Beginning October 15th, execution will be held at this point until the user presses the **Enter** key.

Read-only protection of the ATP dimensioning file LISTSIZE.DAT was found to be missing on November 24th while working with Watcom ATP. At that time, it was noted that the Salford code of DIMEN1 connected the file as OLD rather than as the more general, multi-user READONLY. No one ever complained of trouble, though. Probably there is little multitasking use (recall discussion in the April, 1997, issue), and for those who do run more than one copy of the program at the same time, it is very unlikely that any two would start at exactly the same time. In other words, dumb luck provided protection (joke)!

MS Windows 95 is not required in order to have access to its much-improved EDIT command (see mention in the July, 1996, newsletter). No, aborting Win95 by pressing the F4 key during booting will not work. This leads to the familiar old, crippled EDIT

does the job. This way, the repetitive disk activity (a strong flash about once a second) of your Editor Pentium is avoided. The first line seen on the screen reads *"Microsoft(R) Windows 95"* and a VER command produces: *"Windows 95. [Version 4.00.950]"*

Question: how does your Editor accidentally slip into an abbreviated command mode of Win95? This is another reason to use DOS instead: From time to time, important letters of the alphabet become unusable! For example, if letter e or f or r is keyed, a window opens to perform the function Explore, Run; or Find, respectively. How can this maddening behavior be prevented? Alternatively, if the abbreviations can not be prevented, how can they be canceled (other than by rebooting, which is what your Editor has been doing since day 1)?

ATPDIR= is a second, optional appendage to the program execution command. This follows the first: **STARTUP=** as described in the July, 1995, newsletter. The new **ATPDIR=** appendage provides an alternative way to specify a path that otherwise would be defined by DOS environment variable ATPDIR. The new **ATPDIR=** appendage, if used, overrides the DOS parameter, providing yet another way to distinguish between alternative sets of the fixed-name files LISTSIZE.DAT, STARTUP, etc. Operation began November 26th.

SATURATE and SATURAT1 are the names of little programs that allow the user to vary parameters A, B, and C of smooth Type-93 saturable reactors (requested by the appearance of *FORTRAN* in columns 33-39). The programs are interactive and graphical the same way SURGE1 and SURGE2 are (programs associated with Gabor Furst's surge function as described in the July, 1996, issue). They assume standard VGA graphics, and use the same keys to adjust the 3 parameters: A) up and down arrows; B) Page Up and Page Down; and C) Home and End. Each time a key is pressed, the associated parameter is changed by 10%. One difference is the need for a disk file of input data, which is assumed to have file name parallel to the program name (file type .DAT instead of .EXE or .FTN). This file begins with flux-current points just like Type-93 data, and ends with two lines of parameters. Each program includes a display of the data points and TANH modeling. They differ in that SATURATE compares these with the new exponential model (i**B) whereas SATURAT1 compares these with the new SINH model. For more about these new alternatives, see the separate story about saturation modeling from Orlando Hevia.

Improvements to Salford TPPLOT

LJ2 and EPSON subcommands of the PAPER command conflicted with GNUPLOT output prior to correction on November 1st. That is, with the NOGNU switch not set, execution would die following an LJ2 or EPSON request. To avoid the problem with an older program, simply set NOGNU to unity. As for correction, it should be explained that GNUPLOT output will be produced even though this does not make much sense. Note that LJ2 and EPSON themselves are requests for copies. The creation of GNUPLOT output at the same time is a copy of a copy. So, users have been forewarned. It was Vicente Figueroa-Castillo of Puerto Rico Power Authority in Carolina who first reported the problem, and he was offered a new .LIB file the day after correction.

News from Outside USA and Canada

The Argentine user group (CAUE, Comite Argentino de Usuarios del EMTP) will submit an English-language report for the April newsletter, it is hoped. This will follow its first meeting of the year (in March). According to E-mail from Orlando Hevia dated January 10th: *"The CAUE meetings for this year are: 1) 19/3 ATPDRAW --- Demonstrative description; incorporation of user's models; 2) 4/6 Auxiliary programs for the ATP: cables, machines; 3) 27/8 Modelling of switches; 4) 26/11 and 27/11 (morning) 3rd Argentine Seminar of ATP user; 5) By afternoon of 27/11: administrative meeting. I am preparing some things about cables for the 4/6 meeting .... The inclusion of some information in the newsletter is of interest to Ing. Jorge Nizoboy, the Director of CAUE."*

Korean MS Word files were found to be incompatible with English MS Word as used at BPA. This was explained in the preceding issue. Well, the suspicion of general Oriental incompatibility was strengthened on November 19th when Masahiro Kan of Toshiba Corporation sent to BPA a draft of the JAUG (Japanese ATP User Group) form letter. Supposedly an MS Word document, this bounced off Dr. Liu's MS Word 6 for WinNT the same way Korean .DOC files did. Just as was the case with the files from KERI, each consecutive pair of English letters was separated by one blank byte. But unlike what happened using the MS Word files from Korea, Mr. Kan seems to have devised an easy and effective alternative. He wrote: *"I found Word7 here could save a file as WP5.1/5.2 (English) format, so I will convert the revised document to this format and attach with this E-mail. I hope this could be read by your WP."* Yes, real WP 5.1 accepted without complaint this WP-format file created by Japanese MS Word 7.

s illegal to bet over phone lines or the Internet

or face to face in Wisconsin. It may take years to sort this out in the courts. Meanwhile, the Indians are making big money, so, like the besieged tobacco companies, they should be able to afford a vigorous and protracted legal defense.

"Lightning Lab Home Page" was the subject of

months of internal testing, we produced an even larger index consisting of the full text of over 16,000,000 pages. We made the site public on the 15th of December 1995. Within three weeks of launch, we were handling over two million HTTP requests per day. The Web Indexer, the most powerful part of the setup, is an AlphaServer 8400 5/300, with 6 GB of memory, and 10 processors. Digital claims that the server handles most requests in less than a second.' …. What about privacy? When I subscribe to a mailing list, no one asks if I have given up the rights to use my posts for any reason. And what about my rights? Here in France, everyone has a legal right to verify and modify any information concerning them that

is kept in any database. I wonder how Digital would react if I asked them to remove some of my posts from its database? Or if I wanted to exercise my right to the copyrights on those words?"

European EMTP User Group (EEUG)

The annual EEUG Meeting for 1997 was held November 9-11 in Barcelona, Spain, at the Hotel Melia Confort Apolo. Organized by Prof. Juan A. Martinez-Velasco of the Universitat Politechnica de Catalunya in Barcelona, and Deputy Chairman of EEUG, the meeting was attended by 40 persons from 25 countries. All of Monday and the first half of Tuesday were occupied by technical sessions at which 18 technical papers were presented. The second half of Tuesday was reserved for the EEUG Members' Meeting. Finally, the meeting was followed by a 3-day EMTP short course on overvoltages and insulation coordination studies. Attended by 15 students, this course, too, was organized by Prof. Martinez-Velasco.

