
Can / Am EMTP News

Voice of the Canadian/American EMTP User Group

Publishers and Mailers:

Kwang-yi and Kwang-chien Ger
3179 Oak Tree Court
West Linn, Oregon 97068
United States of America

Authorized by Co-chairmen :

Dr. W. Scott Meyer, Editor
Dr. Tsu - huei Liu

Vol. 93-1; January, 1993

Table of Contents

Salford Compiler and DOS Extender	1
Improvements to Salford TPLOT	2
News from Outside USA and Canada	3
More about Electronic Mail (E-mail)	4
Apollo at New York Power Authority	9
Dr. Tsu - huei Liu in Tokyo and Kyoto	9
3 - Phase Transformer Modeling in Fargo	10
Prof. Chen 's 3 - Phase Transformer	10
Purge of 1992 Mailing List	11
Faster Local Bus for Intel PC s	11
X - Rays and Floppy Disks	12
Florida ATP Short Course March 8 -12	12
News about Laurent Dubé 's MODELS	13
Revised Can/Am Licensing Form Letter	14
Windows Compared in Hannover	14
VAX/VMS ATP Distribution	15
IEEE COMTRADE .PL4 Files	16
Intel i860 RISC Processor	17
Intel and IBM Business Trends	17
Juan Martinez Corrects Type - 59 S. M.	18
Miscellaneous Small Items	18

There was not room in the preceding issue to give credit for this Table of Contents. As usual, necessity was the mother of invention. Credit must be given to Dr. Liu, who had trouble locating stories!

Salford Compiler & DOS Extender

Rev. 2.69 of the Salford FORTRAN compiler FTN77/486 was received at BPA around the end of January. This was sent from supplier OTG Systems of Clifford, Pennsylvania, without any request from BPA.

"ERROR illegal application XX" is the unusual

DBOS output that first came to the attention of developers in Portland when DBOS Rev. 2.66 was installed on Dr. Liu's 33-MHz COMPAQ 486 at BPA. Rather than XX as shown, in fact two non-keyboard characters were seen. A second report of such unusual output came on December 8th when someone telephoned from outside of BPA to report such behavior. Well, readers, do not worry; Salford EMTP seems to run perfectly on Dr. Liu's computer in spite of the DBOS error message, which is preceded by one nonsensical line that reads: "Licensed to LIVING SOFTWARE."

66-MHz Intel 80486 simulation speed first was reported by Robert Meredith of New York Power Authority in White Plains. Being tested was his new home computer, which is described as a Gateway 2000 486 (4DX2 - 66V) --- a local bus computer. Using Salford disk caching, 42.3 seconds were spent in the time-step loop. Although this is much faster than without any disk cache (61.3 sec), surprisingly, it is slower than using SMARTDrive, the disk cache of MS-DOS 5. Allocating 2 of his 8 Mbytes of 70-nsec RAM to SMARTDrive reduced the time spent in the time-step loop to 38.7 seconds. We have come a long way over the last 3 years (Mustafa Kizilcay was using a 16-MHz 386 that took about 10 times as long)!

Robert A. Schultz and Robert E. Meredith of New York Power Authority (NYPA) have contributed some important extensions for Salford EMTP. Two floppy disks were sent by Federal Express on February 18th as this paragraph is being frozen for publication. Look for details in the next issue. This is going to be important. As your Editor understands the NYPA contribution, it includes correction of the trouble with high-resolution (768 by 1024 pixels) screen graphics, and automatic PostScript and .PCX copies of Salford EMTP (not TPLOT) vector screen graphics. There also is unification of all EMTP output files in a single archive (e.g., DC35.ZIP), a special

spooler for printing any of the PostScript files, and an interactive display manager for viewing any of the .PCX files. Wow! It looks like Salford EMTP is ready for another quantum leap forward. Bob Schultz is one talented and creative guy.

The DBOS switch /DISK_CACHE recently has proven to be unreliable for two computers very close to home. First, there was Dr. Liu's 33-MHz COMPAQ 486, which before the removal of caching, first gave superficial symptoms of an error reading the hard disk (the MS-DOS prompt for recovery choice following a message about "*Sector not found*," as best your Editor can remember). Such trouble disappeared completely when DBOS was run with no qualifiers. This was not a casual, random observation, either. Before the change, sustained, correct operation was impossible. For example, RUN.BAT to execute all standard test cases generally would fail during the table transfers of either DC-24 or DC-40 if not earlier during those of DC-16. This was tried many times, and not once did it complete correctly. On the other hand, following the removal of disk caching, execution repeatedly was proven to be correct. Over and over during three days, RUN then was executed, and FC was used on each solution to produce a single differences file DIFF.LIS that was correctly minimal (around 200 Kbytes). A few weeks later, your Editor's own personal, 16-MHz, 386-based AT&T computer, which has been loaned to Bob Hasibar for home use, was cured of aggravatingly-frequent trouble reading the hard disk by removal of disk caching. Computer expert David Szymanski must be credited with suggesting this latter remedy to Mr. Hasibar. Somehow, your Editor had become so accustomed to perfect operation of /DISK_CACHE on his 486 at work that he did not think to suspect such trouble using his 386 home computer from the same manufacturer. Also, Mr. Hasibar's symptoms were not as consistent in that sometimes the execution of Salford TPLOT or EMTP would fail in random places with the familiar Salford message "*Page memory exhausted ...*" Of course, there really was not shortage of paging memory at all. In fact, this now is recognized as a disguised variation of trouble using the disk. Weeks later, when your Editor went back to Dr. Liu's 486 in an attempt to duplicate the "*Sector not found*" message, all he could produce was "*Page memory exhausted*" messages. These occurred during those same table transfers of DC-24 or DC-40, however. The moral of this long story is simple: only try disk caching after correct, sustained operation has been proven without it. Salford disk caching is great when it works correctly, but worse than nothing if operation is less than perfect with some hardware. So, be skeptical; only approach the use of Salford /DISK_CACHE cautiously!

SCROLLIT is the name of an interesting, new screen scroll-back utility that was installed on your Editor's computer by Laurent Dubé early in February. This is shareware (\$17 is supposed to be paid if one continues

using it after a 30-day free trial) from Bromfield Software Products of Ottawa, Ontario, Canada. SCROLLIT has many attributes. Important to Salford EMTP users, it seems to be compatible with DBOS/486, and size of the associated storage in extended memory is an argument of the invocation. The next issue should provide more details.

Improvements to Salford TPLOT

The POST command, when used with CACHE to superimpose two or more plots, resulted in curves that were erroneously offset vertically. This first was pointed out to those at BPA on January 13th in FAX from Ta-kang Chen and Shui-Hsiu Lin of Taiwan Power Company in Taipei. On January 17th, a new variable NYBOTP was added to preserve NYBOT of screen plotting (there had been a conflict).

IEEE PES COMTRADE output now is available from Salford TPLOT as explained in a separate story.

