Can / Am EMTP News

Voice of the Canadian / American EMTP User Group

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Table of Contents

Salford Compiler and DOS Extender

MS Windows 95 is generally compatible with Salford EMTP as was explained to the world in public E-mail of the Fargo list server dated March 1st. Somehow, this important contribution from BPA's Fred Elliott was not noted in the preceding issue. Until Mr. Elliott's critical discovery was publicized, the average Win95 user was unable to run Salford EMTP for MS-DOS within an MS-DOS window of Win95. A few users such as Christian Hoelzl in Austria and Jorge Amon Filho in Brazil had succeeded, but most including your Editor and Mr. Elliott had failed for unknown reasons. Well, Mr. Elliott discovered that removal of the NOEMS switch was all that was required. Before correction, this appeared as follows within his CONFIG.SYS :

```
device=c:\windows\emm386.exe  noems
```

ATPSETUP.LIS is the recipe for installation that can be found on the GIVE2 disk. It was substantially modified by Dr. Liu on July 24th in order to provide a third alternative. In addition to the original two for DOS and MS Windows 3.1, there now is a third alternative for those using Windows 95. This is based on the advice of Prof. Laszlo Prikler of the Technical University of Budapest in Hungary as contained in public E-mail of the Fargo list server dated May 2nd. Prof. Prikler's entire message has been appended as a new section F, for those wanting to reference the original source. The resulting ATPSETUP was mailed to Budapest on July 24th for proofreading and any other criticism or comments that might be appropriate. Disk file size has increased enough (22 Kbytes vs. 7 Kbytes) that some thought is being given to PKZIP-ping the file to save space. But no such change to past practice has yet been made. Note added August 6th: Prof. Prikler, who just returned from vacation, advises that the new section F might confuse more than it clarifies due to its use of a different assumed

directory. So, the appendix was dropped, reducing file size to 13.8 Kbytes.

The DATA command of SPY is used to load input data cards at the start of execution. Prior to June 29th, it used its own code, and this was simpler than the code of OVER1 that is used for non-SPY cases. One feature that it did not provide was the immediate destruction of comment cards (if NOCOMM is unity). Even more important was the processing of $DISABLE and $ENABLE as cards are read from disk. This latter shortcoming was enough to prove fatal for the enormous hvdc case by Dan Goldsworthy (see HVDC.ZIP of the Salford distribution). So, logic of the DATA command was strengthened. The old logic still exists, but it is used only if execution is not just beginning. For usage at the beginning of execution, the code of OVER1 is used via a special flag having value -88111.

KILL terminations (error stops) while using SPY have been given a special pause to allow the user to study the error message in the LUNIT6 window, which will be displayed automatically. This began July 2nd in response to confusion of your Editor. Pentiums are so fast, if execution is not held after the error message has been painted, the user typically would never see it. Execution would end, and the windows would be trashed before the user had a chance to read and/or save them (the latter by the **Esc** key). The special, new SPY break was added to SUBR29 to solve this problem.

NOTMAX is a new parameter of STARTUP that was added July 2nd to allow the user to prevent the end of simulation when end-time TMAX has been reached during interactive (SPY) execution. This solved another Pentium problem : simulation that is too fast. Value zero means no such improvement. Value unity will provide the new interactive break when TMAX is reached : `"---- T = Tmax. Pause because NOTMAX of STARTUP > 0. User can extend TMAX using DEPOSIT. Always send GO when done."` Value two will result in TMAX being set very large, so the simulation should never end. Finally, value 3 is like value 1 except that there will be an additional, second break at the very end (following case-summary statistics).

MOUSET is the parameter of STARTUP that requests use of the mouse. As explained in the October, 1994, issue, the initial implementation worked only for the opening prompt, basically. Well, beginning July 4th, this use of the text cursor was extended into SPY windows. While much work remains, enough already has been done for the user to imagine how the mouse-controlled code will operate. For example, the heading line of the SPY window has up and down elevator buttons just as TPPLOT does, to allow faster scrolling (keyboard speed is limited by DOS or Windows). The left-most 4 bytes of the heading line is a yellow menu button that operates in the same pull-down manner as that of TPPLOT. The PLOT command of SPY has its own yellow menu button. A few mouse targets have been provided, and these include the important CHOICE and ###### targets of opportunity in columns 75-80. But only a small fraction of the prompts yet provide mouse targets. A lot of work remains, but it seems likely. If Win95 compilers from MS and Salford have been a big disappointment, the old version 2.66 of the DOS compiler from Salford remains effective, and remarkable within its inherent limits (the screen is either in text mode or in graphic mode). Current thinking is that this old environment should be more fully exploited, if only to establish a higher standard for the competition that is to run under Win95 or WinNT.

HPXOFF is a new variable of GRAPHICS that was added May 14th in order to offset horizontally the HP-GL disk files ATPHPGL.001, etc., that are produced by ATP. This present mention parallels that of HPDOWN in the preceding issue. That first discovery of the need to offset was for TPPLOT. Not surprisingly, ATP has a comparable need. The default value is 1.10, and the name reflects the fact that a positive value offsets the plot to the right by about this amount in inches. Dr. Liu reports that the default value is a compromise that accommodates reasonably well both that nearby HP-GL-compatible printer (a QMS 1725), and also MS Word for Windows (see separate story).

YAXHPX and YAXHPY are two new variables of GRAPHICS that were added July 24th in order to offset Y-axis numbers of the HP-GL disk files. These are in inches (nominally), and are positive to the right and upward, respectively. Differences of fonts (e.g., most noticeably between fixed and proportionally-spaced ones) make it impossible for developers to locate precisely the Y-axis numbers. Possible overlap with the Y-axis tic marks depends not only on the starting location (X, Y), but also on the font, which is unknown to developers. So the two new variables were added to allow a demanding user to displace Y-axis numbers however he likes.

LNTYHP, LCOLHP, and LENGHP are three vectors that were added to GRAPHICS July 25th in order to control the curve drawing of HP-GL disk files. For use with MS Word, this became critical: the good color yellow, which is so effective on a black background, was found to be practically unreadable on the default white background used by MS Word for its graphics. Control of color was the dominant motivation, then. But as long as this storage LCOLHP was being made accessible to the user, it seemed like a good idea to do the same for two other attributes: line type in LNTYHP and pattern length in LENGHP. Previously, these were fixed by definition within DATA statements of LINEXX (the CALCOMP PLOT module that draws curves). Now,

each vector occupies a row of GRAPHICS with the first column corresponding to the first curve, etc.

Correction : PATH80 is the CHARACTER * 80 variable used with ATPDIR . In the preceding issue, this was incorrectly named PATH .

Quality time-sharing of Salford EMTP simulation under Windows 95 has not yet been demonstrated, as far as developers know. The previous issue briefly alluded to this, with your Editor's public E-mail dated April 23rd being in the middle of the frustrating experimentation that began with Prof. Laszlo Prikler of the Technical University of Budapest in Hungary and ended with Masahiro Kan of the Hamakawasaki Works of Toshiba Corp. in Japan. If one attempts to do other work while Salford EMTP is running under Win95, the computer either will crash (Win95 will cease to operate) or the time-sharing is so bad as to be practically unusable. If any reader ever experiences a more favorable outcome, he is invited to share a report with others. Until then, the avoidance explained by Prof. Prikler is recommended. This was added to ATPSETUP.LIS of the GIVE2 disk on July 24th: Select Background mode on the Misc sheet to be 'Always suspend.' I.e., avoid time-sharing!

JDELAY is a new binary parameter of STARTUP that was added May 20th in order to make conditional the removal of a transfer in OVER12 that involved vector ADELAY. The need for change was first pointed out by Laurent Dubé, who had corrected a case of faulty execution by Prof. Mustafa Kizilcay of FH Osnabrueck in Germany. There was a problem passing the imaginary parts of phasor currents of the electric network into MODELS. The 2nd subcase of DC-68 should have noted this, but did not because the angle was zero degrees. So, Mr. Dubé rotated that angle by 30 degrees to generalize the validation. As distributed by the user group, JDELAY has value zero. In fact, any value other than -55666 removes the seemingly-extraneous transfer. All standard test cases are unaffected. But, if anyone ever has trouble with the delay time of a switch, he may want to try -55666 to restore logic of recent months and years. If this cures his trouble, the user should send illustrative data (as small as possible, please) to Portland for further analysis. Unless and/or until such a counter example can be found, it is being assumed that unconditional removal of the ADELAY transfer is correct. JDELAY is just a temporary switch in case this assumption is not always true. If a year or two passes without any report of the need for JDELAY use, this new control probably will be removed.

What about MS Windows 95 in Japan? Has this new operating system provided compatibility with Salford EMTP that did not exist with MS-DOS? Later in this issue will be found a quotation by Masahiro Kan of the Hamakawasaki Works of Toshiba Corp. in Japan. Although he prefers Linux, Mr. Kan did report successful operation under Win95 without concern for Fred Elliott's famous NOEMS switch. In his public response on April 23rd, your Editor wrote: *"The reader might infer from this that there never was a compatibility problem in Japan between Salford EMTP and Win95. Has any Japanese user of Win95J found otherwise? Does the present success extend to all Japanese computers running Win95J, or rather just to those that always were compatible with Salford DBOS? .... What about DOS PCs by NEC and Fujitsu that were not? If Win95J might provide the long-missing compatibility with Salford EMTP and TPPLOT, this would be an important development in its own right."* About this, Mr. Kan observed: *"I have no NEC or Fujitsu PC, so I cannot say anything definite. But I suppose Salford ATP will run on NEC or Fujitsu PC with Win95 because DOS-Win of Win95 runs in protected mode."* This is an exciting possibility. What reader knows for sure?

About simulations longer than 24 hours (see Watcom story), your Editor was ready to offer use of the date as in f:\atp\leap.ftn (named because leap years complicate the determination) when the elegant and simple enhancement of TGRUN1 arrived in E-mail from Schultz dated June 12th. So, LEAP.FTN remains untried but available for some other computer or compiler that might have the same problem and no known easier solution. Salford EMTP is not so bothered because the DBOS routine SECONDS_SINCE_1980@ has used since the Schultz Revolution of late 1993. About leap years, what will happen when the present repetition (every four years) ends? How many operating systems will correctly provide the exception?

Improvements to Salford TPPLOT

The S3-TRIO64V+ graphic chip was used in a DOS PC that had trouble with TPPLOT graphics. The original mention was in E-mail of the Fargo list server dated July 19th. Masahiro Kan of the Hamakawasaki Works of Toshiba Corp. in Japan wrote that he suspected either this chip or the BIOS was responsible for graphical problems of his friend's computer. On July 23rd, Mr. Kan provided further details: *"Prof. Haginomori of Tokyo Institute of Technology told me that TPPLOT works well in a Dell machine with the same graphic chip and CPU. The difference was found to be the BIOS manufacturer. The Dell machine uses Phoenix BIOS whereas the PC in trouble uses AMI BIOS. My friend reported the problem to the PC manufacturer and requested an explanation."* Question: has anyone tried newer DBOS on this and/or other incompatible computers? Remember that version 2.71 as distributed by the user group is more than 3 years old (DBOS.EXE dates to June of 1993). Maybe current Salford logic

better accounts for graphic cards that have been introduced during the last 3 years.