At least 3 of the 25 countries just mentioned were special in that they provided representation from other EMTP user groups of the world. This began with Dr. Tsu-huei Liu of BPA. As both a program developer at BPA and a cochairman of the Can/Am EMTP User Group, she was invited by the EEUG Executive Board (EB) to attend at EEUG expense while reporting on the current status of ATP. The second representative of a foreign user group was Marco Polo Pereira of Furnas in Rio de Janeiro, Brazil. As Chairman of the Latin American EMTP/ATP Users Group, he reported on ATP activities of that region (the Western Hemisphere south of the United States). Third and finally, Prof. Akihiro Ametani of Doshisha University in Kyoto, Chairman of the Japanese EMTP Committee (JEC), reported on ATP activities in Japan. About the latter, it should be mentioned by Prof. Ametani was offered honorary membership in the EEUG Association, and he personally accepted this distinction.

One or more working groups to validate ATP modeling should be an important outgrowth of the 1997 meeting. Proposed by the EEUG Chairman (Prof. Mustafa Kizilcay of FH Osnabrueck in Germany), this initiative was approved at the meeting of members. Emphasis is to be on system components, with the first working group to concentrate on transmission line and cable modeling. The result, it is hoped, will be a report (book?) that explains and documents differences, limitations, and strengths of the alternatives. Prof. Ametani was asked to head this working group, which is expected to be populated mostly by industrial users rather than theorists. Volunteers were suggested from around the world: Norway, Sweden, Germany, Hungary, Spain, Italy, Brazil, and the USA. BPA is expected to participate in the form of production users Bob Hasibar and/or Dan Goldsworthy, who have access to many field test reports and much BPA EMTP simulation over the past two decades. Time will be required, of course (committees are inherently slow).

The concept of rotating meeting location seems to have established itself for the new EEUG as it did for the LEC-organized old one before it. As long as potential hosts continue to volunteer their energies and organizing abilities, everyone else seems to benefit. A member from Prague of The Czech Republic expressed interest as a possible sponsor of the 1998 meeting.

Prof. Laszlo Prikler of the Technical University of Budapest in Hungary will continue to have some of his ATP activities supported by EEUG during 1998. Included are his editing of EEUG News and his maintenance of EEUG Web pages. He had proposed work on case studies, and is expected to be an active contributor to any report that might be produced by the already-mentioned working group.

EEUG educational offerings of this past year were considered for 1998, too --- although in different locations, and perhaps involving different faculty. Included were a 3-day beginner's course on ATP usage, and a workshop to be conducted in German rather than English. Interested readers are advised to watch the EEUG Web page for such offerings. About the concept of EEUG-sponsored ATP workshops, it should be explained that these have begun in Germany, and have required German, only because the first one was organized by Prof. Kizilcay on the campus of his university in Osnabrueck. Different EEUG-sponsored workshops might be organized by others in other countries, and use a different language.

About size, EEUG has surpassed the milestone of 100 members. It clearly is an important ATP organization of the world. On the other hand, it has not yet reached the level of LEC membership (more than 150). It may never reach this level, for three important reasons. First, the present EEUG began at a time when the average ATP user in Europe knew that membership was not required in order to obtain access to ATP. Second, unlike LEC, the modern EEUG openly acknowledges this fact to everyone. Third and finally, the Internet (E-mail) now allows access to ATP materials independent of user groups. The ATP world is quite different today than it was eight years ago when LEC was confidently pushing its own commercial initiative that included vanishing money (see newsletters late in 1993).

Delayed release of ATP materials that have been funded by EEUG is one way EEUG can encourage membership, it is believed. Your Editor is not bothered

. *Clock(). The clock function*

accuracy has changed from 100 ticks per second to 1000 …" As your Editor reported to Mr. Kan on November 19th: *"This is not good. Why should unoptimized Watcom be so much slower than unoptimized Salford (Win95 on my home computer requires only 10 sec using Salford EMTP)? Strange."* Of course, WinNT and networking (your Editor runs Win95 on an island) is an obvious difference. Why blame Watcom when Bill G is available (joke)?!

LU6VRT buffering of output (the .LIS file) first was reported to be incomplete by Mr. Kan. He observed that the .LIS file of some case was truncated (i.e., the end was missing). Rapidly, this problem was traced to a failure to flush the output buffer upon program termination. So, ENTRY STOPTP was fortified by the addition of CALL DFLUSH on October 10th.

ATPDIR does not work with Watcom ATP as it does with Salford EMTP. On October 9th, Watcom-interested contacts were reminded why: Watcom does not seem to offer a library function equivalent to the Salford DBOS DOSPARAM@. In response, Robert Meredith explained why users in New York never objected: *"… we never wrote ATPDIR into the code. It was all handled by the execution script, including making sure there was a startup and graphics file in the working directory. Editing the script is much more efficient than rebooting the computer to make an environmental variable stick. Script follows:* So, for a while this was recommended. But Mr. Kan wondered why we did not use C with Watcom ATP as we do with GNU ATP. Good question. Earlier, it would have been a problem because Watcom C had not been purchased. But BPA's upgrade to version 11 FORTRAN included C. Eventually some of Walter Powell's precious time was applied to the problem. Adaptation was far from trivial, however (Walter might have worked on it during 2 hours on November 20th).

Freeware DOS utility MV was replaced by WinNT/95 DOS MOVE for purposes of renaming the diagnostic file near the start of ATP execution. This improvement was made November 26th in response to criticism from Mr. Meredith: "I recently tested your MV.EXE program and found that it did not support long file names. Unless your performance is different, it has no business being incorporated in ATP for WNT. The WNT move command must be used, instead." As it turns out, MOVE seems to work fine for Win95, too, so the change was made. Yet, the MV alternative remains, too, in case it either is wanted or needed (e.g., for use with Win 3.1). The user need only add 8888 to the right of the decimal point of PEKEXP in STARTUP as a special request. The user will know that his request has been honored by the output line to the screen (MV echos the file renaming whereas MOVE does not).

Optimized compilation returned to Watcom ATP as created at BPA on November 21st. Why? Because previous troubles with optimization now are believed somehow to have been the fault of the operating system (a DOS window of WinNT) rather than the Watcom compiler. As when Salford DBOS would hang on some computers in some circumstance, it is difficult to know precisely why. For DBOS, by the time trouble had been observed, control had been lost and all one could do was close and reopen the window (prior to newer Win95 or WinNT, reboot the computer). For years, this supposedly was Salford's fault, and would be cured when a *real* operating system from Bill G might become available. Yeah, right (what a joke!). The same sort of infrequent, random trouble plagues Watcom ATP creation (compilation and linking) and use under WinNT at BPA. Now, the standard cure is to close and reopen the DOS window, and repeat the troubled command. Remember that inside opinion about *memory leaks*? Maybe.

