

A I P S L E T T E R

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National Radio Astronomy Observatory

A newsletter for users of the
Astronomical Image Processing System

Edited by

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TeXset by EWG

This Release

With this release, we are attempting to get back to normal. For a variety of reasons, the 15JUL87 and 15OCT87 releases and the corresponding *AIPSLATTERS* were seriously delayed. As a result, we decided to cancel the 15JAN88 release. Now, in an attempt to get things back on schedule and to begin the long-planned source code overhaul, we have frozen the 15APR88 release early and without the usual period as `VERSION = 'NEW'`. The 15JUL88 release will have spent no time as TST and will therefore contain relatively little new code. The 15OCT88 version will be used for the code overhaul and, depending on how quickly that process goes, may not be released.

Staff Changes and Possible New Positions

There are two personnel changes to announce. (1) Don Wells has taken a two-year leave of absence from the *AIPS* group to guide the development of the software for the VLBA correlator. We wish him luck with the project. Don will remain in Charlottesville and will normally join us for our weekly "*AIPS* lunch," but his *AIPS* duties will be suspended by about July 1. (2) Nancy Wiener has been promoted to Scientific Associate as of 1-Jan-1988. She will continue to work with the *AIPS* group in a variety of areas. In addition to her role as Assistant System Manager for NRAO-Charlottesville's VAX and Convex computers, her major role with the *AIPS* Group is as a coordinator of communications. She oversees the mechanics of *AIPSMAIL* and *GRIPEs* and maintains the *AIPS* site database. She will handle the *BANANAS* mail operation and more networking responsibilities as Don's change goes into affect. Please direct all telephone inquiries concerning *AIPS* to Nancy at the numbers listed on the masthead.

The NRAO has been experiencing very restrictive budgets for some time. The Observatory's staffing level for operations is now what it was in 1978, when the build-up of VLA staff was only 30% complete. Consequently, much of the operation of the VLA has been absorbed out of other NRAO operations. This has created manpower shortages in all areas and the *AIPS* group has been no exception. In 1980, the

AIPS project had eight professionals doing programming; today we have four, of whom one is paid by, and dedicated to, VLBA. We are left with roughly the equivalent of one and a half positions for general code development, one for interaction with our rapidly growing user community (see the Site Survey article below), one for support of existing code, and a half for management. This is hardly enough to keep a package of this complexity breathing; the response we can give to many of your requests is therefore limited simply by manpower.

There are glimmers of hope, however, at least for *AIPS*. The NRAO plans to give priority to improving the *AIPS* support, particularly at the VLA site. The idea is to station part of the *AIPS* group in Socorro by filling two *AIPS* positions there, an *AIPS* Manager and a scientific programmer. Candidates for the scientific programmer position should be active researchers who are familiar with *AIPS*. Their research would continue at the 25% level. The *AIPS* Manager should be familiar with *AIPS* and VMS and/or UNIX and should have a strong interest in systems management and in assisting VLA users with *AIPS*. Although the details are not yet final, we suggest that anyone who might consider such positions should telephone Bob Burns in Charlottesville, 804-296-0229.

Summary of Changes: 15 October 1987 — 15 April 1988

These changes are listed in detail in the `CHANGE.DOC` file reproduced later in the *AIPSCLETTER*. There are 168 entries listed this quarter. Four areas were emphasized for this release: single-dish data reduction, interferometer calibration improvements, extending TV display support to SUNs and "virtual" TV devices, and reinstating our support for the Cray Operating System. There are six new tasks in this release: `GETJY`, `FILLM`, `SDCAL`, `CSCOR`, `TXPL`, and `MANDL`. From the 15JAN88 version, which was not released outside the NRAO, there are also new tasks `BPASS` to calibrate spectral bandpass shapes and `IM2UV` to transform images into *uv* data sets, as well as several significant improvements in the calibration package. See the previous *AIPSCLETTER* (Volume VII, Number 4, "October 15, 1987") for details.

Changes of Interest to Users: 15APR88

Various improvements and corrections were made to the basic interferometer calibration package. A new task, `GETJY`, was added to determine the flux densities of secondary calibrators from the existing calibrations (see entry # 4644). A new task, `FILLM`, reads data tapes from the new VLA online system; `FILLR` is still used for tapes written before January 1988 (see # 4715). Spectral smoothing was added to all appropriate calibration tasks (#s 4610, 4620, 4623). `TVFLG` was improved in its handling of windows and subarrays. The performance of the main calibration tasks was improved significantly. Using vectorization on the Convex, improvements of about 30% were obtained (see #s 4663, 4677, 4678).

This is the first public release of the new, improved routines for handling single-dish data in *AIPS*. Some of the details were described in the previous *AIPSCLETTER*. This release contains the task to read and translate tapes in single-dish FITS table format (see `SDTUV`, # 4589). The calibration package was extended to work on single-dish data through new tasks `SDCAL` and `CSCOR` (see # 4588). Pointing calibration was added in change # 4632. Many of the regular *uv*-data programs work on single-dish data sets, but their handling of such data could often be improved (see # 4659 for `UVFND` as an example).

`TXPL` (# 4689), submitted to us by Glen Langston, does a fine job translating *AIPS* plot files for printer-like devices including line printers and alphanumeric terminals. It will be useful for anyone who talks to an *AIPS* machine over a low-bandwidth line, e.g., a telephone connection. It also allows you to write low-resolution plots into the *AIPS* history file. The use of *AIPS* on SUN TVs has benefited from the loan

of a 3/110 from SUN Microsystems for software testing and the submission of SUN display code by Brian Glendenning. We have now built for the SUN a nearly complete emulation of an *AIPS*-model TV device. The main failing is in the speed of zooming, which must be done in software. Entries #s 4709, 4710, and 4719 provide some details. The long-awaited virtual TV in *AIPS* has also been released (see #s 4716-4718). This concept and code lets *AIPS* on one CPU think that it has a TV display, while in fact the real display exists on some other computer down the hall or around the world (wherever the user is actually located). Tests suggest that, at least for ethernet local area networks, the response is good enough to be rated "interactive" or better. The new task **MANDL** (# 4690), also contributed by Glen Langston, makes images of Mandelbrot sets.

A wide variety of corrections was also made to existing code. A new version of **IMMOD** was submitted by Neil Killeen (# 4720). Possibly significant bugs in gridding routines affecting **UVSUB**, **MX**, etc. were also corrected (see #s 4600, 4601, and 4671).

Changes of Interest to Programmers: 15APR88

There are a variety of changes of some interest to programmers and site managers. The VMS compile procedure was corrected (# 4633) and the "midnight job" procedures were cleaned up and released in new, standard directory areas (#s 4635-4638, 4650). The revised procedures make it possible for VMS sites that have network connections to the NRAO, and wish to keep their *AIPS* system and code in complete synchronism with ours, to stay completely current with developments in *AIPS*. The UNIX procedures should appear in a later release.

Techniques for improving program performance are discussed in entries #s 4663, 4677, 4678. Portability problems are described in entries #s 4695, 4698, and 4701. Some subtle problems had to be corrected even in "standard" code to get *AIPS* to run on the Pittsburgh Cray. However, some seriously nonstandard programs were simply moved out of the way since it would require a major effort to correct them (# 4698). Most of these are likely to be removed from *AIPS* entirely during the code overhaul, as we lack the manpower to do otherwise for the moment.

The formats of some of the new files in *AIPS* have been documented (see #s 4684-4686). The need for great generality in TV code is emphasized by the change described in #4696 and the details of the Virtual and SUN TV implementations are described in #s 4709, 4710, 4716-4719. The implementation for the Cray in Pittsburgh and COS systems in general is described in #s 4729-4734 and a several minor changes to UNIX code are described in #s 4735-4748.

15-April-1988 Statistics

From the **EXPFIT** program come the following statistics for selected releases:

	15APR86	15OCT86	15APR87	15OCT87	15APR88
Number of directories	51	74	79	85	91
Number of text files	2,788	3,188	3,448	3,577	3,866
Number of text lines	457,373	512,935	607,108	619,800	680,088
Number of bytes in compressed form	15,051,843	16,839,059	19,899,828	20,229,072	22,203,970

From the **WHOGETS**.ADR file come the following statistics:

Number of contact persons	147	174	197	210
Number of <i>AIPSLATTER</i> recipients	720	759	339	368

Note that 458 people did not renew their *AIPSLATTER* subscriptions between 15APR87 and 15OCT87.

The 1987 *AIPS* Site Survey

The 1987 Site Survey statistics are analyzed in *AIPS* Memo No. 56, "The 1987 Site Survey," by Alan Bridle, Don Wells and Nancy Wiener, so only an outline of the results is given here. The *AIPS* Site Directory has also been reconstituted and appears as *AIPS* Memo No. 57.

This has been another year of spectacular growth in the *AIPS* user community. The number of machines actively running *AIPS* increased from 90 to 132. The total machine power dedicated to *AIPS* around the world increased from the equivalent of 25.2 (VAX780+AP)'s running full-time to the equivalent of 37.5 such machines (or of between ten and eleven Convex C-1's, or about one and a half Cray X-MP's). Both the VMS and UNIX *AIPS* communities are still growing rapidly; there are now 99 active VMS *AIPS* machines, 27 active UNIX machines, and 6 with other types of operating system. About 57% of the total *AIPS* machine power is now under UNIX, however, compared with only 25% under VMS. This imbalance comes about because the most powerful machines now running *AIPS* all have vector register architectures, but there is no such product available under VMS.

The small end of the machine power spectrum is also growing rapidly. Many groups are buying their own workstations such as MicroVaxes or SUNs and are using these for *AIPS* processing instead of traditional Vaxes or other machines that have to be shared with a larger pool of other users. Indeed, the fastest growing group *by number* of active machines was those with no vector hardware, up from 57 to 92 in one year. From the answers that *AIPS* Contact People gave to our question about future hardware plans, it is clear that workstations with small numbers of users, both as stand-alone systems and in combination with more powerful computers, will continue to be a very popular (*i.e.*, economical!) choice. Fortunately, the NRAO is finding ways to acquire or borrow a few SUN workstations despite the current tight budgets, and so the *AIPS* group can begin to offer direct support for *AIPS* in the SUN environment (see the "Summary of Changes" section above).

The array processor world is, in contrast, one of the few areas of *AIPS* that is static or diminishing. The number of active machines with separate AP's actually decreased from 26 in 1986 to 25 in 1987; several AP's were added, but more were shut down, and very few sites presently expect to expand by adding array processors to Vaxes. About one-sixth of the total machine power devoted to *AIPS* comes from machines with AP's, and this share is steadily decreasing. We will continue to support the standard *AIPS* AP, but development in this area will get very low priority if the hardware trend persists.

The mean memory size of *AIPS* machines rose rapidly, from an average of 9.3 MBytes in 1986 to 14.5 MBytes in 1987. The memory size distribution is significantly skewed (Memo 56 has the details) but it is clear that many *AIPS* sites are going to larger memory as it becomes cheap in popular architectures. The *AIPS* code will continue to take advantage of larger memory resources where these are available and when doing so benefits performance. Disk space is still a major limitation at most *AIPS* sites, however, especially in relation to the needs of spectral-line data processing with arrays such as the VLA. The average disk space available for *AIPS* on the active machines is only 0.85 GBytes, an amount that can easily be eaten up by a single ambitious VLA project. Given that few sites can ever dedicate all of their *AIPS* disk space to a single active user, disk space often limits what *AIPS* users can do at a given site. We have plans to assist this situation through "packed" data formats for spectral-line data, and sort-less mapping, once the code overhaul is done. Several sites asked us to distribute a "mini-*AIPS*" that would take less disk space, and we'll think about that.

Memo 56 also identifies the "top ten" *AIPS* sites as judged by a combination of CPU power, disk space, and number of simultaneous *AIPS* users. *AIPS* site managers and planners may find this part of Memo 56 useful to "calibrate" their own installations. (*AIPS* users may also want to use it to suggest some travel plans!)

Although the total non-NRAO machine power devoted to *AIPS* data processing in the U.S. more than tripled since 1986, the U.S. still ranks well down a list of countries ordered by *AIPS* machine power per *AIPS* user. Users in Japan, Sweden, the U.K., West Germany, Italy, Holland, and Canada are better provided for, on average, than those in the U.S. Only one of the "top ten" *AIPS* sites mentioned above is in a U.S. university. Once again, we hope that the comparative statistics in Memo 56 will help to get action

from U.S. funding agencies. Wherever you are, you may find that this gives you some ammunition to help you make a case for improving aspects of your own local *AIPS* situation.

Exporting the *AIPS* code from the NRAO has now more than quadrupled the machine power that is available for VLA data reduction under *AIPS* a fact that has been noted by the NRAO management and which provides a strong justification for continuing support of code export. The 50% annual growth rate of the *AIPS* machine count means however that the current personnel resources devoted to code export and to various forms of assistance to non-NRAO sites are being stretched ever thinner. We estimate that at present about 1.5 full-time equivalent positions at the NRAO are devoted to support of *AIPS* at the 125 active non-NRAO machines (counting the fractions of Nancy Wiener's, Ernie Allen's and Alan Bridle's time that go into this, as well as that of the programmers). With 50% growth per year, the NRAO will soon need to add another position to the user site support effort just to get back to where we were in 1986, in terms of level of support per *AIPS* site. Until this happens, we hope you will bear with us if we cannot respond quickly, or at all, to some of your requests.

Finally, our survey questionnaire asked each *AIPS* Contact Person what they would ask for if they could be granted "one wish" for *AIPS*. We did this to find out if some concerns would come to the top of the list at many sites. In practice, it's only a combination of the most urgent, the most common, and the easiest-to-satisfy concerns that get addressed promptly. The requests most frequently heard were for an *AIPS* Manager's manual; fuller installation documentation; more *AIPS*-standard workstation support; bug fixes; support for specific TV and plotter hardware; better and faster spectral-line processing; and improvements to the user and programmer interfaces. We're always working on "fewer bugs" and probably always will be. We plan a new "push" on documentation soon after the code overhaul is done. SUN workstation support is becoming possible now that we actually have access to some SUN workstations (our SUN code development got a good head start thanks to the work done already by our friends in Toronto). Some of the installation problems on SUN workstations have also been eased now that we have our own experience. (But please note that there is no MicroVax in Charlottesville and we have no TK50 tape drives, so we are limited in the support that we can give on MicroVax-specific issues). Spectral-line coding has been a major priority since Phil Diamond joined the group, and the results of his work are now appearing in the released code.

We must emphasize, however, that some of the Contact People's "wishes" are difficult, or even impossible, to fulfill without major help from you. We're literally in the dark about most TV's and plotters, and the best we can do for hardware that NRAO doesn't own now and can't afford to get soon is to help you distribute *your* code for such devices. So please use either the *AIPSETTTER* or *BANANAS* to advertise hardware-specific code that you can support, and hope that one day you'll get something in return from another *AIPS* site. Our plan for getting an *AIPS* Manager's manual has also hit hard times. In the last *AIPSETTTER*, we asked for advice on what should go into it, and have received only a few replies. This was also a project that Don Wells was to have coordinated, and will have to join someone else's queue now that he is taking a leave from the *AIPS* group. We think that (just as the *COOKBOOK* grew out of documentation written by a user) the style and general content of a Site Manager's Manual should be set by a Site Manager. Any volunteers?

AIPS Users' Group: Offers of Code Support

Below are listed various offers of code support taken from the 1987 Site Survey and from recent E-mail on **BANANAS**. Note: please contact the contributors directly for advice or debugging of their code, especially if it refers to hardware that the NRAO *AIPS* group does not have access to (e.g., TVs, plotters). Please also contact them directly with your thanks!

1. APPLICATIONS

Louis Noreau	418-656-2857
Department de Physique, Pavillon Vachon	1150020@lavalvx1.bitnet
Universite Laval	
Sainte-Foy, P.Q.	
CANADA G1K 7P4	

I have modified **IMEAN** so that it, optionally, prints on the screen the values in the "bins"; I use it to capture this output to make a more conventional histogram using **Excel** on the Macintosh. The current histogram which lies on its side gives me headaches. If you are interested in this modified version of the code, I can send the help and the source files via BitNet.

Walter Jaffe,	31 71 275883
Sterrewacht Leiden	jaffe@hlerul51.bitnet
Wassenaarseweg 78	
Postbus 9513	
2300 RA Leiden	
NETHERLANDS	

We are writing special purpose **WSRT** code for *AIPS* to do redundancy calibration.

Dayton Jones,	818-354-7774, FTS 792-7774
Jet Propulsion Lab	logos::dj
Mail Code 238-700	
4800 Oak Grove Drive	
Pasadena, CA 91109	

Version of **VBFIT** which allows different solution windows for different antennas.

2. TV ROUTINES

Richard Prestage	rmp@uk.ac.man.jb.star
Nuffield Radio Astronomy Laboratories	
Jodrell Bank	
Macclesfield, Cheshire SK11 9DL	
U.K.	

I have developed sets of Y and VMS-Z routines for Sigma ARGS and Digisolve IKON TV displays. I will be submitting them to the *AIPS* group, but if anyone would like copies in advance, I will be happy to send them a tape.

We have also developed a version of **QMSPL**, **CANPL**, which will send a plot file to a Canon LP8-11 laser printer. I will submit it to *AIPS* when some font-downloading code has been tidied up.

Simon Radford	33 76423383
IRAM	radford@frgag51.bitnet
Voie 10 Domaine Universitaire	
38406 Saint Martin D'Heres	
FRANCE	

We have submitted tasks for the Apple Laserwriter and for the ARGS display (see also the 15APR87 newsletter)

Diego Cesarsky	33 1 43201425
Institut D'Astrophysique	IAPOBS::diego or 28734::diego
98 Bis Blvd. Arago	(SPAN)
75014 Paris	
FRANCE	

ARGS Y-routines.

Arie Grossman	818-356-6448
Div. of Planetary Science	venus1::arie
Mail Stop 170-25	
California Institute of Technology	
Pasadena, CA 91125	

TV routines for Peritek VCH-Q.

Alan Welty	413-545-0731
Five College Radio Observatory	
Graduate Research Center	
University of Massachusetts	
Amherst, MA 01003	

Jim Morgan and I wrote and tested Y-routines and Z-routines needed for our DeAnza FD5000 image display. As far as we know, ours is the only *AIPS* site with such a device. It has effectively only one image plane, which limits capabilities. TVOFF does not work (but isn't needed on a one-plane TV), nor do TV routines which require multiple image planes.

Shoshana Rosenthal	617-495-7267
Smithsonian Astrophysical Observatory	shoshana@cfa2.bitnet
60 Garden Street, Mail Stop 42	
Cambridge, MA 02138	

We have developed a partial list of display commands on the MicroVax GPX (in color). It is not written in *AIPS* standard code.

Ed Churchwell	608-262-7857
Washburn Observatory	churchwell@madraf.bitnet
University of Wisconsin	
475 N. Charter Street	
Madison, WI 53706	

Driver for Griunell image processor.

3. GRAPHICS, PLOTTING

Dayton Jones	818-354-7774, FTS 792-7774
Jet Propulsion Lab	logos::dj
Mail Code 238-700	
4800 Oak Grove Drive	
Pasadena, CA 91109	

Four verbs to control graphics plane on DEC Rainbow computers.

Lee Mundy	818-356-4993
Robinson Lab, Room 110	phobos::lgm
California Institute of Technology	
Pasadena, CA 91125	

General plotting routine that interfaces to our PGPLOT package.

Scott Allendorf	319-335-1347
Dept. of Physics and Astronomy	sca%iowa.iowa@hamlet.bitnet
University of Iowa	iowa::sca = 7232:sca (SPAN)
Iowa City, IA 52242	

ZDOPRT for LaserJet II or LaserJet Plus.