The TAMPER subcommand of SET DATA has been added to provide easy interactive observation and modification of indexed program parameters (the ones of TPPARAM.DAT usage). Work began during the weekend of November 14th and 15th when the first phases of the TAMPER code were made available to the general public. The feature was fully usable the following weekend. A mouse is required, however, because your Editor has not bothered to code keyboard equivalents for the clicking on control buttons of the display. Anyone who still does not have a Microsoft-compatible mouse at this late date receives little sympathy. Although not a visible command of the main yellow MENU, TAMPER will be found next to the end of the CONTROL submenu; it is a hidden plot command that results in the opening of yet another special window for observation and modification. Like the HELP window, the new one for TAMPER has been provided with no side or bottom framing. This allows the display of 10 parameters per line with 8 columns per parameter much as has been used for a long time for the STARTUP file. Different buttons allow the user to switch between floating-point, integer, and alphanumeric displays. Because there are far too many integer parameters to be displayed on the screen at one time, the window is scrollable. The FIND button allows the user to locate any known name. To change the value of a variable, the user simply clicks his mouse on it (the program will respond by high-lighting the name and value), and then keys his replacement value in response to a subsequent prompt. The RESTORE button allows the user to abort all such changes since the command was entered. Finally, the EXIT button will close the TAMPER window and return to the regular dialogue window. Special output in this window will display equivalent lines for TPPARAM.DAT to document the changes (if any) that were made interactively.

Could printer port number LPRINT be set automatically to correspond to PRN of MS-DOS? This was the question from BPA's Fred Elliott after he had finished reading about LPRINT in column 2 on page 3 of the preceding issue. The idea of using information that already has been given to MS-DOS is a good one. Some special value of LPRINT could be interpreted as such a request. But how, within a Salford FORTRAN program, can your Editor learn what PRN is?

News from Outside USA and Canada

The first European Conference on Power Systems Transients, EPST'93, will be held in Lisbon June 17-18 according to Prof. Teresa Correia de Barros of IST. It was E-mail from the Fargo server that first provided details for your Editor on December 28th. In fact, the announcement was a call for papers, which could be of two types: 1) shorter, non-refereed papers that would be allowed 10 minutes for presentation; or 2) longer, refereed papers that would be allowed 20 minutes and written discussions.

According to the announcement, *"EPST'93 is open not only to EMTP users, but also to the scientific community involved in all topics related to the area of transient phenomena in electric energy systems."* It remains to be seen whether significant numbers of persons who do not use EMTP will attend the meeting. The concept of a more general audience is interesting in any case. Since 1985, the spring meeting has been open to the general public. Now, by encouraging even those who do not use EMTP, the appeal is wider than ever before. Although the end of the announcement includes address **d2007%beta@inesc.inesc.pt**, a newer and simpler alternative is **teresa@interg.pt**

Dr. Mustafa Kizilcay's paper on low-order network equivalents is scheduled for publication in the April/ May, 1993, issue of ETEP (European Transactions on Electrical Power Engineering). This good news came to Portland in E-mail dated January 21st. The average reader probably does not know it, but the code for simulation using Kizilcay frequency-dependence has been available in Salford EMTP for 2 or 3 years. There is a problem with data generation, however: Dr. Kizilcay uses a commercial product named REDU_RP that is not available to many users. In any case, BPA plans to share official preprints of the ETEP paper with its principal contacts as was done a year earlier with Laurent Dubé's own preprints about MODELS.

SHOW.EXE is another EMTP plotting program. This one runs only under Microsoft Windows 3.1 on Intel microcomputers. It is Prof. Laszlo Priklér of the technical university in Budapest, Hungary, who sent a copy to Portland as announced in E-mail dated February 1st. It seems that SHOW began as the thesis project of one of Prof. Priklér's MSc students, Ferenc Kiss. In North

America, SHOW should first be exposed to the masses at the Florida short course during the second week of March.

A few words about Lisbon probably are in order. Your Editor recalls well that the European EMTP User Group of today really began there. This was in the fall of 1982 when Electricidade de Portugal, the national power company, first hosted an EMTP meeting outside of Belgium (the preceding spring meeting had been held at Laborelec within Belgium). The fall, 1982, meeting began the pattern of rotation among different hosts in different countries --- a pattern that has been followed successfully for the past decade. To see the first EMTP menu, which applied to dinner by all participants at the elegant Hotel Tivoli in downtown Lisbon, readers are referred to pages EMTH-1 and 2 of the *EMTP Memorandum* dated 10 December 1982. This can be found in Volume XII.

Bulgaria and Poland are the most recent countries of Eastern Europe to express interest in ATP. It is Harald Wehrend of the University of Hannover who deserves credit for handling Bulgaria following a late-November visit to his university by someone from Energoprojekt in Bulgaria. In E-mail dated January 12th, Mr. Wehrend reports a request from these people not only to use ATP in-house, but also to *"give it to other interested engineers in Bulgaria."* Of course, following licensing (just the exchange of a piece of paper), this not only is possible, it is encouraged. Concerning Poland, ATP information and materials could be spread by U.S. Technologies, Inc. of Glenview, Illinois. More than the now-common domestic contract who merely would forward ATP materials to Europe by mail, Richard Bielowicz of this company explained by telephone on January 11th that he personally travels to Poland about once a month, and would be happy to spread the ATP word when he is there.

Those 13 UTPF segments from LEC (see column 1 on page 4 of the July issue) still have not yet been merged with the UTPF in Portland. Some segments have been, but others have not. This is despite the expenditure of a significant amount of time (in the case of changes to CABLE CONSTANTS, both here and at Doshisha University in Kyoto, Japan). Whether all differences ever will be reconciled now is problematical. Trouble reconciling BPA's code with LEC's code has reemphasized the complication of involving a third party. This is why BPA wants to deal directly with Prof. Juan Martinez in Barcelona, Spain (about the Type-59 S.M.), with Dr. Mustafa Kizilcay in Frankfurt, Germany (about his frequency dependence), with Prof. Akihiro Ametani and Dr. Naoto Nagaoka in Kyoto, Japan (about CABLE CONSTANTS), etc. Working directly with remote developers is difficult enough; adding LEC as an intermediary complicates the matter intolerably, in your Editor's opinion.

LEC's disk files for its ATP Rule Book are available from Fargo using an FTP transfer of Internet. This history-making development was announced to the world by Prof. Mork in E-mail from the Fargo server on December 21st. The files have been placed in directory **/anonymous/pub/atp/lecruleb**

For more information, see also the later story about politics on the Fargo list server (yes, that hostile electronic exchange concerned LEC's Rule Book files).