Anyway, optimization is back with former /OD (optimization disabled) replaced as follows: /OD ---> /ot /on and the former /ox --> /5 /fpc /fp5. Previously-slow DC-1 simulation then became believable: just over 9 seconds for the time-step loop. But is this good by GNU standards? Masahiro Kan of Toshiba Corp. in Japan is not convinced. His report on November 24th involved his famous, old data case that requires much TACS modeling. Using optimized Watcom TPBIG, he reported 183 seconds in the DT loop and 189 seconds total: *"The simulation speed was a little bit improved compared with the 11/07 version (total 204 seconds), although ATP/DJGPP is faster (total 149 seconds)."* Considering that the GNU software is free, it is hard to be impressed by Watcom solution efficiency. That is for optimized compilation. When compilation was **un**optimized (using /OD), it was hard to understand why execution was so slow compared with Salford (which compiles an order of magnitude faster). Watcom offers winning performance in neither mode.

Environment variable ATPDIR finally is honored for Watcom ATP as it is for Salford and GNU programs. Recall the lack was mentioned in the preceding issue. The breakthrough came from Masahiro Kan of Toshiba Corp. in Japan. First, he proposed using C language (feasible now that BPA has both compilers) as used for GNU ATP. BPA's Walter Powell worked with this for a while (it is not trivial). But before a solution was reported, Mr. Kan had a better idea from a friend: use relatively-new Watcom FGETENV. This integer function returns not only the content of an environment variable (as arg 2), but also its nonblank length (as the function value). On November 24th, the enhanced Watcom TPBIG was sent to Mr. Kan. E-mail dated December 1st identified the friend: *" … Dr. Shuji Sato of Utsunomiya University … was a contributor of that Watcom F77 code to obtain an environment variable.*

Initially, the same name ATPDIR was used by both Watcom and Salford versions of the program. What about MS Win95 users who have and use both (perhaps simultaneously)? How is confusion avoided? For those who use DOS windows, one possible answer is simple might not be obvious: reserve one window for Salford use and another window for Watcom use. The same name ATPDIR can be used with different content in different windows. Your Editor first speculated about this in E-mail to Mr. Meredith on November 28th, and the idea of separate environments since has been confirmed. An environment variable is confined to the window in which it is defined.

WATDIR is to be the separate, distinct name for environment variable ATPDIR beginning December 7th. Prof. Mustafa Kizilcay of FH Osnabrueck in Germany had requested a distinct name, and made the compelling argument in E-mail dated December 4th: *"In case of different names, … they can be specified only once in AUTOEXEC.BAT and execution of Salford ATP or Watcom ATP will access automatically correct files.*

DisplayNT by Meredith and Schultz

DISPLAYNT is the name of an interactive program to display ATP batch-mode plots using PostScript output (the .PS file) on a computer that runs MS Windows NT. This is real (Bill G-approved) Windows programming, with a click of the right button of the mouse resulting in a menu having four entries. Clicking on the bottom of these, "About DisplayNT," results in the following explanation: *"'Copyright (c) 1997 by Robert J. Meredith and Robert A. Schultz. All Rights Reserved. For Use by LICENSED ATP USERS ONLY. This Program is NOT in the public Domain."*

Availability of DisplayNT was announced in E-mail of the Fargo list server dated December 5th. *"New ATP Graphics Tools"* was the subject of this announcement by *"Bob Meredith and Bob Schultz, co-authors of all this good stuff"* The remainder of this story, marked by italics but not quotation marks, is copied from this announcement.

We are making available to the ATP community a number of new tools for working with ATP graphics. .... The major new tool is a program called DisplayNT.exe for the automatic display of ATP Calcomp plots in the WindowsNT 4.0 environment. Its use brings the appearance of integrated graphics output to Watcom ATP for WNT and eventually to all ATP running in Windows NT 4.0 .... The program simply uses the Postscript file output from ATP as the display source; pages through all the plots in that file at the end of the ATP run; and closes up, unless the user interrupts the display with keyboard input. The program can also be activated by mouse clicking on the Postscript file icon. Multiple instances of the program may run simultaneously to compare plots from different cases. Output is fully customizable. Individual traces may be isolated for review, by suppressing any text or other traces that may be in the way.

A full description of the program is included in the accompanying displwnt.pdf file. That file also provides full documentation of how Postscript graphics from ATP can be viewed, customized, printed, converted to EPS figures, included in reports and made a part of electronic documentation. No longer should there be any reluctance by ANY ATP user to take advantage of the unequaled power of Postscript graphics.

The pdf file can only be viewed or printed by Adobe Acrobat Reader version 3.0, freely available for a dozen

of this story is text from Mr. Kan’s insertion of Dr. Noda’s writing.

ARMAFIT is a frequency - domain , linear - system identification program both for continuous-time systems represented as a rational function of s (Laplace operator) and for discrete-time systems represented as a rational function of 1/z (Z-transform operator; ARMA model). This program has been applied to frequency-dependent transmission-line modeling, transformer modeling, reactor modeling by this writer, when he was carrying out his PhD at Doshisha University, Kyoto, Japan, and also to network-equivalent studies by Prof. Mustafa Kizilcay of FH Osnabrueck, Germany. Those projects are for accurate simulations of power systems transients, but the program may be able to be used for other system identification problems. ARMAFIT is first designed especially for a phase-domain transmission-line model (NODA SETUP) and also for a frequency-dependent circuit element (KIZILCAY F-DEPENDENT: KFD) of the ATP (Alternative Transients Program) version of EMTP (ElectroMagnetic Transients Program), and thus the program can generate coefficient file (punch-out file) to be used in a subsequent ATP simulation. But after this writer started working at CRIEPI (Central Research Institute of Electric Power Industry), Tokyo, Japan, he has not used ATP. Because he has not changed the format of input and output files of ARMAFIT, ARMAFIT can be used for those purpose as long as the format of the ATP side has not changed. Now, this writer maintains ARMAFIT as an independent linear-system identification program.

For the NODA SETUP use, refer to "User Instructions of Noda Setup in ATP", which may be distributed by the EEUG (European EMTP Users Group) and also may be available at an anonymous FTP server ftp://ftp.ee.mtu.edu maintained by Prof. B.A. Mork of the Michigan Institute of Technology. As for the KFD use, Prof. Kizilcay will provide a user instructions.

ARMAFIT reads frequency characteristics of a system such as an impedance, an admittance, and a transfer function of electrical circuits, and then fits the characteristics with a rational function of s or 1/z. The fitting is performed using a numerically stable procedure called Linearized Least-Squares method developed by this writer, and model order is determined by use of SD (Standard Deviation) and AIC (Akaike's Information Criterion). For theoretical background, consult this writer's PhD thesis of which the abstract is available at http://www02.so-net.or.jp/~noda/phd.html The above thesis describes the theory used in ARMAFIT in detail. Briefly mentioning, ARMAFIT uses a linearized error function in which all coefficients to be identified are included as linear. Thus, ARMAFIT always identifies the optimum solution of the coefficients, unlike conventional nonlinear optimization methods requiring an iterative procedure which sometimes does not converge. In order to solve the normal equation newly derived from the linearized error function, ARMAFIT uses the Householder transformation avoiding round-off errors of the normal equation which is inherently ill-conditioned. Also, ARMAFIT uses relative error rather than absolute error in order to assure the accuracy for any frequency characteristics. The order of an identified model is determined using AIC (Akaike's Information Criterion) in ARMAFIT, and the identified model is assured to be stable by Routh's method (s-function) or by Jury's method (z-function). Those techniques can be found in the references provided at the end. Etc. (to be continued next issue).