Alan Welty	413-545-0731
Five College Radio Observatory	
Graduate Research Center	
University of Massachusetts	
Amherst, MA 01003	

We currently have two tasks which may be of use to the community — **PGCON** and **PLTCC**. Both use the PGPLOT graphics library. **PLTCC** produces a plot of total cleaned flux density versus component number; written almost entirely by Alan Fey of University of Iowa. **PGCON** was originally written by Scott Allendorf, Bob Mutel and Ralph Gaume at Iowa, and I made many extensions and improvements to it. It produces contour plots. The version at Iowa is probably not too different from what we have at University of Mass.

Ed Churchwell	608-262-7857
Washburn Observatory	churchwell@madraf.bitnet
University of Wisconsin	
475 N. Charter Street	
Madison, WI 53706	

Drivers for PNL laser printers.

AIPS Publications

The Order Form at the end of this *AIPSLetter* may be used to order the following memoranda and books. All previous memoranda are also available.

AIPS Memo No. 54: "The MAIL-REMINDER Utility for VAX/VMS," Patrick P. Murphy, November 1987.

The MAIL-REMINDER utility may be used on a VAX/VMS host computer as a quasi-bulletin-board system. It provides a repository for electronic mail messages received via VMS MAIL, and provides any user of the system (or any group of users, if necessary) access to these messages. A common usage for MAIL-REMINDER is to act as a centralized receiver for mail exploder services. Among other functions, it makes a summary of what messages have arrived and mails this summary to a group of usernames as a reminder of what's going on.

AIPS Memo No. 55: "The *AIPS* Wishlist," Eric W. Greisen, October 1987.

With current personnel levels, it is misleading to suggest that any but the highest priority items are likely to be completed in a timely fashion. Therefore, in this periodic release of the *AIPS* Wishlist, I have reorganized the sections to emphasize similar topics and de-emphasize the assigning of priorities. The sections chosen are (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. Items completed or added to the Wishlist since the previous publication (February 1987) are marked as such.

AIPS Memo No. 56: "The 1987 *AIPS* Site Survey," Alan Bridle, Don Wells, Nancy Wiener, April 1988.

We use data from the *AIPS* Site Surveys to assess the size and geographical distribution of the machine power actively devoted to *AIPS* data processing, and its growth between the surveys. We summarize responses from the *AIPS* sites about their future plans, and discuss some consequences for planning NRAO's *AIPS* effort.

AIPS Memo No. 57: "1987 *AIPS* Site Directory," Don Wells, Alan Bridle, Nancy Wiener, April 1988.

We tabulate the Survey data for 136 *AIPS* sites with 184 machines whose Contact People have responded to at least one of the three last Site Surveys (1985, 1986, 1987) and who have indicated willingness for their site's data to be published. The intent is to provide a listing of "who has what and where" in a form that should help the *AIPS* user community to locate others with similar hardware and interests.

CHANGE.DOC: 15APR88 Version

4586. November 7, 1987 BPASS Phil
Fixed an odd bug in routine BPUPDT which caused a Convex segmentation error when program ran in normal mode. This problem did *not* occur when running the identical code with the debugger switched on.
Moved to 15JAN88 this date.
4587. November 11, 1987 ANCAL John
The variable GSTH in the call to GSTO was declared R*4, while the argument within GSTO is R*8. I changed the declaration of GSTH to R*8 (in GCURVE). This was causing ANCAL to calculate the wrong LST's used in the antenna gain curves. This problem occurs only on the Convex C1.
Moved to 15JAN88.
4588. November 12, 1987 Single-dish calibration Bill
Cloned portions of the interferometer calibration package to allow calibration of single-dish data. Most of the software is common between single-dish and interferometer data. Added a new type of table (CS) to contain single-dish calibration info (gain, offset and position corrections). The following new routines were added:
CSINI — Create/open/initialize CS tables.
TABCS — Do I/O to CS tables.
SDGET — SD analog of UVGET, read SD data with calibration, selection, flagging, etc.
GACSDI — SD analog of GAINI, initialize reading CS table and other constants in common.
DGETSD — SD analog of DATGET, read data and call routine to flag, calibrate, etc.
DCALSD — SD analog of DATCAL, apply calibration to SD data.
SDCSET — SD analog of CGASET, interpolate calibration table.
SDCGET — SD analog of CSLGET, read calibration table.
The following tasks were written or modified to use SDGET:
PRTSD — Print selected SD data with optional calibration and editing, also PRTSD.HLP.
SDCAL — Copy selected SD data with optional application of calibration and editing, also SDCAL.HLP.
CSCOR — SD analog of CLCOR, applies various corrections to a CS table, also CSCOR.HLP, D/CCSC.INC.
Moved to 15JAN88 this date.
4589. November 12, 1987 SDTUV Bill
New task to convert single-dish tables to uv-like format with application of noise tube and pointing corrections; several baseline removal algorithms are included. Index (IX) and calibration (CS) tables are created. The current version only works for 300-foot continuum data, but in principle it can be generalized if the structure of the single-dish tables could be predicted. Also SDTUV.HLP, D/CSDT.INC.
Moved to 15JAN88 this date.
4590. November 12, 1987 TACOP Bill
Modified to copy an arbitrary sequence of tables and to condition the copy on the value of a table keyword. Also TACOP.HLP.
Moved to 15JAN88 this date.
4591. November 12, 1987 TABED Bill
Modified to work on all tables of a given type.
Moved to 15JAN88 this date.
4592. November 12, 1987 SELSD Bill
Fixed problem causing the SCAN and SAMPLE axes to be zeroed. Also no longer copies IX and CS table.
Moved to 15JAN88 this date.
4593. November 12, 1987 IMLOD Bill
Corrected modification to allow copying excess tables to another file. In this process many bugs were uncovered and fixed. The most serious was that files with "dummy" images would cause FITP to blow up. There were several cases where you could tell at what line Gary Fickling's phone had rung: the subroutine just stopped, leaving the files open, etc. "Dummy" images are now 2x2 pixels.
Modified FITNR to pass TABKEY all keywords in one call.
Moved to 15JAN88 this date.

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4594. November 12, 1987 SDTCRD Bill
Removed imbedded blanks in keyword names. Also added keywords 'IREF' and 'YREF' to the list of keywords to read.
Moved to 15JAN88 this date
4595. November 12, 1987 R3DTAB Bill
Modified to check that table buffer is big enough and to compress the table reading process, i.e., group adjacent columns where possible. This should speed up reading tables.
Moved to 15JAN88 this date.
4596. November 12, 1987 FITTP Bill
Modified EXTWRT to compress writing binary tables. Also changed to trap (at least some) zero divides involved with scaling degenerate images.
Moved to 15JAN88 this date.
4597. November 12, 1987 GWTCRD Bill
Changed call argument SYNTAB to packed strings; this avoids a large number of CHPACK calls.
Also changed EXTREQ.FOR, TABHDR.FOR and PRITP.FOR to pass GTWCRD packed strings.
Moved to 15JAN87 this date.
4598. November 12, 1987 TABKEY Bill
If there are no keywords in the table, TABKEY now skips the comparison of each new keyword with all previous keywords. The comparison is now also more efficient. This makes reading FITS tables with large numbers of keywords much more efficient.
Moved to 15JAN87 this date.
4599. November 12, 1987 UVLOD Bill
Modified FITRIU to pass all keywords in a single call to TABKEY.
Moved to 15JAN87 this date.
4600. November 13, 1987 ALGSUB Bill
Fixed a number of bugs mostly involved with processing data in the conjugate half plane. There was also a problem with the way the buffer for the AP roller was being handled; the buffer for QROLL is now the temporary array for indication data in the conjugate half plane. These bugs caused problems for UVSUB only and were most apparent for large shifts and data with multiple IFs (or frequencies) and several Stokes parameters. The QROLL buffer problem could trash several visibilities leading to a possible missorted data error message from MX or UVHAP.
Moved 15JAN88 this date.
4601. November 13, 1987 GRDAT Bill
Fixed a sign problem in computing the declination offset. This caused minor (?) problems in UVSUB when the clean image was shifted and the gridded interpolation method was used.
Moved to 15JAN88 this date.
4602. November 13, 1987 FILLR Phil
Modified so that it now reads the CALCODE off the Modcomp tape and writes it into the SU table. Also modified DFLR.INC and CFLR.INC.
Moved to 15JAN88 this date.
4603. November 13, 1987 BPASS Phil
Added two new options: (1) to switch on bandpass normalization only at user's request and then only if user is not calibrating the data and (2) to write the bandpass phase corrections only to the BP table — this covers the case of data which have been normalized by the autocorrelations prior to running BPASS. Also modified DBPS.INC, CBPS.INC and BPASS.HELP.
Moved to 15JAN88 this date.
4604. November 13, 1987 POSSM Phil
The labelling of the frequency axis was incorrect if BCHAN and ECHAN were not the default values. Also the plotting of the BP table entries failed if BCHAN > 1 and ECHAN = 0.
Moved to 15JAN88 this date.

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4605. November 13, 1987 UVGET Phil
Reversed the order in which BPASET and GAININ were called in order to resolve a LUN conflict. Changed two LUNs which may have caused a conflict.
Moved to 15JAN88 this date.
4606. November 13, 1987 TABCS Bill
Corrected error copying table pointers into a local array; 12 rather than 13 pointers were copied.
Moved to 15JAN88 this date.
4607. November 16, 1987 DATBND Phil
DATBND was not doing the band correction properly if BCHAN and BCHNBP did not agree — added an extra offset to cope with this.
Moved to 15JAN88 this date.
4608. November 16, 1987 BPASET Phil
Corrected error which was missing the last antenna (row) when averaging a BP table into the scratch file.
Moved to 15JAN88 this date.
4609. November 16, 1987 POSSM Phil
Found more errors in the labelling of the velocity and/or frequency axis when BCHAN was not the default.
Moved to 15JAN88 this date.
4610. November 17, 1987 SMOOTH Phil
New adverb. It specifies the spectral smoothing function and parameters to be applied to line visibility data. Four functions are available — Hanning, Gaussian, Boxcar and Sinc. Changed POPSDAT.HELP, D/CAPL.ENC and BEVPARMS.001.
Moved nowhere.
4611. November 18, 1987 CALIBRAT.HELP Bill
Corrected an error in the description of the final run of CLCAL for VLA data.
Moved nowhere.
4612. November 19, 1987 BPASS Phil
When filling the BP table for a single-source file, the channel separation was not being set. It now reads it from the catalog header.
Moved to 15JAN88 this date.
4613. November 19, 1987 DATBND Phil
The IF and polarization offsets were not being set when doing the bandpass correction. This did not matter for single-IF/polarization data.
Moved to 15JAN88 this date.
4614. November 26, 1987 SETJY Phil
When calculating the reference pixel velocity, the sign of the sideband was being ignored.
Moved to 15JAN88 this date.
4615. November 26, 1987 POSSM Phil
When labelling the spectra in km/s, the sign of the sideband was being ignored.
Moved to 15JAN88 this date.
4616. November 30, 1987 EXPFIT Eric
Changed the program to be restartable. It now creates list files for each tape file. If the computer crashes, the highest versions of the list files should be deleted and the program restarted. At successful completion, the multiple versions of the listing and directory files are concatenated in the correct sequence. Also changed AIPGVMS:EXPFIT.COM and created AIPGVMS:EXPFIT2.COM (for the restarts).
Moved nowhere.
4617. December 1, 1987 GACSIN Bill
Removed unused variable SMOOTH which conflicted with a variable added to the D/CSEL.ENC.
Moved nowhere.

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4618. December 2, 1987 TACOP Bill
Made range of acceptable keyword values smarter; if the minimum is greater than the maximum then all values outside of the range given are acceptable. This convention is used elsewhere in *AIPS*. Now gives a warning message if no tables are copied but has a normal successful completion. Also TACOP.HELP.
Moved to 15JAN88 this date.
4619. December 2, 1987 GETCRD, TABHDR Bill
Modified to recognize 'HISTORY VLA' keywords as if they were written by *AIPS* (in GETCRD) and tables named 'VLA xx' as 'AIPS xx' (in TABHDR). Also removed implicit assumption in TABHDR that there were 4 characters per real. On a Cray this would cause garbage or blank table types.
Moved to 15JAN88 this date.
4620. December 2, 1987 SMOSP, SETSM Phil
Two new routines to do spectral smoothing of uv data. SETSM sets up a convolution look-up table in common and SMOSP then applies it to the data. Four types of smoothing are supported: Hanning, Gaussian, Boxcar and Sinc.
Moved nowhere.
4621. December 2, 1987 UVGET, DATGET Phil
Modified to call the smoothing routines when requested.
Moved nowhere.
4622. December 2, 1987 DSEL, CSEL Phil
Modified to hold the information necessary for spectral smoothing. All routines using these includes have, of course, been recompiled and relinked.
Moved nowhere.
4623. December 2, 1987 Calibration tasks Phil
All tasks which use D/CSEL.INC have been modified either to read the smoothing inputs and apply them or to disable the smoothing option specifically. Where necessary, history entries are also written. Tasks which may apply spectral smoothing are: BPASS, CALIB, TVFLG, LISTR, POSSM, SPLIT, UVFIT, and UVING; tasks which do not are: BLCAL, PCAL, CLCAL, PRSTD and SDCAL. For the former, also changed the corresponding help files and include files: D/CTVF.INC, D/CLST.INC, D/CPSM.INC, D/CUFT.INC, and D/CUVI.INC.
Moved nowhere.
4624. December 2, 1987 CALIB Phil
Modified to not pass BP tables when writing a single-source file as output.
Moved nowhere.
4625. December 2, 1987 CLUPDA, GAININ Phil
Renamed variables called SHOOTH which conflicted with one in D/CSEL.INC.
Moved nowhere.
4626. December 2, 1987 BPASS, BPASS.HELP Phil
Removed old, crude spectral smoothing option from the program, the help file, and the local include. This has been replaced by the new SHOOTH option. Also D/CBPS.INC.
Moved nowhere.
4627. December 2, 1987 DCLB.INC, CCLB.INC Phil
Modified these local includes for CALIB to remove variable declaration conflict with the SHOOTH option.
Moved nowhere.
4628. December 2, 1987 UVFND Phil
It's been so long since I checked this out I have forgotten why. So I put it back.
Moved nowhere.
4629. December 2, 1987 CALIB, CLCAL, UVFIT Phil
Renamed variables called SHOOTH which conflicted with one in D/CSEL.INC.
Moved nowhere.

4630. December 2, 1987 SPLIT Phil
Created local includes D/CSPT. INC containing the local heavily used commons. Modified to apply spectral smoothing and to write a history entry.
Moved nowhere.
4631. December 3, 1987 BPASS Phil
A logical unit number in common was being initialized in a data statement. Changed.
Moved to 15JAN88 this date.
4632. December 10, 1987 Single-dish pointing Bill
Made the following changes/bug fixes to allow calibration of single-dish pointing:
CSCOR — Added OPCODEs 'PTRA', 'PTDC' to allow pointing corrections as a function of zenith angle to be entered into the CS table. Also CSCOR.HELP.
DCALSD — Fixed indexing problem in computing position corrections.
DGETSD — Changed to copy random parameters after calibration.
Moved to 15JAN88 this date.
4633. December 10, 1987 COMRPL Eric
I have been working on the checkout system, removing some bugs. In particular, I have made PUTBCK and REMOVE refuse file names that are too long or contain special characters, correct the logical name INCS: to INC:, and to delete correctly from link libraries, including taking into account the occurrence of lower-level routines. That's all inside CVAX. However, COMRPL has a provision to replace in a low-level library only if the level of the current routine is the lowest occurrence of that routine. The old procedure, however, did not regard Macro files as being the same as Fortran files; this now makes errors for VMS with a few of the generic APLGEN: Z routines. So I have corrected both the SYSVMS and SYSLOCAL versions of COMRPL.COM.
Moved to 15JAN88 this date, nowhere else.
4634. December 14, 1987 STFUN.HELP John Simonetti
New, hopefully clearer, version of the help file.
Moved to 15JAN88 this date.
4635. December 14, 1987 Midnight jobs Eric
To provide directory locations for the "midnight" update jobs and for the quarterly update jobs, I have added logicals to SYSVMS:AREAS.DAT for UPDATE (output of such jobs), UPDVMS, UPDVLA (below UPDVMS), and UPDUNIX and created those directory areas on CVAX and VAX1. I took the current procedures running on VAX1, renamed them (dropping the UPD at the beginning), and fixing their references to each other and the new logicals. Finally, I put them into UPDVLA. Files involved are:
APPEND.COM — Appends one file to another; used in REPORT.COM.
CHECKTIME.COM — Checks the time — is it a weekend or too late in the day?
CLEANUP.COM — Deletes old version of control files.
COMLINK.COM — Does all compile/replace operations from COMRPLs done on CVAX, followed by all compile/link operations from COMLINKs done on CVAX. These are given in the COMRPL.UNQ and COMLINK.UNQ files.
CONTROL.COM — Copies the CVAX control files (*.UPD files) with COPYSUB.COM and sorts and trims them with SRTUNQ.COM, producing the minimum current lists (*.UNQ files).
COPY.COM — Copies all files in PUTBCK.UNQ from CVAX. These are the files added or changed in ATPS since the last update.
COPYSUB.COM — Copies a file, trying up to 20 times before giving up.
END.COM — Writes the LASTGOOD.DAT file and, if there were link errors, sends mail to that effect.
ERROR.COM — Sends mail to indicate the failure of the job; called by CHECKTIME.COM after 9 attempts.
ERROR.TIT — The mail message sent by ERROR.COM.
JOBMAIN.COM — Sets the logicals, submits itself to run tomorrow, calls VERSION.COM for TST and then NEW, and finally calls REPORT.COM.
JOBQUEUE.COM — Procedure to restart the midnight job, beginning tomorrow.
LASTGOOD.DAT — Date of last good midnight job — this is a dummy copy, older than any date to be found in the *.UPD files.
Moved to 15JAN88 15-December, nowhere else.

4636. December 14, 1987

Midnight job continued

Eric

Other files included:

- LINKERR.TXT — The text sent by END.COM and LINKEND.COM.
- PEOPLE.DIS — The mail addresses to be notified when the job fails.
- REMOVE.COM — Removes deleted files from link and source libraries. This proc was modified extensively to check lower levels of the directory before removing from link libraries.
- REPORT.COM — Generates a report file summarizing the job and the reasons given by the programmers on CVAX for their actions (includes any additions to CHANGE.DOC).
- SRTUNQ.COM — Sorts the transaction files (*.UPD) by file name and descending order of time. Then drops all entries prior to the time in LASTGOOD.DAT and any duplicates, leaving only the most recent changes for any file. Produces *.UNQ files.
- VAX3.COM — Uses a LASTGOOD.DAT on VAX3 to copy all help files and load modules that have changed since the last successful VAX3 job.
- VERSION.COM — Does the job for a specific version, calling CLEANUP, CHECKTIME, CONTROL, REMOVE, COPY, COMLINK, END, and VAX3.

The procedures below are used for partial jobs, debugging and the like:

- COPYONLY.COM — A main proc, for doing a partial "midnight" job with the file copies only.
- LINKEND.COM — Sends mail about link errors; called by LINKONLY.
- LINKONLY.COM — Does the compile and link portions of the job only.
- VERCOPY.COM — Does the copy portions of the job for a specific version.
- VERLINK.COM — Does the compile and link portions of the job only.

Moved to 15JAN88 15-December, nowhere else.

4637. December 15, 1987

UNIX system AREAS.*

Kerry

The same update area logical definitions added to the SYSVMS version of AREAS.DAT have been added to the SYSUNIX version of AREAS.DAT. These logical definitions have also been added to the concomitant AREAS.CSH and AREAS.SH files in SYSUNIX as well as to the versions of AREAS.CSH in SYSNRA01 (on NRA01 as well) and SYSVLAC1. The required directories have been created on NRA01, but CHOLLA seems to be down today, so the CHOLLA version of AREAS.CSH in SYSVLAC1 cannot be changed, nor can I create the required CHOLLA directories. Also, the CHOLLA midnight job will continue to fall flat on its face until someone has the opportunity — and remembers — to take these manual actions.