The CACHE and X-Y PLOT commands became compatible May 12th in response to a request of the preceding week by BPA's Jules Esztergalyos. It seems that those who work with relays frequently plot one variable against another (the X-Y part), and then want to compare two or more such trajectories on the same plot. The superposition of CACHE now allows this as illustrated by new XYCACHE (to be found in the TPPLOT archive). In addition to the superposition of two X-Y plots, this illustrates 2 other generalizations: 1) superposition can mix time plots with X-Y plots; and 2) an X-Y plot can have more than a single curve. As for the SHOW subcommand of the CACHE command, it should be mentioned that a special, second row has been added to each X-Y entry in order to document the second of two plot variables that was used. For example, Frame 3 of the display produced by XYCACHE begins as follows:

```
 Frame 3.  16-Mar-79  13.47.56     323   -8.0 ..
    Curve 1.  NODE2            4      66     ...
              NODE1            4  ---  hidden ..
```

where "hidden 2nd variable of X-Y plot" has just begun on the third of these lines. Frame 3 contains two X-Y curves with the first involving node voltage of NODE2 plotted against the node voltage of NODE1 .

BACKPS is a new parameter that allows the user to control the background color of his PostScript output. It was May 16th that this extra control, connected through floating index 94 of TPPARAM.DAT, was added for flexibility. In the case of ATP files, that NYPA utility PSPLOT (see the October, 1995, and January, 1996, issues) provides the conversion from black background to white background as desired for printing on paper using a monochrome printer. There never was a printing problem with TPPLOT PS files, but what if a user wanted his TPPLOT output to be consistent with his ATP output? New parameter BACKPS permits this choice. Default value unity gives a white background as before whereas value zero will result in a black background. A new, extra /bakgnd command has been added at the end of the header to apply the control (the comment will show S. N. 5926) . Because of location, note that this new control will override any /bakgnd declaration in the header.

BPA's Transient Stability Program (TSP) now runs on Intel-based PCs under Salford DBOS . Output can be plotted using Salford TPPLOT provided the TSP signal file first is processed by a new utility TSTOPL4 which creates a corresponding ATP .PL4 file. Any of the three original, basic file types can be created: 1) UNFORMATTED, 2) FORMATTED, or 3) C-like. Of course, BPA's TSP is in the public domain, and can, in fact, be acquired by aFTP along with the paired Power (load) Flow Program from site **ftp.bpa.gov** (directory **web/int/ftp/outgoing/teos** ends in the mail routing of Dr. Liu's section, it will be noted). But TPPLOT requires ATP licensing, and so does TSTOPL4, which was written by your Editor.

HEADER5.DAT through HEADER8.DAT are new files within TPPLOT.ZIP that have been added by Dr. Liu to improve PostScript output of WINDOW plotting (now being used for as many as 6 windows). For use with autoscaling, then, MWINDO < 7 is the current restriction. The four previous HEADER files have changed, too, as documented in comment cards at the top of the file. The other major alternative involves the choice between portrait and landscape (integer index 272 is for LANDPS : 1 if landscape; 0 otherwise).

A WINDOW plot was allowed to occupy two full screens beginning May 26th. Previously, the plot could be taller than the screen, but painting was done one window at a time, from top to bottom; and if the plot was too tall, the bottom would be clipped. But now a second screen is allowed so that there can be a top half first, and a bottom half immediately following it. The user can switch rapidly back and forth between the two halves by pressing the **Page Up** and **Page Down** keys. About the transition between pages, windows should never be split. If the Y axis of a window does not completely fit on the first page, that window will be deferred to the second page. But HP-GL and PostScript output are unaffected. There is no paging for these alternative outputs, which remain unchanged. The paging on the screen merely allows more accurate screen display prior to printing on paper. Typical printers have plenty of resolution (300 or more dots/inch), so there is no problem with the hard copy. The problem was with the screen. Standard VGA only provided 480 pixels vertically --- not much when divided among 5 or more windows. With a top half and a bottom half, this is effectively doubled to 960. As an illustration, SIX.WIN has 3 windows filling each of two pages. If used with HEADER6 or HEADER7, the PostScript output TPPPOST.001 prints nicely on 8.5 x 11-inch paper of the nearby QMS printer in portrait or landscape orientation, respectively. New JULES6 is provided to illustrate 6-window autoscaling.

Parameter JULES of integer index 270 was named after BPA's Jules Esztergalyos as explained in the October, 1995, newsletter. Well, it was fortified on June 5th as part of the work on PostScript by Dr. Tsu-huei Liu. Previously, the first two .PL4 comment cards (produced by BEGIN PL4 COMMENT in ATP data) were taken for the case title if JULES had value unity rather than zero. Now, JULES can have any positive value from 1 through 11, and this is the number of comment lines that will be used to label the plot automatically. Since the first comment card continues to be used for the super title, JULES now is one larger than the number of case-title lines. Now, JULES = 3 corresponds to the old,

fixed allocation of 2 case-title lines. So, why the need for more lines? Randy Suhrbier's DEC VMS plotting program allows more. TPPLOT might replace this more easily if it is more compatible. That is the motivation. So, Dr. Liu's reconciliation continues.

Parameter JULOFF of integer index 275 is related to JULES in that it provides an additional vertical offset (downward, in pixels) for all windows and curves when plot labeling is loaded automatically (i.e., if JULES is positive). Later, JULOFF might be computed by the program. But initially, the user simply lowers his windows manually as much as he wants to provide extra room for the labeling (one super-title line and JULES - 1 case-title lines) at the top. JULOFF will be ignored if the .PL4 file does not have one or more case-title lines, however. For non-WINDOW plotting, JULOFF is ignored even though JULES is applicable (i.e., even though labeling is loaded from the .PL4 file).

SET is a new hidden command that allows parameter changes to be made as simple plot commands during execution rather than via batch-mode SET DATA which works on disk file TPPARAM.DAT. Illustrations follow :

```
SET JULES = 5
SET IHS = 1
```

The alert reader might wonder why this is needed, since TAMPER (see the January, 1993, newsletter) already provides such capability. But TAMPER is interactive, and is more useful for observation. In that it is done within a window, it is inherently interactive. Like so many things done in MS Windows, interactive may be the laborious and error-prone way. Take the user who is processing a family of .PL4 files. The same network with the same variables might be involved for each as fault time or location might be varied. Well, a smart user would want to decide upon his changes once, and then put them in a file for batch-mode execution. It seems unlikely that he would want to repeat his mouse clicks for every member of the family. It would be much easier to change parameters using @ to point to a disk file. For more illustrations, see JULES* disk files.

There is a non-mouse form of TAMPER for those who just wanted to change selected parameters. But this was based on index number rather than parameter name. The time had come for the higher-level SET command. Much like negative $UNITS use, SET also will cancel any previous use if OLD replaces the usual value. For example,

```
SET JULES = OLD
SET IHS = OLD
```

will restore values existing prior to the changes that were illustrated in the preceding paragraph. It should be used with caution, however. First, do not try to restore a variable that has not previously been SET. Second, do not separate the change from the following restoration by use of TAMPER (which shares the same storage). Use one or the other, but not both.

USE TPPLOT BEGIN is the declaration of ATP data that allows use of TPPLOT for real-time (concurrent) plotting. This is illustrated by DC-1 and DC-63 if the user toggles binary switch NOTPPL from unity (as distributed by the user group) to zero. Well, this was fixed July 9th. Apparently the feature had been broken as part of the experimentation to use TPPLOT for the SPY interface during late 1994.

X-Y PLOT had its Y-axis scaling factor extended as a result of a complaint by Prof. Bruce Mork of Michigan Tech in Houghton. Included with his private E-mail dated July 9th was a .PL4 file in which variables 1 and 3 could be plotted if selected in that natural order. But, if the order of variable selection was reversed, execution would die. It was found that 10**K was the offending operation. Because TPPLOT has been compiled with the default switch that provides 2-byte integer constants, this was limited to $K < 5$. By replacing the constant 10 by INTEGER*4 LONG3, the range was extended to 9.

News from Outside USA and Canada

A printed copy of the April newsletter was mailed by BPA to each of its 9 primary EMTP contacts on June 4th. As was done for the preceding issue, the double-sided printing of the user group was involved. The placement of APR96.ZIP on the Houghton FTP server was announced by Prof. Bruce Mork of Michigan Tech in public E-mail dated May 10th. Actually, it was the copy for MS Word, named APR96MSW, that first was made available. As explained in a separate story, the WP 5.1 file was derived from the MS Word .DOC file, and was sent to Houghton and Hannover about a day and a half later.

BRITFORM.ZIP is the licensing form that is used within the U. K. by Gayle Collins, the Can/Am High Commissioner for that part of the world, as explained in the July, 1994, newsletter. Curiously, BRITFORM was nowhere to be found when your Editor checked the Houghton aFTP server on May 29th. Whether a copy ever was available via aFTP now is unclear. So, E-mail to Prof. Bruce Mork on June 10th included this WP 5.1 attachment. Your Editor's recommendation was for a separate subdirectory **/uk** or **/britain** to parallel the existing **/eeug** and **/canam** under **pub/atp/license**

"Magnetic bank routing information must be printed across the bottom of any check that is used to compensate Dr. Ger for ATP services." Thus began a paragraph of the preceding issue. But the importance could not then be quantified because the transaction had not yet been completed when the paragraph was written. Well, one line of Dr. Liu's computerized bank statement

for the month of April provides plenty of incentive : *"Credit for foreign item fee of 60.00 collected by Citibank .... 70.00"* That's right, only $70 was credited, from a check for $130. After talking to various persons at different locations of Citibank , beginning with the toll-free telephone number (800) 285-3000, no one believed this was an error. In fact, one person explained that Citibank will not cash any foreign check for less than $100. So, the whole procedure fails for the case of $20 floppy disks for Salford EMTP, or $10 ATPDRAW (Dr. Ger's international prices, for Air Mail outside Mexico and Canada). Conclusion for persons overseas: make sure there is magnetic encoding across the bottom of any check that is submitted for payment!

LICENSE.ZIP was updated May 21st and sent to Houghton for placement on Prof. Bruce Mork's aFTP server. Quoting from the accompanying explanation : *"We made minor changes to the licensing agreement. These include VM1 ---> LISTSERV in the Fargo address. Most importantly, we added the requirement of magnetically-encoded numbers on checks. Finally, we were more explicit about double-sided printing."* Recall magnetic encoding was explained in the preceding issue. As for double-sided printing, Dr. Kai-Hwa Ger has received several applications that consist of only page 6, but which wrap onto the back sides. This is **not** what is meant by double-sided printing! The pages are defined unambiguously by hard page (Hpg) marks in the WP 5.1 document. Of course, if too big a font is used, each of these pages will spill onto a second sheet. The solution is to use a smaller font. The disk file consists of 8 pages, of which 5 and 6 are to be printed on a single piece of paper to create the licensing form itself.