Reading those LEC disk files (of the ATP Rule Book) is less than obvious for the average program user who does not have Lotus Manuscript. The VIEW utility of PC Tools may do a good job on the WordPerfect files of the newsletter (see column 2 on page 15 of the preceding issue), but it seems to do no better on Lotus Manuscript files than shareware LIST does. Neither does WordPerfect or MS Word seem to offer any direct hope. As discovered two or three years ago by LEC Manager Guido Empereur, one can export from Lotus Manuscript using the DCA format, and this is recognized by either WordPerfect or MS Word. But how well? To see, one of the smaller LEC disk files was randomly selected. After conversion by Manuscript, the DCA file was sent into MS Word for Windows 2.0 on Dr. Liu's computer. Ordinary text looked perfect, but the table looked like a mess.

The form letter used for Can/Am ATP licensing has been updated as explained in a separate, later story. The plan is to distribute a revised, printed copy when BPA next mails to its primary contacts (which include foreign user groups).

The Japanese EMTP Committee meeting of Friday, October 16th, was addressed in person by Can/Am Co-Chairman Dr. Tsu-huei Liu. An interested reader is referred to a separate story for details of this and other events during four days in Japan.

The Republic of China EMTP User Group, which services Hong Kong and Singapore in addition to Taiwan, has grown once again. FAX from Ta-kang Chen and Shui-Hsiu Lin of Taiwan Power Company on January 13th indicated the following four new members: 1) Industrial Technology Research Institute; 2) Tatung Company; 3) Chiao Tung University; and 4) Taipei Institute of Technology. In response to this and other useful information, BPA mailed Salford EMTP and TPLOT FORTRAN to Taipei on January 14th. The TPLOT source code is important if progress is to be made with oriental language. Recall that such multilinguality was possible using the old Lahey compiler F77L for operation within 640 Kbytes. It would be nice if the Salford compiler somehow could be shown to be equally tolerant.

Public Power Corporation of Athens, Greece, is expected to be the first organization in Europe to use the

new (current) Apollo EMTP from New York Power Authority in White Plains. This provides yet another illustration of how persons overseas can obtain ATP from North America. In a letter dated December 9th, we in Portland were informed that PPC had two engineers stationed at ESCA in nearby Seattle. One of these, a Mr. A. Koronides, will be receiving the ATP materials, and carrying them back to Greece with him during March if he does not forward them earlier. But he did not have an empty, 60-Mbyte cartridge tape, so BPA chose to donate an old, surplus, Sun Unix tape. In a letter to Ion Panagouloupoulos, Head of Generation Transmission, System Studies Department, your Editor concluded as follows on January 14th: *"About the tape, let me explain that BPA does not want it back. Rather, when possible, BPA wants to assist other licensed users by means of such sharing; and it encourages others to do likewise. Hence you are requested to retain the tape for some time (e.g., a year or two) after having read the files --- in case someone else in Europe later might have interest in the files."*

More about Electronic Mail (E-mail)

Prof. Bruce Mork's telephone number as stated in the October issue on page 14, column 1, was in error. Correction was made by Prof. Mork in list server mail dated November 8th from which the following is pasted: *"The correct number is (906) 487-2857."* Printed copies as mailed in North America show correction of the final two digits by hand, at the last minute.

The October issue was made available via E-mail on November 7th --- some 5 weeks before the average North American subscriber was mailed his copy via the post office. This is as it should be: finally, electricity beats mechanical printing and mailing! This pattern is expected to be repeated in the future. Subscribers to Prof. Mork's Fargo list server should have access to the news first. If speed is important, this is something to remember. Also, do not forget that a disk file is more valuable than paper for permanent storage since disk files can be searched mechanically. Even better and more powerful than WordPerfect itself for this job is Vernon Buerg's shareware utility LIST, which allows a wild card (so a single command will search a family of files).

English E-mail addresses were clarified in the same message. A question was raised in the preceding issue, in the last complete paragraph of column 1 on page 9. Professor Mork now explains that *"E-mail addresses originating from the UK have the order of the domains reversed. For example, the FROM: field provided by the originating mailer in the UK will probably be something like fred@uk.name1.name2. To send mail to that person, simply reverse the order, making it fred@name2.name1.uk."*

A total of 541 E-mail messages had accumulated within your Editor's CompuServe Filing Cabinet by January 24th when he began removing the older ones. Storage began on 8 August 1992. The accumulation did not include more than just a few messages from the Purdue mailer, since nearly all of these are deleted as quickly as they are recognized. For example, only the latest directory of subscribers is kept. The point is this: the volume of E-mail has been great, largely replacing FAX for written communication with most working contacts. E-mail messages probably outnumber FAX messages by 10 to one, now. The new medium has changed the way developers in Portland communicate with others. About the removal of old mail, a separate utility OLDMAIL was written for this purpose.

About unknown locations of some subscribers of the Fargo list server, Prof. Mork observes that *"Subscribers to ATP-EMTP have always been instructed to include their location (following their name) when sending the SUB command to subscribe. However, many do not bother to provide this information."*

WinCIM is CompuServe's Information Manager (CIM) that runs under Microsoft Windows. A full-page testimonial by Harry Green can be found on page 26 of the January issue of CompuServe Magazine. This Editor remains unconvinced by the hype, however. It seems likely that the upgrade would not be free, and failure to mention the price is viewed as an ominous sign! Your Editor does not intend to GO WINCIM *"for the latest information about obtaining WinCIM and receiving support."* So, if any satisfied customer wants to submit a short justification or defense for publication in the next issue of this newsletter, he is encouraged to do so. However, emphasis should be on features that affect E-mail, **not** computer shopping!

Speaking of shopping, *The Electronic Mall* is the section of *CompuServe Magazine* that bears some resemblance to familiar advertising of airline flight magazines. A difference is that a member can contact companies using his computer (i.e., via CompuServe). It seems likely that many cheaper items are purchased on inspiration. But there also are expensive products for which CompuServe merely provides a convenient way to request information. Consider that sleek, black, 1993 Ford Taurus, for example (GO FORD)!

Subscription to the Fargo server continues to grow. Prof. Mork indicated by telephone on February 12th that the milestone of 100 had been broken recently.

Junk E-mail is the term used by your Editor late last summer to describe messages from the Fargo list server. But this name was quickly abandoned following an objection from Prof. Bruce Mork, who correctly observed that the list server only relays messages to those who have

subscribed, and therefore want such mail. For the postal system, the name *junk mail* has come to mean mail that a recipient has not requested --- almost always commercial advertizing. Well, there is junk E-mail, as your Editor learned during the early morning hours of November 16 when a record 12 files were received. The problem is, six of these were identical form letters from an unknown person using the address **Power_List@GLOBE.EDRC.CMU.EDU** The communication began: *"This is a formal Request for Discussion on the creation of a new news-group (internet bboard) called "sci.engr.power" (not moderated)."* No doubt about it, your Editor is on a junk mailing list! Junk is as junk does.