Moved to 15JAN88 same date.

4638. December 16, 1987

Midnight job

Don

Added by Editors from CHKOUT history: Moved VMS procedures from Pittsburgh to new CVAX UPDVMS area. These are designed to be more general than previous releases and to be able to use several kinds of network connections.

Files were:

- CONFIG.COM — Sets control parameters — it is called by many of the procedures.
- CONTROL.COM — Causes the control files (*.UPD) to be copied and then run through SRTUNQ.COM.
- COPY.COM — Converts PUTBCK.UNQ into a list of fully qualified file names and then has COPYSUB.COM copy them to the local machine from CVAX.
- COPYSUB.COM — Copies all files in a list of files from CVAX to the local directory and then moves them to the desired destination directories. Can use DECNET, FTP, or electronic mail and does attempt a number of retries on failures.
- PARSE.COM — Converts pieces of a text line into DCL symbols.
- GETEMAIL.COM — Waits for files to come in from AIPSSERV (on CVAX), moves them from mailbox to scratch, decodes them into scratch directory, and verifies that all of them have been received. Times out eventually if it doesn't get the files.
- SENDEMAIL.COM — Composes an E-mail request message to AIPSSERV on CVAX to have a list of files sent to the local machine.

Moved from Pittsburgh, nowhere else.

4639. December 16, 1987

MULTI

Phil

Fixed so that it would work on *sv* data generated by the pipeline. Such data has more than the usual number of random parameters and MULTI barfed because there was no room for the SOURCE parameter. It now replaces the (hopefully) superfluous FLAGS parameter with the source number.

Moved to 15JAN88 this date.

4640. December 18, 1987

PRTSD

Bill

Added option to print the baseline subtracted from the data. Also PRTSD.HELP.

Moved to 15JAN88 this date.

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4641. December 18, 1987 GRIDR Bill
Corrected bug in decoding adverb STOKES.
Moved to 15JAN88 this date.
4642. December 18, 1987 SDTUV Bill
Fixed several problems in MEDIAN which were causing improper functioning in the median window filter. Also added option to make a gain correction for the lateral defocusing. Also changed D/CSDT.INC and SDTUV.HLP.
Moved to 15JAN88 this date.
4643. December 18, 1987 CALIBRAT.HLP Bill
Added information from the VLA Calibrator Manual about the flux densities of 3C48 and 3C286 as well as the baseline limits and the number of antennas to use.
Moved to 15JAN88 this date.
4644. December 18, 1987 GETJY Bill
New task to determine point source flux densities from CALIB solutions and to make appropriate changes in the source (SU) and solution (SE) tables. After running GETJY the solution tables may be applied to a CL table without rerunning CALIB. GETJY may be rerun multiple times without adversely affecting either the SU or SE tables. Modified CALIBRAT.HLP to give a description of the use of GETJY. Also GETJY.HLP.
Moved nowhere.
4645. December 18, 1987 ISTAB Bill
Now restores MSGSUP to its original value rather than 0 after the ZOPEN call.
Moved nowhere.
4646. December 18, 1987 CSCOR Bill
Fixed a problem encountered when rewriting the input table.
Moved to 15JAN88 this date.
4647. December 18, 1987 CGASET Phil
The amplitude correction to be applied to the data due to the residual fringe rate and delay corrections was being incorrectly calculated and applied.
Moved to 15JAN88 this date.
4648. December 21, 1987 CGASET Phil
The routine also had the indexing wrong for the amplitude correction; the indices were off by 1.
Moved to 15JAN88 this date.
4649. December 21, 1987 VMS installation Mark Calabretta/Eric
Changed VMS procedure file INSVMS:IPROHPT.COM for:
(a) At line 299 the upper limit in the range of TV devices available is set to 4 and so precludes the IVAS and ARGS. I believe the limit should be 6.
(b) For the Graphics and TV menus, IPROHPT modifies the values of certain parameters obtained from ILASTTIME. This was done apparently to avoid problems in IQUEST with possibly undefined symbols. However, there is a simple solution. The VMS lexical function F\$TYPE provides a mechanism for deciding whether a symbol is undefined. Only if it is undefined is it necessary to define it by giving it a default value.
(Mark included a copy of the differences between his revised IPROHPT and the old one.)
Moved nowhere.
4650. December 23, 1987 Midnight job Eric
Changed ASSHPRG.COM in SYSVMS to add logical UPD_PROC pointed at UPDVMS and created a local version of ASSHPRG.COM which points at UPDVLA followed by UPDVMS. Changed all of the procs to use this logical and moved many of the procs up to the UPDVMS semi-generic area. Those with both UPDVMS and UPDVLA versions are CONFIG, JOBMAIN, JOBQUEUE, REPORT, and VERSION as well as the text files ERROR.TXT, LINKERR.TXT and PEOPLE.DIS. VAX3.COM is only in the UPDVLA area. Corrected a variety of errors in COPYSUB, CONFIG, CONTROL, JOBMAIN, and JOBQUEUE. Discovered a VMS bug: if procedure X copies X.COM to the default area, then VMS will attempt to execute the new X.COM immediately; it doesn't stay with the version it was executing! This makes it hard to update the midnight job procedures!
Moved to the VLA to test them, nowhere else.

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4651. December 28, 1987 REPORT.COM, END, SRTUNQ, VERSION Pat Murphy
Two changes, both to the VMS version only : (1) Fixed a bug in the END procedure so that it tries to mail warnings separately to each person in the distribution list; that way, if the link to CVAX is down, people at the VLA will know about the problems; (2) Changed the reporting so that it uses the VMS append command for all files instead of the APPEND procedure. I need to check if this latter procedure can be removed; the change should speed things up.
Moved nowhere yet.
4652. December 28, 1987 Midnight job ERROR.COM Pat Murphy
Made the same change as in #4651 to ERROR.COM and removed the EXIT 42 statement.
Moved nowhere yet. (wait and see if it works first!)
4653. December 29, 1987 VLA-specific REPORT, VERSION Pat Murphy
Updated these "Midnight job" command procedures to conform with the generic VMS ones (the APPEND bug).
Moved nowhere yet.
4654. December 29, 1987 SETJY, POSSM, SPLIT Phil
Changed so that if the sideband in the CH table is zero, the programs assume that upper sideband was used.
Moved to 15JAN88 this date.
4655. January 5, 1988 CONVL Bill
Images 2048x2048 and larger were failing due to the zero padding and the limit of 16384 bytes in an AIPS I/O transfer. CONGAU now uses APIO to transfer data from the AP, and CONMUL and CONDIV will now break up rows that are too long. Also changed D/CCVL.INC. There is insufficient free disk space on either of the C'ville AIPS computers to test the changes for large images, but for smaller images, the new version gives the same result as the old.
Moved nowhere.
4656. January 5, 1988 FITTP Bill
Fixed problem with writing single-dish data; RA and dec were being trashed when they were processed as u and v.
Moved to 15JAN88 this date.
4657. January 5, 1988 POLSET Bill
Now gives more informative message if there is no polarization calibration information in the AN table.
Moved nowhere.
4658. January 5, 1988 SDTUV Bill
Fixed sign of position error due to insufficient lateral focusing. Also added option to make a gain correction for the lateral defocusing.
Moved to 15JAN88 this date.
4659. January 5, 1988 UVFND Bill
Modified to work on single-dish data. Cloned routine FNDUPR as FNDSPR to process single-dish data. Listings are appropriate for single-dish data and "uv ranges" are in degrees rather than kilolambda.
In the interferometer data section, changed the max antenna number to MAXANT and increased the size of the arrays used to hold converted data; previously more than 8 correlator values would overflow this array. Also UVFND.HLP.
Moved to 15JAN88 this date.
4660. January 6, 1987 ZERROR Pat Murphy
Modified the last part that was printing an integer out with an (A) format; causes problems on some terminals (e.g., with a value of -1). Changed it to split up the value into bytes and type them out (in decimal). This routine should later be modified if the FCB() array type is changed from I*2.
Moved to 15JAN88 this date.
4661. January 19, 1988 MX Bill
Fixed bug computing block offset for channel maps when CHINC was larger than 1. All image planes higher than the first were being put one plane lower than was correct.
Moved to 15JAN88 this date.

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4662. January 13, 1988 CALREF Bill
This routine was computing garbage values to be multiplied by zero weight outside of the range of valid data. This occasionally caused CALIB or CLCAL to blow up adjusting the phases to a common reference antenna.
Moved to 15JAN88 this date
4663. January 14, 1988 Calibration speedup Bill
Changed:
OPT2.LIS — Added the following routines to the list of routines and programs to vectorize in SYSRA01: and SYSLAC1: DATGET, DATCAL, DATFLG, DATPOL, LISTR, PCAL, CALIB.
UVGET — Modified to always call DGINIT and recognize a few more cases in which the polarizations do not need to be translated.
DATGET — Modified to allow vectorization of the copy of visibility data to the output array. Changed use of common variables FSTVIS and LSTVIS and changed call to UVDISK to have a full buffer load at a time. Changed data wanted tests to loop separately over the buffer for each of the several tests. In this the tests will vectorize.
DATCAL — Streamlined test for bad data. Changed to trap single-channel case and to use separate loops over channel with and without delay corrections. I verified correct vectorization on the Convex.
DATFLG — Rearranged loops for better performance; added trap for single-channel case. I verified correct vectorization on Convex.
DATPOL — Revised data gather loop for better efficiency.
LISTR — Now 30% faster for a test case. Modified MATIUV to use character variables to format the output line. Verified the correct vectorization of the whole program on the Convex. Now only asks for RR and LL in a matrix listing only requesting this data (formerly the RL and LR data was also calibrated).
PCAL — Now 25% faster for a test case. Worked on PCLSEL to improve vectorization and verified correct vectorization of the whole program on the Convex. Also the model computation and averaging steps are skipped if the polarized flux densities of all sources are to be fitted (usually the case).
CALIB — Now 35% faster for a test case. Worked on GCALC (amplitude and phase calibration routine) to improve vectorization and verified correct vectorization of the whole program on the Convex.
Moved nowhere.
4664. January 14, 1988 DGETSD, SDGET Bill
Now checks UVRA which gives the range of RA and Dec about the catalogue header RA and Dec values. SDGET will set UVRA to large values if they are initially 0.
Moved nowhere.
4665. January 14, 1988 SELSD Bill
Now sets UVRA to preselect the desired RA and dec window in SDGET. Also changed SELSD.HLP.
Moved nowhere.
4666. January 14, 1988 UVFLG Bill
For projected single-dish data, BDRP and EDRP now give the range of scan numbers to flag. Also UVFLG.HLP.
Moved nowhere.
4667. January 15, 1988 CLCOR Bill
Added new OPCODE = 'IONS' to make ionospheric corrections, especially Faraday rotation corrections using a Chiu model of the ionosphere provided by Chris Flatters. An offset dipole model of the earth's magnetic field is used. This option has not been completely tested and debugged, but I'm turning it back in pending getting suitable test data.
Also made some structural changes to CLCCOR to move the details of the more involved models into separate sub-routines. Many of the internal variables to CLCCOR were moved to common. Modified CLCOR.FOR, CLCOR.HLP, D/C/ECLC.INC.
Moved nowhere.
4668. January 18, 1988 DGINIT, DGHEAD Bill
Recent changes made to UVGET require that DGINIT always be called. If STOKES = 'HALF' and only one polarization was present; DGINIT would fail. It will now accept this condition. DGHEAD not does not automatically set the number of Stokes parameters to 2 if DGINIT was called with STOKES = 'HALF' (PCODE = 12). This problem occurred when fringe fitting single-Stokes VLBI data.
Moved nowhere.

4669. January 19, 1988 UGUIDE.RNO Kerry
Updated UGUIDE.RNO to reflect the UNIX implementation for the 15OCT87 release. These changes made it onto the UNIX installation tape for the 15OCT87 release as well.
Moved to 15JAN88 same date.
4670. January 21, 1988 SPLIT Bill
Now scales u , v , and w when the reference frequency is changed. When a subset of channels was selected or channels were averaged, the output u , v , and w were wrong. This would cause scaling errors in images produced from such data.
Moved to 15JAN88 this date.
4671. January 21, 1988 ALGSUB, UVGRID Bill
Fixed frequency scaling problem in shift; the correction of u , v , and w from the reference frequency to the first channel gridded was done twice for the shift, effectively canceling the correction. UVSUB with CMETHOD = 'GRID' (either explicitly or implicitly) and HX had this problem for shifted images where the first frequency channel gridded was not at the reference frequency. The shift was in error by :
$$((chan_1_freq - ref_freq)/ref_freq) * shift.$$

Also fixed bug in ALGSUB which caused records to be dropped if the "AP" data buffer filled up on the next to the last visibility of a input I/O buffer. This was leaving the end of the output file with unwritten records; on VAXen this resulted in garbage records. This caused no noticeable problems on systems which zero files when they are created.
Moved to 15JAN88 this date.
4672. January 22, 1988 CALIB Bill
Added SCALAR directive include in front of several loops in DSIFA, DSIDI and TRED2 to suppress erroneous vectorization by to Convex compiler. This problem affected the least squares fringe fitting.
Moved nowhere.
4673. January 27, 1988 VLBIN Phil
Removed some "blue inkisms" from the code which was preventing its compilation on the Cray — still needs some work to put the I/O in Z-routines.
Moved nowhere.
4674. January 28, 1988 GETSOU Bill
Changed priority level of error messages from 8 to 6 to allow suppressing these messages. This was causing an erroneous error from TVFLG. Also now restores the previous value of MSGSUP after the call to SOUINI.
Moved nowhere.
4675. January 28, 1988 TVMOVIE Eric
Changed AUSD and TVMOVI to compute the image size and zoom points to be multiples of MAXITV / (MAG * (MAG-1)). The AIPS rules on zoom and scroll require this to keep the frames from jittering as the movie runs. Also changed the YIVAS version of YSCROL, YZOOHC, YCURSE, and YCUCOR dropping the round off of the upper left corner pixel. It should be computed without rounding. Made similar changes in the YDEA, YH75, and YV20 versions of YSCROL and YZOOHC and in the YGEN version of YCURSE and YCUCOR.
Moved nowhere.
4676. January 29, 1988 SOUINI Bill
Now restores the original value of MSGSUP after TABKEY call.
Moved nowhere.
4677. January 29, 1988 GRIDTB Bill
Modified to increase speed. Added more buffers to allow reading multiple IFs or channels; the number of buffers is currently set by PARAMETER statement to 4. Moved the logic outside of loops, i.e., separate loops for different cases. Now reads a number of data values into a buffer before gridding. Moved the row averaging and output to disk to a new routine GTBWRT. Both these routines appear to function correctly when vectorized on the Convex.
Moved nowhere.
4678. January 29, 1988 TVFLG Bill
Moved TVFOAD to a separate file to allow vectorization. Modified the loop structure, i.e., moved control logic outside the loops and made separate loops for different functions.
Moved nowhere.

4679. January 29, 1988 OPT2.LIS Bill
Added GRIDTB, GTBWRT and TVFOAD to the list of routines to vectorize in SYSBRA01 and SYSVLAC1.
Moved nowhere.
4680. January 29, 1987 SUN installation Eric
During installation on my Sun, called SAIPS, found and corrected:
CVMT.INC — Added a second COMMON statement; there were too many continuation lines.
INCS.FOR — Corrected this test program for INCLUDE files: added PUVB.INC to go with DPCL.INC, changed CVMT to CUMT to go with IVMT.INC (despite the name), and added a routine to test the DUMT/CUMT pair.
ZTTP2 — Dummy Z routine to open terminals.
ZTPWAD — SUN version of pseudo-tape disk IO with -1 as the "magic" EOF error code.
Moved to SAIPS, nowhere else.
4681. January 29, 1988 Misc VAX Eric
Changed
IREBUILD — INCVMS: procedure had COMRPLs out of logical order. This should no longer matter, but if COMRPL fails to find a lower-level routine then the upper-level will replace it in the library. COMRPL should now be better, but there still may be holes.
ZERROR — (APLGEN:) Removed null character strings (i.e., '').
ZHYVER — (APLGEN:) Removed null character strings (i.e., '').
AIPS — Corrected parsing of AIPS_VERSION for times when AIPS is not the top-level directory.
Moved nowhere.
4682. February 1, 1988 DGETSD Bill
Now properly selects by time range when the data is not in time order and no calibration or editing is done.
Moved nowhere.
4683. February 1, 1988 SDTUV Bill
Added the ability to subtract a tabulated baseline before doing the median window filter. Also cleaned up a few items and changed SDTUV.HELP, C/DSDT.INC.
Moved nowhere.
4684. February 1, 1988 MV2C06AN. Bill
Upgraded the description of the antenna (AN) extension table to reflect the current contents.
Moved nowhere.
4685. February 1, 1988 DOCTXT:CHAP14.RNO Bill
Revised chapter 14 of Going AIPS. Added description of single-dish variant of the random groups data and made minor wording improvements.
Moved nowhere.
4686. February 1, 1988 Table documentation Bill
Added the description files for most of the calibration tables to DOCTXT: as HV2C06xx where xx = CL (calibration), SN (solution), IX (index), BL (baseline), CH (IF frequencies), FG (Flag), SU (source), and CS (Single-dish calibration).
Moved nowhere.
4687. February 1, 1988 DGHEAD Bill
Fixed bug which caused the number of pixels on Stokes axes to always be 1 for STOKES = 'HALF'. This was causing LCP data not to be calibrated using LISTR.
Moved nowhere.
4688. February 1, 1988 APCLN Bill
Now sets scaling and offset value in clean image to 1 and 0.
Moved nowhere.
4689. February 4, 1988 TXPL Glen Langston/Bill
New task. Attempts to write the contents of a PL file onto a terminal or a line printer, or into the history file.
Cleaned up a bit to meet AIPS standards. Also TXPL.HELP.
Moved nowhere.

4690. February 4, 1988

MANDL

Glen Langston/Bill

New task. Computes a portion of the Mandelbrot set. Pretty pictures. Also MANDL.HLP.
Moved nowhere.

4691. February 5, 1988

UVFLG

Bill

Fixed a set of bugs in the single-source file mode in which an "autocorrelation" (as a result of an antenna in both ANTENNAS and BASELINE) was interpreted as "flag all data to that antenna."
Moved to 15JAN88 this date.

4692. February 10, 1988

UVFLG

Bill

Fixed bug introduced in last correction of UVFLG which caused specifying all antennas (ANTE = 0, BASEL = 0) to not flag anything.
Moved to 15JAN88 this date.

4693. February 12, 1988

UVDIF

Kerry/Eric

The Cray noticed that a common was longer in a subroutine than in the main program. Removed the extra variable from /MAPHDR/ in FEDUIN.
Moved to Pittsburgh, nowhere else.

4694. February 12, 1988

EXTREQ

Bill

Straightened out the confusion between packed and unpacked strings in the calls to GTWCRD. Also modified to give correct and more informative error messages.
Moved nowhere.

4695. February 12, 1988

Cray Discovered

Kerry

TYPE*n FUNCTION declarations are regarded as syntax errors by many compilers (including Cray's CFT). The standard practice for FUNCTIONS is give them ANSI-standard declarations (e.g., INTEGER, REAL, DOUBLE PRECISION, etc.). Programs changed in APGNOT: include CLCOR and JHFIT. Subroutines changed in APLNOT: include ERF.
The CFT compiler does not like multiplication or exponentiation by a negative constant unless it is enclosed in parentheses. Programs changed in APGNOT: include GAL and WARP.
The CFT compiler does not support error branching in ENCODE and DECODE statements. The source-code preprocessor is used in the COS implementation to eliminate them; however, it performs a very simple-minded search in these statements for the pattern ',ERR=n'. POPSGN had a DECODE statement with ',ERR = n' that it failed to detect, so I changed it.
The CFT compiler does not allow more than 19 continuation statements (neither does the ANSI standard). CVHT.INC had more than 19, so I compressed them into 19 or fewer.
Moved to Pittsburgh, nowhere else.

