - .. load with functype (?? — QMSPL offers this)
    - n. use white contour line over black grey pixel (3045)
    - D? label the step wedges (2639, 2641)
    - N? polarization lines as well, or maybe new task (3720)
  6. .. UVPLT:
    - n? to average channels
    - ?? binning options like IMVIM
    - .. add SOURCES, FLAGVER, etc. options (2935)
    - ND plots flagged data (3215)
    - N? change to set self-scaling on binned, rather than raw, data (3111)
  7. N? SNPLT
    - N? plot antenna number as well as station ID (3540)
    - N\* doesn't complete the last, partial page (3630)
    - N? SUM seems to plot all points, not the maximum deviation (3631)
    - N? eliminate meaningless source-file missing message (3643)
    - ND add XINC option (3696)
  8. n\* Develop TV by wire:
    - D\* make it work in Berkeley Unix
    - D\* Sun Y routines
    - N? make it work from CVAX to Berkeley Unix
    - N\* very slow from Convex to VLA Sun (3234)
  9. N\* TV in windows:
    - N\* X-Windows implementation of SSS
    - N\* SSS uses default character size which can be too big (3214)
    - N\* experiment with smaller TV, better window setup for Suns (3746)

## Lower priority:

1. ?? Dicomed tasks — DICPL, DICTV, DICTP?
2. N? PLCUB:
  - N? string too long — check it (3521)
  - N\* option to omit the axes for each small spectrum (3691)
3. N? LWPLA:
  - N? portability of Postscript file format troubles (3680)
4. .. Map vs map plotting (IMVIM):
  - .. allow rms images, plot points with error bars (2682)
  - .. binning options: convolve with rms gaussian???
5. N? DFTPL:
  - N? appears to require a TIMERANG to be specified (3030)
6. ?? TVHXP, TVHLD problems
  - ?? differ between Charlottesville and VLA??
  - D? fails on Convex (2527, 2825)
  - N? TVHLD leaves wrong channel marked as on? (3069)
7. ?? PRTPL
  - ?? speed — new bit routine, quick grey-scale
  - ?? line width control (for low-resolution devices)
  - ?? better grey scale options and algorithm (like QMSPL)
  - ?? does it still work at all?
8. .. PROFL:
  - n. Improve the computation of the vertical scaling of PROFL plots.
9. .. VBPLT:
  - \*\* doesn't work when ANTENNAS specified (2672)
  - .. check use of JULDAY
  - .. speed it up
  - .. average channels option
  - .. all baselines on one plot option with/without data
  - .. plot points with error bars
  - N? fails when all phases are zero (2362)
  - N? fails on single-dish data (3017)
10. .. GNPLT, GAPLT — (do after gain file format change):
  - ?? fails to handle time limits correctly (2201, 2203)
  - .. capabilities of GAPLT
  - .. alternate plot symbols
  - .. other axis types and scalings (esp. "scan number")
  - ?? clear READ status
  - ?? alternate plot method (2055)
  - ?? GAPLT to be less sensitive about missing AN file (2774)
  - N? add STOKES option, including 'DIFF', to GAPLT (3440)
11. .. PCNTR
  - .. accept and convert I, Q, U images also

12. .. Convert pen plotter code to standards
  - D? import CSIRO version of KONTR
  - .. PRFPL: add line printer option for values (2705)
  - .. PRFPL: add output to QMS (or better yet a plot file) (2754)
  - ?? make a PENPL to interpret plot files to pen plotters
13. N. develop MacPaint for AIPS TVs (3133)
14. .. Image storage unit and control panel
15. .. support a graphics package or two — PGPLOT or MONGO