"China, unhappy with Internet data, creates own network with limited tie" is the headline of a story on page B7C of the May 17th edition of the *Wall Street Journal. "China's powerful Ministry of Post and Telecommunications, nagged by what it considers the subversive dangers of the Internet, is creating a nation-wide network of its own with only limited links to the outside world. The new network, dubbed GNET and covering southern Guandong province, ... The move follows the sudden restriction earlier this year of Internet access for most Chinese, who now have to register with China's state police before being allowed to log on. The new rules have quelled the swell of connectivity that swept the country last year ...."*

An Indian ATP user group continues to remain a goal of Prof. Ned Mohan of the University of Minnesota. It is good the professor remains optimistic, since your Editor has about given up hope following failure of that mailing last year to Singapore (see the April, 1995, issue). So, although BPA probably is through mailing ATP materials that might (and then again, might not) be shared within India, Prof. Mohan is not. E-mail dated May 21st explained: *"I have Prof. Hariharan, retired from IIT-Bombay, visiting me here today. Since retirement, he has been active in research and as a consultant. He is visiting .... and will be returning in August. His interest is power systems. He soon will be getting a PC of his own. He also has an e-mail address at the IIT as the professor emeritus."* Of course, IIT is the well-known Indian Institute of Technology which has campuses in several cities.

Japan is another area of the world where Salford EMTP and TPPLOT now are available by E-mail. A separate story documents this important initiative by Masahiro Kan of the Hamakawasaki Works of Toshiba.

South African user group relicensing has been slow for unknown reasons. This involves Dr. Warren Levy of ESKOM as documented in E-mail dated May 29th.

Vol. 1 of *"EMTP Journal"* is the English title of a bound volume with a green cover that has been published by the Japanese EMTP Committee (JEC) at Doshisha University in Kyoto. The opening page is in Japanese, but the date 21 March 1996 is readable at BPA, which received a copy in a package that was postmarked June 6th. The 418 pages of vol. 1 are separated into 8 sections by special green marking pages. Most of the first section consists of Can/Am newsletters (pages 1-78), but it is followed by one of Prof. Hermann Dommel's newsletters: Vol. 1, No. 1 of *MicroTran News* is dated December, 1994, and it occupies pages 79-91. Price is probably the most important thing learned: $2600 for commercial use, and $510 for an *"Additional license"* (meaning that extra persons or computers require extra money?).

More about Electronic Mail (E-mail)

Soon, E-mail should allow any one ATP user to determine whether any other ATP user is licensed. This is an important development --- important enough to be moved to a story of its own (see "On-line records ....").

Portland's Teleport Internet Services continues to grow. Full-page advertising on page 77 of the June issue of *Computer Bits* magazine has nothing but headlines: *"4 T-1's to the Internet. 1300+ incoming lines. 10 cities and growing... No one else even comes close."* A cocky bunch, eh? Well, the Web page **www.teleport.com** reveals more such posturing. It begins: *"Home to 4357 Web sites. 907678 hits can't be wrong since February 7, 1996. .... guess when Teleport's home page will hit a million and win a year's subscription."* But there also is some genuinely-informative text. Within *"Teleport and the Internet,"* which is under *"All about Teleport,"* can be found the following summary conclusion about speed within the USA: *"round trip times for a cross-country*

journey starting from Teleport are usually in the neighborhood of a few hundred milliseconds." This follows a detailed explanation of the different places a packet of information typically is delayed. As for total number of Teleport subscribers, a smaller ad on page 64 states: *"Over 21,000 customers and 4,300 Web sites."*

Meanwhile, Agora might be shrinking. The April, 1995, issue reported 1042 directories at the root level, of which **/atp** is one. Well, on May 31st when the experiment was repeated, only 683 entries were found. This is the good news : faster file transfers (e.g., less competition for Agora's one T-1 line).

Segmentation of UUENCODE-d Salford EMTP files was the problem of Dr. Lance Grainger of A. Comeau Associates in Edmonton, Alberta, Canada. June 30th, he responded as follows to GIVE1.ZIP (which had been sent from BPA using the usual **Attach** of MS Mail): *"I received 27 files .... My Eudora 1.5.2 software ....."* Then, on July 1st came the satisfying resolution: *"I have spent most of the weekend talking to various people and searching the net for assistance .... What I have found out is this: 1) It was most probably my Eudora 1.5.2 software which fragmented the files. 2) I have been directed to David Harris's 'Pegasus email software' located at* ***http://www.pegasus.usa.com/*** *which is capable of properly handling uuencoded files. The Pegasus software has a switch in it which permits me to leave the original message on my host Internet provider to allow for those cases where the download to my own computer may not occur correctly."* So, this story ended happily. It is being repeated here for the record. The average recipient of GIVE1 and GIVE2 has no trouble with segmentation, but there may be other isolated exceptions who can benefit from Dr. Grainger's account.

Reliability of BPA E-mail remains less than desired. The 12th of June, Dr. Liu's connection was deliberately broken because of some trouble. At the end of the day, around 18:00, your Editor rebooted the machine in order to try again. Mail was again available, but all history of past usage was missing. There was no sent mail or received mail, and the address book was missing. So, Dr. Liu reported the trouble the following day, and eventually (June 18th) the missing information was restored. Ah, the joys of a remote post office!

Chinese language has been seen at a World Wide Web site. The following was picked up June 13th from **http://www.saec.edu.tw** : *"Welcome your visit to the Study Abroad Electronic Center's WWW. This site uses Chinese and requires a computer both equipped to read Chinese characters and with Netscape 2.0 or higher. If when viewing this site on your computer, its content looks like nonsense and grage (sic), this means your computer's system software does not support a Chinese environment. If you are using a browser other than Netscape, the sites graphics will appear distorted on your screen."* So, what Chinese can summarize the details of accommodation with the 7-bit Internet? Are 2 7-bit bytes (which would limit display to 16K characters) used for each Chinese character, as for Japanese? Or, is a third byte used? Finally, what about the possibility of using Mosaic (BPA's money-saving standard) rather than Netscape?

Doshisha University in Kyoto, Japan, has a Web site at address **http://www.doshisha.ac.jp** This provides another example of how Oriental language can be handled as demonstrated by Taku Noda during his visit prior to the IEEE PES summer meeting. Of course, Mr. Noda's Epson notebook computer has the required Japanese language capability, but Dr. Liu's 486 DX2 / 66 at BPA does not. So, when Mr. Noda demonstrated connection using Dr. Liu's computer, there was a lot of garbage at first. But a button marked *English* was seen, and once this had been selected, the display switched from Japanese to English. Very slick: a bilingual Web site!

Japanese language E-mail and/or files can be handled (if not viewed) using a computer that has no Japanese language software. This was demonstrated by Taku Noda using your Editor's Pentium and Agora to Telnet to his mailbox in Japan. Unreadable bytes in the scrollable Win95 window for Hyperterminal were copied, and then pasted into a file on a floppy disk using Notepad. After this disk was moved to Mr. Noda's Epson notebook computer (which does have Japanese language software), the file was confirmed to contain readable Japanese.

Shockwave is produced by Macromedia. It *"is a freeware viewer that plugs in to a browser and allows users to view multimedia presentations created with Macromedia's Director."* This according to an editorial on page 6 of the June issue of *Computer Bits* magazine. The new WWW movies are to be contrasted with conventional displays, which might be considered to be silent slides: *"Most Web pages don't do anything; they just sit there trying (often in vain) to look pretty and interesting."* But is this really progress? Have movies and television really been good for civilization? If not, is there any reason to believe that a multimedia Web would be any more beneficial (except to advertisers)?

More junk mail --- this time noncommercial --- was received from Prof. Bruce Mork's Fargo list server on May 22nd. This seems to have originated with Russell W. Patterson at address **rwp1@ra.msstate.edu** somewhere on the campus of Mississippi State University. The body of the 6852-byte message began with the following pitch: *"This is a formal Request For Discussion (RFD) for the creation of a world-wide unmoderated Usenet newsgroup* ***sci.electric.power.system.engr*** *This RFD is being issued in accordance with the guidelines set in the*

'How to create a new Usenet newsgroup' and 'How to Make a New Group Proposal' FAQ's regularly posted to ***news.announce.newgroups*** *This is not a Call for Votes (CFV); you cannot vote at this time (see PROCEDURE: below)."* If this is related directly to ATP, your Editor would like to know how.

peak.org is the E-mail service used by Laurent Dubé, recall. Well, it is being spun off from Oregon State University to become a private corporation. Details are to be found on page 8 of the June issue of *Computer Bits* magazine. *"With over 2000 accounts, CSOS has accomplished its mission,"* which was *"to produce a critical mass of Internet users that would attract commercial Internet providers to the area."* Oh yeah? Where in early advertising were potential customers informed of this? It sounds a little like Pres. Richard Nixon declaring victory in Vietnam! The commercial competitors would seem to have come to Corvallis in spite of CSOS rather than because of CSOS . In any case, now that there are commercial alternatives, CSOS no longer is a pioneering operation. So, what is to be the new role of PEAK ? The *"primary distinguishing feature, according to Sechrest, will be its commitment to educating the public through lab classes, online training courses, and even telecourses."*

Prof. Mustafa Kizilcay of FH Osnabrueck in Germany has switched from CompuServe to AOL. Beginning June 9th, your Editor has been receiving mail from address **kizilcay@aol.com** rather than the old 100117.2636@..

But did AOL accountants study in Leuven (joke)? AOL *"has problems with the way it reckons its subscriber revenue"* according to a column by Mike Francis on page G1 of the June 16th issue of *The Oregonian. "The attorney general's office in New York state has begun an investigation into what America Online describes only as 'consumer rights.' Bloomberg Business News reported last week that the inquiry focuses on the way AOL rounds upward the number of minutes its customers spend on-line. Subscribers in California, New York, Pennsylvania and other states have sued America Online over the practice."* Historical note : LEC avoided litigation by shutting itself down toward the end of 1993 (see October, 1993, newsletter).

"Ban Viet ngu cua ky thu E-mail" was the subject of a message sent to the Fargo list server on May 14th. The language is Vietnamese --- produced from your Editor's English by BPA's Vinh Tran. In the preceding issue, use of French was noted. That was the second language. On May 13th, a third (Portuguese) was noted. So, to better make his point, your Editor decided to issue his call for discussion of the problem in Vietnamese. The following is the original English-language content that was translated to Vietnamese for the general public by Mr. Tran : *"The message from Cristina to Marco Polo on Monday raises once again the question of an official language for Prof. Mork's E-mail service. The April newsletter raised the issue about French. Now we have Portuguese. Is it not time to insist upon English? In the hopes of making the point better, this note is being written in Vietnamese. What would readers like next? Japanese or Chinese?"* About that subject, the original English was something approximating *"A 4th language for E-mail : Vietnamese."*

COLDFUSI.ZIP is the disk file name within directory **pub/atp/canam** of Prof. Bruce Mork's Houghton aFTP server for an important article that first was published in LEC's *EMTP News* during 1988. This really is news from 1995, but somehow mention within newsletters was overlooked at the time. *"News : Optical Scanning of LEC's EMTP News"* was the subject of public E-mail of the Fargo list server dated Sun, 19 Feb 1995. This explained: *"In general, there is no easy, compact way to produce computer storage of the many hundreds of pages. Yes, optical scanning may work well on some or most, but only in bitmapped form because of graphics, figures, mathematical symbols and Greek letters, etc. .... But some articles .... are purely keyboard text. This can be recovered as a file without too much difficulty. .... The first such article to be processed is the now-famous one by Dr. Tsu-huei Liu and Li Jin-gui of Bonneville Power Administration (BPA) in Portland, Oregon. This covered most of pages 9 through 12 of the March, 1988, issue. .... Disk file COLDFUSI.ZIP is the archived storage of the WordPerfect 5.1 storage of the just-mentioned article. .... Context of the file is provided by the following additional paragraph at the start: .... In reference [7], there is a statement that begins: 'as of the end of February, 1988.' Well, it remains true today. I.e., as of mid-February, 1995, neither DCG nor any of its agents (e.g., Prof. Dommel) has ever delivered the requested materials to BPA as required by the DCG contract. Finally, no one ever responded to this call for help with any useful suggestion. As far as this writer knows, Prof. Dommel's research using Luis Marti remains 'cold fusion.' That is, it could not be confirmed or made to work by independent researchers."*