Yes, your Editor unfortunately and unwittingly subjected himself to this flood of electronic printed matter by agreeing to be listed in that directory of power engineers that is maintained by Prof. Heydt at Purdue University (see page 10, column 1, of the preceding issue). At first, your Editor thought that he had been singled out for some special, unfavorable treatment, so he reported the multiple mailing in a message dated November 17th. But Prof. Bruce Mork explained in response that the problem is more general and serious: *"The system that Carnegie Mellon and Purdue have set up is not a list server, but just a mail forwarder. As far as I can figure, rejected mail gets sent back to the originating address, which get forwarded, again, to all the people on the forwarding list. Bounced e-mail therefore can cause an endless loop of message transmissions, each with a longer header. Maybe they can fix it by putting an administrator's address in the FROM: field instead of the mail-forwarder address."* Let's hope so! A subsequent bulletin from Prof. Mork on the 17th summarized the superior properties of the ATP-EMTP list that he maintains: *"(It) takes care of bounced mail automatically, in that it retries on 3 day intervals. Subscribers never see duplicate messages caused by mail bounces. ... As list owner/maintainer, I only come into the loop if there is an address that has been bouncing for more than a week, or if a subscriber has an unusual problem with subscribing or canceling his subscription or changing his address. I am using a facility at **vm1.nodak.edu** -- you can contact the postmaster there and ask about adding a new list to their list server, if you are interested."*

The Purdue mail forwarder appears to your Editor more and more like the solution to a nonexistent problem. The capability is fine; and occasionally (perhaps once a week) there is some legitimate bulletin such as advertising for a faculty position at some university, or the announcement of a conference. Otherwise, in a typical week, there will be no traffic at all. The stupidest aspect seems to be ongoing public voting. Messages consisting of little more than *"I vote yes"* are not uncommon. A day or two ago, such messages began arriving again, for no apparent reason. Today (Dec. 18th) when your Editor connected to compuserve, he received 11 pieces of mail. These were

dominated by such trivial, public voting. But the final message, from V. C. Remesh of Carnegie Mellon, was entitled "*please DON'T vote.*" Maybe this will provide some relief. It explained that: "*there was no call for votes whatsoever. kindly do not broadcast your 'votes'.*" Perhaps this would be an opportune time for your Editor to cancel his subscription? The good news is that few of the just-mentioned *spontaneous voters* have been recognized as being subscribers of the Fargo list server. Count your blessings, Prof. Mork!

Yet, "*I read you loud and clear*" may be the list server equivalent of public voting from Purdue and Carnegie Mellon! Your Editor has just been forced to rethink his blessings before counting. Consider the following illustration. On January 5th, your Editor received via Fargo a message from the University of Northumbria in Newcastle upon Tyne, England. It announced: "*The ATP-EMTP list server refuses to recognize my mail. If you happen to receive this communication, I shall greatly appreciate a confirmation from you.*" That same day, three persons responded publicly. One would think that this should have been enough. In fact, the first of the 3 should have been enough. Following several days of no additional such nonsense, your Editor concluded erroneously that the episode had ended. But not so! On January 13th, a fourth "*we hear you*" message was received! Not uncommon for such E-mail, there was not even any explanation of whom had been heard! It is like voting in an election for which the polls had closed one week ago! So, the Fargo server, too, has a problem with junk mail, in your Editor's opinion.

The availability of new ATP versions should be announced to the general public first by the Fargo list server. This is the new procedure that began on November 14th when your Editor issued a 6-Kbyte news release to describe a proposed BPA distribution of VAX / VMS ATP materials. For further details about VAX ATP, see a separate story.

Titles beginning with "News:" indicate the new, periodic (typically weekly) news releases from Portland. The availability of new ATP versions was merely the first usage of what now is seen as a more general procedure. For example, the correction of saturation modeling of the Type-59 S.M. by Prof. Juan Martinez (see separate story for details) was announced to the world in server mail entitled: "*News: Martinez corrects S.M. 59.*" Laurent Dubé has suggested that Prof. Mork might want to separate Portland news releases from other E-mail in order that others could easily pick them up as a group. Your Editor questions any such special treatment, however. How or why are his own news releases any more important than anyone else's? Any subscriber is free to separate E-mail however he wants, after all. This includes the ultimate separation of file deletion!

Accented European languages can be handled by CompuServe without distortion only if MS-DOS disk files are encoded (e.g., using the shareware utility UUENCODE of Theodore Kaldis) prior to expedition, and decoded upon reception. This is the general, unfortunate conclusion of experiments involving Prof. Guy Clerc of the Electrotechnical Laboratory of École Centrale de Lyon in France. Upon request, Prof. Clerc sent a paragraph of French-language text to your Editor's CompuServe address. What was received was corrupted wherever an accented character should have been. For example, **Français** became Fran5ais, **caractères** became caractIres, **supérieur** became supErieur, **à** became H, **être** became Atre, etc. Yet, this is better for incoming mail than for outgoing mail. Within CompuServe's windowed interface CIM, it is impossible to enter any character having code 128 or higher! Of course, it is easy to enter such non-keyboard characters using EDIT of MS-DOS 5 or WordPerfect: simply hold down the **Alt** key while pressing the decimal digits of the character code. Laurent Dubé (yes, this is **Alt** followed by 1, then 3, and finally 0) does not use CIM, so he has no such protection against characters above 127. When he sent a file of French-language text to his brother in French-speaking Québec, Canada, the file as received was unprintable (paper was ejected at a high rate of speed). It would seem that all of this trouble (including the need to encode WordPerfect files) can be traced to the saving of one bit in eight (the difference between 128 and 256). In retrospect, this *economy* by the designers of E-mail was very short-sighted, and we all are paying for it today --- again and again.

The availability of new ATP versions for beta testing should be announced to the general public first by the Fargo list server. This is a new procedure that began on January 2nd when your Editor issued a call for volunteer guinea pigs to test Prof. Chen's transformer model (see separate, later story). Time was running short, and the Fargo list server seemed like the ideal vehicle for broadcasting the news rapidly. Note that beta testing is different from offers to the general public. Anyone can read the news, of course, but only applicants who satisfied the seven stated requirements would be considered, it was explained at the beginning.

An alternative to sending FAX to several persons is yet another use of the Fargo server. This was first done on January 15th in response to 7 very long (44-cm) pages of FAX from Leuven earlier in the day. For any normal, private communication, private E-mail would have been used. But in this case, BPA was just one of five destinations. The Fargo server provided a quick and inexpensive way to reply to at least 3 of the other 5 parties who were involved. A 4th, identified only as "M. Loesing," might also have E-mail. Finally, the 5th, "M. P. Pereira" of Furnas in Rio de Janeiro, Brazil, probably still does not. Yet, this was not an issue because FAX

might not be much more effective. The last paragraph of the preceding issue said that FAX was sent to Rio on November 3rd. This sentence should be corrected. November 3rd was the date of the first of several attempts over several days. Eventually your Editor tired of the effort, and gave up. Regular Air Mail was used to send photocopy later. Even this was unfortunately delayed so that it could accompany a printed copy of the October issue --- and then was forgotten when the newsletter was mailed. No such complications exist with the Fargo list server! As for subject matter, LEC's FAX seemed merely to have rediscovered the one-line change of our October newsletter. There was no recognition that changes also were required in LCMODE (see a continuation of the story later in this issue).