4696. February 13, 1988

TV Colors

Eric

The AIPS TV model has a black and white look-up table (LUT) followed by a color look-up table (OFM). The basic assumptions were that peak intensity into one of these tables would be the same as peak intensity out and that peak intensity into the OFM would be equal to or greater than (where there is an adder) the peak out of the LUT. Both these fail for the SUN, where peak in is 63 and peak out is 255 for both LUT and OFM (which are the same "device"). Also made all routines use the identical formula for the slope of the LUTs. Changed in AIPSUB: AU6, AU6A, AU6C, and TVHOVI; changed in YSUB: IENHNS, ILNCLR, IHCLR, IHLCLR, IHPCLR, and TVFIDL. Also changed TVFLG, but didn't put it back since it's out for other reasons. Corrected bug in IENHNS affecting the plot on rectangular screens and added error messages to IENHNS, INCHAR, and YGEN:YCHRW.
Moved to SAIPS this date, nowhere else.

4697. February 17, 1988

SDTUV

Jim Condon/Don

Fixed truncation error in computing IDAY (the day number).
Moved nowhere.

4698. February 17-18, 1988

Problem Code Moved

Kerry

Several programs and subroutines frequently cause problems for what should be routine installations of *ATPS* on many systems. These include the *APLUNIX* routines *ZBKLD1*, *ZBKLD2*, *ZBKLD3*, *ZBKTP1*, *ZBKTP2* and *ZBKTP3* which have been moved to *APLCVEX*. The programs that depend on these routines, *BAKLD* and *BAKTP*, have also been moved to *APGVHS*. When portable versions of the Z-routines involved are developed for UNIX, *BAKLD* and *BAKTP* may find their way back into the UNIX implementation, but I simply don't have time to either develop them or to answer all the phone calls regarding them. Similarly, the collection of Zeta plotter-oriented routines found in *CONPLOT* have been moved to *APLVHS* and the programs which depend on them (*KONTR*, *OUTPLT* and *PRFPL*) have been moved to *APGVHS*. These programs also depend on another collection of Zeta plotter oriented routines called *ZETASUBS* as stored in *APLVHS*. These Zeta plotter oriented routines and programs are highly non-portable since they depend heavily on *BYTE* data type variables as well as *LOGICAL*1* arrays *EQUIVALENCED* to arrays of other data types. Moved nowhere except by midnight jobs.

4699. February 19, 1988

APLGEN:ZMSGOP

Kerry

In an *ENCODE* statement, there was one more item in the I/O list than specifiers in the corresponding *FORNAT* statement. The extra I/O list item (*IVOL*) was incorrect and has been removed. Moved nowhere except by midnight jobs.

4700. February 19, 1988

UNIX Procedures and AT&T UNIX

Kerry

At some time during the evolution of AT&T UNIX (probably between System III and System V), several options to *grep* were deprecated including *-e* (next argument is the expression; useful when the expression starts with *-*) and *-s* (silent mode). Given our Version 7, System III and Berkeley UNIX experience, these options had been used throughout the *ATPS* programming procedures for UNIX, but were only there out of habit in the case of *-e* and could simply be eliminated, or in the case of *-s*, could be eliminated with the output of *grep* redirected to */dev/null* which achieves the same effect. Moved nowhere except by midnight jobs.

4701. February 19-20, 1988

Cray found

Kerry/Eric

Bugs found by Cray:

- AUGB* — The common */HIBUF/* was declared smaller than elsewhere. Raised *BUFFER* to 3072.
- CATDIR* — Changed comparison on physical type to use *CHCOMP* when comparing to blank. Only the first two characters are specified and the rest may not be initialized to blanks.
- UVPGET* — Changed to build *ISORT* as two real characters followed by blanks. Before it just took the header value: two real characters followed by 0-6 unknown characters.

Moved from Pittsburgh this date, nowhere else.

4702. February 22, 1988

YSPLIT

Eric

Corrected bad branch sequence in *YIVAS* version which caused the common variables *TVSPLT* not to be set. Moved nowhere.

4703. February 23, 1988

SDTUV

Bill

SDTTAB was clobbering the output *uv* data file buffer by using it as local work space. The size of *TBUFF* was increased in *DSDT.IBC* and it is now used in *SDTTAB*. This problem was occurring when a tabulated baseline was removed. Moved nowhere.

4704. February 25, 1988

CALREF

Phil

Occasionally in *CALREF*, the arguments passed to an *ATAN2* function would both be zero, causing it to blow up. Fixed so that this does not happen. Moved nowhere.

4705. February 25, 1988

VLBIN, VLBIN.HLP

Phil

VLBIN would not work under UNIX due to difficulty in opening the native input file. Since *ATPS* does not know about lowercase, an environment variable had to be set, but this was not being decoded correctly. Created a routine called *VLBNAN* (with Kerry's help) which would do this. Also modified the FFT routines so that if the number of freq. channels was a power of two, it would choose a fast FFT routine (*QUICKFT*); if not, it would choose a slightly slower routine able to cope with non-power of two arrays (*FOURG*). Also updated the help file. Moved nowhere.

4706. February 26, 1988

PRTCC

Eric

Task failed to check for 0 in the sort order code. This led to null characters appearing in the displayed line. Also PRTAB.
Moved to CHOLLA and VAX1 this date, nowhere else.

4707. February 29, 1988

APLVMS:ZRLR64.MAR

Bill

Zero was not being treated as a "special" number and was being written as the smallest possible value.
Moved nowhere.

4708. February 29, 1988

UVINIT

Bill

Modified to allow starting writes in the middle of a file. Any previous, partial data in the buffer is read.
Moved nowhere.

4709. February 29, 1988

SUN TV

Brian Glendenning

Submitted a package of routines to drive the SUN Computer display as an ATPS TV device using the SUNView window package. The basic structure is as follows: (1) a set of Y routines to bundle data for transmission to/from the SUNView system, (2) Z routines to open, close, and do I/O with the "socket" between the ATPS programs and the SUNView program, and (3) the SUNView program itself. In SUNView, the TV device can be considered an artifact of software. For more than one AIPS task to share the TV, the software creating that artifact must be a standalone program to which all ATPS tasks communicate. The Y routines provided are

YCBCTL	YGRAPH	YINIT	YTVCIN	YTVCLS
YTVHC	YTVOPN	YZERO	YZOONC	

the stubbed Y routines are

YSCROL	YSPLIT
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and the Y routines that write but do not read are

YINGIO	YLUT	YOFH
--------	------	------

The Z routines are

ZSSSOP	ZSSSIF.C	ZSSSHC	ZSSSCL	ZQSASH.C
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For the SUNView program, submitted .icon files named

aips	brian	oattes	zukowski
------	-------	--------	----------

a text file named sss.txt, a Makefile and .c routines

buttons	close_socket	cmmap_change	cursor	events
get_client	get_socket	imrd	iswrt	repaint_canvas
resize_canvas	screen_clear	scrwrt	sock_io	sock_rcv
sock_snd	sss	window_start	zoom	

Moved to a number of SUN sites previously.

4710. February 29, 1987

SUN routines

Eric

Changed almost everything. In the Z area, changed the call sequence to ZSSSIF, rewrote ZSSSCL (ZCLOSE no longer does TVs), and added ZQSDSH.C. In the Y area, changed call sequence to ZSSSIF, altered typing, removed various stubs to allow reads as well as writes, changed to "upper left corner" notation for zoom/scroll. Bundled the C routines into files with ATPS-length upper case names: HEADER.H, COLMAP.C, CURSOR.C, INGIO.C, SCRWRIT.C, SOCKET.C, SOCKXF.C, SSS.C, and WINDOW.C. Rewrote some of it to handle multiple channels, other image I/O read/write modes, an OFM as well as LUTs, zoom and scroll, and so on. Changed SYSVMS: AREAS.DAT and LIBR.DAT and SYSUNIX: AREAS.DAT to add directories for the SUN Screen Server Y routines, the SSS to SUNView C routines, and the Virtual TV Y routines (to come).

Moved from SAIPS this date, nowhere else.

4711. March 3, 1988

Misc TV

Eric

Changed:

YCBECT — (YGEN) Added error tests and messages.

YINIT — (YH75) Corrected two errors: it was calling YTVCIN, which is wrong, since the disk parameters are supposed to prevail and it was setting the OFM to 10 bits in and out whereas the device has only eight bits out.

Moved nowhere.

4712. March 10, 1988

APCLN, SDCLN

Bill

Removed prohibition of CLEANing a 4096x4096 image.
Moved nowhere.

4713. March 10, 1988 LINK procedure in SYSUNIX Kerry
Changed the test for any necessary object module replacements in object libraries to be more portable between UNIX systems.
Moved nowhere.

4714. March 11, 1988 PRTTP Bill
Added capability to index VLA archive tapes written after January 1988.
Moved nowhere.

4715. March 11, 1988 FILLM Bill
New task to read VLA archive format tapes. Data from several tapes or files may be written into the same AIPS uv data file. "Channel 0" data is separated from spectral-line data and written into several files, and a subset of the channels of a spectral-line data file may be selected. Works on VLA-archive-format data written after January 1988. Also FILLM.HELP, D/CFLM.INC, and D/CNC2.INC.
Moved nowhere.

4716. March 14, 1988 Virtual TV device Eric
The "Virtual TV" is implemented as a set of Y routines which bundle their arguments and other parameters into FITS-standard integer buffers and send them to some other computer. The other computer runs a program, called TVHON, which unbundles the commands and calls Y routines for some "real" TV device. I have had to revise system files AREAS.DAT and LIBR.DAT to allow for the new logicals YVTV and YVTVPGH. The include pair D/CVTV.INC was added to INC:. The new routines in YVTV are

YALUCT	YCHRW	YCINIT	YCHECT	YCONST	YCOVER	YCRCTL
YCREAD	YCUCOR	YCURSE	YCWRT	YFDBCK	YFILL	YFIND
YGRAPH	YIFH	YINGIO	YINIT	YLOCAT	YLUT	YMHMAX
YOFH	YRHIST	YSCROL	YSHIFT	YSLECT	YSPLIT	YTVGIN
YTVCLS	YTVHC	YTVOPH	YZERO	YZOONC		

The new program in YVTVPGH: is called TVHON.FOR.
Moved from SAIPS, to BRA01 (Convex) by midnight job, nowhere else.

4717. March 14-15, 1988 VTV (2) Eric
To support the Virtual TV, the new routines required in APLSUB: are:

REALOG — Converts between floating and integer logarithm forms.
CHAVRT — Converts between character and special integer forms.
HDBUF — Converts between standard AIPS header and a special local integer version.
MYBUF — Builds a transmission buffer with an OPcode, program name, and integer values.
UNYBUF — Translates transmission buffer into local integer values.

In the Z routine area, wrote APLGEN: Fortran routines:

ZVTVCL — Closes virtual TV device.
ZVTVOP — Opens virtual TV device.
ZVTVIF — Does I/O over virtual TV device.
ZVTVRC — Closes connection of Virtual TV to TVHON.
ZVTVRO — Opens connection of Virtual TV to TVHON.
ZVTVRX — Does I/O over connection of Virtual TV to TVHON.

The first three are used with the YVTV:Y*.FOR routines and the second three are used by TVHON to complete the circuit. Actually these generic routines do very little except call lower-level routines. Currently, all that are provided are APL4PT2: routines in C called

ZVTVC2 — Actual socket close for ZVTVCL.
ZVTVO2 — Actual socket open for ZVTVOP.
ZVTVI2 — Actual socket IO for ZVTVIF.
ZVTVC3 — Actual socket close for ZVTVRC.
ZVTVGC — Actual socket restart for ZVTVRX.
ZVTVO3 — Actual socket open for ZVTVRO.
ZVTVI3 — Actual socket IO for ZVTVRX.

Also provided Fortran stubs for these in APLGEN:.
Moved from SAIPS, to BRA01 (Convex) by midnight job, nowhere else.

4718. March 16, 1988

VTV (3)

Eric

Changed the encoding of the image header to include the alternate definition of the velocity/frequency axis (which is apparently preserved now in the image catalog). This meant changing HDRBUF in APLSUB:, TVMON in YVTVPGH:, and, in YVTV:, YCREAD, YCUCOR, YCWRT, YFIND, and YLOCAT. Also fixed ZVTVX2.C to return correct error codes, and a long line in ZVTVGC.C, both from APL4PT2:. Corrected ZVTVX2.C and ZVTVX3.C to limit the buffer size to 1024 bytes and to write/read multiple buffers if needed.

Moved from SAIPS, to NRA01 (Convex) by midnight job, nowhere else.

4719. March 16, 1988

SSS TV

Brian Glendenning/Eric

When the SUN Screen Server executes over an internet, it is more efficient to reduce the number of transmissions. Changed things to — optionally — buffer the write commands to the SSS program and to omit the error returns where the error code was all that was being returned. Changed the Z routine names so that they are now

ZSSSOP.FOR ZSSS02.C ZSSSXF.FOR ZSSSX2.C ZSSSCL.FOR ZSSSG2.C
dropped ZQSASW.C and ZQSDSW.C (all in APLSUB:), and changed the SSS routines for buffer IO
HEADER.H COLMAP.C CURSOR.C IMGIO.C SCRVRT.C SOCKET.C
SOCKXF.C SSS.C WINDOW.C

Moved from Toronto a while back, from SAIPS this date.

4720. March 17, 1988

IMMOD

Neil/Bill

I have completely rewritten the main work subroutine (IMMODL) in order to: (1) prevent a divide by zero that always occurred for point source models if BMAJ and BMIN were left at zero (they shouldn't even be used), (2) remove the assumption that the reference pixel was an integer and at coordinate $M/2, N/2 + 1$, (3) allow fractional pixel shifts of the model centre from the reference pixel, (4) choose the nearest pixel for point source models when the shift is not an integral number of pixels, (5) change (improve?) the structure and logic. For point source models, the history file no longer contains irrelevant information.

Moved nowhere.

4721. March 18, 1988

MX

Bill

Added trap to keep the user from requesting CLEANing within 3 cells of the edge of an image. CLEANing the edge pixels causes bad things to happen.

Moved nowhere

4722. March 18, 1988

FILLM

Bill

Fixed bug which caused two sets of CL table entries with everything but the source number the same at each source change. Also fixed algorithm computing the number of baselines of data to expect. Also D/CHC2.INC.

Moved nowhere.

4723. March 18, 1988

CALIBRAT.HLP

Bill

Added description of use of FILLM to read the new format VLA archive tapes.

Moved nowhere.

4724. March 21, 1988

FILLM

Bill

Corrected bug which caused data to be trashed when it was being averaged. Also added execution time info to FILLM.HLP.

Moved nowhere.

4725. March 21, 1988

CALIB

Bill

Restored "null" smoothing in CLBADJ when referencing phases using CALREF. This was removed earlier this quarter, but is vital to the referencing working.

Moved nowhere.

4726. March 22, 1988

FILLM

Bill

Changed to reject all data with a shadowed antenna rather than only the baseline to the shadowing antenna. Also D/CHC2.INC.

Moved nowhere.

4727. March 22, 1988

SUNs

Eric

Added to the SYSSUN: directory
AIPS — Procedure starts AIPS and calls AIPSSS.
AIPSSS — Procedure to start the SUN Screen Server program (and TVHON if desired — currently commented out).
LIBR.DAT — Version of library list to provide for SSS — requires a SUN TV and logical called APLSUNL: (in AREAS.DAT).
ASSNLOCAL.SH — Version with lots of stuff commented out, but the SSS task as the TV.
Moved from SAIPS this date, nowhere else.

4728. March 22, 1988

PRTUV, UVFND

Phil

Both tasks were trivially modified to cope properly with data from a single dish. Previously they SQRT'd the real and imaginary to get the amplitude — now they check to see if the antenna numbers are different before doing so. This is necessary to retain the sign of the total power amplitudes.
Moved nowhere.

4729. March 23, 1988

Generic COS Z-routines

Kerry

The following is a list of the routines stored in APLCOS that have been re-written or added as part of the effort to port AIPS to the Cray X-MP at the Pittsburgh Supercomputing Center and should work on all X-MPs running COS as distributed by Cray:

IAND	IEOR	IOR	JIAND	NOT	ZADDR	ZBYNOV
ZBYTFL	ZC8CL	ZCLC8	ZCHPRS	ZCPU	ZDACL8	ZDATE
ZDCHIN	ZDELAY	ZDIR	ZERR02	ZEXPN2	ZFI2	ZFREE
ZGETCH	ZGNAME	ZGTBIT	ZGTBYT	ZI16IL	ZI32IL	ZI8L8
ZILI16	ZILI32	ZKDUMP	ZLPCL2	ZLPOPH	ZMATH4	ZMI2
ZMI3	ZMKTMP	ZMOUET	ZPHFIL	ZPRIO	ZPRMPT	ZPRPAS
ZPTBIT	ZPTBYT	ZPUTCH	ZR8P4	ZSETUP	ZTACTQ	ZTAP2
ZTAPE	ZTCLOS	ZTFILL	ZTIME	ZTOPEN	ZTPCLD	ZTPHI2
ZTPHID	ZTPOPD	ZTPOPH	ZTPWA2	ZTPWAD	ZTQSPY	ZTTYIO

ZWAI2
There are some routines that are missing from the generic set due to the PSC's non-standard PDM (permanent data set management) system calls (see PSC-specific Z-routines). These routines should be developed as part of the port of AIPS to the Ontario Center for Large Scale Computing at the University of Toronto (i.e., where standard COS is being used). These should be available in the 15JUL88 release. All other required Z-routines are either stubbed in APLCOS, pending development, or are taken from the functional or stubbed versions stored in APLGEN.
Moved nowhere.

4730. March 23, 1988

Stubbed COS Z-routines

Kerry

The following is the list of new or changed routines stored in the APLCOS area that are either stubbed, pending development, or are site-specific and require local development. There are other stubbed routines in APLCOS. These are just the new ones:

ZABOR2	ZABORT	ZFRE2	ZM7OC2	ZM7OM2	ZM7O02	ZM7OX2
ZPRI2	ZR32RL	ZR64RL	ZRLR32	ZRLR64	ZSTAIP	ZTKCL2
ZTKFI2	ZTKILL	ZTKOP2	ZTQSP2	ZTCL8	ZTTOP2	ZTTOPW
ZTXHA2	ZTXHAT					

The IEEE floating-point/local floating-point conversion routines ZR32RL, ZRLR32, ZR64RL, and ZRLR64 are particularly noteworthy since this means no FITS tape or disk files can be read that were generated using FITTP with DONEWTAB = 0 (the default). Even though these routines are stubbed, they issue no messages to that effect and have no error return. This is because, even if DONEWTAB = 2, FITTP will still try to write certain extension files in IEEE floating-point (see HELP FITTP). The ZABOR* routines involve the abort handler where COS reprieve processing "could" be implemented, but is not particularly critical. The routines ZFRE2 and ZTQSP2 are used by the AIPS verbs FREESPAC and SPY, which would be "nice," but would also require substantial development effort. ZPRI2 has to do with raising and lowering priorities, something that can only be done on the JOB card under COS and is really only needed when there is a real AP device. ZSTAIP is where any cleanup action is supposed to be performed at the end of an AIPS session. It doesn't do anything at the moment and may never. The ZTXHA* routines are stubbed in the sense that minimum matching has not been implemented for text file names. This is because text files (e.g., HELP and RUN files) are FETCHed from the front-end at the moment and there is no way to perform minimum matching. The rest of the above involve I/O to and from various peripherals (e.g., TV, Tektronix-like, message terminals, etc.) which is nearly impossible under COS.
Moved nowhere.

4731. March 23, 1988

ZDCH.INC in INCCOS

Kerry

This is the system-dependent Z-routine include file for the COS implementation in which, among other things, the parameters of the COS file table design (i.e., FTAB array contents) as defined in ZDCH.INC is carried about in a COMMON. Arrays of CHARACTER strings are also declared and defined in a COMMON here as part of the emulation of VMS-like "logicals" (COS has no such concept).
Moved nowhere.