The Yellow Pages in most American cities is the telephone book of commercial rather than residential entries. It is named because printing typically is on yellow rather than white paper. Well, now the telephone companies themselves are placing this information on-line. Mention in the July, 1993, newsletter was for a commercial product. Now, files are becoming available free of charge. Page D1 of *The Oregonian* dated June 5th carries a story with the subtitle: *"US West places on the Internet system more than 1.5 million business listings in 40 cities in its 14-state service."* Obvious advantages include computer searching and newness: *"It allows searching by business category, name, address, Zip code or phone number."* So how does US West (one

of the Baby Bells) pay for this free service? *"By selling advertising, which can be found all over the site. ... The other cash generator is expected to be what businesses will pay to have display space on the Internet. The display ads will appear as World Wide Web home pages. .... the company expects to offer the pages in the fall. Later in the year, plans are to let businesses with existing home pages put links to those pages on the US West site."* The story is by ever-interesting Fran Gardner, who provided the following conclusion: *"Being able to search by several categories can be useful. Asking for pizza and Portland and entering the zip code 97201, for instance, brings up a list of pizza parlors in downtown Portland."* So, where is this great service? At address **http://yp.uswest.com** But there are other free sites, too, such as **http://wyp.net** for the World Yellow pages *("a site out of El Cerrito, Calif., offers 105 million listings, 12 million of them businesses.").*

European EMTP User Group

The EEUG ATP short course was **not** given the first week of July as mentioned last time. Three full weeks before the course was to start, Prof. Mustafa Kizilcay wrote the following: *"Unfortunately, we should cancel the EMTP Summer Course because of low participation (until now 7 registrations). .... The reason for low interest might be the length of the course. Five days is a long time for companies. In Germany, all companies try to save money. This is the trend at the moment because of the bad economic situation. I know from* (name of consulting company deleted to protect its image) *that the electrical engineering dept. occupied formerly two floors in the building. Recently, it has been squeezed to one floor."* So, bad news. A new record : the first ATP course (of which your Editor is aware) that ever has been canceled. In retrospect, was cancellation wise? Recall Prof. Dennis Carroll's alternative of contraction some 14 months earlier.

The 1996 annual EEUG meeting has been scheduled for November 10-12 in Budapest, Hungary. A separate story provides details.

MODELS from Laurent Dubé

Gabor Furst is a creative user of the new ATP() function and *DEPOSIT( )* statement (see preceding issue) as summarized in public E-mail dated June 4th**:** *"I have developed a Monte Carlo simulation using MODELS with a number of simultaneous probability variables. .... I wanted to abort any individual run at the beginning after detecting that the set of probability variables obtained would be of no interest in the simulation. In my case, this meant that one could determine from the examination of the variables that no overvoltage of any significance will occur. .... The procedure worked perfectly, as far as the length of each energization was concerned. I managed to reduce the total length of the Monte Carlo simulation to one third of the original total time."*

Dr. Dmitry N. Kosterev is the young, recent graduate from Corvallis who has been assembling a lot of MODELS data at BPA for Jules Esztergalyos, the relay modeler. Well, 96 SM 465-5 PWRD is the number of his most recent IEEE PES paper, which is entitled *"Modeling synchronous voltage source converters in transmission system studies."* Readers are to be assured that, although EMTP is mentioned throughout, in fact it is ATP that is involved. Only two mentions of ATP are noted, and both are in section 2.2 ("EMTP model"). The first sentence reads: *"A VSC is modeled using EMTP (BPA-ATP version)."* For the record, BPA uses ATP, but is neither the originator nor owner of it. The second and final reference is to *"control language ATP-Models [8]."* Since Ref. 8 is the Dubé-Bonfanti ETEP paper, there is no ambiguity; but upper-case letters should have been used for Mr. Dubé's creation.

Szymanski uses Windows 95 for ATP

MS-DOS EDIT under Win95 has been pleasantly improved compared with the crippled editor of real DOS that began with version 5. Thus began a paragraph of the preceding issue. An even better example of power and speed was observed purely by accident. Here in Portland, Agora E-mail is preserved in quarter-Mbyte chunks such as AGORA95*.LIS --- a family of 33 uncompressed text files that total 8115 Kbytes for the year 1995. Well, Vernon Buerg's shareware LIST is frequently used on this family to find some specific reference last year. One time, by mistake, your Editor issued the EDIT rather than the LIST command, and watched in awe as EDIT rapidly loaded 9 files before complaining that its limit had been reached! How long did all of this loading take? Only about 3 seconds.

Windows NT is the MS alternative to Win95 for those wealthy and/or courageous enough to try. A strong advocate of WinNT use has been Dr. Gary Thomann of Power Technologies (PTI) in Schenectady, New York (USA). Public E-mail of the Fargo list server dated May 2nd contains good arguments for WinNT. Like many businesses, PTI seems to have rejected Win95 and jumped right onto WinNT. But is this because WinNT really is good? Maybe it means nothing more than that Win95 is bad, and **some** MS operating system seems inevitable. Bill Machrone, Vice President of Technology for Ziff-Davis Publishing, seems to be one of the NT skeptics. His column on page 59 of the June 10th issue of

PC Week magazine is entitled *"NT on laptops: has everyone gone mad?"* This column about WinNT ends: *"It's the inevitable operating system that nobody wants. How sad. For all of us."* About laptop computers, this is a real challenge for NT, which is almost universally shunned. Mr. Machrone asks: *"Can you think of an operating system with less to recommend it for laptop use? Other than, say, MVS ? "* The problem is this: if WinNT is to be a universal replacement, then it must run on laptops, too. But vendors seem not to like NT for laptops in 1996.

"Is Windows 95's help engine really a hindrance?" is the title of Paul Bonner's *On Windows* column that can be found on page 534 of the May issue of *Computer Shopper*. The article begins: *"Is it just me, or does the help system in Windows 95 represent a giant step backward?"* No, Paul, it is not just you. As you write, *"the information you need might be there, but there's a good chance you'll have a hard time getting to it. What you will get is help windows popping up right and left, with no menu or navigation buttons to guide you. Click on a jump in the main help windows, and suddenly that window disappears and a secondary window -- with no menu, history list, or bookmarks -- appears elsewhere onscreen. Sometimes you can go back to the first window, other times not."*

BPA remains committed to the avoidance of WIN95, it would seem. Your Editor can see no movement anywhere around Dr. Liu's group. As for Dr. Liu's 486 at BPA, it continues to run Windows for Workgroups version 3.11 (according to the help button). Were it not for recent crashes caused by **Alt-Tab** to change the focus, all would be reasonably happy. But every now and then (1 in 30 usages, perhaps), attempts to switch from the full-screen DOS window to another process will lock the computer, forcing the user to push the hardware reset button. The computer experts seem to be convinced that the problem is MS's, but thus far have offered no relief other than vague promises (or are these threats?) of possible future replacement by NT.

IBM OS / 2 Warp Used by NYPA

IBM's OS / 2 is being used for the support of ATP by Robert Meredith and Robert Schultz of NYPA (the New York Power Authority in White Plains). This is a continuation of the same story in the preceding issue.

PL42MAT is the utility that converts ATP .PL4 files into .MAT files for MATLAB. As mentioned in the preceding issue, PL42MAT was incompatible with Watcom C-like .PL4 files. But that problem has been solved, according to public E-mail of the Fargo list server. Dated June 3rd, this news summary by Massimo Ceraolo of the University of Pisa in Italy reported other progress, too : *"... comparison of plots from different ATP files has become very simple with the version 3.0 .... the new version allows to assemble into a unique MAT file up to 10 PL4 files. Other improvements are : .... a Win 3.x version of the routine that, since it uses the whole computer memory, is much faster with large files."*

Elapsed times in excess of 24 hours first were reported for Watcom ATP by Glenn Wrate of Michigan Tech in Houghton. In E-mail dated June 7th, he noted a problem: *"I know most people don't run cases this long, but I've noticed that the program doesn't keep accurate times for simulations longer than 24 hours. For example, the case I just finished ran for 24.95 hours, but the statistics at the end of the run lists 0.95 hours."* The relief came rapidly from Robert Schultz of NYPA, who reported the switch to an *"undocumented clock routine"* which *"in Fortran, as in C, returns clock ticks since program start. 100 ticks per second."* This was June 12th. Previously, seconds since midnight were being used together with correction in case midnight had been passed. But what if midnight had been passed two or more times (this was the problem) ? !

1996 EEUG Meeting in Budapest

Budapest, Hungary, is to be the place, and November 10th through the 12th is to be the date, of the 1996 annual EEUG meeting. After two years of meetings in Hannover, Germany, EEUG Chairman and FH Osnabrueck Prof. Mustafa Kizilcay will be taking his show on the road. Public E-mail of the Fargo list server dated May 24th announced the 1996 meeting and issued a call for papers. For more information about the meeting, TU Budapest Prof. Laszlo Prikler encouraged E-mail to his address **priki@vmt.bme.hu** or the EEUG home page on the Web at **http://www.vmt.bme.hu/eeug**

The preliminary program has been scheduled as follows at the Technical University of Budapest:

Sun, Nov. 10 : 9.00-12.00 Sightseeing Tour
Sun, Nov. 10 : 13.00-18.00 Technical Visit
Mon, Nov. 11 : 9.00-17.00 Technical Sessions
Tue, Nov. 12 : 9.00-12.00 Technical Sessions
Tue, Nov. 12 : 14.00-17.00 Members' Meeting

The call for papers explained two alternatives: 1) full conference papers (20-minutes presentation); and 2) short contributions, with 10-minute presentation and discussion. Four preferential subjects were listed: "1. Testing of ATP Program (Comparison of simulated results and that of obtained by using other tools, i.e. TNA, other programs, field/laboratory tests); 2. New application fields (neural net training, relay algorithm testing, FACTS, power electronics, superconductivity,

EMC); 3. Using ATP as simulation tool in computer-aided education; and 4. MODELS applications"

A 750-kV substation located 80 km outside Budapest is to be the subject of that technical visit. Included are sets of 330-MVA shunt reactors, 1100-MVA auto-transformers, and SF6-insulated 420-kV switchgear.

Prices are reasonable by American standards. The Monday and Tuesday meetings are covered by the 150 DEM registration fee for members (or 250 DEM for nonmembers) which *"includes 2 lunches, welcome cocktail, official dinner, coffee breaks, rent of the conference room and photocopy costs."* As for lodging, there is a choice between a 4-star hotel at 160 DEM/night and a student hostel for 25 DEM.