Smooth Saturation by Orlando Hevia

The original Type-93 saturable reactor provided a piecewise-linear representation using compensation. Less well known was the smooth alternative from your

Editor, which assumed a hyperbolic tangent function. It is this latter alternative which was the starting point for work by Orlando P. Hevia in Santa Fe, Argentina. News first reached the English-speaking community of ATP users in public E-mail dated October 15th. Later, Mr. Hevia explained that he is *"retired from the Empresa Provincial de la Energia (a public utility of distribution of electric energy). I am working in the Universidad Tecnologica Nacional, in the GISEP (Grupo de Investigacion de Sistemas Electricos de Potencia Electric Power Systems Research Group).*

A hyperbolic tangent model for saturation has been available in ATP for a decade or more, but has been little used prior to Mr. Hevia's inquiry. As explained in Section V-H of the Rule Book, the describing equation for this compensation-based element represents flux using the equation A * TANH (B * i) + C * i where i is the current. Until Mr. Hevia's contribution of a special optimization routine, ATP offered no assistance in the determination of the 3 parameters (A, B, and C). Mr. Hevia's fitter accepts lumpy, old Type-93 data as input, and produces a smooth hyperbolic approximation as output.

Special request word SMOOTH SATURATION USING TANH (SSUT) is the way an ATP user can access the new parameter fitter from Mr. Hevia beginning October 26th. Usage is illustrated by a new 6th subcase of DC-13 which includes automatic screen graphics in the case of Salford EMTP. Because graphic coding relies upon the CALCOMP PLOT interface (which includes support for HP-GL, PostScript, and GNUPLOT), it introduces no new problem for the conversion to other platforms. I.e., Watcom, GNU, and DEC VMS ATP remain graphically-deprived (the practical effect).

Branch cards for simulation (the FORTRAN alternative of the Type-93 model) are created automatically, and can be punched just as with other supporting programs. In order to preserve adequate precision while maintaining readability of the data, optimal encoding of the numbers is used. This is unlike other supporting programs.

Mathematics of Mr. Hevia's fitter are documented in a paper that he is writing for the European newsletter (*EEUG News*). Entitled *"Nonlinear inductor TANH in the ATP: Determination of the parameters,* this is scheduled to appear in issue number 4 of vol. 3 (1997). Section 3 is entitled *"Method of the flexible simplex."* The introduction to this begins as follows (perhaps more will be provided next time): *"Function minimization generally involves an iterative search for the optimum vector of independent variable values. There are many possible methods, and some of these require the calculation of partial derivatives of the function to be minimized. Others, using an ingenious adaptation to the environment, generally find an acceptable solution without having to calculate derivatives. One method that avoids derivatives was proposed by Nelder and Mead, and it is based on a so-called simplex. This name refers to a polyhedron defined in the space of n dimensions, where n is the number of independent variables. This polyhedron may or may not be regular.*

The Argentine user group provided access to Mr. Hevia's fitter as a separate MS-DOS program prior to its implementation in ATP, it should be noted. That mid-October message explained: *"The program is available to all the ATP users in the CAUE Page (CAUE = Comite Argentino de Usuarios del EMTP = Argentine Committee of EMTP Users), in the Internet URL http:// iitre.ing. unlp.edu.ar/estudios/caue/caue.html In the Zona de Archivos (Archive Zone) you can obtain the file etanfi.zip. (32919 bytes)."* Later, in private E-mail, Mr. Hevia explained: *"This page is maintained by the Universidad Nacional de La Plata, a pioneer in the use of the ATP in Argentina."*

In fact, the Argentine user group itself is a pioneer in that it seems to have been formed, and to have operated for some time (years?), without the knowledge of program developers in Portland. Of course, difference of language discouraged contact in the old (pre-Internet) world of snail mail and telephone. In any case, there is no need to involve developers in Portland. The Can/Am licensing agreement clearly provides for the sharing of information among licensed ATP users, so there are no monopolies on ATP user groups. In fact, Argentine users did for their own country what your Editor had been trying to encourage for Europe beginning in 1990. Unfortunately, LEC (the Leuven EMTP Center on the campus of K.U. Leuven in Belgium) collapsed under the weight of public scrutiny of its accounting (perhaps best described as *money laundering*) before much competition could be provided. Many Europeans **did** access ATP via your Editor, but they did **not** organize in their own self defense as an alternative to LEC prior to its closure at the end of 1993. Assuming conditions of LICENSE.ZIP have been observed, users of ATP in Argentina are to be commended for their resourcefulness.

This is where the story stood during late November. But there is more, including alternative smooth functions such as SINH (hyperbolic sine) and ** (exponentiation). Description of a second phase of the ATP implementation of Mr. Hevia's work will be delayed until the April issue.

Line and Cable Constants

An old LINE CONSTANTS error was observed by

Rao Atmuri of Teshmont Consultants in Winnipeg, Manitoba, Canada. Acknowledging this, BPA's Dr. Tsu-huei Liu wrote as follows in reply on October 21st: *"Request of printout for 'inverse of [C] for the symmetric components of the equivalent phase conductors' (i.e., 1-punch in column 32 on the frequency card) seems the cause of the problem you observed."* Not at all subtle or inconspicuous, DBOS terminated execution during an attempt to take the square root of a negative number. All possible outputs had been requested, and there was some conflict between 2 of them (which used the same temporary storage, it was found). Dr. Liu corrected two CALL MOVER lines of SUBR25 on October 24th in order to separate the storage, and a corrected TPBIG was offered two days later.

Japanese ATP User Group (JAUG)

Japanese **do** have an ATP user group, and it is distinct from the Japanese EMTP Committee (JEC). Information contained in the July, 1997, newsletter deserves an update as follows. Rather than change JEC from an EMTP user group to an ATP user group, a separate ATP user group was established. It really was very simple. No different from what was done for South Africa or India or Korea, a form letter to accomplish ATP licensing within Japan was established by mutual agreement. This was mentioned at the start of the third story of this present issue. For the record, founding JAUG officers appear at the bottom of the form letter in JAPANLIC as follows: 1) The JAUG Chairman, Dr. Hiroshi Arita of Hitachi Corporation in Hitachi, Japan. 2) The JAUG Vice-Chairman, Masahiro Kan of Toshiba Corporation in Kawasaki, Japan.