4732. March 23, 1988

PSC Specific Z-routines

Kerry

The following is the list of Pittsburgh-Supercomputing-Center-specific Z-routines that are stored in the APLPSC area. Most of these are necessary given the PSC's non-standard permanent data set management system calls (PDM-II) as well as the error return codes peculiar to the PSC's so called "bridge" library, which partially emulates standard COS permanent data set management (PDM). Also, PSC-specific "logicals" are currently hard coded in ZTRL0G as well as PSC-specific job setup requirements in ZACTV8 for task initiation (i.e., as batch jobs):

ZACTV8	ZCHPR2	ZCREA2	ZDAOPN	ZDEST2	ZEXIS2	ZHOUN2
ZRENA2	ZTACT2	ZTPCL2	ZTPOP2	ZTRL0G		

The routine ZDELA2 is also stored as a batch job deck (ZDELA2.JOB) which will assemble ZDELA2.CAL and store the object form in the proper library.
Moved nowhere.

4733. March 23, 1988

Defunct COS Z-routines

Kerry

The following is a list of routines that have been removed from the APLCOS area either because the COS implementation uses the version stored in the APLGEN area, the routine has been renamed as part of the new Z-routine naming convention, the routine has been superseded by another routine as part of the restructuring of the Z-routines for all systems, the routines is simply not supported under COS, or the routine is otherwise defunct:

ZASSYM	ZCLOSE	ZCREA3	ZCREAT	ZDEACL	ZDEAHC	ZDEAOP
ZDEAIF	ZDEST1	ZENDPG	ZESTEX	ZEXIST	ZEXPED	ZFI3
ZFIO	ZFIO2	ZGTDIR	ZITOGH	ZMIO	ZMIO2	ZMOVE
ZMSGCL	ZMSGDK	ZMSGOP	ZMYVER	ZOPEN	ZPARS	ZQASSH
ZQCLOS	ZQCRE3	ZQCREA	ZQDASS	ZQDEVN	ZQEXP	ZQIO
ZQMSG	ZQOPEN	ZQRENA	ZQTAPE	ZQTRUN	ZQWIO	ZRENAH
ZTKBUF	ZTKCLS	ZTKOPN	ZTKQIO	ZTREAD	ZWAIT	ZWHOMI
ZXCLOG	ZXFREE	ZXHFX	ZXLOC	ZXLPRT	ZXHRTM	ZXHSGS
ZXSIGC	ZXTLOG	ZXTPIO	ZXTSPY			

Moved nowhere.

4734. March 23, 1988

DAPL.INC and CAPL.INC in INCCOS

Kerry

Various adverbs were added to the GO verb as part of the COS implementation, including such things as the CPU time limit and SSD allocation. This required special versions of these include files. This makes special versions of GO.HLP, DDTLOAD.OOI, DDTSAVE.HLP and POPSDAT.HLP also necessary; however, there is nowhere to store these in the current ATPS directory structure.
Moved nowhere.

4735. March 23, 1988

UNIX Included Source Text Processing

Kerry

The method for handling included source text under UNIX has been changed to incorporate C-style #include statements in the search procedure that is used to determine the most up-to-date form of a module (i.e., unpreprocessed source, preprocessed source or object code). This involved modifications to the procedure SEARCH and the sed script INCLUDE.SED, both of which are stored in SYSUNIX. Also, the preprocessing of VMS-style INCLUDE statements has been changed to allow programmer-defined values for the environment variable INCS used to specify a directory search path. The standard directory search path is now defined by INCS.SH as the environment variable STDINCS (the name STINCS was very tempting), whereas INCS.SH formerly defined INCS itself and the programmer could not override this. Now, if INCS is defined and is not the same as STDINCS, a warning message is issued by the preprocessor (PP) regarding the use of a non-standard directory search path. Otherwise, the directory search path definition of STDINCS is simply assigned to INCS. All versions of PP and INCS.SH as stored and distributed in the SYSUNIX, SYSALLN, SYSSUN, SYSCVEX, SYSNRA01 and SYSVLAC1 areas have been modified to reflect this change. Any locally developed versions of these modules should be similarly modified.
Moved nowhere.

4736. March 23, 1988

ZTPMID in APLGEN

Kerry

Added missing INCLUDE statement for ZDCH.INC.
Moved nowhere.

4737. March 23, 1988 ZTTOP2 in APLUNIX Kerry
A stubbed version of this routine has been added to the generic UNIX Z-routine area, which had been inadvertently left out of the 15OCT87 release (we have functional versions for the Convexes at NRAO in APLNRAO1 and APLVLAC1). A functional version is not necessary unless message terminals are configured. Removed the APLSUN stubbed version added by Eric earlier.
Moved nowhere.
4738. March 23, 1988 AREAS.SH and AREAS.CSH Kerry
Changed (in SYSUNIX, SYSNRAO1 and SYSVLAC1) to reflect the new UPDATE, SUN TV, and virtual TV areas added to AREAS.DAT earlier.
Moved nowhere.
4739. March 23, 1988 COMRPL and COMLNK in SYSUNIX Kerry
Fixed problem with log files that were being left around after successful compilations and/or links driven by "e" files.
Moved nowhere.
4740. March 23, 1988 AIPS Startup Procedure Kerry
In SYSNRAO1, SYSVLAC1 and SYSSUN, a bug has been fixed involving LOCAL mode where (on a system configured with multiple TV devices) the procedure would fail to start up the desired local version of AIPS.EXE if an AIPS.EXE did not exist in the LOADn area corresponding to the TV device (n) selected. Note: the same fix for the version in SYSUNIX did not make it onto the installation tape, but is quite simple, i.e.,
change: if test ! -f \$TVLOAD/AIPS.EXE
to: if test ! -f \$TVLOAD/AIPS.EXE -a "\$AIPLOCAL" = ""
Moved nowhere.
4741. March 23, 1988 INSTEP3 in INSUNIX Kerry
As an optional, but strongly recommended, part of the installation process for AIPS under UNIX, INSTEP3 compiles and links a subset of the AIPS program library, including those required to run the "Dirty Dozen Test" (DDT). The task VM was formerly part of the DDT suite, but has been replaced by VTESS, so it has been replaced in the subset installed by INSTEP3 as well.
Moved nowhere.
4742. March 23, 1988 DACK in SYSNRAO1 and SYSVLAC1 Kerry
A new and improved version for doing AIPS user data consistency checks (i.e., on the DAO* areas) on the NRAO Convexes.
Moved nowhere.
4743. March 23, 1988 Default File Creation Mask Setting Kerry
In the ASSNLOCAL.SH for SYSUNIX, SYSNRAO1 and SYSVLAC1 areas, a call to umask has been added to ASSNLOCAL.SH to set the default file creation mask to 000 (owner, group and world readable and writable). This is a measure to facilitate the execution of AIPS from private accounts (remember, permissions on directories must also be set properly).
Moved nowhere.
4744. March 23, 1988 LIBR.DAT in SYSNRAO1 Kerry
Added the definitions required for COMRPLing the new YVTV area routines.
Moved nowhere.
4745. March 23, 1988 INCS.FOR in SYSUNIX Kerry
Updated to reflect the contents of the INC area for the 15APR88 release. INCS.FOR is simply a set of dummy routines that INCLUDE all the INC area include files. Preprocessing and compiling INCS.FOR is a way to detect common block alignment errors (on those systems that are sensitive to such things) before initiating any of the INSTEP* procedures. The code overhaul in progress should make this precaution unnecessary in the future.
Moved nowhere.
4746. March 23, 1988 Typing and Documentation Cleanup Kerry
Cleaned up typing in SPHE (as stored in APLNOT) as well as QMULCL and QCLNSU (as stored in QVEX). Also changed the comment identifying the latter from Cray to Convex versions. Changed the comment identifying ZDCHIE.FOR (as stored in APLNRAO1 and APLVLAC1) to NRAO-CV Convex and NRAO-VLA Convex, respectively.
Moved nowhere.

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4747. March 23, 1988 REVERSE.FOR in QVEX Kerry
Added bit reversal routine used by SWFOUR just for the sake of completeness (i.e., SWFOUR is not actually used in the Convex implementation).
Moved nowhere.
4748. March 23, 1988 UGUIDE.RNO in DOCTXT Kerry
Updated to reflect the 15APR88 release.
Moved nowhere.
4749. March 24, 1988 FILLM Bill
The determination of which antenna was shadowed used the wrong sign of w to determine which antenna was in front.
Moved to NRA01 this date.
4750. March 24, 1988 POSSM Phil
The program was SQRT'ing the real and imaginary part of the visibilty to get the amplitude, which was all right as long as it was not an autocorrelation but, in that case, the sign was lost.
Moved to NRA01 this date.
4751. March 24, 1988 VLBIN Phil
On a MkII correlator in line mode, the autocorrelation data for the second antenna in a baseline is not fringe-rotated. VLBIN will now do this if requested — this procedure is necessary for the Doppler correction which is coming soon. Fixed a minor bug in the FFT process which I inserted in my last change. Updated the D/CVLB.INC and D/CSET.INC to implement the fringe rotation. Also updated the help file.
Moved to NRA01 this date.
4752. March 24, 1988 TVFLG Eric
Changed TVFOAD, moving comment lines to correct locations and changing error handling to get a meaningful error code when the TV display is not changed (due to no "valid" data being found). Changed TVFLG (1) to use the new error codes from TVFOAD, (2) to do a better test on the window parameters after the GRBOXS call, (3) to set the x window to the full range if that fits on the TV, (4) to correct the prompt messages for manually entered clip limits to fit in the text buffer and to refer to only one value when RMS, and (5) to compute correct antenna numbers when there is more than one subarray. Changed TVFLG.HELP (1) to remove numerous long lines added by someone else, (2) to correct bandpass information (the lines were taken from some other program and incompletely edited), (3) to correct the units of DPARR(6) to seconds in the Help part, and (4) to add some info on the interactive window setting being kind on those x windows which can be full.
Moved nowhere.
4753. March 24, 1988 VMS Installation Eric
Changed TRANSPRT.COM in INSVMS: to omit all load modules for TV tasks from 1600 bpi tapes. Changed IBUILD.COM and IBATCH.COM to relink all TV tasks, even for Model 70 TVs, if the tape is 1600 bpi. Please, people, order 6250 bpi tapes!
Moved nowhere.

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AIPS Order Form

1. Name and address of Contact Person: _____
☐ Address label on back is correct _____
include street address for UPS delivery _____

(*N.B.*: If you have received a plastic mailing container from us, we insist that you use it for a reorder. Also return tape(s).)

2. ☐ new order ☐ reorder

Version of *AIPS* currently running: _____

3. *AIPS* version desired: ☐ 15-Apr-1988
(Shipped \approx 1 week after release date) ☐ 15-Jul-1988

4. Tape type desired:
(*AIPS*, VMS only) ☐ Vax/VMS BACKUP
(*AIPS*, UNIX only) ☐ UNIX tar

Version of UNIX system in use:
N.B. we need to know this.

e.g., bsd4.x, Sys III, Sys V, V7, etc.

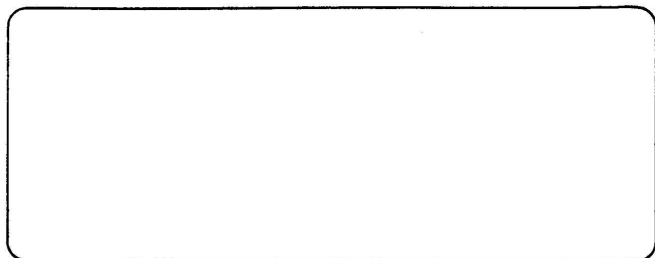
- (*AIPS*, neither UNIX nor VMS) ☐ FITS compressed text format
(DDT test package: \geq 15JUL86) ☐ RUN files, FITS binary data
5. Tape density desired: ☐ 800 bpi ☐ 1600 bpi ☐ 6250 bpi
6. There are gripes on (returned) tape: . . . ☐ Yes ☐ No

7. Printed documents requested: ☐ Full 15OCT86 *COOKBOOK* (no binder)
☐ 15OCT86 *COOKBOOK* chapters: _____
☐ 15APR87 *GOING AIPS* Vol 1 (no binder)
☐ 15APR87 *GOING AIPS* Vol 2 (no binder)
☐ *AIPS* Memo No. 54
☐ *AIPS* Memo No. 55
☐ *AIPS* Memo No. 56
☐ *AIPS* Memo No. 57

8. Custom binders requested: ☐ *COOKBOOK*
(now free) ☐ *GOING AIPS*, Vol. 1 ☐ *GOING AIPS*, Vol. 2

Send order form to: *AIPS* Group, NRAO
Edgemont Road
Charlottesville, VA 22903-2475 USA

DATED MATERIAL - DO NOT DELAY



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National Radio Astronomy Observatory
Edgemont Road
Charlottesville, VA 22903-2475
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April 15, 1988



A I P S L E T T E R

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National Radio Astronomy Observatory

A newsletter for users of the
Astronomical Image Processing System

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TeX_{set} by EWG

This Release

The "code overhaul" began early in April and will continue for some time. We have provisionally labeled the code being overhauled as the 15APR89 release of *AIPS*. Until April 1989, all releases will exist at NRAO as "new" versions only and code development in them will be restricted to submitted tasks and the correction of significant errors. For example, the 15JUL88 release of *AIPS* is very similar to the 15APR88 release, with five added tasks and several significant bug fixes and improvements.

AIPS Position Available Immediately

There is an immediate opening for an *AIPS* scientist/programmer at the NRAO in Socorro, New Mexico. Due to a reorganization of the NRAO scientific staff, this position has been reclassified, and a revised description follows. Please bring this ad to the attention of anyone at your site who might be interested in joining the NRAO *AIPS* staff.

Assistant Scientist (Computer Division)

Will be responsible for maintenance of NRAO's Astronomical Image Processing System (*AIPS*) under VAX-VMS and UNIX in Socorro, New Mexico. (*AIPS* currently runs in this environment on a Convex C-1, three VAXes with Array Processors, and a SUN workstation). Will write applications and systems code for *AIPS*, under the general direction of the *AIPS* Project Manager. Will advise NRAO scientific staff and visiting astronomers about the use of *AIPS* to reduce VLA (and eventually VLBA) data. Will work closely with a second *AIPS* Scientist in Socorro and with the *AIPS* Group in Charlottesville, Virginia. Will be responsible for liaison with the Charlottesville *AIPS* group about any problems of *AIPS* use in Socorro. Occasional travel to the NRAO Central Offices in Charlottesville will be required.

Candidates should have experience with radio astronomical data processing or with *AIPS* (preferably both). An advanced degree in radio astronomy is desirable and a working knowledge of Fortran is essential, as is significant experience with either VMS or UNIX. Candidates must be willing to write code that conforms to pre-established standards.

If the successful candidate has an active research program in radio astronomy or astronomical image processing, he/she will be encouraged to devote up to 25% of his/her time in self-directed research. Research that relates to the VLA or VLBI will be particularly encouraged. This position is not a tenure-track position and is not subject to the NRAO tenure "clock." Advancement to the rank of Associate Scientist or Scientist can be made on the basis of merit and professional development at any time. If the successful candidate does not wish to pursue an ongoing research program, an appointment could be made as a Scientific Programming Analyst.

The successful candidate will be based at the newly completed NRAO Array Operations Center on the grounds of the New Mexico Institute of Mining and Technology in Socorro. This facility has a staff of over two dozen Ph.D. astronomers and computer professionals that is expected to grow significantly as the NRAO VLBA comes into full operation. Current computing plans call for installation of several second-generation mini-supercomputers networked to advanced imaging workstations.

The NRAO is an Equal Opportunity/Affirmative Action employer with an excellent fringe benefit program, including medical, dental and long-term disability insurance, and a fully vested retirement plan.

Candidates for this position should apply to Dr. W. R. Burns at the NRAO in Charlottesville.

NRAO Programmer Position Available

There is also an immediate opening for a real-time programmer in Socorro, New Mexico to work on the control system of the VLA. Please bring this ad to the attention of anyone at your site who might be interested in joining the NRAO programming staff.

Programmer (Real-Time Control Systems)

The National Radio Astronomy Observatory has an opening for a real-time programmer experienced in Fortran and assembler languages. The successful candidate will work with a system designer to develop support software for radio astronomy observations at the Very Large Array near Socorro, New Mexico. Specific tasks will include real-time observations, real-time control, and system documentation.

A bachelor's degree and at least two-years of experience, preferably in a distributed environment, are required. Experience in one or more of the areas of ModComp Computers, real-time systems, and multiprocessors is highly desirable.

The NRAO is an Equal Opportunity/Affirmative Action employer with an excellent fringe benefit program, including medical, dental and long-term disability insurance, and a fully vested retirement plan.

Please send resume and salary requirements to Personnel Manager, National Radio Astronomy Observatory, Edgemont Road, Charlottesville, Virginia 22903-2475.

Summary of Changes: 15 April 1988 — 15 July 1988

The 15JUL88 release is nearly the same as the 15APR88 release except that several bugs have been corrected and a few new things have been added. 15JUL88 was never treated as a TST version of *AIPS* and there are only 81 changes listed below. The 15OCT88 and 15JAN89 releases will receive similar treatment. Almost all of the programming effort is being put into the code overhaul that is described in the next section.

Changes of Interest to Users: 15JUL88

Tim Cornwell and Robert Braun have created improved versions of the maximum entropy, mosaicing tasks *VTESS* and *UTESS* and three new supporting tasks. These are *LTESS* to do linear combinations of images, *STEES* to make images of expected sensitivity, and *IMERG* to merge images of different spatial resolution. See entry #s 4764, 4765, and 4770. Fred Schwab has contributed a new task *UVSIM* to create and fill a *uv* data set with simulated visibility data. See entry #s 4759 and 4773. Neil Killeen submitted the new task *SLCOL* to collate slice files and write values to a text file on disk (# 4767).

The calibration package received numerous corrections. In particular, *FILLM* had a number of bugs corrected and was improved to read several new modes of recording data at the VLA. *FILLM* is now able to read Modcomp tapes in the VLA's new dual IF modes. See entry #s 4771, 4775, 4778, 4783, 4786, 4790, and 4812. *POSSM* acquired the capability to write its plots to ASCII files (# 4796), the use of the bandpass correction was improved (#s 4782, 4794, 4795, 4813), and several minor problems with *TVFLG* were eliminated (#s 4762, 4793, 4800). *VLBIN* also had bugs removed in the frequency offsets and *FBS* corrections (#s 4780, 4784). The so-called *WaWa* IO package, and *HGEOM* in particular, were extended to handle images 4096 pixels on a side (# 4792).

Changes of Interest to Programmers: 15JUL88

There isn't a whole lot to say here — read the next section if you want to curl your hair. The generic *COS* version of the *AIPS* *Z* routines and procedure files was released (#s 4803–4810). A preliminary set of text file routines appeared (# 4760) for UNIX and VMS and the UNIX *ZTQSPY* routines were changed (# 4755).

The *AIPS* Code Overhaul

We have begun the *AIPS* code overhaul. The bulk of the transformations are done by two programs which we have written and will supply with the new *AIPS* when it is finally released. The first of these, called *XLATE*, translates the code form into more-or-less ANSI standard Fortran 77. In so doing, it

- (1) checks **INCLUDE** statements, reporting non-standard ones, eliminating standard ones beginning with C and E, and changing ones beginning with I to begin with D,
- (2) converts all declarations to ANSI-standard forms, reporting illegal ones such as **BYTE** and **LOGICAL*1**,
- (3) eliminates declarations of **FTAB** (now in **DDCH.INC**),
- (4) converts **ENCODE** statements into in-core **WRITE** and **DECODE** statements into in-core **READ**,
- (5) corrects length of comment delimiters and declaration types in comments,
- (6) converts **CALL COPY** (**NWDPLI**, *a*, *b*) into *b* = *a* statements,
- (7) converts in-line function references to their generic names,
- (8) reports any use of "Pseudo-I*4" variables, and

(9) reports any in-line comments.