More BPA Reinvention Nonsense

Congress may be the latest obstacle to BPA's new-found commercialization. The following summary was found in BPA's unofficial *Market Intelligence Weekly* newsletter dated May 29th (Vol. 3, Issue 17). *"Rep. Peter DeFazio was on hand to second the concern and to question whether it was appropriate for BPA to compete with private enterprise as an unregulated federal entity. Al Alexanderson, PGE senior VP and general council whined that 'nowhere else in the country expect (sic) in the Pacific Northwest does the federal government own 40 percent of the power market and 80 percent of the transmission system.' He wants legislators to intervene to ensure that PGE and others have a level playing field."* BPA's *"defense cut no ice with Doolittle and DeFazio who both want the agency (to) lay off on any market expanding activities until the Regional Review determines what BPA's role will be in the Pacific Northwest market." Whined*? It is easy to see why this kind of self-serving advocacy was not designed for release to the general public! About the "sic," it seems likely that *except* was intended, rather than *expect*. As for Doolittle and DeFazio, except for belonging to the party out of power (the Democrats), these are influential lawmakers. BPA's *reinvention* is not yet a done deal. Should Republicans lose control of the House during November elections, BPA's politicians might need to reconsider their direction once again (what else is new?).

HP-GL for Brain - Damaged MS

For years, MS Word for Windows has had trouble displaying legal HP-GL that was produced by TPPLOT, ATP, and PCPLOT. As explained in public E-mail dated July 23rd, perhaps the best public explanation of the troubles of MS Word came from Prof. Laszlo Prikler of the Technical University of Budapest in Hungary. His own public E-mail of the Fargo list server, dated March 12th, began as follows: *"I have created two small HP-GL files (PCPL.HGL and TPPL.HGL), one with PCPLOT 6.12 and one with the latest TPPLOT, and I inserted/ imported these files into three different versions of MS WinWord (2.0, 6.0, 7.0) and CorelDRAW (3.0, 4.0, 5.0). Here are the results ...."*

HP-GL output of ATP and TPPLOT no longer is incompatible with MS Word for Windows, however! This was the unexpected good news learned during the afternoon of July 13th as your Editor talked to BPA's Dr. Tsu-huei Liu at home, where she made the breakthrough. In fact, correction is so simple that apparently no one else (including your Editor) realized it. HP-GL graphs appear normal after both X and Y coordinates have been multiplied by a factor of 1000. This was confirmed quickly using Dr. Liu's 486 DX2 at BPA, which runs Word 6.0a under Windows for Workgroups 3.11 (according to Windows Help information).

3P was added at the start of FORMAT statements to provide the scaling by a thousand. Also, the number of digits to the right of the decimal point was changed from three to zero (e.g., F10.3 became F10.0) in order to keep the precison the same. To illustrate, an old value of 2.000 has become 2000. (including decimal point).

HPYOFF is a new variable of GRAPHICS that was added July 14th in order to offset vertically the HP-GL disk files ATPHPGL.001, etc., that are produced by Salford EMTP for Intel-based PCs. This present mention parallels that of HPXOFF elsewhere in this same issue. BPA's QMS 1725 had no such need, but MS Word certainly did --- to raise the plot that otherwise had no bottom margin at all. Value 1.0 is being used to produce a nice, centered appearance in MS Word 6.0a

The SC command is the scaling instruction that defines minimum and maximum coordinates for both directions. Following the multiplication by 1000, this became: SC 0, 11000, 0, 9000 (all 4 numbers integers). At least that was the initial adjustment. But it was not the final one. In fact, there is no obvious lower bound on Y. Zero is at the bottom of the screen, but this is not necessarily the bottom of the plot. As explained earlier, WINDOW plots of TPPLOT now can span two screens, and later probably will be allowed to span an arbitrary number of screens. Since the HP-GL coordinates are continuous, this means that the second screen or page will have negative Y coordinates. Putting all four limits under user control seemed to be the only solution that would satisfy all. The new X-axis minimum and maximum are IHPXMN and IHPXAX (integer indices 63 and 64) whereas the new Y-axis limits are IHPYMN and IHPYAX (integer indices 99 and 100) as further explained in TPPARAM.HLP

Yellow is a great color for use on a black background, but it becomes practically invisible on the default, bright-white background used for MS Word graphics. So, in addition to control of all colors of all curves (see LCOLHP in the TPPLOT story) of ATP, there has been a change to data of TPPLOT. LCOLHP(4), which is integer cell 145, was changed from default value 4 to value 5 in the second subset (VGA) of TPPARAM .

PCPLOT by Prof. Mustafa Kizilcay had lesser problems of compatibility with brain-damaged MS Word, it should be remembered. Yet, not everything was right. Charles M. Y. Chang of National Chiao Tung University in Hsinchu, Taiwan, called this to the attention of all on May 26th. His public E-mail of the Fargo list server stated: *"... we can use MS Word or MS Power-Point to read that HP-GL .... and generate a high-quality figure which occupies very little memory. Unfortunately, a problem has been encountered. The 'division marks' of the two axes disappeared when importing these HP-GL format output files of PCPLOT."* This was using PCPLOT Version 6.10, which dates to 1991. So, your Editor rapidly sent a copy of one-month-old Version 6.40, and this seemed to solve the problem at NCTU.

An Epson Stylus Color II printer was used by Vitaly Faybisovich of Los Angeles, California. There have been many reports of trouble using MS Word over the years, and Mr. Faybisovich's complaint was the most recent -- in public E-mail dated July 21st. Well, a new GIVE1 was E-mailed on July 28th, and Mr. Faybisovich reported successful production of color hard copy the following day. But what about the desired graphical editing using MS Word? Mr. Faybisovich wrote: *"It is desirable to have an opportunity to edit this inserted file in MS Word (change scale, orientation, remove or add some details, change black background for white, etc.)."* Gabor Furst thinks not. In E-mail dated July 25th, he wrote that *"Word cannot edit pictures which were not produced by Word.*

Trapezoidal Rule Oscillations

This is a continuation of the story having the same title in the preceding issue. Recall GIFU switches were named after Prof. Yoshihiro Murai of Gifu University in Japan, who first asked for *dynamic current redirection.*

Prof. Haginomori of Tokyo Institute of Technology in Japan is said to have supplied another data case that was helped by the new switch logic. In public E-mail of the Fargo list server dated June 29th, Masahiro Kan of the Hamakawasaki Works of Toshiba wrote: *"I received test data cases from Prof. Haginomori .... Because he has not yet joined this mailing list, I will write on his behalf. .... Dr. Haginomori said: The first is a simple and fundamental case, and the newest TPBIG gave a reasonable solution. This case contains a doubly-fed ac machine used as an adjustable-speed generator-motor with flywheel. Every version of TPBIG including Jan 1996 could not give any valid solution for such data ...."*

Salford Compiler for Windows 95

The new Salford fortran compiler for Windows NT or Windows 95 was acquired by the European user group for purposes of evaluation. This initiative by EEUG Chairman Mustafa Kizilcay was barely mentioned in the EEUG story last time. Now, with fewer demands on space, the disappointment can be summarized. As written, the testing *"was less than fully successful."*

The same compiler runs under either Win95 or WinNT. But all testing was done using only Win95 as installed on your Editor's 133-Mhz Pentium from David Szymanski. This PC with 16 Mbytes of RAM supported all of the experimentation of this story. Details were related to Prof. Kizilcay in five E-mail messages between the 6th and the 12th of April.

Current ATP fortran for FTN77/486 version 2.66, which dates to 1992, passed through the new compiler with only very minor adjustment. One old feature that the new compiler did not seem to offer was the handling of imbedded blanks in file names, such as for :

```
INCLUDE  'RUNIN .INS
```

Another was use of the less-than sign < to supply input from a file rather than the keyboard. For example:

```
VARDIM20.BAT  <  LISTSIZE.BPA
```

But these were minor, isolated differences that were rapidly circumvented. Overall, unoptimized compilation under Win95 was not a problem.

ATP linking was found to be less satisfactory, unfortunately. First, linking has slowed considerably : 20 sec under Win95 vs. 8 sec under DBOS. But even this would be forgiven if all library routines of DBOS were satisfied. They were not. The linker reported that the following were unsatisfied :

```
WCREATE#   COUP#
CONCEALW#     POPW#      WCOUP#      KILLW#
SET_CURSOR_POS#      GET_KEY1#
GET_MEMORY_INFO#     SELECT_FILE#
SELECT_DOT_MATRIX#    GET_CURSOR_POS#
COPY_FROM_REAL_MODE1#  COPY_TO_REAL_MODE1#
```

The most serious is GET_KEY1 as will be explained in more detail later. Temporarily, in CIMAG4.INS it was replaced by an ordinary old READ (ok for non-SPY usage).

Most standard test cases give the same answers as running under DBOS. Mike Albert's shareware FC was used to compare all output files. Exceptions are not believed to be serious:

a) DC-40 requires a little more work. But preceding

DC-24 is perfect, as are other cases such as DC-32 and DC-49 that dump tables. Somehow $STARTUP may be causing trouble.

b) DC-56 and DC-57 die because of missing GET_KEY1 (used for SPY input).

c) Some subcases of CABLE CONSTANTS / PARAMETERS die with an operating system complaint about coprocessor fault in CZEGEN. No attempt was made to pursue this. Since most subcases run correctly, this is believed to be an isolated problem.

Compatibility with existing DBOS screen graphics is a very important advantage of the new compiler. All plots of the various test cases, including the 13 of new DCN-15 from NYPA, looked fine on the screen. Pixels are not scaled; instead, they are absolute. But since any monitor used with Win95 should have 768 x 1024 or higher resolution, the 600 x 800 choice fits nicely in a window that covers most of the screen.

Speed of text output to an ATP window (as opposed to the DOS window of the operating system) is tolerable, although much slower than output to those old Salford DBOS text windows. Using 119-byte lines (the longest possible while avoiding wraparound in a default window that is produced by the /WINDOWS switch on the FTN77 command), around 50 of these can be added in a second. Of course, MS windows are graphic, and presumably this explains the slowdown compared with DBOS windows. This is the problem: MS Windows users are paying a graphic price for simple text. Under DBOS, the 1173 lines of the HELP window can be scrolled from one end to the other in 1.21 seconds. Why give up such blazing speed? MS windows are a inferior alternative for such usage. Why even consider them?

Virtual COMMON ("you only pay for what you use") seems to be in effect as it was using DBOS. Recall that TPPLOT has more than 100 Mbytes of working space (actually, 28,500,000 words), and there are no known consequences of this extra space as long as it is not used. Well, this advantage seems to continue using FTN77 under Win95. This is a very important detail.

Timing as reported at the end of .LIS files was modified to recover fractional seconds. The DBOS library routine SECONDS_SINCE_1980@ routine has been providing hundredth of a second. But not under Win95. Values using the new compiler seemed to be approximately right, but the fractional parts were all zero. So, CLOCK@ was tried, and it seemed to perform as desired. This was in TGRUN1.INS:

ATP execution seems to have slowed. Whereas DC-1 would remain in the dT-loop for less than 10 seconds using DBOS, this time has expanded to 11 or 12 seconds using FTN77 under Win95. This is for unoptimized compilation (both cases). The attempt to optimize under Win95 led to many compilation errors in several segments, so was quickly abandoned.