Brain - Damaged MS Windows

HP-GL once again seems to be incompatible with MS Word for Windows. Just when one believes his MS car finally is running normally, it breaks down in some new way, or again in some old way. HP-GL is an old problem for Microsoft. Readers who have forgotten are referred to a story with headline *"HP-GL for brain-damaged MS"* in the July, 1996, newsletter. After more-recent troubles are explained, there will be a trickier complaint that involves speed of display using the DOS window of WinNT 4.0

The modern MS trouble handling HP-GL was first publicized by Aziz Marican of the University of Wales in Cardiff, U.K. His E-mail from the Fargo list server was dated November 20th, and had subject *"Importing HPGL into Word97."* Mr. Marican wrote: *"... since our word-processing software have now been upgraded to Word97, I found that the files can no longer be imported into this new package."*

Confirmation of the problem, and an estimate of the repair cost, came from Douglas Selin of Arizona Public Service in Phoenix. His public E-mail dated December 2nd contained the following bad news for MS fans and victims alike: *"Mr. Marican is correct that the new Office 97 version of Microsoft Word no longer has the HP-GL filter that it had in Version 6.0. We found this out the hard way also. Just recently I have found a program that will provide this filter. The name of the program is ImageStream 97 and can be obtained from a company called Inso. A phone number in the US that works is 800-333-1395 and the cost is $69 (US) plus shipping. The software can also be purchased off the Internet. See the address www.software.net and do a search on ImageStream 97. I believe this is downloadable for a lower cost ($59)."*

Why use HP-GL with MS Word? Robert Meredith of the New York City area reminded users of the possible PostScript alternative upon which his new WinNT program DisplayNT (see separate story) is based. His public E-mail dated December 3rd explained: *"Bob Schultz and I will be making extensive documentation available within about a week, describing how to use Postscript files for screen display, printing, EPS files, inclusion in word processing (without dealing with any cost for HPGL filters) and electronic publishing. Stand by for more information about the most elegant means of ATP graphics available."*

DOS display speed is difficult to predict and explain. Consider first Dr. Liu's 133-MHz Dell Pentium running WinNT 4.0 at BPA. When a DOS window is opened, the window is small (it covers perhaps a third of the screen). This way, DIR of the 610 files in D:\EMAIL can be displayed in about 1.12 second. On the other hand, if the window is made full-screen by pressing **Alt-Enter**, the display is slowed to 3.12 seconds. As with RUN.BAT, times at the start and the end were obtained accurate to 1/100th of a second. How about your Editor's 133-MHz Pentium at home, which runs Win95 as set up by MS-certified computer expert David Szymanski? Here, a new window begins as full-screen. With 611 files in F:\ATP, DIR to the screen requires 1.32 seconds. Following use of **Alt-Enter** to reduce the window size, repetition is accomplished in 1.26 seconds. Moral of the story: beware of Bill G's full-screen DOS window. At least for one popular computer, operating system and window size (a Dell using a full-screen window of NT), performance is lousy.

Messrs. Meredith and Schultz were the first to offer an explanation for the slow full-screen DOS window of NT. This followed weeks of frustration about slowness of their own graphics program DISPLAYNT when launched from a DOS window of Dr. Liu's computer at

The address will not be advertised directly.

DCG myth #1 : *"In 1986, Dr. Scott Meyer removed himself from DCG involvement (due to what at the time was described as philosophical and political differences) to develop, and to aggressively advocate an independent version of the EMTP which he called the ATP*

Once again, DCG spin doctors have trouble with the simplest of concepts, facts, and dates. Dr. Meyer **never** removed himself from involvement with DCG, and neither did BPA remove Dr. Meyer from any such involvement. In fact, this was a major part of DCG's problem: the DCG contract promised work by Dr. Meyer, but DCG management (the Steering Committee) never seemed to know how to use it. Dr. Meyer's work on EMTP at BPA was included in BPA accounting that demonstrated satisfaction of BPA's obligation through the end of DCG on the final day of 1987.

Modern-day DCG spin doctors do not remember what happened between 1984 and 1987? First, there was no direction. Then there was incompetent and inconsistent direction (Dr. Meyer was to continue filling the data base, whatever that meant!). Toward the end, at one SC meeting, there was even a protest by other representatives to BPA representative Robert Hasibar. This concerned EMTP work by your Editor, as reported in writing by BPA. Nothing ever came of the objections, however, as best your Editor can recall. BPA simply ignored the SC's contention (that it might retroactively reject the topics of work that already had been completed by BPA). The agreement then expired, ending BPA involvement. Quickly, following the removal of Prof. Hermann Dommel from influence over the Leuven-published *EMTP Newsletter*, your Editor then published his account of DCG / EPRI misinformation. See pages 31-40 of the March, 1988, issue of LEC's *EMTP News* (as his involvement ended, Prof. Dommel convinced Prof. Van Dommelen to modify the name of the journal).

DCG myth #2 : *"In 1989, UBC further developed and marketed the original version of the EMTP and concentrated on PC platforms under the trade name MicroTran. In the mid 80s Manitoba HVDC Research Centre developed a version of the EMTP (EMTDC) targeted primarily for the simulation of HVDC systems.*

As your Editor has written and stated many times, neither MicroTran nor EMTDC is known to have any EMTP heritage. Recall EMTP, named by your Editor late in 1975, was what was developed from BPA's *Transients Program*, abbreviated *T.P.*, after Dr. Hermann Dommel left BPA during July of 1973. EMTP was in the public domain, so was available to anyone, of course. It **could** have been the starting point for EMTDC or MicroTran, but was **not**, as far as your Editor knows. Prof. Dommel's much smaller and more primitive T.P. is a likely ancestor for UBC enterprise. Work in Manitoba, too, might have begun with Prof. Dommel's T.P. Any credible evidence to the contrary now is being sought for publication.

GNU ATP for Linux and DOS

The X Window System was used by LEC (the Leuven EMTP Center at K.U. Leuven in Belgium) to support ATP windows and graphics on workstations. Four years after LEC's impending closure, might this work finally be used productively by remaining ATP developers? This possibility was suggested by your Editor in private E-mail dated September 14th: *"Ten years ago, we had great windows and graphics using Apollo. No doubt about it, such work could be done using Linux. In fact, it must be remembered that much of this work already has been done for The X Window System by the now-defunct LEC … Thinking about it, there was LECPLOT, too. We in Portland never worked with such materials, but we know that they ran on several workstations … If one wanted to do graphics under X Windows, I would recommend an inquiry into the status of this old LEC work. A lot of work might be saved.*

Compiled TACS Speeds Simulation

This is a continuation of the story about compiled TACS in the preceding issue.

SINGLE STEP IF MAKE (SSIM) is a special request that is intended to be used along with the environment variable COMPTACS = MAKE in order to terminate execution at the end of the first time step. After one step, creation of the FORTRAN will be complete, so the user can proceed to compilation. Subsequent execution using COMPTACS = USE then will simulate at maximum speed until time T-max of the miscellaneous data card. I.e., in the USE phase, SSIM is ignored. But during the MAKE phase it results in a reduction of T-max to DELTAT (the time-step size). This way, one data file rather than two will suffice. Any translation after October 18th should include SSIM, which is a universal feature.