Fortran 77 allows declaration, equivalence, and common statements to occur in any reasonable order. Therefore, we have concatenated the include files for common and equivalence to the corresponding declaration files. Note that this cannot be done for DATA statements (V-type includes) which must follow all of the declarations. The main effect of item 2 above is to eliminate all INTEGER*2 variables.

The second program is called XEDIT and is a general text editor that is driven by editing commands found in a text file. The nature of the changes made by XEDIT is controlled mostly by the contents of these command files, and at least two will be included in the new releases. As we are currently using it, XEDIT

- (1) inserts a copyright notice,
- (2) does a variety of string substitutions to rename some of the WaWa subroutines, rename the catalog header variable, rename all 60 of the header pointers, correct Bill's spelling, etc.,
- (3) converts character-handling calls to their most probable standard representation in either direct CHARACTER variables or in subroutine calls to convert between HOLLERITH and CHARACTER,
- (4) changes ZMATH4 calls to straight arithmetic,
- (5) changes about 50 call sequences, mostly to drop bytes/pixel and other obsolete arguments,
- (6) logs numerous obsolete, illegal, or questionable things,
- (7) changes numerous subroutine arguments to CHARACTER or HOLLERITH declaration,
- (8) changes to immediate CHARACTER and numeric constants rather than DATAed variables in most subroutine and function calls, and
- (9) removes unused variables.

The goal here is to simplify the code and to take advantage of Fortran 77 as much as possible. Fortran 77 defines some limits on computer architectures, so we are choosing to accept those limits. Primarily, this shows up in the lengths of variables. All numeric variables are the same length except DOUBLE PRECISION which we allow to be either one or two times as long as the basic unit. (The one times would be used in 64-bit computers.) Since everything is the same length, there is now no problem with constants in call sequences and we don't have to pass around so many length parameters. We are dropping common, but now obsolete, system parameters such as NCHPFP and NWDPPFP (the number of characters and integers per floating point). All of this fits into the overall goal of making it easier to code in *AIPS*.

Unfortunately, not everything will be easy. Fortran 77 is weaker than other modern languages in its handling of character strings, in that they cannot occur with other data types in, for example, commons and I/O records. Thus, data structures such as the *AIPS* header are not allowed by the language definition. We are therefore required to define a non-standard variable type called HOLLERITH to hold character data within IO records and commons. A few simple operations may be done on HOLLERITH variables, but mostly they will be accessed only by the two routines which convert between HOLLERITH and CHARACTER. The new *AIPS* uses CHARACTER variables essentially everywhere except for storage in data structures and all the old character/hollerith forms (1 or 2 per integer, 4 or NCHPFP per floating) are eliminated. The storage in HOLLERITH variables will be 4 characters per storage unit.

The new *AIPS* uses a pre-processor program to convert *AIPS*-standard code into ANSI-standard Fortran 77. The preprocessor changes HOLLERITH statements into something acceptable (REAL at the moment), does the INCLUDE function for external files in the INC: directories, and also supports a LOCAL INCLUDE option. This last eliminates the need to maintain separate task-specific INCLUDE files. Instead, the text to be included at several points in a program is entered into the beginning of the program file surrounded by LOCAL INCLUDE *name* and LOCAL END statements and then inserted where desired by INCLUDE *name* statements.

In general, the conversion is going well but there is a huge amount of work involved. XLATE and XEDIT do a lot, but there is a substantial amount of hand editing which remains to be done. Many file formats will

change, not only by the change in the length of the integer, but also from deliberate changes which use the increased size of each integer and correct any poor alignments between physical and logical records. We are removing any remaining reference to integer map files and all scaling of images. (The verb **RESCALE** will now actually rescale the data in the **MA** and associated **SL** files.) We will allow extensions to the image header in the form of keywords with values. Because many devices and operating system functions require 16-bit integers for their input and output, the **Z** routines and, perhaps, some **Y** routines will have to be handled with special care.

There are several reasons for making this, perhaps overdue, change. Most important of these is the fact that 2-byte integer arithmetic has been found to be slower than 4-byte on both Vaxes and Convexes. On Vaxes, the difference seems to be about 10–30%, but it can be much larger on some vector computers. Most serious arithmetic in *ATPS* is done in floating point, but anything we can do to speed the code is worth some effort. A second reason for the conversion has to do with errors in Fortran compilers. Most errors, which we have been able to diagnose, arise in the handling of 2-byte integers. With this conversion, we may be able to compile all of the code with high levels of optimization, gaining some additional performance enhancements. To date, compiler errors have prevented us from compiling non-Q subroutines with optimization. A third reason for the conversion is the limited range of 2-byte integers. Aborts for integer overflow have been a useful diagnostic in the past, but the code is now more mature and most such aborts are due to numbers which are correctly larger than 32767. Finally, many *ATPS* programmers wish to code in the “latest” Fortran standard. This they will be able to do, but we remind *ATPS* programmers that we are adopting a *limited subset* of the *strict* ANSI Fortran 77 standard. This does not include all of DEC’s excellent enhancements, *i.e.*, those that extend the ANSI standard and are printed in blue ink in VMS manuals. *ATPS* will contain no Input/Output outside of **Z** routines (except internal writes and reads).

Until now, we have provided a program with each change of file format to allow users to convert their *disk* data files. We do not believe that this will be practical this time and expect, instead, to require users to move their files to FITS tapes (or pseudo-tape disk files) to transfer data to the new *ATPS*. In fact, with all the changes, we regard the new *ATPS* as a new software “product”, particularly from a programmer’s point of view. A new *Going ATPS* will be required. The new *ATPS* will be protected by copyright and the NRAO will require a license agreement with all recipients. The license will be free of charge to non-profit institutions engaged in basic research in astronomy.

CHANGE.DOC: 15JUL88 Version

4754. March 28, 1988

IVAS

Eric

Changed **YCURSE** and **YCUCOR** to apply the 2-pixel correction to the *x* coordinate only in 12-bit mode. Ultimately, I guess, the correction will no longer be needed anywhere.
Moved from 15APR89 this date, nowhere else.

4755. March 30, 1988

ZTQSPY and ZTQSP2

Kerry

A generic version of **ZTQSPY** has been added to **APLGEN**. It calls **ZTQSP2** to actually get the process information required to implement the **SPY** verb. A stubbed version of **ZTQSP2** has been added to **APLGEN**. Bell-UNIX-specific and Berkeley-UNIX-specific versions of **ZTQSP2** have been added to **APLBELL** and **APLBERK** respectively, both of which simply issue the UNIX **ps** command (with options suitable for value of **DOALL**) via a call to **system** and make no attempt to parse the output. For the curious, the formerly distributed versions of **ZXTSPY** (which try to parse the output of **ps** and which **ZTQSP2** is intended to replace) have not yet been deleted.
Changed in 15APR89 same date.

4756. March 31, 1988

SDTCRD

Bill

Changed **SINGLDSH** keywords **INDX** and **INDY** for **XREF** and **YREF**.
Moved from 15APR89 this date.

4757. April 1, 1988

UNIX Include File Processing

Kerry

The obsolete Fortran version of the INCLUDE program has been deleted from the SYSUNIX area to eliminate confusion. The INCLUDE program is used by the source code preprocessor to handle VMS-style INCLUDE statements and the Fortran version has long since been superseded by a much faster C version. The sed script INCLUDES.SED in SYSUNIX has also been modified to handle C-style #include statements. This script is used by the SEARCH script to extract a non-redundant list of include file dependencies as part of its attempt to determine the most up-to-date version of a module (i.e., unpreprocessed, preprocessed or object form). In the case of C code, the SEARCH script now checks #include'd files. The dummy program INCS.FOR, which is designed to reveal common block alignment errors that might arise from INCLUDE'd source text, has also been updated to reflect the contents of the INC area for the 15APR88 release.

Removed from or moved to 15APR89 same date.

4758. April 6, 1988

MAPSIZ

Bill

Fixed problem which was causing an integer overflow on 4096x4096 images in APCLN, SDCLN (and VTESS).
Moved to Convex and 15APR89 this date.

4759. April 7, 1988

UVSIM

Fred/Bill

New task. Creates and fills a uv data base with "simulated" data from a specified array. Also created UVSIM.HLP.
Moved from 15APR89 this date.

4760. April 7, 1988

Text file Z routines

Kerry/Bill

New set of "Z" routines to read and write text files, Convex, VMS and Generic Unix versions of

ZTXOPN — Open text file via ZTXOP2.

ZTXOP2 — Opens text file.

ZTXIO — Reads/writes text file.

ZTXCLS — Closes text file.

Moved from 15APR89 this date.

4761. April 7, 1988

Misc TV

Eric

Changed

AU6B — Added missing test on error return and initialization of logical variable controlling an error message.

YTVOPN — (VTV) Added line setting some value into TVIND2 — this is required by TVCLOS.

YIMGIO — (YSSS) There is often an error reading one pixel the first time. Put in one retry before quitting on error.

Moved from 15APR89 this date, nowhere else.

4762. April 7, 1988

TVFLG, VTV

Eric

Changed

TVMON — Forgot a format.

TVFLG — Moved TVCLOS call so that the TV is closed before the data are actually flagged. Corrected bug which caused the task not to flag anything in multi-source files.

ZSSSI2 — (APLUNIX:) Corrected round-up computation which was needed for the buffer computation, but which was changing the call argument unexpectedly.

SOCKIF — (YSVU:) Corrected addressing problem for buffers with odd numbers of true data values to be transferred.

Moved from 15APR89 this date, nowhere else.

4763. April 7, 1988

PLNGET

Eric

Improved the tests on the corners. Before, it could fail because of a request for a higher plane number on a 1-point axis.

Moved from 15APR89 this date, nowhere else.

4764. April 9, 1988

Mosaicing tasks

Tim/Robert Braun

These programs share subroutines which are now placed in the library. All routines include CVMT.INC, DVMT.INC, EVMT.INC. The routines are:

ADDMAP	ACCESS	AKCLOS	AKOPEN	APLPBI	APPLPB	BGTOSH
BMSHP	CALRES	CONV	COPMAP	DISPTV	DIVMAP	FILSWP
FLAT	FNDVAR	MAKVM	MAKGAU	MLTMAP	RESID	SMTORG
STEP	SUBMAP	VMBLKD	VITELL			

Moved from 15APR89 by Eric this date.

4765. April 9, 1988 Mosaicing tasks Tim/Robert Braun
New suite of tasks for mosaicing applications:
VTESS — New version. Makes CLEAN-style restored image as well as ordinary VM image. Can handle more pointing centers than before. Now writes cubes.
UTESS — New version. May even work this time.
LTESS — New program. Does linear combination of images in the same format as VTESS.
STESS — New program. Makes sensitivity image for VTESS images. Use this to find out what the effective Jy/beam noise is at any point in the image.
IMERG — New program. Adds two images: one high-resolution and one low-resolution, merging the Fourier transforms smoothly at a specified radius in the u, v plane.
LTESS and IMERG can be used with VTESS to mosaic very large images. (See MOSAIC.HLP to be added soon.) To work properly, some adverbs must be defined: OUT2NAME, OUT2CLASS, OUT2SEQ, OUT2DISK, NPBSIZE(64), NNOISE(64).
Moved from 15APR89 by Eric this date.
4766. April 9, 1988 XTRAN Phil
Corrected minor typo in the printing of the shifting parms.
Moved from 15APR89 this date.
4767. April 13, 1988 SLCOL Neil Killeen/Bill
New task to collate slice files and write values to a disk text file. Also created SLCOL.HLP.
Moved from 15APR89 this date.
4768. April 13, 1988 ZTXOP2 Neil Killeen/Bill
APLUNIX version did not have a format for the read-to-EOF loop.
Moved from 15APR89 this date.
4769. April 17, 1988 ALGSUB Bill
Fixed bug computing the address of the row in memory to conjugate when interpolating data near the center of the grid. This caused slightly incorrect results in the *gridded subtraction* method in MX and UVSUB. (The DDT small MX Clean test changed in the 14th bit in the most discrepant pixel). This problem caused the large DDT MX Clean to crash on Crays.
Moved to 15APR89 this date.
4770. April 17, 1988 VTESS Eric
Changed DAPL.INC, CAPL.INC, POPSDAT.HLP, NEWPARMS.001, and VTESS.HLP to add the new adverbs OUT2NAME, OUT2CLAS, OUT2SEQ, OUT2DISK, NPBSIZE, NNOISE. The latter should be changed in the overhaul to drop the initial N.
Moved from 15APR89 this date.
4771. April 18, 1988 FILLM Bill
The actual number of antennas, rather than the maximum antenna number, was set in the CL table header.
Moved to 15APR89 this date.
4772. April 19, 1988 LISTR Bill
Ampscalar averaging matrix listings of amplitude and phase for STOKES='POLC' conjugated the wrong phase.
Moved to 15APR89 this date.
4773. April 25, 1988 UVSIM Fred
I've added two new options (controlled by APARM(3)) to this task. When APARM(3)=0, the program works as before, generating data spaced uniformly in hour angle along the $u-v$ curves. Now UVSIM can alternatively generate samples spaced uniformly in $u-v$ curve arclength. When APARM(3) is positive, the data are spaced at increments of APARM(3) meters along the $u-v$ ellipses. And, when APARM(3) is negative, the data are spaced at increments of -APARM(3) meters along the $u-v$ curves. These options are useful if one wants to assess quantitatively the uniformity of the coverage over some region of the $u-v$ plane without gridding or binning the data.
Three subroutines basic to this need (and two subsidiary routines) were added: INITH computes the hour-angle at which a source is at a given elevation angle. Given an initial hour-angle h_0 , NEXTH computes an incremented hour-angle h_1 with the property that that segment of the $u-v$ curve which is traced out during the corresponding time period has arclength equal to some input constant, L . PERIM computes the arclength of a $u-v$ curve between given hour-angle limits. DSQUANK is an automatic quadrature (numerical integration) routine. FCN is a function subroutine defining the integrand for the numerical integrations required by NEXTH and PERIM.
Also modified UVSIM.HLP.
Installed in 15JUL88 on CVAX; moved nowhere else.

4774. April 28, 1988 AIPS Startup Procedure SYSUNIX Kerry
A bug has been fixed involving LOCAL mode where (on a system configured with multiple TV devices) the procedure would fail to start up the desired local version of AIPS.EXE if an AIPS.EXE did not exist in the LOADn area corresponding to the TV device selected. This bug was fixed in the 15APR88 release in the SYSWRA01, SYSVLAC1 and SYSSUN versions, but was missed in the SYSUNIX version.
Changed in 15APR89 same date.
4775. April 29, 1988 FILLM Bill
Fixed problem with times crossing a day boundary and straightened out time units (all radians) in MCWANT.
Moved to 15APR89 sometime or another.
4776. May 2, 1988 FITTP David Garrett/Kerry
Changed RIB to IIB in statement label 120 in the routine FITSNC. Otherwise, an illegal instruction resulted for 16-bit integer maps. Of course, there shouldn't be any these days.
Moved to 15APR89 same date.
4777. May 2, 1988 FIXFITS in SYSVMS Eric/Kerry
FIXFITS is a command procedure designed to use VMS CONVERT to change the record format and attributes of a FITS disk file to those required for reading by UVLOD and IMLOD (i.e., SIZE=2880, FORMAT=FIXED and CARRIAGECONTROL=NONE).
Moved to 15APR89 same date.
4778. May 11, 1988 FILLM Bill
Fixed bug in MCWANT which caused there to be no time averaging under any circumstances.
Moved to 15APR89 some time or another.
4779. May 11, 1988 GAPLT Eric
Corrected erroneous logic which caused program to assume dummy station names for all antennas when an AN file was available and to quit when an AN file was not. However, the only thing the task uses from the AN file is the station names!
Moved this fix into 15APR89, too.
4780. May 19, 1988 VLBIN Phil
Fixed bug which didn't fill in correct frequency offsets when more than one source in a uv file. Also had to change DVLB.INC and CVLB.INC to implement this change.
Moved to 15APR89 at some point.
4781. May 20, 1988 POSSM.HLP Phil
Updated the help file to reflect the new features.
Moved to 15APR89 this date.
4782. May 20, 1988 BPASS.HLP Phil
Tidied up the help file extensively, inserted an explain section. I hope that one day a user will update this.
Moved to 15APR89 at some point.
4783. May 25, 1988 FILLM.FOR Bill
Call argument STURD in MCFLIP was declared I*2 in MCFLIP and I*4 in the calling routine.
Moved nowhere.
4784. May 26, 1988 VLBIN Phil
The FBS correction was being calculated incorrectly whenever the observing bandwidth was less than 2.0 MHz (so most continuum observations would be unaffected) due to a misunderstanding on my part of what the correlator did. I had assumed that the delays were set every 0.25 x 2000/BW microseconds; instead they are calculated every 0.25 microseconds and are unaffected by the bandwidth.
Also changed the units for the DOPOFF column in the CL table; should have been Hz.
Moved to 15APR89 at some point.
4785. May 30, 1988 PUTVAL Eric
It was ignoring any image scaling and offset — which will be correct only after the overhaul. Fixed it here in AU7A.
Moved nowhere.

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4786. June 2, 1988 FILLM Bill
Fixed bug addressing spectral line channels.
Moved to 15APR89 sometime or another.
4787. June 3, 1988 GET1VS, GETVIS Bill
The weight and output visibility was not being set for fully flagged data. Thus the effective visibility and weight were those of the previous good record. This affects **MX**, **GRIDR** and **UVMAP** and possibly other *uv* tasks.
Editors' note: The only task adversely affected turned out to be **GRIDR**, the others handled the error condition correctly.
Moved to 15APR89 sometime.
4788. June 3, 1988 PRTMSG Eric
Changed a hard-coded 3.0 days to refer to the system parameter **TIMEMS** to inform users if some of their messages are too old.
Moved to 15APR89 also this date.
4789. June 6, 1988 UVFND Phil
Two reals were not being rounded as they were converted to integers.
Moved to 15APR89 sometime.
4790. June 14, 1988 FILLM Bill
Fixed bugs in setting offsets in internal storage arrays when 2 IFs were being recorded.
Moved to 15APR89 sometime.
4791. June 21, 1988 INTEDG Nancy/Eric
Fixed error in determining line segment end points at the edge of the plot area. Affected **PLROW** and the **PFPLN**.
Moved fix to both 15JUL88 and 15APR89.
4792. June 23, 1988 WaWa IO and HGEOM Eric
Changed **IBUN. IBC** and **IOSETN. FOR** to allow 4096 images in the WaWa IO system. Changed **HGEOM** to test for large images and to use a coarser interpolation grid if needed to fit everything in **HGEOM**'s very large buffer. Also corrected **HGEOM**: its parameterized increments were declared and initialized separately everywhere they were used. This was misleading and was changed to pass the parms everywhere from a single initialization.
Moved from the Convex and to 15APR89 also.
4793. June 23, 1988 TVFLG Eric
Dropped a message which was misleading for single-source files. Changed the default **STOKES** to **I** except for multi-source files with **DOCAL FALSE**.
Made fixes in 15APR89 as well.
4794. June 27, 1988 DATBND Phil
DATBND was not doing the bandpass correction for autocorrelation data. Just an oversight.
Moved to 15APR89 at some point.
4795. June 28, 1988 DATBND, BPASET Phil
BPASET was setting up the bandpass scratch files in such a way as to make the cross-power correction in **DATBND** easier; however, this was incompatible with the correction needed for the total-power correction. So **BPASET** now just passes the bandpass spectra to the scratch file and **DATBND** does all the operations necessary for bandpass correction. Also found and fixed an indexing error in **DATBND** which was causing the bandpass spectra to be offset by -1 channels.
Moved to 15APR89 at some point.
4796. June 29, 1988 POSSM Phil
Added option to write the plotted spectrum to an ASCII text file. Also updated **POSSM. HLP**, **DPSM. IBC**, **CPSM. IBC** to reflect this change.
Moved to 15APR89 at some point.
4797. July 5, 1988 WTMOD John Benson
The ability to replace the existing visibility weights with constant, antenna-based weights was added. The user enters antenna weights through the inputs variable **ANTWT**. The new visibility weights are **SQRT (ANTWT(ISTN) * ANTWT(JSTN))**.
Moved to 15APR89 at some point.