USE_VIRTUAL_SCRATCH_FILES@ had to be commented out because it was an unsatisfied external. Then, execution was fine. But this avoidance does give up an advantage of DBOS. An equivalent for input data cards (LIMCRD of STARTUP) could probably be programmed using local dynamic storage (routines GET_STORAGE@ and RETURN_STORAGE@ are mentioned on page 333 of the FTN77 User's Guide). But this would require more programming (a step backward).

Upon exit, ATP checks the screen status using GET_VIDEO_MODE@. Curiously, the mode number that is returned seems to have changed its value. For years, we have been relying on text mode being indicated by a value 3. So, the conversion from graphic to text mode is bypassed if this value is found in ENTRY STOPTP. But your Editor's note indicates that "Win95 returns 2 rather than 3!"

Unsatisfied external GET_KEY1 or its equivalent is crucial to SPY as it is presently formulated. The concept is simple enough. Periodically (e.g., 3 times during each step of the time-step loop), there is a SPY break. Simulation is interrupted as ATP considers whether a key has been pressed. If none has been, the simulation continues. But if a key has been pressed, it must be read and considered for use by SPY. Note that the new Salford compiler fails to provide this elementary service just as MS PS did (see the preceding issue). Is this a coincidence? If not, possibly both compilers attempt to use the same defective service of Win95?

Screen graphics within a window work fine, but execution dies if the plotting is redirected to RAM. So, BOTH rather than DISK had to be used to run cases with screen graphics such as DC-18. The trouble seems to be with CREATE_SCREEN_BLOCK@ which returns an invalid final argument.

Hard copy via PEN PLOT goes through the motions that include the opening of a small window during creation of the disk file. But selection among printers is tricky. No actual hard copy was attempted.

The Hershey fonts seems to lack "\" as can be found in DCN-15 (the plot test from NYPA). Using DBOS, this was not a problem. Well, since execution died, special traps were added to SYMBXX and AXISXX to convert any occurrence to forward slashes.

The mouse can not be seen or used in text mode as it was under DBOS for the opening prompt of ATP or within the DBOS window of TPPLOT. Admittedly, the assumed solution under Win95 probably involves graphical windows with buttons. But what about the user

who wants to stay in text mode, within a DOS window? It would appear we have lost the ability to use the mouse and its slug cursor for such use.

Trapping **Ctrl-Break** in recent years has relied upon use of DBOS CALL SET_TRAP@ within MAIN0A . Well, this did not work, so was disabled. An equivalent function probably could be programmed, however. Page 329 of the User's Guide shows TRAP_EXCEPTION@ *"to install a user-defined exception handler."*

Inability of FTN77 to overwrite a .EXE file during linking was a nuisance discovered by Dr. Liu. If little test program KEYBOARD.EXE is aborted, this unwanted lock somehow occurs. The following provides documentation of the failed linking:

```
NO ERRORS  [<MAIN@>FTN77 Ver 2.00]
Creating executable: keyboard.exe
*** Unable to create executable file: ....
```

Dr. Liu said that she solved the problem by rebooting the computer (messy).

Conclusion: that 1992 compiler that runs under DOS never looked better. Developers in Portland have no immediate plans to replace it. In fact, there is interest in considering a current version. More about this next time.

ATP via E - mail within Japan

"Free distribution of new ATP materials by E-mail within Japan" was the subject of history-making public E-mail of the Fargo list server dated June 19th. In this, Masahiro Kan of Toshiba Corporation in Tokyo wrote the following:

"For a long time, most Japanese ATP users have been looking with envy at North American and European users who are able to update their ATP disk files upon demand by E-mail or secure FTP . Unfortunately, the average Japanese ATP user continues to employ TPBIG.EXE that dates to January of 1994. As a group, we have fallen behind the times. So, I as an individual decided to contribute to improve this situation within Japan. .... If you want a copy, and if you believe your mailbox can handle a 1.6-Mbyte message, send me a request by E-mail. I then will check Can/Am .... lists to see whether or not you are ATP-licensed. If you are, I will forward to you by E-mail a copy of what BPA shared with me."

The ATP Web page on the campus of Michigan Tech in Houghton was updated within 24 hours to reflect Mr. Kan's new service. The following day, Prof. Bruce Mork wrote: *"I've added the e-mail contact info on Masahiro Kan to the web site. Prof. Ametani is still listed as the Chair, with Kan listed as e-mail distributor."* This would be right, and parallel to the situation for Europe. As for *Chair*, this is politically-correct, non-sexist '90s-speak meaning Chairman or Chairwoman. It is unlikely that any dictionary will show such a meaning prior to the '60s, but it is common terminology today for American political parties and universities. Has *Chair* spread to other parts of the English-speaking world?

Some 75 ATP licenses already exist for Japan, so there is a large starting base of potentially-interested, already-licensed users. But what about those who are not yet licensed? Only 4 or 5-days (the time it takes to mail a letter from Japan to Portland) is the typical delay for licensing thanks to new procedures that use E-mail. Mr. Kan explained how to use LICENSE.ZIP for this: *"Hard page marks define the pages. The licensing form is pages 5 and 6, to be printed on both sides of a single sheet of paper. This form is to be filled in and Air Mailed .... to Portland. After reception and validation (signing by the Can/Am user group), I will be notified promptly by E-mail. Then I should be ready to proceed with the file transfer."*

Japanese as well as English language was used to announce the new service. Mr. Kan wrote: *"The preceding English text is for the benefit of most subscribers of the Fargo list server, who do not read Japanese. The following translation is for Japanese subscribers. Of course, for those not having Japanese-language software, this will look like garbage. But for those eligible for the new service, the following should be the preferred alternative. In order to avoid the possible code changes during transfer, the Japanese text was uuencoded."* The encoding was not as simple as one might think. There seem to be different UUDECODE versions in use around the world, and not all of them are compatible. The one used here in Portland had trouble. It generated errors for about half the lines. E.g., the first was "Check sum mismatch decoding line 20." Well, it is only important that all Japanese have compatibility.

News about Apple Macintosh ATP

Stu Cook of JUST Services in suburban Montréal, Québec, Canada, has been compiling new Macintosh ATP FORTRAN using the Language Systems compiler on his Apple Quadra (a Motorola 68040-based Mac).

CALCOMP PLOT screen graphics are being added to Macintosh ATP as the first major installation-dependent enhancement. The parallel PostScript and HP-GL of Salford EMTP (recall the NOPOST and NOHPGL switches of the STARTUP file) also should be available. More about this next time.

"Apple Computer Inc. said Wednesday that it expects to report operating losses through at least the rest of the

year. The computer-maker, which is struggling to restructure, also said it expects sales to be lower than year-ago levels through the end of 1996, ..." This is a continuation of the gloomy forecast of the preceding issue, as reported in a short story on page B1 of *The Oregonian* dated May 30th. It would seem that investors were not impressed. *"Apple stock hits lowest in 10 years"* was the headline of a story on page B2 of *The Oregonian* dated June 27th. *"Apple's stock dropped 75 cents to $19.87 and a half .... Shares traded as high as $48.75 last July."*

On - Line Records of ATP Licensing

Soon, E-mail should allow any one ATP user to determine whether any other ATP user is licensed. This is important because licensing agreements allow any two licensed users to share materials.

EEUG provided the first computer-stored list of ATP licensing. This was by E-mail from Chairman Mustafa Kizilcay, who attached a list of some 105 European entries dated 4 December 1995. Unfortunately, German privacy law prevents the disclosure to such information now, to the general public, because such disclosure was not announced at the time the information was gathered. It is understood that the issue should be addressed at the next general meeting (November in Budapest). While permission to disclose is not expected to be mandatory, there should be great incentive: If one's name is not in the public list, that person will be considered to be ineligible for the sharing of ATP information by E-mail.

The Can/Am user group was second to produce a computer-stored list of ATP licensees. This list was created by keying the information contained on paper licenses dating to late 1987. Of course, this is a much bigger list. The storage using MS Excel was begun by Kwang-chien Ger, Dr. Liu's son, as explained in the preceding issue. Since then, each time Dr. Kai-Hwa Ger signs a license, LICENSE.XLS is updated. So, the storage in current, and no legal complications are known to exist about its publication. If any reader disagrees, it is requested that he contact developers in Portland with an explanation. Publication via Prof. Bruce Mork's Houghton aFTP server is expected by year's end. It is from LICENSE.XLS that those 75 Japanese entries of the preceding story were extracted and sent to Mr. Kan, so computer storage already has proven to be invaluable.

Once licensing is published on the Internet, the Can / Am user group expects to halt the return of photocopy of validated licenses. Dr. Ger probably would continue to return such copy along with orders for materials, but that is a special case (the package is being mailed anyway). For cases where only licensing is requested, validation will be confirmed via public records on the Internet. A similar idea already has been adopted for Masahiro Kan's E-mail distribution of a preceding story, it will be noted. What worked well for Japan soon will be generalized, and extended to the rest of the world.

EDF, WAPA, and UBC E-mail addresses were found among subscribers of the Fargo list server. May 29th, form letters were sent as will be detailed next time.

Surge Function by Gabor Furst

A new surge function has been developed by Gabor Furst of suburban Vancouver, British Columbia, Canada. There also are new interactive graphical interpreters of both this new function and the original 2-exponential Type-15 source.

An explanation of Mr. Furst's work was received in E-mail dated May 29th : *"After staring at the Fortran listing the Heidler-Bernd Stein surge function for a while, ... I decided to create my home-made surge function. Looking at the double exponential original type 15, and also at the listing of the Bernd Stein function, it became evident that the Heidler surge could be created by some kind of manipulation of the exponent in the component which governs the rising part of the surge. I started to experiment with the simple 1 - exp (t / T) as a basis, and soon discovered that simply raising (t / T) to the power of k provides the answer. In fact, if one ignores the decaying part of the surge (assuming no decay after reaching the maximum value (1.0 p.u. say), then the surge obtained can be made very similar to the one produced by the Heidler / Stein function . The simulation of the tail is in fact a little more complicated, because starting two exponentials from time zero affects the crest value."*

About the original 2-exponential surge, Mr. Furst wrote: *"The type 15 surge is awkward to use, as it does not produce the amplitude specified (see examples in DC19), and it still has the abrupt change at the start of the front, which some people may object to. The Bernd Stein version overcomes both difficulties."* More about amplitude at the end of this story.

Mr. Furst coded his new surge function in MODELS, so no change to the program was required. He wrote: *"I assume that the user is interested in a basically 13 type surge, with a rate of rise of the front given by the time T0, a tail to A1 amplitude at a time of a fixed 50 us, and he wants a nicely smoothed surge at both at the start and around the crest value .... By experimenting with the factor k in the surge 1 - exp (- (t / T) ** k) surge, I conclude that k=2.5 will provide this with a reasonable accuracy. A second surge started at the time when the*

previous surge exceeds 0.999 per unit produces the desired tail. (Note that 'tfront' is the time by extending the linear portion of the rising part of the surge to zero time (or tstart) and the amplitude level)."

SURGE1 and SURGE2 are small, interactive, graphical programs that were written to allow the Intel-based PC user to see his surge as a function of time, and adjust all three parameters interactively. Three pairs of keys provide the control: 1) the up and down arrow keys for amplitude (not very interesting); 2) the **Page Up** and **Page Down** keys for one time constant; and 3) the **Home** and **End** keys for the other time constant. How far this concept might evolve remains to be seen. Several components are amenable to such graphical display --- a different type of graphics than presently being used by graphical preprocessors such as ATPDRAW, it is to be noted. An MS-DOS PC is required because graphics and keyboard input are done using Salford DBOS.