Dr. Ivano Bonfanti of CESI in Milano, Italy, has a new, simpler E-mail address. This was learned from Laurent Dubé on December 9th. Use **bonfanti@cesi.it**

Ambiguity or imprecision has plagued some server complaints about faulty EMTP operation. As a recent example, consider the following claim that was made on January 18th: *"Using TACS STAND ALONE, I can not plot TACS variables on a PC."* In this case, the trouble was clear enough, but there was no explanation of what a PC is, what program version was being used, or from whom, or when, it had been obtained. Of course, your Editor was concerned about Salford EMTP, so he simulated the 2nd subcase of DC-18 to create a .PL4 file, and demonstrated that this could be plotted correctly using Salford TPLOT. All of this was explained in server mail the following day. But maybe the complaint was not about Salford EMTP at all! More precision should save everyone time.

LEC could not accept UUENCODED files on the 28th of January when your editor tried to send an archive of those missing LMFS files (see later story). In E-mail dated February 3rd, Guido Empereur, LEC Manager, asked for a second transmission without either compression or encoding because the university's *"IBM mainframe does not seem to like compressed nor (sic) encoded files. During file transfer to PC, or already upon receipt of the E-mail file, things go wrong."*

Strong politics were introduced to the Fargo list server in the form of a 6020-byte message from LEC dated December 22nd. It was rebutted in detail the following day by your Editor in a 17581-byte message (also public). Details of the charges and counter-charges are interesting, but are beyond the scope of the present story. The question now being considered is this: is the list server an appropriate place to air such grievances? Your Editor concluded his rebuttal as follows: *"If LEC wants to avoid additional, detailed rebuttals such as this present one, it is advised to consider its future list server messages more carefully. ... Use of the Fargo list server for deliberately-hostile communication is not believed to be in the best*

interest of the ATP user community that it is supposed to serve. At least that is this writer's opinion. He will hold his fire if LEC can learn to do likewise."

An unexpected conclusion to the preceding paragraph arrived from the server on January 15th. Entitled *"disclaimer concerning rule book files message,"* LEC Chairman Van Dommelen wrote that he *"hereby declares to have had no previous knowledge of the existence of this public message. Although he has nothing to do with the form, content and destination of the message, in his quality of Chairman of LEC, he apologizes for any confusion, bad feelings and inconveniences it may have caused."* This suggests yet another problem with E-mail: lack of signatures at the end of a letter. It is impossible to determine who actually sends a message. One does know from **where** E-mail comes (in this case, from K.U. Leuven), but there would seem to be no easy way to determine from **whom** it comes. In this case, the first of four persons listed as authors has denied all knowledge. That leaves three, beginning with the LEC Manager!

Harald Wehrend of the University of Hannover continues to supply interesting information about E-mail within Germany. In a letter dated December 22nd, he writes: *"I just started operating with a privately organized mailbox here in Hannover (only local phone calls are necessary). It will cost 5 DM per month and an additional 0.02 DM per minute of connection time. What I don't yet know is the price of E-mail through Internet. I was told that it is possible, and that billing will depend on the volume. I want to test these mailbox options during January. It would be fine to send and receive E-mail from my PC at home."*

This low-cost, private, German mailbox intrigued your Editor, who asked Mr. Wehrend for details. It seems that little more than a computer, a telephone line, and access to some E-mail network is required for an entrepreneur to begin such a business. In E-mail dated January 8th, Mr. Wehrend wrote: *"A list of addresses (telephone numbers) is published monthly in a german PC magazine named c't. Before selecting one mailbox, I tested several (around Hannover, there are 6 or 8 that can be dialed by modem). Without paying, one can get information about cost, can test the kind of menus used by the mailbox, and can even register online. If one registers, however, money must be remitted in advance for about 6 months of expected charges. Only after a user's money is in the operator's bank account is a user allowed to send E-mail, etc. ... There is no membership, no official bill, ... One can use the mailbox resources as long as the account is not overdrawn."* Amazing! Compared with enormous CompuServe in the USA and Canada, E-mail in Germany seems refreshingly personal.

Japanese use of E-mail has been confirmed by the Purdue directory (see column 1 on page 10 of the October

issue). The copy dated December 2nd shows 7 entries ending in **.jp** (the country code for Japan). In addition to 4 entries for Mitsubishi, there is one for a university (Kumamoto), and two for a power company (Tokyo Electric). All addresses are simple, high-level, and easily remembered from the English names. For example, the entries for Tokyo Electric Power Company end with **.tepcoco.jp** and the entries for Mitsubishi Electric Company end with **.melco.co.jp**. Familiar names from EMTP contact a decade ago between BPA and Mitsubishi are Hiroshi Suzuki and Toshi Sakaguchi. It is unfortunate that Doshisha University, with whom ATP developers in Portland have by far the greatest interest in exchanging EMTP information, does not yet have convenient working access to E-mail.

Prof. Teresa Correia de Barros of IST in Lisbon, Portugal, managed to arrange E-mail during early December. This completed an important link among 4 authors who had been trying to collaborate on a paper (more about this later). Use **teresa@interg.pt** (what could be simpler?). The person responsible for this important progress (including recent reform to simple, mnemonic names) is understood to be Luis M. F. Barruncho, a talented graduate student. E-mail access to IST is doubly important because it has been extended to the national power company, EDP. The preceding story about news from overseas mentions the precedent-setting 1982 meeting in Lisbon, for which it is appropriate to credit J. Allan Lima. Through the first half of the 1980s, Mr. Lima was an important collaborator of developers in Portland. Unfortunately, his involvement was lost to management (Mr. Lima was promoted) some five years ago. Well, it was natural enough for your Editor to inquire about Mr. Lima, after learning that E-mail had bridged the gap to IST. In a note dated January 6th, Prof. Correia de Barros provides the following news: *"Luis' efficiency has, as always, solved the problem. He created an address for Allan Lima on our computer. Since EDP is linked to us, this can be used efficiently. The address is allan@interg.pt"*