4798. July 6, 1988 FITTP Eric/Bob Payne
The keyword `GCOUNT` was being written as a floating point number for some reason, probably worry over integer overflow. Fixed to use correct integer format with an `INTEGER*4`.
Also made the fix in 15APR89.
4799. July 8, 1988 COMB Eric
Corrected some logic in handling corners and the like. In odd cases such as a 1-point axis at a lower axis number than a more-than-1-point axis, `COMB` could get lost. Also, `COMB` looked at all 7 axes for checking the corners, rather than limiting itself to the actual number of axes. This finally bit us.
Put in 15APR89 also by Phil.
4800. July 14, 1988 TVFLG Eric
Changed `GRIDTB` and `TVFLG` so that they handle the case of a missing `AN` file as well as such garbage (Pipeline ??) can be handled.
Moved also to 15APR89.
4801. July 18, 1988 Stubbed APLGEN routines Kerry
The following routines have been added to the `APLGEN` area as stubbed versions and require local development for those systems for which an appropriate version does not already exist:
`ZDM2DL` `ZDOPRT` `ZQMSIO` `ZRM2RL`
The stubbed versions of `ZDM2DL` and `ZQMSIO` in the `APLCOS` area, as well as the stubbed versions of `ZDOPRT` in the `APLCOS` and `APLUNIX` areas, have been removed since stubbed versions of these routines now exist in the `APLGEN` area. Also, the stubbed versions of `ZMCACL` and `ZRDMF` in the `APLCOS` area have been removed since stubbed versions of these routines have existed in the `APLGEN` area for some time.
Moved to or removed from 15APR89 same date.
4802. July 18, 1988 ZTPWAD in APLGEN Kerry
This stubbed version had been unconditionally branching around code to a `RETURN` statement after issuing a message that this routine requires local development. Apparently, this is regarded as a fatal Fortran error in the VMS world and `COMRPL` aborts. Now it assigns `IERR` an appropriate non-zero value, then checks to see if it's not zero and branches to the `RETURN`.
Moved to or removed from 15APR89 same date.
4803. July 18, 1988 APLCOS versions of `ZDCHIN` and `ZILI32` Kerry
In `ZDCHIN`, the value of the `/DCHCOM/` variable `NSPG` has been changed to 24. This is an appropriate value for DD-39 disk drives, which are prevalent these days in the Cray world and have 24 sectors per track. `NSPG` is used in the `COS` implementation to determine the size of the system buffer to be used under word-addressable I/O. `ZILI32` has been changed to call the `COS` library routine `USUCTI` to convert 64-bit Cray integers to a packed buffer of 32-bit IBM integers.
Moved to 15APR89 same date.
4804. July 18, 1988 Generic APLCOS routines Kerry
Based on our experience porting *ATPS* to the Center for Large Scale Computing at the University of Toronto, the following generic `COS` routines have been added to the `APLCOS` area:
`ZCHPR2` `ZCREA2` `ZDAOPH` `ZDEST2` `ZEXIS2` `ZMOUN2`
`ZRENA2` `ZTACT2` `ZTPCL2` `ZTPOP2`
These versions depend on the Fortran-callable Permanent Dataset Management (PDM) system verbs of the `COS` operating system as distributed by Cray. These routines represent the lowest-level file management of *ATPS*. These versions are *not* compatible with the versions found in the `APLPSC` area. The `APLPSC` versions depend on the modified version of PDM (*i.e.*, PDM-II) that we are obliged to use at the Pittsburgh Supercomputing Center (PSC) via the PSC's so-called "bridge" library. The development of the generic `COS` versions was delayed until the University of Toronto provided us with an opportunity to port *ATPS* to a system using Cray's standard PDM.
Moved to 15APR89 same date.
4805. July 18, 1988 Stubbed APLCOS routines Kerry
New generic `COS` versions of `ZACTV8` and `ZTRL0G` have been added to the `APLCOS` area. However, they are stubbed since they require the installer to provide some system-dependent values that are currently hard-coded pending the development of a better implementation scheme. `ZACTV8` depends on PDM system calls, so the `APLPSC` version must also be different from the `APLCOS` version (see entry #4804).
Moved to 15APR89 same date.

4806. July 18, 1988

MAKGAU and VTTELL in APLNOT

Kerry

The routine MAKGAU contained calls to the non-ANSI Fortran intrinsic functions COSD and SIND. These have been replaced with calls to COS and SIN after converting the original COSD and SIND arguments to radians. The routine VTTELL had a labelled COMMON by the same name (i.e., /VTTELL/) which has been renamed to /VTTL/ (i.e., like it had been renamed once before when this routine was local to the task VTESS).

Moved to 15APR89 same date.

4807. July 18, 1988

QCOS Dynamic Memory Management

Kerry

With the exception of QINIT and QRLSE, all calls to QMEMSZ to vary the amount of memory allocated for the pseudo-AP arrays have been commented out in the QCOS routines in favor of an "all or nothing" scheme. If it proves to be desirable, partial allocation/deallocation may be reinstated once the various memory requirements can be mapped out again. Changed QMULCL, QPHSRO, QCFFT, QRFFT, QRFT.

Moved to 15APR89 same date.

4808. July 18, 1988

Real Dimensions of APCORE for QPSAP

Kerry

The real dimensions of APCORE have been moved from QINIT in the QPSAP area to the include file DAPC.INC in the INC area. This really changes nothing, but it is consistent with the QALW, QCOS and QVEX pseudo-AP implementations. It also simplifies the generation of a purely QPSAP object library, if desired, on those machines where a library of higher-performance Q-routines is being developed/debugged.

Moved to 15APR89 same date.

4809. July 18, 1988

COS Programming Tools

Kerry

The following SYSCOS area files have been added or replaced and are intended for use in the Cray/COS implementation where AIPS programming is performed on VAX/VMS front-end stations:

AIPPGMLIB.JCL	AIPSN.	AIPSUBLIB.JCL	APGNOTLIB.JCL	APLCOSLIB.JCL
APLNOTLIB.JCL	APLPGLIB.JCL	APLSUBLIB.JCL	COMPILE.COM	COMRPL.COM
LIBR.DAT	OPTIONS.COM	PP.FOR	QCOSLIB.JCL	QNOTLIB.JCL
QPGNOTLIB.JCL	QSUBLIB.JCL	QYPGMLIB.JCL	QYPGNOTLIB.JCL	VERSION.COM
YH7OLIB.JCL	YH7OTLIB.JCL	YPGMLIB.JCL	YPGNOTLIB.JCL	YSTUBLIB.JCL
YSUBLIB.JCL				

The COMRPL.COM, COMPILE.COM and OPTIONS.COM procedures are hacked versions of those found in the SYSVMS area. PP.FOR is the source code preprocessor. In addition to massaging the source text, it also makes use of the *.JCL files. These are COS batch job control language templates designed to compile the preprocessed source code and store the resulting object code on the main frame. The *.JCL file used depends on the area in which the target source code resides (e.g., APLSUBLIB.JCL is used for APLSUB area routines). PP uses these JCL templates to generate a suitable local job deck by substituting VMS logical definitions (as defined in OPTIONS.COM) for various keyword values. The mapping of source code area to JCL templates is defined in LIBR.DAT. Unlike the UNIX and VMS implementations, there is no COMLNK procedure. Since COMRPL.COM uses JCL templates, it can be used for generating executable modules in addition to maintaining object libraries. The procedure VERSION.COM is designed to behave much like the VERSION command in AIPS programming environment for the VMS implementation. However, in addition to toggling the version id between OLD, NEW and TST, it takes an optional second argument, VMS (default) or COS. This is used to toggle the search paths for INCLUDE files and command procedures between those required for AIPS programming and execution under VMS and those required under COS. Finally, the file AIPSN is simply a paraform of a VAXstation indirect command file (i.e., for use with the play or @ command). It's designed to be cloned into files with names of the form AIPSn which can then be used to initiate a given AIPSn session under interactive COS. As yet, no AIPS start-up command procedure has been developed for COS to do this in a more automatic and painless fashion.

Moved to 15APR89 same date.

4810. July 18, 1988

Defunct SYSCOS Files

Kerry

The following files no longer apply to the COS implementation and have therefore been deleted:

ACOMLNK.COM	ACOMRPL.COM	AIPS1.UK	AIPS2.UK	AIPS3.UK
AIPS4.UK	AIPSN.UK	APCLNK.COM	ASSIGNL.COM	ASSIGNP.COM
CAL.JOB	CDNEW.COM	CDOLD.COM	CDTST.COM	CHKOUT.COM
COMLNK.COM	COMLNK.FOR	COMRPL.FOR	DACOMLNK.COM	DACOMRPL.COM
DAPCLNK.COM	DCOMLNK.COM	DCOMLNK.FOR	DCOMRPL.COM	DCOMRPL.FOR
DWAPCLNK.COM	DNCOMLNK.COM	DNCOMRPL.COM	DPCOMRPL.COM	LOGIN.COM
MAKEAPL.JOB	MAKEDIR.JOB	MAKELIB.JOB	MAKELOAD.JOB	MAKENOTST.JOB
NAPCLNK.COM	NCOMLNK.COM	NCOMRPL.COM	NOMIT.JOB	OMIT.JOB
PCOMRPL.COM	PREPRO.FOR			

Removed from 15APR89 same date.

4811. July 18, 1988 ZERROR in APLGEN Kerry
Code has been added to this routine to avoid recursions that could arise when it is called from the ZMSG* routines.
A test is made to see if it was called by a ZMSG routine and, if so, it issues its messages via simple WRITES to UNIT=6.
Moved to 15APR89 same date.
4812. July 19, 1988 FILLM Bill
Fixed bugs reading spectral line data in 2AD mode. Also now checks to see if the frequencies of the two IF pairs are the same and, if so, writes the two spectra in the same file rather than two separate files.
Moved to 15APR89 sometime or another.
4813. July 20, 1988 BPASS.HLP Phil
Added a warning to the help file about BPASS problems with multi-IF and dual polarization data. The fix is just to use multiple passes.
Moved to 15APR89 this date.
4814. July 29, 1988 ZMSGWR in APLGEN Kerry
Although this routine performed without any problems on our Convexes, it caused a fatal error when invoked on SUN and other systems. After many suggestions from various sites, it's been changed so that at least it works on both SUNs and Convexes, and hopefully all machines.
Editors' note: this and the following changes were made to the 15OCT88 release, but were included with the 15JUL88 release for UNIX systems. Since they mostly affect those systems, they are being reported now.
Moved to 15APR89 same date.
4815. July 29, 1988 ZMPORT, ZTQSPY and ZXPORT in APLCOS Kerry
Changed statement labels starting in column 1 to start in column 2.
Moved to 15APR89 same date.
4816. July 29, 1988 ZBYTF2 in APLUNIX Kerry
Replaced C assignment symbol = with proper "equality" symbol (i.e., ==) in an if statement. This has been fixed for several releases on the UNIX distribution tapes, but never seemed to make it back to CVAX for some reason.
Moved to 15APR89 same date.
4817. July 29, 1988 ZFREE in APLUNIX and APLNRAO1 Kerry
Fixed to handle up to 15 volumes and volume names up to 15 characters in both the APLUNIX and APLNRAO1 versions. Also, the volume's TIMDEST limit (days) has been added to the information display. The APLNRAO1 version is new and also displays the user access restrictions on the various disks as part of the disk sign-up scheme recently implemented on NRAO1. This is a kludge, pending a more formal implementation of disk reservation in ATPS, for example, as SETPAR parameters.
Moved to 15APR89 same date.
4818. July 29, 1988 ZFRE2 in APLUNIX Kerry
This routine has also been modified to handle longer volume names (see ZFREE in APLUNIX entry). In addition, the calculation of ATPS blocks has been changed to use 1024 instead of 1000.
Moved to 15APR89 same date.
4819. July 29, 1988 ZSPACE in APLNRAO1 and APLVLAC1 Kerry
As in the case of ZFRE2, ZSPACE was incorrectly using 1000 instead of 1024 in calculating ATPS blocks.
Moved to 15APR89 same date.
4820. July 29, 1988 ZCREAT and ZDCHIN in APLNRAO1 Kerry
As part of the disk reservation scheme recently implemented on NRAO1, special versions of ZCREAT and ZDCHIN were required. These are kludges, pending a more formal integration of disk reservation in ATPS, for example, as SETPAR parameters.
Moved to 15APR89 same date.

4821. July 29, 1988

ZPHFIL in APLNRAO1

Kerry

As part of the installation of additional disks on NRAO1, we elected to reconfigure the file systems for *ATPS* user data to make them blocksize large (64K bytes) and non-fragmented. This meant we could reclaim the 10% of each file system's space that otherwise was required to be held in reserve for use by the I/O system. This is a substantial amount of disk space, given our striped file systems. However, this meant user private files which are normally stored on disk #1 would potentially waste space. To avoid this, a special version of ZPHFIL has been created that stores all MS, TS and SG files on DA00 instead. This may eventually be implemented in the generic version, but we should probably wait until a data format change also requires purging all user data (e.g., the first release of *ATPS* after the code overhaul).

Moved to 15APR89 same date.

4822. July 29, 1988

ZMKTMP in APLUNIX

Kerry

The routine formerly known as ZMKTM has been renamed to ZMKTMP. The maximum length of the file name has been increased to 128 characters. The calling sequence is also different. An explicit file name length argument has been added (i.e., rather than depending on "extra" arguments passed at the Fortran/C interface for arguments of type CHARACTER). An error return code argument has also been added. Despite the calling sequence change, the function of this routine is essentially unchanged.

Moved to 15APR89 same date.

4823. July 29, 1988

ZLPOPN, ZLWIO and ZQMSIO in APLUNIX

Kerry

Calls to ZMKTM in these routines have been replaced with calls to ZMKTMP (see ZMKTMP entry above). Also, the output file in ZLWIO is now OPENed as FORM = 'UNFORMATTED', as it should have been all along (my error). The routine ZLWIO is called only by the LWPL* tasks, which produces Postscript output. Since we don't have a Postscript engine on any of the *ATPS* at NRAO, we have no real way to exercise these routines very well. ZLWIO has also been modified to more closely approximate ZQMSIO, especially in its error handling. The maximum physical file name length has been made 128 characters in all three of these routines now.

Moved to 15APR89 same date.

4824. July 29, 1988

Defunct APLUNIX and APLALLN Routines

Kerry

The new routine ZMKTMP replaces the routine ZMKTM (see ZMKTMP entry). Its use in the APLUNIX version of ZQMSIO makes the APLALLN version of ZQMSIO unnecessary. Removed ZMKTM from APLUNIX: and ZMKTM and ZQMSIO from APLALLN:.

Removed from 15APR89 same date.

4825. July 29, 1988

ZPTBYT in APLUNIX

Kerry

The arguments were out of order in this version, but it's a routine that is very seldomly used (only for 8-bit FITS data, which FITTP doesn't produce). Also, other errors were discovered, but only after forcing IML0D to actually use this routine. These errors have been corrected and tested (at least for non-byte-swapped machines).

Moved to 15APR89 same date.

4826. July 29, 1988

ZXUID is dead

Kerry

The routine ZXUID is no longer used in the UNIX implementation of *ATPS* and has, therefore, been removed from all the UNIX Z-routine areas, including APLUNIX, APLHRAO1 and APLVLAC1. ZXUID used to be used to set the effective user id of the process to that of the *ATPS* login. This required hard-coding a user id in the routine, a point more often than not overlooked by *ATPS* managers during the installation process. The intent was to avoid permission problems on directories to which *ATPS* must have write access. It also required that you run *ATPS* from the *ATPS* login. This is no longer true. The trade-off is that *ATPS* managers must now be careful to establish certain directories with proper permissions (777) for users to be able run from private (i.e., non-group) logins. These include all LOAD*, DAO*, MEMORY and ERRORS areas.

Removed from 15APR89 same date.

4827. July 29, 1988

ZSTRTA and ZSTRTB in AIPGUNIX

Kerry

The calls to ZXUID have been removed from these programs. These are the only modules that ever called ZXUID.

Moved to 15APR89 same date.

4828. July 29, 1988 ZSTRTP in APLUNIX and APL4PT2 Kerry
ZSTRTP is a new routine intended as a means by which execution priority can be established based on *POPS* number. At the moment, it is only used by special versions of ZSTRTP for the NRAO Convexes and will probably be called by the AIPGUNIX version of ZSTRTP in the 15OCT88 release (or later). The only difference between these versions of ZSTRTP is that the APLUNIX version uses the old *nice* function to set priority and the APL4PT2 version uses the sexier *setpriority* function. This is only because the 4.2bsd documentation strongly discourages the use of *nice*, referring to it as obsolete. This may be, but it achieves the same effect on our Convexes and *setpriority* has no clear advantage. In either case, you must be the super-user to elevate priority. If this is desired, ZSTRTP.EXE must be owned by root and have its set-effective-user-id bit set (e.g., *chmod 4775*). The desired execution priority for the respective *POPS* number is determined from translating an environment variable with a name of the form *PRIO_n*, which is best defined in *ASSNLOCAL.SH*. This is a kludge, pending a more formal implementation of *POPS* number-based execution priorities in AIPSL, for example, as SETPAR parameters.
Moved to 15APR89 same date.
4829. July 29, 1988 ZSTAI2 in APLCVEX Kerry
The hard-coded AIPSL login home directory that was being used in the *sed* expression for parsing the output of the Convex-specific *tpq* command has been removed.
Moved to 15APR89 same date.
4830. July 29, 1988 ZTPWAD in APLALLN Kerry
The end-of-file indicator required by this routine for a file OPENed for Fortran direct access has been empirically determined to be either of the IOSTAT values -1 (normal EOF) or 1944 (non-existent record; see the lists of error codes in */usr/include/fortran/error.h*).
Moved to 15APR89 same date.
4831. July 29, 1988 ZTTOPN and ZTTYIO in APLALLN Kerry
I've noticed on several UNIX systems recently that unit 6 is not regarded as open until either it is explicitly opened or until I/O is performed on it. ZTTYIO contains a test, via *INQUIRE*, to see if unit 6 is open that was failing on Alliant systems and was issuing the spurious error message *ZTTYIO: LUN = 6 NOT OPEN* (on unit 6, no less). This arises when ZTTYIO is called prior to any call to *MSGWRT* (*ZMSGOP* normally opens unit 6 via a call to *ZTTOPN*), for example, in ZSTRTP or SETPAR. This has been cured by inserting an explicit *OPEN* of */dev/tty* (the alias device name for the users' terminal) in an APLALLN version of ZTTYIO for cases where it finds unit 6 not to be open already. As a further precaution, a similar *OPEN* statement has been inserted in an APLALLN version of *ZTTOPN*. *ZTTOPN* normally does nothing for unit 6 unless it needs to be reassigned to a dedicated message terminal.
Moved to 15APR89 same date.
4832. July 29, 1988 ZMOUN2 in APLALLN Jay Bookbinder/Kerry
This is an Alliant-specific version of *ZMOUN2* which uses the Alliant *tmount* command to implement software tape mounts. It queries the user for the required *VSN*, but it's otherwise very similar to the APLCVEX version.
Moved to 15APR89 same date.
4833. July 29, 1988 ZXTSPY in APLALLN Kerry
This is an Alliant-specific version of *ZXTSPY*, a routine that is effectively dead in the UNIX implementation. However, in case it is ever resurrected, this version accounts for yet another format change in the output of Alliant's *ps* command.
Moved to 15APR89 same date.
4834. July 29, 1988 ZTQSP2 in APLBERK Kerry
The *g* option of the *ps* command being used in this routine has been dropped as unnecessary as well as undesirable.
Moved to 15APR89 same date.