The original Type-15 surge function has a new, automatic control of amplitude beginning July 25th. This followed the suggestion of Taku Noda, doctoral student at Doshisha University in Kyoto, Japan. While working in Portland, he was shown SURGE1 (the original interactive modification and display program). As well known, the peak is controlled not only by the coefficient of columns 11-20 but also by time constants. For the user who wants to specify the peak of the surge, this is inconvenient. So, a new special request **-6666.** in the otherwise-unused field of columns 41-50 now is taken as a request that columns 11-20 be interpreted as the peak of the surge. Illustration was added to DC-19 in the form of a new node TAKUSG which is comparably connected and excited except for different interpretation of the data (the new TAKUSG uses peak whereas the original SURGE used the coefficient).

If Switches Short Compensation

Circuit breaker modeling in its modern form might include both an ideal switch and a time-varying resistance R(t) that is set at each time step by TACS or MODELS logic. A parallel connection of these two components could be used. When the switch is closed, the Type-91 R(t) is shorted, so has no influence. But when the switch opens, dynamics of an arc, represented by R(t), begin. This allows more accurate simulation of TRV (transient recovery voltage) including restrike and reignition. For an illustration of the basic configuration, see the new 5th subcase of DCNEW-16.

Marjan Popov at the university in Skopje, Macedonia, supplied such data on May 29th when ATP ended such attempts with KILL = 209 and nearby S.N. 3471. The complaint was: *"ZnO solution by Newton`s method of 3 coupled arresters has failed due to singularity of the Jacobian matrix. ...."* Investigation revealed that there was no trouble when all switches were either open or closed. But when there was a mixture of one and two, this error message would result. This was prior to June 1st when enhancements avoided the trouble.

Fundamentally, KILL = 209 occurred because the subnetwork identification was imperfect. With two of the 3 switches shorted, ATP really should not be solving the 3 Type-91 elements using 3-phase compensation. In fact, the 3 elements can be considered to be in 3 separate subnetworks, so could be solved one at a time (3 cases of single-phase compensation). But ATP logic is not this good for the case of shorted compensation elements that are not grounded. Worse than just a singular Jacobian, a singular Thevenin impedance matrix [Zthev] is in fact the source of the trouble. Each row corresponding to a closed switch is identically zero.

Previously, zero columns and identical columns of [Zthev] were handled as special cases. Beginning June 1st, a third special case was added to SOLVNL : zero rows. Today, with two switches closed, the full 3x3 Thevenin matrix still is brought in. But it is collapsed to a scalar (one row and one column) prior to the Newton solution. This is just an example. The new logic is general, and should work for any number of phases.

DCNEW-16 begins with the single-phase example from Laurent Dubé, recall. Although this applies to the same physical problem, it is fundamentally different in two ways: 1) it is single phase (so no mixture of open and closed); and 2) a perfect short circuit is avoided by the series resistor R = 1.E-6 ohms from N1 to N12 . Did Janko Kosmac of the University of Ljubljana in Slovenia add his isolation resistance to a multiphase case that was troubled? This would have been the practical engineering solution. Anyway, no longer is there a need for an isolation resistor such as he used. ATP logic now is smart enough to avoid trouble if the compensation element is shorted by a switch.

Linux ATP by Walter Powell

This is a continuation of the story having the same title in the preceding issue. Recall that BPA's Walter Powell has been evaluating the GNU compilers at home using his 100-MHz Pentium that runs Linux.

Lack of blank fill on the right of input lines was another surprising discovery about g77 rules. This was found at the start of execution, as LISTSIZE.DAT was read. The line reading BLANK (5 characters only, with no trailing blanks) was read into CHARACTER*80 BUFF77 easily enough, but execution then died during

the following attempt to numerically decode. The key word BLANK had not been recognized because ATP had checked not only for these 5 characters but also for a trailing blank that did not exist! So, it was concluded that there was a need to expand input lines to a full 80 bytes by the addition of blanks on the right.

Usage of Linux is how widespread? The following was reported by Mr. Powell in E-mail dated May 2nd : *"… I attended a Portland Linux User Group (PLUG) meeting at PSU. The meeting was quite interesting, the people and their motives behind Linux. I met the publisher of the Linux Journal and listened to his many stories about the popularity of Linux, never measured, but probably much higher than 'official figures' assumed -- 120,000,000 PCs with MS-DOS/MS Windows vs 115,000 PC's with Linux."* If this were a commercial product, Linux would be in serious trouble. But it is not, so there is reason to hope in spite of the numbers. As for PSU, this indicates Portland State University.

Masahiro Kan of the Hamakawasaki Works of Toshiba Corp. in Japan has been an effective advocate of Linux using public E-mail. About his message dated April 23rd (see preceding issue), your Editor commented as follows later that same day: *"BPA's M39. version of EMTP dates to July of 1984, so is missing changes of the past decade such as Laurent Dubé's MODELS . Nonetheless, the 1984 program was big --- maybe 2/3rds the size of a current version. It does provide a reasonable test of the compiler, even though some structural features (e.g., the handling of text) are completely different today. The fact that compilation, linking, and execution seem correct for DC-1 certainly is a favorable sign."*

So how did Mr. Kan's truncated "M39." Linux ATP perform? Simulation speed for DC-1 was comparable to Salford EMTP running under Win95: 48 sec vs. 48 to 51 sec for a slow 486 DX2/66. But more important, *"The multitasking feature worked well in Linux. While running simulation program, editing data by Emacs worked well. On the other hand, on Win95, while running simulation program (Salford ATP), I could not edit files by MS Word or Notepad. In my PC, Salford ATP worked well both with and without NOEMS option for EMM386.exe on Win95J (Win95 Japanese version)."*

Linux is not required for use of the GNU compiler, however. DOS is an alternative as noted by Mr. Kan in E-mail dated April 25th. He observed: *"I also tried porting M39 to DOS (djgpp) by f2c and gcc. Compiling and linking was successful. Although running DC-1 causes a segmentation violation error, running a small data case worked well, and in addition, multitasking in Win95J also worked well."* Later, Mr. Kan provided more information: *"Djgpp is a free DOS extender copyrighted by D. J. Delorie .... Much Unix software including Emacs, AWK, PERL, GCC, GDB, Ghostscript, TeX, etc. has been successfully ported to djgpp. Of course it can run under Win95. I am using Mule (Multilingual Emacs), Ghostscript ported to djgpp under Win95J, and time-sharing operates correctly under Win95. Of course there is no 640-kB barrier using djgpp."* Following pre-publication review of this on July 28th, Mr. Kan provided the following clarification: *"I succeeded in running the DC-1 case by changing the treatment of COMMON blocks as I wrote in list server mail. .... The version of djgpp used is 1.12, which is the last one of the version-1 series. The newest version of djgpp is 2.xx, but f2c with 2.xx has bugs. As a whole, I feel f2c + gcc is more stable under Linux than under djgpp (MS-DOS)."*

About plotting and windows (a question posed by your Editor), Mr. Kan responded as follows on April 26th: *"I am using my own plotting software for ATP PL4 files written in C. It runs well in DOS-Windows of Win95. It supports output of postscript file including Japanese comment. I am planning to port it to Linux. This job now is only a plan. I think I would use Tcl/Tk under X-Windows, which are both free software, so the end users do not need to buy it."* Last-minute addition: your Editor recommended something simple, such as a small program for the interactive display of HP-GL files that would be produced by ATP if NOHPGL is zero. There also is GNUPLOT, as left on Dr. Liu's computer by Taku Noda of Doshisha University in Kyoto, Japan, during his July visit. If a good, royalty-free plotting program already exists, why reinvent the wheel?

Hewlett - Packard (HP) Unix ATP

Hewlett-Packard (HP) Unix has a new ATP version thanks to the work of Prof. G. Corwin Alexander of Oregon State University in Corvallis (USA).

Procrastination by your Editor has made it difficult for Prof. Alexander to progress during the past 3 months. It seems best to delay his report until the October issue.

WordPerfect 5.1 vs . MS Word

"The new computer crashes frequently when one tries to use old WP 5.1" was a complaint made in the preceding issue about Dr. Liu's DX2/66 computer. So, the April issue was switched from WP 5.1 to MS Word for Windows 6.0 when it was about 1/3 or 1/2 full. The .DOC file is the original, then, and printed copies were made from it. Upon completion, output in WP 5.1 format was produced using Word, and this was taken into WP 5.1 for manual adjustment to provide continuity with the past. After some 3 hours of such clean up, the

average reader probably would not notice any difference in style between JAN95.WP5 (created entirely within real WP 5.1) and APR95.WP5 (created by smoothing the WP 5.1 output of MS Word). Both the .DOC and the .WP5 files were sent to Prof. Bruce Mork for placement in **pub/atp/canam** of his aFTP server.

Back to crashing. Curiously, real WP 5.1 did not crash once during the hours of cleanup. It can only be concluded that MS knows a lot about its operating systems, and how crashes might be avoided --- even (or maybe especially?) for competing products. To conclude, the reason for switching from WP 5.1 to MS Word no longer exists, as far as your Editor can determine. On the other hand, the change already has been made, and no compelling reason to reverse it is seen at this time. MS Word is WYSIWYG and higher level, so probably is a little faster to use than old WP 5.1. So, the procedures used for the April issue are being continued, and applied to the July issue, too. Your Editor may not be happy about it, but it would appear that Bill G has won again. What else is new?

Hoidalen Improves ATPDRAW : 3.20

Hans Høidalen explained about improved ATPDRAW in public E-mail of the Fargo list server dated June 27th. From address **hans.hoidalen@efi.sintef.no** this began: as follows: *"ATPDRAW ver. 3.20 is now available on the **ftp.ee.mtu.edu** server. The changes made in the latest version is a result of suggestions from BPA during this writers trip to Portland the first week of June."*

Excerpts from ATPDRAW author Hoidalen's note follow the headline *"What's new in version 3.20:*
** Error in 3-leg transformer fixed. ...*
** Error in UM type 1 (synchronous machine, ...*
** Nonlinear inductor type 93 added.*
** 3-phase MOV arrester added.*
** Error in UNDO routine corrected. ....*
** Problems related to transposition object corrected ...*
** Two new transposition objects added ....*
** Two phase sequence objects added ....*
** Selected objects are green.*
** New and improved mouse operations ....*
Left simple click .... Left click and hold ....
Left double click .... Right click ....
Right double click ....
** Two new parameters added to the ATPDRAW.INI ...*
** Problem related to using dos editor EDIT.COM ..."*

Schematic (picture) creation, rather than ATP data creation, has been the dream of many for as long as data assemblers have been considered. The idea is both simple and appealing : have some computer program read ATP data as input, and draw the corresponding schematic diagram as output. Recently, this idea was raised in public E-mail from Masahiro Kan of the Hamakawasaki Works of Toshiba Corp. in Japan. The response by ATPDRAW author Hoidalen was quite unexpected. He wrote as follows on July 8th : *"note that Ricardo Chan **71024.2651@compuserve.com**, Univ. of Texas at Austin, tried to create ATPDRAW circuit files automatically from an external data base. He ran into positioning problems however, when placing the objects resulting in unintentional overlapping problems and thus severe node naming problems (objects node overlapping, short circuit node pick up etc.). When placing the objects (on the screen or in the CIR file) he really used the physical geographical coordinates. He requested me once to rewrite the ATPDRAW node naming procedure (create a special version). It is possible of course to drop the automatic node naming offered by ATPDRAW, but then a user would have to specify all node names."*

Availability of Ver. 3.21 of ATPDRAW was announced on July 11th. Prof. Bruce Mork attached to his public E-mail the following explanation from author Hoidalen: *"A) The missing 'Same node on two separate nodes' warning is now re-introduced. This warning really appeared in ver. 3.1 but due to the introduction of the DEF phase sequence option, it fell out in ver. 3.20. B) The node naming warning message boxes now have two buttons: 1) Ok: Press this to continue the node naming process; and 2) Abort: Press this to abort the naming process. Select Refresh (F5) to visualize the nodes in question (node names drawn in cyan color)."*

Orbach Pricing : $20K → $600 ?