85 cents was the charge by CompuServe to send a 42-Kbyte file at 13:09 on Thursday, December 10th. In the preceding issue (page 9, column 2), there was a report that 28 Kbytes cost 60 cents. Both transfers were at 9600 baud, both were **intra**-national, and both were made during normal working hours on a weekday (although it is not clear that any of these parameters would significantly affect the charges). Extrapolation implies a rate on the order of \$20 per megabyte. At this rate, the 3-disk Salford EMTP distribution would cost around \$70. Worse yet, mother would have been billed a staggering \$700 for Prof. Bruce Mork's record-setting transfer last summer (page 11, column 2 of the October issue). For the record, the latest file transfer was to Prof. Dennis Carroll in Florida, where preparations for advertising of the upcoming EMTP short course (see later, separate story) by

mail is beginning once again. The 42 Kbytes consisted of 192 new sites that have entered the user group's address file since the end of October, 1991. This is yet another indication how big ATP business has become within the USA and Canada. Your Editor doubts whether the expanded mailing list of all other user groups combined would be larger. A seemingly never-ending supply of new inquiries about ATP is believed to be uniquely North American. Yet, if your Editor is wrong in this assessment, he would appreciate being informed of details in order that a clarification might be published in some future issue. Meanwhile, your Editor continues to search for evidence of the first customer who has paid EPRI the advertised royalty for the right to use the DCG/EPRI EMTP. The contrast is staggering. The utter failure of DCG/EPRI EMTP commerce would seem to be the natural legacy of greed, stupidity, and monopolistic inefficiency. Remember, the lesson about bureaucratic bungling is not confined to totalitarian communism and Eastern Europe. Classes demonstrating the importance of a free market and unrestricted competition in all things have been continuously in session in Western-style democratic republics such as the United States, too! Your Editor views the EMTP lesson as just one small example of a much larger trend that affects all aspects of society. When the story is finally complete, maybe *"EMTP Wars"* could represent an illustration of *Megatrends, II* (for mention of the original, see Volume XII of *EMTP Memoranda*, 6 Dec 1982, page WSWE-9).

Someone willing to share ATP materials might be located using the Fargo server. Of course, readers within the USA and Canada have no such need. But those overseas might not have a friend in the United States who would be willing to forward materials. In responding to Dr. Rainer Bacher of ETZ in Zurich, Switzerland, on January 3rd, this idea occurred to your Editor. This is a very practical new use. For many months, subscribers have been posting messages such as: *"Who can help me with the modeling of ..."* Why not a message such as: *"Who will share Salford EMTP materials with me?"* As it turned out, Dr. Bacher had no such need, however. In E-mail dated January 7th, he requested that the user group mail ATP materials to a hotel in Columbus, Ohio. Yes, Dr. Bacher will be attending the IEEE PES Winter Meeting, anyway, so the timing was fortuitously ideal. It also might be the beginning of a trend, as announced to the world in E-mail of the Fargo server on January 18th.

OCT92.WP5 is the single, 169-Kbyte disk file that stores the October, 1992, issue of the newsletter in WordPerfect format. No, your Editor did not abandon his plan (page 19, column 1 of the October issue) to split the issue into two pieces. Such smaller files continue to be necessary for working storage. But after all editing was completed, it was found that the two pieces **could** be combined, so this is what was done. A single file clearly is better for the reader.

The 65-Kbyte limit between CompuServe and the outside world somehow was broken on December 15th by Yin Yuexin of the University of Florida using the account of Prof. Dennis Carroll, which has address **dcarr@admin.ee.ufl.edu**. Late in the afternoon, before heading home for the day, your Editor was shocked to monitor the slow arrival (about 10 minutes at 9600 baud) of a 197-Kbyte message that CompuServe stored in a file having default name NONAME.DAT. The very first line of this documents the peculiar origin: Sender: **smtplink@dcarr_at_adminee.compuserve.com**. Following such typical E-mail header information was a note that UUECODE should be used to recover the original 8-bit information. Yet, the original files were conventional UTPF segments, which have no special characters requiring the 8th bit. Further, Mr. Yin knew nothing about the encoding. The process is surprising, and not at all understood.

Computer-stored ATP Rule Book pages finally are available from the Fargo server. These come from LEC in Leuven, Belgium. Refer to the story about foreign user groups for details.

Apollo at New York Power Authority

Robert Meredith and Robert Schultz of New York Power Authority (NYPA) in White Plains (a suburb of New York City) continue to support and distribute ATP for H-P Apollo workstations that use the Aegis operating system. Since November, this has included the testing of new (current) Apollo ATP FORTRAN.

The old Apollo translator, which was the first ATP translator, has been abandoned. In its place, a new one was created during the weekend of November 7th and 8th by merging features of existing translators for DEC VAX / VMS and Sun Microsystems that already ran at BPA on your Editor's 486. This followed FAX dated November 5th in which Mr. Meredith confirmed that the current Apollo FORTRAN compiler version 10.8 was tolerant of more-common rules than in the beginning (1984). Mostly, such details concern developers rather than users. But one detail will be important to any user of CABLE CONSTANTS: the switch from 32-bit to 64-bit COMPLEX arithmetic.

A floppy disk containing current Apollo EMTP FORTRAN was sent to NYPA by Federal Express on November 9th. When Mr. Meredith was contacted by telephone just before mid-January, he reported considerable progress. It seems that many corrections already have been made (your Editor is embarrassed), and execution is correct for most test cases. There are no known general problems, although isolated test cases still are not correct. Mr. Meredith did not want to send any changes back to Portland until the job is complete. Well, the two New York Bobs **do** seem to be very good at whatever they try, so it seems best to let them work at

their own pace. Look for a conclusion to this story in the next (April) issue.

Public Power Corporation of Athens, Greece, is expected to be the first place in Europe to use Apollo EMTP from NYPA. For details, see the preceding story about foreign news.

Dr. Liu in Tokyo and Kyoto

Dr. Tsu-huei Liu addressed a large meeting of the Japanese EMTP Committee in Tokyo on Friday, October 16th. This is the EMTP user group run by Prof. Akihiro Ametani (Chairman) and Dr. Naoto Nagaoka (Secretary) of Doshisha University in Kyoto. A special feature was the projection of Salford EMTP and TPLOT execution on a big screen. Important points of discussion included BPA's policy to develop and use ATP in cooperation with the Can/Am user group. Compatibility of Salford EMTP with MS Windows was discussed. The preceding day, Dr. Liu had addressed a meeting of the Japanese IEE using only conventional overhead transparencies.

FOIA (the U.S. Freedom of Information Act) was an important topic of Dr. Liu's presentations in Japan. After all the misinformation about BPA EMTP work that has been spread by DCG and EPRI over the years, it was important for all who would listen to hear what U.S. law requires. Several transparencies treated this important subject. Any reader who is unfamiliar with the need for understanding about the free nature of BPA computer work is advised to read the 10 pages on this subject that were contributed by your Editor to the March, 1988, issue of LEC's *EMTP News*.

CRIEPI's collection of money from Japanese companies to support its DCG membership continues to disqualify CRIEPI, but none of those paying, from free access to ATP. As a consequence of this clarification, ATP was spread within Japan. On February 1st, your Editor validated 23 Can/Am licenses that had been sent to Portland by Dr. Nagaoka.