## TASKS: TAPE

### Higher priority:

1. N\* FILLM:
  - ND bugs reported in averaging (3260, 3261)
  - ND loads wrong frequencies (3272)
  - ND makes too many entries in NX and CL tables (3368)
  - N\* index identifies sources incorrectly on short drive times (3369)
  - ND loses qualifier number (3386)
  - ND fails to notice change from LP to LL band (3414)
  - ND add TIMERANG option, stop task after end time read (3435)
  - ND CL table times align badly with scan limits (3434)
  - N? remove record-length message on Modcomp tapes (3505)
  - N\* lists wrong alternate-axis information (3528)
  - N? too slow on Convex (3527)
  - N? DPARM should be added to history file (3639)
  - N? improve English in description of shadowing in help (3732)
  - ND fails to notice when number of channels changes (3741)
2. \*\* FITTP
  - D\* to write 32-bit floating
  - .. add "verify" option
  - \*\* improve help file re DONEWTAB (2645)
  - N? option to write uv files in portions: n1 to n2 by n3/file (3550, 3604)
  - N. move tape at start, before scaling uv data (2321)
  - N? blows up when HI file missing? (3284)
  - N? add more defenses against bad scaling, overflows (3301)
  - N? improve EOT performance (3304)
  - N? error writing SN tables — wrong column type (3644)
3. \*\* IMLOD
  - ?? skip over uv files (2736) and vice versa
  - \*\* default output class failing? (2685)
  - \*\* convert output name to uppercase (2805)
  - \*\* bug: map processing level lost between FITTP and IMLOD on DOALL true?
  - \*\* rename NFILES adverb to avoid conflict
  - N? fails to read old IBM-format tapes (3038)
  - N? fails to recognize "Pipeline" class, velocity (2297, 2298, 2349)

4. \*\* UVLOD
  - .. combine UVLOD and IMLOD
  - \*\* DOALL option for FITS files
  - \*\* convert output name to uppercase (2805)
  - \*\* on Convex ignoring BCOUNT?
  - .. add *uv*-range, time range options (2505)
  - N? option to concatenate FITS file to existing file on disk
  - N\* remove Dec-10-like "weight" random parameter and its data
5. \*\* PRTPP
  - \*\* doesn't detect "Pipeline" image names, IMLOD does???
  - ?? skip over "unrecognized" files (2677)
  - \*\* floating divide by zero (2696)
  - N? problem with DBCON'd *uv* files (2293, 2357)
  - N? remove record-length message on Modcomp tapes (3505)
6. \*\* FILLR
  - ?? suppress tape length warning messages (2714)
  - D\* adapt to new on-line format
7. N\* TPHEAD:
  - N\* fails on Export format files after the first (3083, 3210, 3579)
  - N? honor page-full conditions (2380)
8. D. UVEXP — error leading to apparent loss of sort order?
9. .. Investigate troubles with blank tapes on DOEOT.
  - \*\* add to help files: DOEOT, FITTP, etc.
  - \*\* get VLA blank-tape fixup method for all Vaxes

## Lower priority:

1. ?? Tape handling
  - .. change AVFILE (incl. in tasks) to skip label files without counting them.
  - D\* should not go forward on REWIND on Convex (2585, 2908)
  - .. AVTP - option to find file by keyword value (2629)?
2. \*\* Tape dummy files
  - ?? keep track of current tape position
  - \*\* rename from TA to something else
3. ?? Backups of data to be faster and more selective
  - ?? improve speed of BAKTP, BAKLD on Unix

## TASKS: EXTENSION FILES

1. ?? AIPS table files; what next:
  - .. convert  $\geq 1$  image to table
  - ?? convert table to  $\geq 1$  image — see XGAUS
  - ?? translate between table and ASCII or spread-sheet formats (DIF format)
  - .. others: check IPPS AUTOPHOT list.
  - .. interactive editing task (spread sheet?)
  - N\* extension copy subroutines give better messages (3206)

2. ?? PRTAB
  - D? BCOUNT = ECOUNT fails (2522)
  - ?? add more selection criteria (2954)
  - N. add knowledge in PRTAB about specific tables, *e.g.*, selection by source, flagging (3197)
    - done by SNPLT and LISTR
3. N? PRTAN:
  - N? add alternate print formats: sorted, Y shape (3506)
4. N. Table tools:
  - N? allow TACOP to copy tables from UV to MA (3054)
  - N? TACOP copies too much (3120)
  - N? improve description, defaults of NCOUNT in TACOP (3398, 3652)
  - N? change TAPLT and TAFLG to use math string to describe columns (3405)
  - N? doesn't append tables as help might suggest (3437)
  - N\* overwrites CL version 1 despite OUTVERS (3464)
  - N? INVERS default is non-standard (3593)
  - N\* TABED help file needs help: suggestions in (3594)
  - N\* TASAV should die destructively if all files are not saved (3676)
5. ?? Slices:
  - N\* SL2PL and SLFIT blow up (3240, 3218)
  - ?? print out values (verb?)
  - ?? display on TV like TKSLICE
  - ?? convert to tables format
  - ?? overlay plots by arc seconds not points (2717)
  - .. plot multiple offset slices
  - .. moment fit slices
  - .. find along curved tracks
  - .. other more flexible plot options, *e.g.*, log-log (2680)
  - ?? SLICE:
    - ?? option to limit interpolation order to 0, linear, ...
    - ?? make 2-d image from cube
    - ?? fails on XGAUS (.CENTR) images?
  - ?? SLFIT:
    - ?? clean up units, display (see 2795, 3019)
    - ?? fit a baseline
  - ?? SL2PL seems to refer to format revision A?? (2803)
  - N? SL2PL makes a long display string — check it (3485)
  - N? slice plot does not show the position angle (3486)