Tamir Orbach, said to be writing on behalf of Kim Development USA Inc. of Washington, D. C. (the nation's capitol), is a peddler of an ATPDRAW - like data assembler. This present mention is a continuation of the story in the preceding issue.

Prof. Srete Nikolovski of the University of Osijek in Croatia was the first to respond with specifics about Orbach's software. In public E-mail of the Fargo list server dated June 27th, he offered the following opinion: *"I have a copy of ATPWIN, and I have made some examples. It seems to me user friendly, but if I look in ATPDRAW, it seems to me that ATPWIN has not as much capability as ATPDRAW because many important components like generators, motors, ... can not be modeled. It seems to me like early alpha version."* The response from the factory came in public E-mail 3 days later: *"So far only you, and one other person have received ATPWIN. Two others are on the way, but there are no seasoned users out there yet. .... you are right that ATPWIN supports less elements than ATPDRAW, and I think the web page gives an accurate description of*

the elements which it does support ...." Maybe, if the surfer reads between the lines, and questions everything he reads. For example, when reading about support for *"overhead transmission lines,"* the reader should ask : does this mean constant-parameter distributed modeling only? I.e., is there no support for Semlyen, or Marti, or Kizilcay frequency-dependent modeling? Remember, be skeptical of advertising of this or any other commercial product. *Caveat emptor*, as the Romans used to say.

Meanwhile, a review from Hungary is eagerly awaited by many including your Editor. Prof. Nikolovski wrote that he: *"contacted Laszlo Prikler at the Technical University of Budapest, who is now preparing an evaluation article about the available pre-processors for ATP ...."* It is understood that Prof. Prikler has been selected by EEUG Chairman Mustafa Kizilcay to evaluate ATPWIN for the European user organization and/or its newsletter. Orbach apparently agreed with this proposal, which required a free demonstration copy of his software. While waiting for Prof. Prikler's report, readers are reminded once again of your Editor's advice: extreme skepticism. In case Prof. Nikolovski or other readers did not understand the meaning of skepticism three months ago, it might be prudent to be more explicit. Your Editor will add the proverbial advice that has been given many times about DCG / EPRI EMTP commerce : *"a fool and his money are soon parted."*

Miscellaneous Intel PC Information

A $500 Internet appliance or network computer has been proposed by some as a possible serious competitor of PCs for the home market. *"Oracle backs $500 Internet PC with Java Suite"* is the head-line of a story on page 65 of the May issue of *Computer Shopper*. Oracle Corporation describes the software as a *"Microsoft Office-comparable suite of Java applications"* --- this for the computer without hard disk. But who takes the threat seriously? *"… the PC community remains unruffled, unconvinced that Oracle can ship such a device or that consumers would flock to buy it."*

Destination PC-TV by Gateway 2000 is a radical new product that might tie computers and television together successfully. But why such innovation from rural mid-America? Evan Ramstad of the Associated Press wrote as follows on page G1 of the June 16th issue of *The Oregonian: "IBM opened a new division in Florida to create its first personal computer. Apple Computer opened a new building to build the Macintosh. Gateway 2000 rented a two-bedroom duplex to create the first combination PC and big-screen TV. With a basketball hoop in front, a trailer park down the street and a view of Gateway's huge cow-spotted plant across Interstate 29, this hardly seems the place from which the most talked-about computer of the year would come. .... Because it doesn't build a PC until an order comes in, Gateway's financial risk on Destination is less than other companies would face if they designed the same product .... Since putting them on sale in April, Gateway has sold a few thousand Destination machines, which come with a 31-inch monitor."*

Cray Research has become a DEC Alpha customer as it struggles to survive during the ongoing microprocessor revolution. Page 17 of the February issue of *SunExpert* magazine reports that Cray *"has just unveiled the Cray T3E. .... It uses multiple Digital Equipment Corp. Alpha processors --- from eight to 2,048 --- linked via a high-speed internal 3D torus network. This results in a device with a performance range of 4.8 GFLOPS to 1.2 TFLOPS."*

But Sandia National Laboratories plans to exceed this performance using conventional Intel processors. That same *SunExpert* story refers to *"an R&D effort to produce a supercomputer capable of at least 1.8 TFLOPS. It will be based upon thousands of P6 processors, Intel's successor to the Pentium."*

Miscellaneous Small Items

Free printed copies of the 20-page April newsletter were mailed by First Class (air) to 9 Canadian and 72 American addresses on June 17th. This is the second of four issues this year, which is expected to be the final year that news on paper will be mailed free of charge by the user group. Beginning with 1997, individual users are expected to pick up their own copies electronically (by aFTP transfers from the Houghton server or its Hannover mirror). If readers want paper, they can print their own, and mail copies to whomever they like.

Lubarsky's Law of Cybernetic Entomology: *"There is always one more bug."* This obvious truth by a student of Prof. Murphy was Walter Powell's contribution to Dr. Liu's white board around Christmas of 1995.

Unwanted **Tab** characters have plagued both source code and data since the preceding issue. These are believed to be produced sometimes by MS-DOS EDIT as mentioned in the October, 1993, newsletter. But why and when? What circumstances prompt EDIT to replace 8 or more leading blanks by 1 or more **Tab** characters? In the case of code, some 10 or 12 disk files were found to have such conversions for blank UTPF idents on the left (in columns 1-8). If one had been converted, all had been (a large subroutine would have hundreds). There is no way any such changes would have been made by hand. As for data, DC-68 involved 3 such lines of 2 tabs each as learned from Robert

Meredith of NYPA in E-mail dated April 3rd . This was immediately below the line that begins with 92CRZ1A

TACS and the electric network might be solved simultaneously rather than sequentially. This idea is found in a paper from EMTP researchers at the University of British Columbia in Vancouver, Canada. Presented at the 1993 IEEE PES Winter Meeting was IEEE paper number 93 WM 241-0 PWRS by A.E.A. Araujo, H. W. Dommel, and J.R. Marti. This had title *"Simultaneous solution of power and control systems equations."* What **is** said sounds good and optimistic. What has **not** been said might be more important. Who believes the authors' claims? Any reader who estimates that the proposal might be practical is encouraged to lead informed peer review of the concept using public E-mail of Prof. Bruce Mork's Fargo list server. ATP developers in Oregon certainly were skeptical in 1993 when the paper first was seen. The intervening three years, during which nothing more has been heard, would not seem to have changed any opinion about which your Editor knows. What do knowledgeable readers think?

EMTP96 is the new name for DCG/EPRI EMTP Version 3.0 according to recent advertising that has been mailed widely from CEA headquarters in Montreal. One of two envelopes addressed to BPA's Robert Hasibar had a postmark dated March 26th. Enclosed was a short-course-like brochure having subtitle *"A two-day seminar to introduce the new models and features of EMTP96."* The show is to be held May 23-24 at EPRI Computer Facilities in Irving, Texas. The cost for members is $295 (American, not Canadian). It is unclear precisely what EPRI's role in this might be -- beyond the use of its facility. All four instructors are from Canada, and reference to "DCG/EPRI" rather than "EPRI/DCG" strongly suggests that EPRI did not write the advertising! What reader knows how strong the attendance was?

USE SEATTLE XFORMER is the special request word that indicates a desire to use the 3-phase, saturable transformer model of Prof. Xusheng Chen, who teaches at Seattle University (Washington, USA). This present mention is a continuation of the mention in the October, 1995, issue: *"The answers of the third of three subcases of DC-31, which illustrates such usage, have changed noticeably as Prof. Chen might explain in some future mention. .... At the Portland meeting, he presented his latest IEEE paper, it is understood. Prof. Chen talked about the possible addition of a 3rd (tertiary) winding."* Well, July 18th, Dr. Liu and your Editor returned Prof. Chen's telephone call, and resurrected this long-delayed project. Two floppy disks of current Salford EMTP materials were mailed the following day along with an E-mail message that offered to *"print a short summary of what you did last summer."* This was answered by a letter attached to copies of IEEE PES papers. While there is no summary of ATP changes a year ago, Prof. Chen does say that *"the 95 paper is on SEATTLE XFORMER, and the 96 paper is on duality-derived multi-leg transformer models. Subroutine CHENSPR .FOR generates data for both methods. When I submitted the final report to you in April 1993, I planned to extend SEATTLE XFORMER to 3-winding, core-type transformers in one year. However, it took me much longer time to fulfill the task, and it is not yet completed. Hopefully I can complete the task this year. I am now on sabbatical so that I have more time to work."* Prof. Chen's two IEEE PES papers are: 1) 95 SM 421-8 PWRD, Xusheng Chen, "A three-phase multi-legged transformer model in ATP using the directly-formed inverse inductance matrix;" and 2) 96 SM 410-1 PWRD, Xusheng Chen and S. S. Venkata, "A three-phase three-winding core-type transformer model for low-frequency transient studies."

CRIT stores the current margin for switch opening. But for random opening of a Monte Carlo study, trickery was required in OVER4 and OVER16. The current margins, if nonzero, are stored backward from the bottom of CRIT, with reverse indexing. Curiously, this was being used for non-MC usage too. While this caused no problem as long as there was space (no overlap of the downward and upward storages), it was a disaster when there was not because such usage was unprotected by an error message. Masahiro Kan of the Hamakawasaki Works of Toshiba Corp. in Japan was the first to report symptoms. This began in public E-mail dated July 1st, followed by a private message of clarification on the 4th. In fact, MEASURING switches had nothing to do with the problem; their location in the data merely affected the location of other switches, and hence the unintended overlap. Correction was made July 6th.

DEC OSF Unix has had ATP updated. Dr. Søren Støvring-Hallsson of NESA in Hellerup, Denmark again did the work. He was sent ATP FORTRAN by E-mail from BPA on July 16th, and later that same day returned a list of shortcomings as determined by the compiler and linker. The following day, he reported success handling a corrected, second translation: *"I have compiled and linked the new ATP version received today (July 17). There were no compile errors and only linking warnings related to the foreign c-subroutine calls from MODELS ..... I have run some of the benchmark test cases and the results seem OK. The run time for the cases tried so far is the same as the previous version .... I will test more cases in the next days."*

The NORUN switch of STARTUP was described in the January, 1995, issue. Use is strongly recommended for anyone who sends data to Portland for analysis. The establishment of $INCLUDE files, with possible added complications posed by nonexistent disks or directories, is the last thing developers want to worry about. Use of NORUN = 1 removes all such complications.