The compressed size of Salford TPBIG increased by 20 Kbytes --- from 1092 Kbytes to 1112 Kbytes --- between the 7th and the 18th of October. The dominant part of this is the addition of service for the MAKE of compiled TACS (i.e., creation of the FORTRAN to be compiled).

Supplemental variables must be of the newer, free-format type rather than the original (old), fixed-format type. The average user may not even be aware of the original, fixed-format alternative because it was dropped from the Rule Book by BPA's TACS contractor, Laurent Dube, after he had supplied the more sophisticated free-format alternative around during the spring of 1980 (see page TPIM-13 of vol. X *EMTP Memorandum* dated 15 April 1980). Yet, the old fixed-format alternative continues to be honored as demonstrated by several standard test cases. Take large DC-1 by Robert Hasibar of BPA as an illustration. Near the start of control logic of this primitive first approximation to hvdc modeling will be seen the following two lines:

```
88F1SII                    4     .AND. F1S
88NOT3                           .NOT. F1SII
```

These are the old, fixed-format equivalent to what after 1982 could be written as:

```
88F1SII    = 4 .AND. F1S
88NOT3     = .NOT. F1SII
```

Here everything to the right of the equal sign in column 11 is free-format (more or fewer blanks can separate names and operators (in this case, the logical AND and NOT). Later, automatic translation from old to new might be provided, if there is sufficient interest. But not initially. If the old is encountered, execution will be halted with an error message.

How fast is compiled TACS compared with TACS assembly language? More precise timing than that used in the following story is required. Space is limited here; the story already has spilled over into the following issue.

TACS Assembly Language

TACS ASSEMBLY LANGUAGE (TAL) is a new special-request word that refers to use of lower-level (assembly-language-like) coding for TACS supplemental variables. Recall the much-faster mathematics of MATHPLT*.FTN as reported in the April, 1997, newsletter. Well, code to service such simple arithmetic commands has been added to ATP as an alternative to the slow logic supplied to BPA by contractor Laurent Dube in May of 1980. Operation should be universal.

TACS assembly language is not as fast as compiled TACS, obviously. But it avoids the need for a compiler and linker. If 80% or more of the potential gain might be realized without the burden of conventional, external FORTRAN compilation and linking, and without the need to tailor the program to one particular data set (the effect of compiled TACS), the new alternative of TACS assembly language might fill an important void.

Today, the user must supply his own assembly language. This is done immediately after each supplemental variable, if the TAL switch has been thrown. The program will read equivalent TACS assembler commands until $EOF is found as a special appendage to the final such command. An in-line comment symbol may precede the mark to reflect clearly the fact that the mark is not really a part of the data itself. Usage will be illustrated by the simple data the April, 1997, newsletter. Interpretation of the 4 input data cards (one original plus three assembly-language) representing variable TEST1 follows:

```
  Free-format    TACS    supplemental    variable
defined.
  MATH-like    assembler    computes    preceding
variable
  MATH-like    assembler    computes    preceding
variable
  MATH-like    assembler    computes    preceding
variable
```

Later, TACS assembly language might be generated automatically by ATP. What reader knows enough about compilers to offer an efficient solution? Various ideas have been considered, including use of Walter Powell's pocket calculator (see the April, 1997, newsletter). This really is all that is wanted or need: a compiler for the arithmetic of a pocket calculator. Yet, present needs are a little different since RISC rather than CISC instructions are involved. The Powell code is slow, so no doubt is CISC. Your Editor began writing his own compiler one weekend about a year ago, but this was set aside for some since-forgotten reason, and never was completed. Also, that work, too, involved only CISC (it was prior to the RISC discovery). Before your Editor would return to the task of writing his own compiler, he wants to offer others, who might be better qualified, a chance to contribute. He does not want to invest substantial effort only to discover later that a freeware solution already is available.

Details of TACS assembly language are being kept secret for a while. They will not be revealed to anyone unless he promises in writing to preserve the secret, and to avoid commercialization. Once an efficient compiler is available in ATP, most likely no one will care. But until then, your Editor intends to keep his TACS assembly language out of the hands of commercial developers. Until ATP has its own compiler, there is obvious potential for commercial exploitation. In that a program modification would not be required (a stand-alone preprocessor would do the job), special care is required. Keeping the language an ATP secret is the only way your Editor can imagine to prevent possible commercialization. The idea seems fool proof: one obviously can not write a preprocessor without knowing details of the syntax of TACS assembly language.

Speed of TACS assembly language simulation next will be demonstrated. However, a larger-scale illustration than the one used in the April newsletter is required. This is believed to be due to the modular structure of contractor Dube, who isolated the code for supplemental variables and devices. Barring removal of the subroutine boundary (not yet attempted), more math is needed inside in order to overshadow the burden of calling the subroutine. So, that April example having six variables TEST1, …. TWO? was multiplied ten fold. Times in seconds spent within the time-step loop for ATP simulation of the three data cases now compare as follows:

```
   Dube's original TACS,  60 variables:  106.21
   New assembly language, 60 variables:   18.33
   Original TACS, one dummy variable :     8.46
```

Each simulation involved the same 100K time steps with minimal printout, and an average of the 5 best of 6 trials using Salford EMTP in a new DOS window of your Editor's 133-MHz Pentium. Subtracting the third row from each of the preceding two provides an estimate of the time required by the math itself:

```
   Dube's original TACS,  60 variables :  97.75
   New assembly language, 60 variables:    9.87
```

The ratio here is 9.9 --- not the 16.47 of the April, but respectable nonetheless for anyone who might be slowed by substantial amounts of control system mathematics.

As for Dube's MODELS, it is **so** slow (see October, 1996 and January, 1997, newsletters for benchmarks), your Editor did not want to waste the time required for six trials. The one that he waited for (while grabbing a bite to eat) required 750.11 seconds for the same 60 variables. After subtracting the same 8.46 seconds for do-nothing TACS, this indicates that MODELS takes an astounding 75.2 times as long as the new TACS assembly language.

Counterpoises or Grounding Electrodes

The complexity of modeling counterpoises and / or grounding electrodes was made by several public E-mail messages toward the beginning of September, as the preceding issue summarized. This is a continuation.

Prof. Akihiro Ametani of Doshisha University in Kyoto, Japan, first contributed to discussion of the Fargo list server by reacting to the public discussion. BPA's Dr. Tsu-huei Liu keyed text from Prof. Ametani's FAX dated September 29th, and this was submitted from Agora on October 23rd. Prof. Ametani wrote as follows (the remainder of this story). For brevity, CC is used in place of CABLE CONSTANTS and LC is used in place of LINE CONSTANTS.

CC can not be applied, in theory, to a naked underground cable, i.e., to a not-isolated buried conductor.
CC has adopted Pollaczek's impedance formula for an underground cable, and Carson's formula for an overhead cable/line the same as LC. …. both formulas were derived from the assumption of an isolated, infinitely long and infinitely small conductor, see Chap. 4 and 5 of the EMTP Theory Book, BPA, Aug. 1986. Therefore CC should not be applied to a naked buried conductor. LC has no option to deal with a buried conductor.