## VERBS: APPLICATION

1. N? TELL:
  - N? New verb to cancel a pending TELL (3137)
  - N? cancel pending TELLs on GO (3600)
  - N? allow TELL to someone else's task — only QUIT (3028)
2. ?? Verb to "set TV cursor on RA,Dec" — *i.e.*, graphics box
  - ?? verb to convert RA,Dec to pixel coordinates (2748)
3. ?? Verbs like CELGAL for ecliptic-celestial/galactic coordinates



4. ?? Verb to display convolution/deconvolution of beams (2501)
5. ?? TKSET — clarify cursor positioning in the Help file
6. ?? EXTLIST:
  - ?? display slice fit results
  - ?? display the file sizes
  - \*\* format problems on slices (2814)
  - N? display XYRATIO form CNTR, GREYS, ... (3710)
  - N? add UVHGM and ISPEC to display
7. .. Verb to catalog extension files
  - .. (Add tests for primary type = desired extension type to TKSL verb, SL2PL, PRTAB, ...)
8. N? RENAME to do more than one per invocation (3142)
9. \*\* MAXFIT:
  - \*\* fails on the Convex (2637)
  - N? other odd behaviors (3139)
10. ?? TKSLICE
  - ?? display *y*-axis even if undefined units
  - ?? *y*-axis label often fails actually
  - \*\* extend plot range a bit for clarity
  - ?? loses to current image scaling (2605)
  - ?? aborts if the min equals the max (2683)
  - ?? remove PIXRANGE from TKASLICE (or use it!)
11. .. TV labeling:
  - .. clean beam
  - \*\* stars
  - .. new LYPES: source name, angular scale, freq
  - D\* TVLABEL: Convex bug on rotated images (2758)
  - D\* TVLABEL: ticks too short on the IVAS (2759)
  - N? plot box or slice overlay, based on BLC/TRC (3061, 3558)
12. .. TV:
  - .. anti-wrap algorithm causes strange behavior at high zoom
  - .. new spiral hue/intensity LUT (1218)
  - .. TVBOX-like to set up inputs to MX
  - .. TV version of TKSLICE
  - \*\* change DOPOS to something else in TVMOVI
  - ?? set RA and Dec shifts with cursor (2712)
  - ?? interactive TV display of coordinates (2747)
  - .. display images aligned by coordinates (2896)
13. .. IMHEADER(*n*) ; QHEADER(*n*) (???)

## VERBS: SYSTEM OR POPS

1. N? Message files:
  - N? add BCOUNT, ECOUNT to CLRMSG, PRMSG (3640)
  - N? add verb to index message file by task starts (3641)
  - N? add verb to search/index message file by keywords (3641)

2. ?? *POPS*

- .. continuation line (or something) for long ADVERB = \*, \*, \*, ... statements
- ?? bug leads to procedures being concatenated after an EDIT  
or otherwise messed up (2569)
- ?? GO SPLIT does proc SPLITS — min match problem (2962)

3. ?? System access:

- ?? verb to drop to job control subprocess (2210)
- ?? verb for quick logoff?? (2210)
- .. standards for system-dependent verbs
- N? verb to show available tape drives (2310)

4. ?? How to pick up new adverbs easily despite LASTEXIT

- ?? user DEFAULT RUN file, if present, instead of loading LASTEXIT
- ?? autoload RUN NEWPARMS to make sure new adverbs present (??)
- ?? adverb to suppress saving LASTEXIT on EXIT, RESTART
- ?? drop RESTART

5. ?? Batch:

- ?? AIPSC: option to turn off checking (some procs get 0 divide?) or make response to errors  
optionally less drastic
- \*\* reduce delay times at start-up; first loops in QMNGR
- ?? batch jobs not delete CA files, messages
- .. verb to submit a single task as a batch job (2211, 3707)
- .. batch work files by user number (2615)
- \*\* SUBMIT fails if two doing it at the same time (2616)
- N? TIMDEST failed to die when YES/NO missing in batch job (3136)
- N\* change INPUTS, TPUT to use system value to limit BATQUE adverb (3707)