Type-59 S.M. modeling was of particular interest to Toshiba, which supplied Dr. Liu with an illustration of trouble in the form of a disk file GEN_1.DAT that ended with a KILL code. Yet, this simulated normally using the 1984 "M39." version of BPA's EMTP. Well, following Prof. Martinez's correction (see separate story), this data case simulates to completion.

Dr. Liu worked with Prof. Ametani, Dr. Nagaoka, and several students during her subsequent trip to Doshisha University in Kyoto. Included was concern about reconciliation of BPA's CCEIGN (a module of Prof. Ametani's CABLE CONSTANTS) with the segment that came from LEC. The latter included substantial changes

made by Dr. Nagaoka during his fall, 1991, trip to Leuven to attend the annual LEC meeting. Unfortunately, the changes to CCEIGN have not yet been fully reconciled.

3 - Phase Xformer Modeling in Fargo

The first of two BPA contracts to work on low-frequency, multi-phase, transformer modeling of EMTP was awarded to North Dakota State University in Fargo nearly a year ago.

A *Table of Contents* and *Outline* of the final report from NDSU was disseminated on February 12th as the bulk of a 7597-byte E-mailing of the Fargo list server. Later that same day, a second server message informed the general public that the oral presentation would be held here in Portland during the morning of Monday, February 22nd. Dr. Donald Stuehm, Professor at NDSU and Principal Investigator for the project, did make the presentation --- to an audience of 12 persons representing 3 organizations. BPA expects to reprint copies of the 100-page final report and mail them to its primary EMTP contacts (including foreign user groups) when a final copy is available.

Prof. Chen ' s 3 - Phase Transformer

The second of two BPA contracts to work on low-frequency, multi-phase, transformer modeling was awarded to Prof. Xusheng Chen of Seattle Univ.

By year's end, Prof. Chen's transformer model was available for simulation within ATP. This was the result of his trip to Portland to work with your Editor on the debugging. Work began at BPA shortly after noon of Tuesday, December 29th, and it extended to within two hours of the New Year. The joint effort was a success; Prof. Chen's transformer model finally is available for use by others. Those having E-mail read the news first in the form of a call for volunteers that was sent on January 2nd by the Fargo list server.

Initial debugging involved two simple problems that had been brought by Prof. Chen: 1) a continuation of steady-state operation; and 2) transformer excitation from a balanced, 3-phase source. These involved just small, trivial data cases (almost no network). A third and final test was more realistic: 3) GPU's 1973 energization of the 214-mile, 345-kV transmission line connecting Homer City to Stolle Road (prior to 1979, this was named UTPF Test Case No. 17).

Copies of Salford EMTP that included the Chen transformer were mailed to the following parties for testing: 1) Prof. G. A. Capolino in Marseilles, France; 2) Yin Yuexin in Gainesville, Florida.

Interface mathematics of Prof. Chen's transformer bear

some resemblance to the Type-59 S.M. In both cases a Norton equivalent is used, and this admittance contributes to the network admittance matrix $[Y]$ --- which must be reformed and retriangularized whenever changes in saturation are significant. The Norton current is changed correspondingly, of course. A difference from the Type-59 S.M. is the requirement that the user supply a Pi-circuit to represent the transformer during the phasor solution for initial conditions. This is a little primitive, but it made the installation much simpler. The Pi-circuit automatically defines the transformer coils, and it interconnects them with the rest of the network. It is only in the time-step loop that the normal Pi-circuit code is bypassed in favor of Prof. Chen's code to define the Norton parameters.

An initial, unfortunate constraint of Prof. Chen's transformer model is its fixed number of coils: six, for a 3-phase, 2-winding transformer. Now, your Editor may not know much about transformers, but he **has** seen enough data representing them to know that many (e.g., that 1973 GPU device at Stolle Road) involve a third (tertiary) winding. When your Editor made this observation on December 31st, Prof. Chen explained that his code could be modified to allow such 3-winding cases. But, as this text is being frozen on February 27th for publication, no such change yet has been seen.

The limitation of a single Chen transformer in any one data case could be removed by reprogramming, of course. If the model is to survive, its storage should be moved to existing, variably-dimensioned tables of the EMTP. Yet, BPA support for any such change most likely would be contingent upon favorable reaction to the initial offering. The jury is still out on this question.

Purge of 1992 Mailing List

The preceding October issue was mailed by the user group to an unmanageable 159 sites in the USA and Canada. So, once again, the year-end purge of the mailing list was a practical necessity.

Former newsletter Editor Thomas Grebe had written the program that had been used to maintain subscriber information and produce address labels through the July, 1992, issue. While good, Mr. Grebe's program was not written in a language that could be easily modified by the user group. Mr. Grebe used Ashton-Tate's dBASE or one of its extensions (dBASE II, etc.) with which neither Co-Chairman had any familiarity. Yet, some changes had become increasingly desirable with the change of names and addresses, and the growth of the data base. Had Mr. Grebe known of the problem, he might well have volunteered to modify his old program for the user group. In the past, your Editor has pointed to him as a model of cooperation. Unfortunately, Mr. Grebe's current

employer is Electrotek Concepts, which is EPRI's agent in some EMTP-related matters such as its famously-slow OS / 2 version. The user group simply did not want to ask any favors, considering this circumstance. So, your Editor decided to write his own program in FORTRAN and use the Salford compiler to perform many sophisticated functions that now seemed to be desirable. This program, PRINT.FTN, was used for the first time to produce labels for the October, 1992, issue.

Any errors or undesirable constructions of the mailing labels for the October or January issues should be pointed out --- either to this Editor, or to the Publishers and Mailers. The new data base, NEWSLETT.LIS, is easy to modify in either place, and to compare for changes, since it is nothing more than an ASCII, MS-DOS text file that is maintained using a conventional text editor such as shareware PCWRITE or EDIT of MS-DOS 5. Although a computer program was used to extract the starting information from Mr. Grebe's dBASE disk file, every address label already has been reworked by hand. For example, note that the 2-letter abbreviations for states (e.g., AK for Alaska) no longer are being used. One problem with official abbreviations is difficulty remembering (e.g., why is **AK** any more logical for Alaska than for Arkansas?). Another problem is quality: As long as a computer is doing the work, why not do it right? So, if anything about a current label is less than optimal, and if a subscriber is willing to take the time to mail a correction to Portland, the change will be made.

Organizations are becoming more important. No longer is the user group tolerating the lack of a company or school name on ATP licenses (see separate story), and the same now goes for additions to the newsletter mailing list. The form for subscription was revised around the start of the year. No longer is information about the computer being used, or the specialty of interest, being requested and retained. This dated to founding-Editor Grebe, and also to simpler, pre-electronic times. Nowadays, if someone wants to contact others about some particular type of problem, he is advised to make his interest known to others using Prof. Bruce Mork's Fargo list server (i.e., advertise using E-mail). The world keeps changing.