A KILL code was originally introduced to avoid problems such as Carlos' case, and it was stated that CC could not handle a naked buried conductor, i.e., the case of r_{i+1} (outer radius of the i-th conductor) = r_{i+2} (outer radius of the conductor outer insulator). However, there

Publishing Programs and Viewers

The story of preceding issues now is being continued. Not only is Corel WP 7 being used more for ATP-related documentation, its Envoy output is being tried on others.

Envoy is ideally suited for small files, with Prof. Akihiro Ametani's public E-mail message (see separate story about counterpoises) providing a good illustration. Just over three pages of writing were involved, and this was mostly text. An inventory of the different versions shows:

```
AKI930.WP7    20,480   10-22-97   3:25p
AKI930.EVY    10,800   10-23-97   7:37a
AKI930.TXT     8,599   12-22-97  11:30p
```

The .EVY file is just over half the size of the .WP7 file, and this saving should be important to anyone who might receive such a file using a regular telephone line (as your Editor uses for connection to Agora). About the .TXT file, WP7 **text out** was used to create it, so equations and all non-DOS characters are missing. It is surprising that there is not more than 2.2 Kbytes of difference. For publication by Prof. Bruce Mork's Fargo list server on October 23rd, the .EVY file was appended to the .TXT file as a PKZIPped, UUENCODEd attachment.

Envoy for MS Windows and Apple Macintosh can be downloaded free of charge from the Novell Web site. This was summarized in public E-mail dated May 7th: *"Dr. Liu was able to find a small reference on the Novell Web page http://www.novell.com/whatsnew Near the bottom of this display, under the heading 'Downloadable Novell Soft-ware,' will be found an entry for 'Envoy Viewer.' Clicking on this transfers to the Web page http:// www.novell.com/envoy/ which provides a substantial amount of advertising-like information."* Somehow, this detail about free acquisition was missing from previous references to Envoy.

PDF creation by freeware Ghostscript was the exciting possibility explained by Mr. Kan in E-mail dated December 1st. Writing about the form letter used by the Japanese ATP User Group *"I have created the PDF file for the ATP Licensing form for JAUG. I used Word V7 and Ghostscript V5.10 . Ghostscript V5.10 can create PDF file from postscript file. The ability is not complete, but enough for the text documents. I attach this PDF file."*

Frequency Scans & Power Quality

Initially, the 2550-byte limit of Salford TPPLOT has been imposed for all platforms. A later increase should be possible, if needed for practical usage. For example, the Salford compiler will allow expansion within the 16-bit limit of 32767, which should be enough for anyone.

An unrelated reform affecting FMTPL4 might also be mentioned. Previously, it was not alone in selecting

How much continues to be spent on salmon? *"Bonneville is charged by law with paying those costs, now capped at $435 million a year."*

Terms Used in *Randy's World*

Some acronyms and terms used in *Randy's World* (see preceding story) most likely are a mystery to the average reader outside of BPA --- particularly those outside of the country. The most obvious of unclear terms will now be summarized. This explanation began as an appendix to *Randy's World*, but fonts were found to be needed, so the list was moved into the newsletter itself:

1) *GS-15 level* is high. This is not the working level. Perhaps one in 100 employees reaches GS-15 level during his career.

2) *MEO* stands for *Most Efficient Organization*. The term has no real meaning; it is bureaucratese (the jargon of bureaucrats). It came to characterize BPA's disruptive reorganization of the late '80s. There is some similarity to purges in dictatorial countries: crises are seized upon as justification for wholesale managerial change that benefits the friends of those in power (obviously).

3) Quinn Gardener of *Randy's World* is believed to be the same as the *Gardner* mentioned in *Clearing Up* (see the July, 1994, newsletter). As used here, *PUC* indicates a Public Utilities Commission --- a select handful of individuals who regulate the sale of electricity (along with natural gas, typically) according to state law. Each state has its own law and its own commission, generally. Mention of the Mormon church, which is centered in Salt Lake City, Utah, correlates with the reference in *Clearing Up*.

4) Vickie (*"They're offering me a job; I guess I better apply on it"*) VanZandt was not always a manager. In fact, she briefly was involved with EMTP development about 21 years ago. She helped implement in UTPF the first synchronous machine (S.M.) model. This involved work on a CDC computer with IBM FORTRAN for the Type-50 S.M. model as contributed by Mike Hall and John Alms of SCE in Rosemead. Page FOTS-5 in Vol. VI of *EMTP Memoranda* reports: *"Most of this work was done by, or with the assistance of, my temporary helper Vicki Van Zandt, a BPA Trainee."* Later, on page FOTS-13, one reads that: *"Unfortunately, Vicki was stolen from me after her three weeks of good work ...."* One page later, the memo was closed on January 13th, 1977.

5) George Bell is black. Every BPA employee must know it, but *Randy's World* contains no obvious clue for non-Americans. Politically-savvy natives (not to be confused with so-called *Native Americans*, or even just American citizens) might guess from the reference to *George Bell Day*, but few foreigners probably understand how Pres. Clinton's so-called *"affirmative action"* really works. There are three obvious criteria involved in non-merit-based discrimination as practiced by management during the Hardy years: a) sex; b) age; and c) race. Curiously, *Randy's World* makes the first of these obvious, but not the third. The second is detailed only at the end of the long chronology (final point 31; that *bloody fortune*).

6) *Rajneeshees* were followers of an Indian philosopher /religious leader named Bhagwan Shree Rajneesh during the '80s. This was when a famous commune and city named Rajneeshpuram was operated on a 64K-acre ranch in Wasco County of central Oregon near the John Day River. Although now long gone, Rajneesh was Oregon's most recognizable personality prior to Tonya ("The Club" or "Skategate") Harding. The commune of some 4000 followers peaked in 1985 as authorities began to uncover hard evidence of varied criminal acts that included immigration fraud, arms smuggling, illegal wiretapping, money laundering, and attempted murder. The collapse became public on 13 September 1985 when Anand Sheela, who wielded

is the title of a story on page B1 of *The Oregonian* dated October 8th. The subtitle explains that *"The lawsuit about alterations in Java programming follows months of rhetoric between the high-tech rivals."* Now why would MS alter Java? To adapt it to MS Windows and only Windows, of course: *"Sun … contends that Microsoft deceived customers and software developers into thinking that Microsoft's version of the Java language was good for programs that ran on all computers. Sun is seeking to stop Microsoft from using Sun trademark icon for Java --- a coffee cup with steam rising from it …. Sun officials said they also might try to keep Microsoft from shipping its new Internet Explorer 4.0, from which they say Microsoft removed bits of the Java language so that it works best with its Windows operating software."*

The continuing decline of Apple Computer was noted in a short story on page B1 of *The Oregonian* dated October 14th. This explains: *"With its share of the*

against IBM some two or three decades ago. Like O. J. Simpson, MS will have the better attorneys, and it can be expected to delay proceedings unbelievably. Don look for resolution any time soon. Alternatively, **real** cynics have warned of a possible quick resolution. This would follow a substantial payment by MS to the White House (joke? Only time will tell)!