6. ?? Gripe system:

- D\* GRDROP fails in GRIPR (2711)
- N? replies to users should show *AIPS* version string (3606)
- N? new verb to enter gripes from external disk text files (3730)

7. ?? Deletion and bad catalog entries:

- ?? ZAP to deal with bad headers, missing CB files???
- ?? TIMDEST to detect and handle errors better
- ?? ALLDEST apply DOCONFIRM to SAVE/GET files
- \*\* ALLDEST should not destroy recent, "active" files (2699)
- N\* EXTDEST should refuse to do certain critical files, e.g., SU, CL version 1 (3428, 3688)

8. n? Providing better helps:

- ?? verb to display HELP INDEX by keyword(s) match (3582 good ideas)
- ?? search for string over help files (2811)
- ?? improved categories for general HELP files
- N? program to make the general help files

9. \*\* INPUTS

- \*\* adverb to start with page n
- ?? limit display to selected category of parameter (CALIB, 2573)

10. ?? History file manipulation

- ?? verb to insert a comment in the history file.
- ?? verb to edit history file — delete by task, line numbers
- ?? all tasks should create an empty HI file if one is missing (2640)

11. ?? RUN files:
  - ?? user/system RUN file index verb
  - ?? RUN file form for SAVE operation
  - .. 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
12. ?? Clarify *POPS* environment in GET help file — procs can be lost
13. .. FINISH should be ok at end of any line in proc
14. .. PROC(*array*) should work when called as PROC(*scalar*)
15. ?? Verb to kill a batch job???
16. .. Verbs:
  - .. FINDSPACE — find disk number with most space
  - .. FINDNAME — find image with some name parms.
17. .. Catalog: NEXT
  - .. return array of catalog numbers (???)
  - .. rename a set of maps to sequence the SEQ numbers (???)
  - \*\* catalog listings to go on to next disk if catalog file missing (2925)
  - N. print catalog listing directly to line printer (3459)

## DOCUMENTATION

### Higher priority:

1. \*\* COOKBOOK
  - \*\* move new general help files into COOKBOOK
  - \*\* update since last revision !!!
  - \*\* calibration chapter: correction in (3595)
  - N? calibration chapter: confusion in (3690)
  - \*\* FITS disk usage
2. \*\* Help file improvements
  - \*\* improve system file name descriptions for VERSION, INFILE, etc.
  - N\* add one-line descriptions and categories to all help files
  - N\* write program to produce category-divided lists of helps
  - \*\* update all general help files listing tasks/verbs (2782)
  - N? rewrite HELP PANIC (3632)
3. .. Add EXPLAIN files (non-programmers)
  - .. UVSEN (3258)
  - .. XGAUS, BLANK, *et al.*
  - .. many others
  - N? calibration tasks should list tables used in the help/explain (3597)

## Lower priority:

1. \*\* Miscellaneous:
  - \*\* advertise 6250 bpi better (*COOKBOOK*, Helps, ...)
  - \*\* Volume 2: what's left? Move it to Volume 3.
  - .. public display of **HELP INDEX**???
  - \*\* Volume 1:
    - \*\* listing of all **HELP/EXPLAINS** most important, but probably ok
    - \*\* discard Chapter 1, update Chapter 2
    - .. what needed for Chapter ,
    - \*\* maybe rename as "*AIPS* User Reference Manual"?
    - \*\* do the printing with final **AIPLAS**
2. .. Programmer documentation:
  - ?? **WHATSUP** and selective **UPs** files
    - D. devise method for auto generation
    - D. install method in code
    - N? **PUTBCK** to enforce new documentation standards
    - N? write program, to make category-divided lists of routines
    - .. generate files of these lists
    - .. **PRNTMN** to pick them up
    - .. subroutine help library?
  - ?? *AIPS* Manager manual:
    - ?? service programs
    - D? magic places to change in code (**TIMDEST**, ...)
    - ?? system configuration recommendations
    - ?? implementing various peripherals
  - .. **XREFS**:
    - ?? Vax/Convex version of **XREFS**
    - ?? Vax/Convex cross reference by task rather than individual module
3. ?? *AIPS* memos to be finalized:
  - ?? use of **EMACS** editor with *AIPS* files
  - ?? mailing List Package
  - ?? checkout System
  - N? Fortran standards
  - N. update Gripes procedure memo
4. ?? Havlen/Fomalont "DEMO" image file?
  - ?? under the mythical user number 1?
5. .. An *AIPS* Tee-Shirt? — never a serious priority