AIPS Order Form

1. Name and address of Contact Person: _____

☐ Address label on back is correct _____

include street address for UPS delivery _____

(*N.B.*: If you have received a plastic mailing container from us, we insist that you use it for a reorder. Also return tape(s).)

2. ☐ new order ☐ reorder

Version of *AIPS* currently running: _____

3. *AIPS* version desired: ☐ 15-Jul-1988
(Shipped \approx 1 week after release date) ☐ 15-Oct-1988

4. Tape type desired:

(*AIPS*, VMS only) ☐ Vax/VMS BACKUP

(*AIPS*, UNIX only) ☐ UNIX tar

Version of UNIX system in use: _____

N.B. we need to know this.

e.g., bsd4.x, Sys III, Sys V, V7, *etc.*

(*AIPS*, neither UNIX nor VMS) ☐ FITS compressed text format

(DDT test package: \geq 15OCT87) ☐ RUN files, FITS binary data

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

6. There are gripes on (returned) tape: . . . ☐ Yes ☐ No

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A I P S L E T T E R

Volume VIII, Number 4: October 15, 1988

National Radio Astronomy Observatory

A newsletter for users of the
Astronomical *Image Processing System*

Edited by

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The 15OCT88 Release

In the 15-July-1988 *AIPSLATTER* we described the “code overhaul” which we began in April. Until this “new” *AIPS* is completed and tested, all releases will exist at NRAO as “new” versions only and code development in them will be restricted to submitted tasks and the correction of significant errors. The 15OCT88 release is very similar to the 15JUL88 release, with the addition of one new task and the correction of a few bugs. We hope that the new version will be ready for a 15APR89 release.

There are only 45 changes listed in the following reproduction of `CHANGE.DOC`. This new low is due to two effects — almost all of the programming effort was devoted the code overhaul and all members of the *AIPS* group had significant diversions this quarter. Kerry got married on September 24, while Bill, Phil, and Eric spent several weeks in Europe teaching at Italian schools, consulting, and vacationing. Our congratulations and best wishes to Kerry and June.

For users, there is a new task called `CVEL` (entry # 4851) to shift visibility data in frequency to ensure that all data are at the same velocity or otherwise correct an erroneous observing frequency. Additional controls over frequency selection and averaging times were added to `FILLM` (entry #s 4863 and 4872). Several calibration bugs (#s 4858, 4861, 4864) and several bugs affecting VLBI fringe fitting (#s 4860, 4865, 4866) were corrected.

For programmers, entry #s 4836 and 4856 point out the danger of assuming an order for axes — in this case the IF and frequency axes in *uv* data. Tables can have large records, requiring large buffers (# 4835). Numerous improvements to the UNIX start-up and compilation scripts are described in entry #s 4837-4850. Illegal coding practices and ones which confuse the SUN compiler are described in entry #s 4877 and 4878. Please don't use them.

CHANGE.DOC: 150CT88 Version

4835. July 28, 1988 PRTAB, DPTB.INC, CPTB.INC Phil
Increased buffer size to 8192 to cope with large BP tables. Also rationalized the whole DOHMS section; it now looks much neater and new tables can be added easily now to the list of tables with time columns.
Moved to 15APR89 this date.
4836. July 29, 1988 DGHEAD Bill
DGHEAD now reorders the regular axes in the output CATBLK to reflect the order that DATGET actually returns. This is only a problem with 2 IF spectra read by FILLM. Also does not strip off the SOURCE random parameter if several sources are selected.
Moved to 15APR89 this date.
4837. July 31, 1988 UNIX Start-up Scripts Kerry
The umask 000 command (sets default file creation permissions) which was formerly executed in the SYSUNIX, SYSNRA01, SYSVLAC1, SYSALLN and SYSSUN versions of the ASSNLOCAL.SH script has been moved to the AIPS start-up scripts stored in the SYSUNIX, SYSNRA01, SYSSUN and SYSVLAC1 areas. Also, the ASSNLOCAL.SH (Bourne shell syntax) script for NRA01 has been translated into C-shell syntax and stored as ASSNLOCAL.CSH in the SYSNRA01 area. ASSNLOCAL.SH is no longer invoked by the SYSNRA01 version of the AIPS start-up script. Instead, it is executed as part of the login process such that the definitions of environment variables needed by AIPS programs at execution time are available for inspection and/or modification prior to start-up. This may become the technique of choice, pending some experience on NRAO systems. The ASSNLOCAL.CSH in SYSNRA01 also defines environment variables with names of the form PRI0n which are used to establish POPS number based execution priority. These are only used by the routine ZSTRTP in the APLUNIX area. currently, ZSTRTP is called only by special NRA01 versions of ZSTRTA and ZSTRTB.
Moved to 15APR89 same date.
4838. July 31, 1988 Defunct Files in SYSUNIX Kerry
The program CHAIPS.C used by the procedure LINK to change the ownership to that of the AIPS login and set the effective user id permission bit on AIPS executables has been eliminated. The obsolete script MAKELIB has also been eliminated.
Removed from 15APR89 same date.
4839. July 31, 1988 NOOPT Option for UNIX Programming Kerry
A new option, called NOOPT, has been added to the UNIX programming scripts. It is intended to override and/or disable any compiler optimization levels as defined by the OPT[0-9] in the *OPT.SH files. NOOPT may also be defined as a compiler option itself, for example, the -no option for Convex's fc compiler (see FCOPTS.SH in SYSCVEX). Also fixed option parsing in FC. Files changed in SYSUNIX:
COMRPL COMLNK FC LINK
Files changed in SYSALLN:
FCOPTS.SH LDOPTS.SH
Files changed in SYSCVEX:
FCOPTS.SH LDOPTS.SH
In SYSNRA01, removed DEBUG as the default compilation mode (which we normally use only in the case of TST) in FCOPTS.SH and CCOPTS.SH. Files changed:
FC FCOPTS.SH LDOPTS.SH
Files changed in SYSSUN:
FCOPTS.SH LDOPTS.SH
Files changed in SYSVLAC1:
FC FCOPTS.SH LDOPTS.SH
Moved to 15APR89 same date.
4840. July 31, 1988 LIBR.DAT for UNIX Kerry
The extraction of many of the common routines in the *TESS family of tasks into external modules required that an additional cycle of the QNOT object library be inserted in the link list for tasks from the QYPGNOT area. LIBR.DAT in the SYSUNIX, SYSALLN, SYSNRA01, SYSSUN and SYSVLAC1 have been modified. Also added the YVTV areas to the SYSVLAC1 version as the second TV implementation.
Moved to 15APR89 same date.

-
4841. July 31, 1988 LIBR in SYSUNIX Kerry
Changed the technique used to test if a process id associated with an extant `SUBLIB.pid` lock file is active to use `kill -0` instead of `ps -#` (Berkeley UNIX). Also, to avoid "arg list too long" failures in the case of many *.o files staged for replacement in the various LIBR areas, the test for the existence of such *.o files has been changed. Moved to 15APR89 same date.
4842. July 31, 1988 LINK in SYSUNIX Kerry
As in the case of LINK, to avoid "arg list too long" failures in the case of many *.o files staged for replacement in the various LIBR areas, the test for the existence of such *.o files has been changed. The execution of the now defunct CHAIPS program has been removed. A premature break that prevented links of multiple tasks on a single command line (e.g., `LINK $APLPGM/*.o`) has been corrected. Moved to 15APR89 same date.
4843. July 31, 1988 MAKEAT in SYSUNIX Kerry
Eliminated the superfluous `-type f` from the predicate list for the `find` command so it can now find symbolic links on Berkeley UNIX systems. Moved to 15APR89 same date.
4844. July 31, 1988 INSTEP2 in INSUNIX Kerry
Added `chmod 777` on binary areas. Added loop for testing whether all object libraries that depend on a given source code area have been built (i.e., not just the library used to build `LOAD0` executables) before skipping the compilations for that area (e.g., on a restart of INSTEP2). Moved to 15APR89 same date.
4845. July 31, 1988 AIPS Start-up Script in SYSNRAO1 Kerry
Removed `$SYSLOCAL/ASSNLOCAL.SH` (`$SYSLOCAL/ASSNLOCAL.CSH` is now invoked by `LOGIN.CSH` at login time). Removed `$SYSLOCAL/UNAREAS.SH`. Added `LPDEVn` test and user query to select a line printer device if `LPDEV2` is defined (i.e., much like selecting a TV device if `TVDEV2` is defined). Removed `ZSTRTA` versus `ZSTRTP` logic. Changed text of start-up messages and user device-selection queries. Moved to 15APR89 same date.
4846. July 31, 1988 ASOPTS.SII Kerry
Fixed typo in a comment in the `SYSUNIX`, `SYSKVEX`, `SYSNRAO1`, `SYSSUN` and `SYSVLAC1` versions. Moved to 15APR89 same date.
4847. July 31, 1988 ASSNLOCAL.SII and LIBR.DAT in SYSNRAO1 Kerry
Converted definitions to reflect the new directory-naming convention for AIPS-related file system on NRAO1. This was changed as part of the reconfiguration of AIPS-related disks on NRAO1. Moved to 15APR89 same date.
4848. July 31, 1988 FSC, KC and ZQMSCL Kerry
Abbreviated the `tr` translation arguments in the `SYSNRAO1` versions of `FSC`, `KC` and `ZQMSCL` as well as the `SYSVLAC1` versions of `FSC` and `KC`. Also added `FSC` to the `SYSUNIX` area. `FSC` performs an `fsplit` compilation that is often the work-around for internal compiler errors on program compilations. Moved to 15APR89 same date.
4849. July 31, 1988 OPT2.LIS Kerry
Restored `QVTRAN` to `OPT2.LIS` in `SYSKVEX`, `SYSNRAO1` and `SYSVLAC1` since Convex has fixed the problem with vectorizing this routine in version 4.0 of `fc`. Also added `OPT2.LIS` to the `SYSKVEX` area for use by other Convex sites. Moved to 15APR89 same date.
4850. July 31, 1988 SPACE in SYSNRAO1 Kerry
Changed the output directory. Moved to 15APR89 same date.
4851. August 1, 1988 CVEL Phil
New task. CVEL is a task designed to shift data in frequency in order to correct for either an incorrect observing frequency or to ensure all data are at the same velocity (i.e., correct for the Earth's diurnal motion). Also required two include files (`DVEL.INC` and `CVEL.INC`) and a help file. Moved to 15APR89 same date.

4852. August 1, 1988 FOURG Phil
For some reason this routine was present in APLNOT in the TST area but not the NEW. It is needed for CVEL and VLBIN.
Moved nowhere.
4853. August 3, 1988 Miscellaneous Eric
Corrected a bad branch address on an error condition in APLGEN:ZOPEN. Also changed the code handling the maximum possible negative integer (-2147483648) because integerization of a double-precision floating number of this value caused an overflow abort on Alliants. The code appeared only in IML0D and UVL0D. Also corrected OPCODE to OPTYPE in TABED.HLP.
Moved fixes to 15APR89 as well.
4854. August 7, 1988 CVEL Phil
Modified to call Q routines for the FFT's and phase shifts.
Moved to 15APR89 same date.
4855. August 11, 1988 CALADJ Bill
Fixed typo in searching for AN tables in header. It always thought there was one subarray. Affected CLCAL.
Moved to 15APR89 this date.
4856. August 11, 1988 IF-frequency axis order Bill
The new VLA Modcomp tape reader, FILLM, now puts the IF axis before the frequency axis for continuum data. There were several places where it was implicitly assumed that frequency came before IF. UVPGET has been fixed to set INCF to INCIF if there is only 1 frequency. The following routines were fixed to determine the correct "frequency" increment: UVGRID.FOR, VISDFT.FOR, ALGSUB.FOR.
Moved to 15APR89 this date.
4857. August 12, 1988 CITC2R Bill
Fixed bug in parsing exponents. The value returned was: *mantissa * 1.0 * **exponent*. This affected tasks using KEYIN to read text files (i.e., UVFLG, ANCAL).
Moved to 15APR89 this date.
4858. August 15, 1988 NXTFLG Bill
If the IF or channel range is 0 to 0, the full range of IF and/or channel is flagged. Previously this condition was handled incorrectly.
Moved to 15APR89 this date.
4859. August 16, 1988 DGHEAD Bill
Fixed problem rearranging the order of axes if no IF axis was present.
Moved to 15APR89 this date.
4860. August 16, 1988 DATGET Bill
Fixed problem with Convex Vectorizer in loop 180 when the loop count (number of correlator) values was 1. The case of one correlator is now done as a scalar operation. This problem seems to have mostly affected fringe-fitted VLBI data in CALIB and SPLIT.
Moved to 15APR89 this date.
4861. August 16, 1988 SN2CL Bill
Blanking of the old CL table entries was not being checked.
Moved to 15APR89 this date.
4862. August 16, 1988 SMOTYPE Bill
SMOTYPE='PHAS' was not described in the CLCAL.HLP or SMOTYPE.HLP files, even though it was implemented.
Moved to 15APR89 this date.
4863. August 30, 1988 FILLM Bill
Added selection by frequency range in each VLA IF (A, B, C, D). Added adverb CPARM and moved what was in DPARM to CPARM and then used DPARM to specify the adverbs. Also changed FILLM.HLP, C/DFLM.INC and C/DMC2.INC.
Moved to 15APR89 this date.

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4864. September 1, 1988 SN2CL Bill
Fixed bugs which could cause the routine to think that there was only 1 Stokes parameter present and to trash the least significant bits of the reference frequency. Affects CLCAL.
Moved to 15APR89 this date.
4865. September 2, 1988 CGASET Dayton Jones/Bill
Fixed error of a factor of 0.5 in the argument of the sinc function in the amplitude corrections made for delay and rate errors. The Amplitude corrections were too large. Affected VLBI data when calibration was applied.
Moved to 15APR89 this date.
4866. October 8, 1988 CGASET Steve Meyers/Bill
Removed erroneous amplitude correction for delay error.
Moved to 15APR89 this date.
4867. October 10, 1988 QMENT Bill
Renamed this FPS array processor VFC routine to MENT.VFC and added a Q routine to call it so that there can be separate versions for 120B and 5000 series FPS APs. This problem was causing VTESS to fail on FPS 5000 series APs.
Moved to 15APR89 this date.
4868. October 11, 1988 FILLM Bill
Corrected the number of AIPS adverbs passed. This was causing the frequency selection adverbs (DPARM) to be ignored.
Moved to 15APR89 this date.
4869. October 12, 1988 DDTSAVE.HLP Kerry
Added BMAJ, BMIN, BPA and ZERO SP for potential future use.
Moved to 15APR89 same date.
4870. October 12, 1988 RUNSYS:DDTLOAD.001 Kerry
Set NNOISE same as NOISE. NNOISE is a new array adverb used by VTESS which defaults to all zeroes. Unfortunately, the routine RESID then divides by these zeroes, thus causing the VTESS problem in the DDT to fail. The real solution is that VTESS needs to check for zero NNOISE values.
Moved nowhere, intentionally not changed in 15APR89.
4871. October 13, 1988 overflows Eric
Increased buffer size in AU9 for Crays. Declared more variables to be long integers to avoid overflowing an intermediate result in AU7.
Moved AU9 fix only to 15APR89.
4872. October 14, 1988 FILLM Bill
Added option to specify the averaging time for calibrator sources separately from program sources (as specified by the calibrator code). Also FILLM.HLP, and DMC2.INC.
Moved to 15APR89 someday soon.
4873. October 14, 1988 VTESS Kerry
Coding errors involving the integerization of negative *SEQ adverb values have been corrected in the routine GETIN. Also, GETIN now error exits if a positive noise level is not specified for a given field.
Moved to 15APR89 same date.
4874. October 17, 1988 SDCLN Eric
Changed dimension statements and tests to allow the SDI algorithm to work on images with 4096 points on the x axis.
Moved fix to 15APR89 this date.
4875. October 17, 1988 HGEOM.HLP Kerry
Changed the upper limit on image sizes to 4096 to reflect the increase to 4096 images made in the program some time ago.
Moved to 15APR89 same date.

4876. October 17, 1988

UNIX @ File Handling

Kerry

The way @ files were being edited in the UNIX programming scripts has been changed from using `ed` to using `sed` plus temporary files. Files changed in `SYSUNIX`:

AS CC COMLNK COMRPL FC FSC LINK

Files changed in `SYSNRA01`:

FC FSC

Files changed in `SYSVLAC1`:

FC FSC

Moved to 15APR89 same date.

4877. October 17, 1988

Non-ANSI standard code

Kerry

Several cases of non-ANSI standard constructs have been corrected as a result of porting *ATPS* to the SUN/3 systems in Charlottesville. File changed in `INC`:

CKIN — Changed the name of a labeled `COMMON` from `/KEYIN/` to `/KEYCOM/` to eliminate the name conflict with the routine `KEYIN` as called in the routine `VLBKEY` of `VLBIN`.

File changed in `APLNOT`:

CALADJ — Eliminated floating-point constant from an expression being used as an array index.

Files changed in `APGNOT`:

BDEPO — Changed uses of `COSD` and `SIND` to `COS` and `SIN` after conversion of the arguments to radians.

BSMAP — Changed uses of `COSD` and `SIND` to `COS` and `SIN` after conversion of the arguments to radians; changed in-line comments to ANSI-standard comments.

GEOM — Moved `DATA` statement from the midst of declaration statements.

HGEOM — Moved `DATA` statement from the midst of declaration statements.

UVSIM — Moved `DATA` statement from the midst of declaration statements; changed `COMMON` labeled `/NEXTH/` to `/NXTHCM/` to eliminate name conflict with the local function `NEXTH`; converted `DO WHILE` construct to the equivalent `IF` and `GO TO` logic. `DATA` statement and `DO WHILE` statement already fixed in 15APR89.

File changed in `QPGNOT`:

IMERG — Changed uses of `COSD` and `SIND` to `COS` and `SIN` after conversion of the arguments to radians.

Moved changes to `DKEY.INC` and `UVSIM` to 15APR89, rest already fixed there.

4878. October 17, 1988

SUN/3 Discovered

Kerry

Trivial changes have been made to several modules that tripped up the SUN/3 compiler but otherwise comply with the ANSI standard. Also, statements longer than 72 columns resulting from the transformation of `ENCODE` statements to internal `WRITE` statements by the generic *ATPS* source code preprocessor (i.e., `$SYSUNIX/PP`) have been worked around by changing the un-preprocessed `ENCODE` statements slightly. Files changed in `APLPGM`:

TAPLT — Added single quotes to break up literal string in a `FORMAT` statement that was being continued on the next line.

UVFND — Added single quotes to break up literal string in a `FORMAT` statement that was being continued on the next line.

UVPLT — Added single quotes to break up literal string in a `FORMAT` statement that was being continued on the next line.

File changed in `APGNOT`:

PRTSD — Changed `ENCODE` statement to avoid preprocessed code greater than 72 columns.

File changed in `QPGNOT`:

BPASS — Eliminated superfluous parentheses which confused the compiler.

Moved changes to `TAPLT`, `UVPLT`, `BPASS` to 15APR89 same date, rest already fixed there.

4879. October 17, 1988

ANCAL

John Benson

Added tests and messages for errors in the input "keyin" data file.

Moved to 15APR89 this date.

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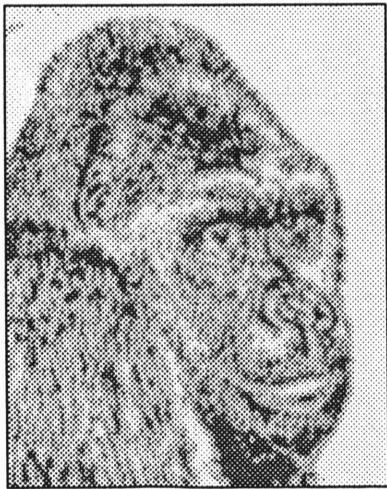
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