HP Mopier printers are worthy of note. BPA probably has a bunch by now. One is Dr. Liu's default printer, connected to her Pentium via a high-speed network and WinNT. Within WP 7, this printer appears as "HP LaserJet 5Si Mopier PS" with the PS assumed to indicate PostScript. The name *Mopier* is a variation of *copier* with the first three letters indicating Multiple Original Printer. Note the concept, which is guaranteed to succeed, and no doubt is feared by photocopy companies: make 2 or more originals rather than 1 or more photocopies of an original. As long as the original begins in some compatible computer program (increasingly true these days), this has the obvious advantages of both convenience and lack of distortion. Not much speed is sacrificed, even for large volume. The unit at BPA is not very big, but it has six extra trays for collating of output below the normal one on top, and has a rated duty cycle of 100K pages/month, and print speed of 20 pages/minute. Dr. Liu showed your Editor 9 pages of printed HP documentation that conspicuously mention the network use (*"Fast, network traffic-reducing features ..."*). Under *"Languages,"* it shows: *"Enhanced PCL 5 and Adobe PostScript Level 2 language standard."* This information is dated 2/28/97 and apparently has been downloaded from **http://hpcc997.external.hp.com** See directory **peripherals/printers/lj5si_mopier.html** of this H-P Website.

The Bill Gates Show is how the 1997 computer show named Comdex was described in a story on page C1 of the November 22nd issue of *The Oregonian*. *"Even though Gates' prominent role is part of the Comdex tradition, Microsoft's dominance was never more obvious than at Comdex '97."* The caption under a large color picture explains how an MS employee *"demonstrates some of the features planned for Windows '98, the new operating system coming from Microsoft."* The dominant term at the conference seems to be *Webize*. The main story by Elisa Williams of the AP has headline *"Software-makers go wild with the Web."* The subtitle is: *"The Comdex trade show reveals a trend toward integrating as many Internet functions as possible in programs."*

Miscellaneous Small Items

The Skyport address for Dr. Liu now is scheduled to change January 29th (our last day in the middle of the swamp). Oregon is being left in favor of BPA's Dittmer Control Center across the Columbia River in the state of Washington. This is east of the Interstate 5 freeway to Seattle, perhaps two north of downtown Vancouver (and the river's edge). This information is provided for anyone who wants to visit. As for mail, the preferred address now is: BPA, Route TOP/DITT2; P. O. Box 491; Vancouver, WA 98666; USA.

Availability of the October newsletter from his Houghton aFTP server was announced by Prof. Bruce Mork of Michigan Tech on November 18th. His public E-mail referred to file name **oct97msw.zip** within directory **pub/atp/canam** which reflects the Microsoft Word nature of the file. That was what your Editor submitted. But the aFTP storage in Houghton was unavailable for extended periods shortly thereafter. On November 24th, Masahiro Kan of Toshiba Corp. in Japan reminded users of alternatives, which include a second flavor, too: At site **ftp://pels.pwr.eng.osaka-u.ac.jp/pub/atp/canam/pdf/** one can find *"oct97.pdf : PDF format file which was converted by Bob Meredith ... You can view and print it by using a free Acrobat reader."* Of course, Mr. Kan also mentioned storage at the University of Hannover in Germany, which was announced publicly by Lutz Hofmann on November 19th.

This cute little pun from the Linux community was provided by BPA's Walter Powell on March 20th of 1996.

MASTER/SLAVE SWITCH DEPENDENCY is the special request that is used to declare the dependence of one switch on another. This was explained in the January, 1997, issue. Curiously, the feature was never added to standard test cases until November 1st, when its absence was noted. A new 6th subcase of DCN17.DAT produces the same answer as the first without using a GIFU switch. This illustrates the observation from a year ago: use of switch dependence is an alternative to GIFU switches for simple cases. For this particularly illustration, when one switch (the master) closes, another (the slave) must always open. So, the ONLY OPEN,CLOSE mode was declared. But the circuit is simple. For more complicated circuitry, the dependence would not be predictable.

The frequency domain and the time domain are not easily reconciled, readers are reminded. On December 3rd, Marjan Popov asked the following in public E-mail from Skopje, Macedonia (FYR): *"I would also like to simulate the dependence of the voltage with respect to frequency."* Since the inquiry also had mentioned Kizilcay frequency dependence (Section IV-H of the Rule Book), it was not surprising that the author, Prof. Mustafa Kizilcay of FH Osnabrueck in Germany, responded. About voltage as a function of frequency, he wrote: *"Voltage dependence with respect to frequency (?) is not taken into consideration in this model. I do not know how to realize such a feature for this time-domain model."* Any reader who believes he can envision a viable approach is invited to write his own story on the subject. Fame should provide adequate incentive for such work. No doubt about it, international acclaim of unprecedented proportion should result for anyone who

might successfully and practically unite the frequency domain representation of one component with the time-domain representation of the rest (as used by EMTP). Such unification has long been desired for the representation of transmission lines and cables because the frequency domain avoids well-known complications of mode switching that plague present-day models. This was the final thought of Prof. Akihiro Ametani of Doshisha University in Kyoto, Japan, during his June 28th visit to Skyport.

A copyright notice for the PostScript that is produced by ATP batch-mode (CALCOMP PLOT) graphics was first proposed to developers in Portland by Robert Schultz of the New York City area. In E-mail dated December 1st, he observed: *"... it struck me that we do not have a copyright notice in the Postscript header from ATP. Every commercial product is copyrighted. This needs to be fixed."* Indeed it did. The .LIS file has had such a notice since year one. How or why was it overlooked in the .PS file that holds PostScript output? Whereas Mr. Schultz wanted to mention the Can/Am user group, your Editor and Dr. Liu reiterated their position during the great FREEP debate of May, 1996: in the absence of some clear and obvious transfer of rights, these continue to be held the contributor. So, Messrs. Schultz and Meredith reworked their message to begin as follows: *"This program copyright (c) Robert J. Meredith & Robert A. Schultz 1989-1997. All rights reserved. For use only by licensed ATP users in accordance with Licensing Agreement."*

LFD is the name of List Size 21, which is described in the unabbreviated form of case-summary statistics (obtained using KOMPAR equal to zero) as "Total modal/phase [T] matrix storage." Prior to reform on December 12th, this was unnecessarily large for some simulations. Not for **all** cases involving distributed lines, but for **some**. The demands of constant-parameter distributed modeling are not as great as the demands of Semlyen frequency-dependent modeling, for example. By more careful utilization of existing arrays SFD and QFD of List 21, some space was saved in some cases. This discovery was made by Dr. Liu and your Editor as both worked together on their bigger, joint project of rewriting branch input (see separate story). So, beginning December 13th, the List-21 usage reported at the end of some test cases is reduced. This was a windfall of the reform of branch input. Other benefits were anticipated, but this one was not. Changes in the code are documented below a comment "December 12, 1997"