Faster Local Bus for Intel PC s

Local-Bus Technology : Video Takes a New Route. This is the title of a detailed article by John R. Quain in the October 27th issue of *PC Magazine*. In the Highlights section on page 138, Mr. Quain writes that "*local-bus technology speeds performance by putting peripherals like video controllers directly on the CPU's 32-bit bus and allowing them to run at full clock speed*" rather than the 8-MHz of a standard 16-bit AT bus (ISA, for Industry Standard Architecture). On page 137, Mr. Quain explains that "*a PC with local-bus video can cost as little*

as \$100 more while delivering video performance that's 2 to 15 times as fast as a standard VGA adapter. Unfortunately, you can't upgrade your current system."

Ms. Mae Wu of FEI America had wanted to quote prices of a local-bus machine for the July, 1992, issue (see story on page 17). But your Editor was not smart enough to realize the significance at the time. Now, re-educated by **PC Magazine**, he understands that this is an important and affordable new technology that should be of interest to anyone using bit-mapped Microsoft Windows 3.1.

80387 math coprocessors are very cheap these days. The 8-page, December-January catalog of FEI America shows prices that range from \$79 for either the 16- or the 25-MHz 387SX to \$129 for a 40-MHz 387DX. In between, \$99 will purchase either a DX or an SX chip for 33 MHz. Any reader who still might be running Salford EMTP on an 80386-based computer without a coprocessor should pay particular attention. Speeding simulation by a factor of 10 should be worth \$100 (are you paying attention, Gerald Lee?) !

X - Rays and Floppy Disks

Do X-ray machines harm floppy disks? Should one warn against X-raying when one addresses a package that contains a floppy disk? What about the X-raying of luggage at airports? For what it is worth, Laurent Dubé has had no trouble with the X-raying at any of the many airports of North America and Europe that he has passed through (yes, he packs his computer disks with his carry-on luggage). Emboldened by this report, your Editor has done the same thing on his 3 or 4 more-recent trips, and has observed no trouble. But what about the mail? Who knows for sure? The inspection is done an unknown number of times in unknown places. The user group continues to warn against both X-rays (maybe not harmful) and magnetic fields (obviously harmful). It is reassuring to learn that a much bigger mailer, CompuServe, does likewise. United Parcel (UPS) delivered a start up kit to your Editor on August 4th. Stuck to the shipping box was a conspicuous orange sticker. In big, bold, black lettering, this declared: "*Do not X-ray. Do not expose to any magnetic fields.*"

Laura Young is BPA's ADP Coordinator for System Planning. Around the end of October, she distributed an undated, 2-page memorandum entitled *EO Computer News*. This contains an interesting final note about the subject of possible damage to disks, both hard and floppy, from X-rays and magnetic fields: "**Item 6.** *Several people have asked me what happens to floppies and notebook computers when passed through a metal detector. According to an article in the August 31 INFO WORLD, the metal detector you walk through at the airport uses a powerful electromagnet (usually mounted overhead) to*

detect metal objects. Fortunately, since the intensity of a magnetic field decreases as the square of the distance from the source, a floppy disk in your pocket is unlikely to be affected. And the hard disk in a laptop can withstand much stronger magnetic fields thanks to its metal case. Interestingly, the airport device most likely to damage your disks is not the metal detector but the X-ray machine. X-rays themselves can't erase magnetic materials, but the transformer that generates high voltages for the X-ray tube may create a powerful magnetic field. What's more, if your floppy disks are on the bottom of a bag, they may be carried directly over the hefty induction motor that drives the moving belt. Again, it is unlikely that a hard disk will be affected by these fields, but they are aware of people on several occasions losing data on floppy disks in carry-on luggage. They suggest you keep your floppies inside a ferrous metal tin, which offers some protection against magnetic fields."

Federal Express or other worldwide delivery service certainly is faster than regular mail, but it is not obviously more secure for magnetic media. There is no provision for sticking to the widely-used cardboard envelope a label warning about X-rays. Three months ago, when we needed reliability the most, Federal Express was found lacking. Of the 4 floppy disks that were expedited to Laurent Dubé at the 1992 annual LEC meeting in Leuven, Belgium, the Salford DBOS disk arrived with one file unreadable (tested using several computers). Who knows what happened? The disk had been tested by DBOS installation on Dr. Liu's computer before it left your Editor's hands, so BPA did everything it could. The only sure solution is to avoid floppy disks entirely by the use of FTP transfers of Internet (we at BPA continue to wait impatiently).

Florida ATP Short Course March 8 -12

Prof. Dennis Carroll again will be offering his 4.5-day EMTP short course during spring break at the University of Florida. The course will be one day earlier than last year. It is scheduled for Monday, March 8th through Friday, March 13th, 1993. As explained in the preceding issue (see column 2 on page 16), faculty are expected to be unchanged from last year: 1) Dr. Kurt Fehrle, a consultant of CANA (which is part of the former General Electric hvdc operation in Philadelphia, which was purchased by the French CGEE Alstom); 2) Dr. Tsu-huei Liu of BPA in Portland; 3) Mr. Thomas Grebe of Electrotek Concepts in Knoxville, Tennessee; and finally, Prof. Dennis Carroll and graduate student Yin Yuexin of the University of Florida. Except for Mr. Grebe, who typically will leave within 24 hours of his arrival, all faculty should be available all five days (a real advantage for students).

E-mail contact with EMTP developers in Portland has

been established, and seems to be working well. While Dr. Liu will be advising on-site, your Editor should be available with symbolic debugger back in Portland to provide rapid analysis of any troublesome data cases. This will be another first for EMTP short courses. The only complaint about Florida E-mail is a cosmetic one: Prof. Carroll's name has been encrypted to the semi-human form **DCARR at admince**. Do tenured professors not deserve more dignity than this?! Only a few worse names than this come to mind, with one being used by Guido Emperor of LEC at K.U. Leuven: KHECA09%BLEKUL21. Okay, compared with LEC's Manager, Prof. Carroll is lucky!

The University of Wisconsin -- Madison would seem to have had trouble attracting students to its course that features use of the DCG / EPRI EMTP for Intel microcomputers. A form letter dated December 2nd, from Program Director Willis Long, was received both at BPA and at the University of Florida (that must be some mailing list!). Prof. Long begins as follows: *"Enrollments are slow in arriving for our January 11-15, 1993 EMTP-Windows Short Course in San Francisco. As of this writing we do not have enough students to be able to conduct the course. This course was very successful in 1991 and 1992, when it used the OS/2 PC version of the code."* Readers may remember EPRI's famous OS/2 version, which simulated at less than one quarter the speed of Salford EMTP for DC-1 (see pages 2 and 3 of the January, 1991, newsletter). Well, ever upward and onward --- beginning from a very low level, in the DCG / EPRI case !

Registration for the Florida course seems to be brisk. When contacted on February 12th, Prof. Carroll indicated that reservations had been made for 18 persons. It looks like another early sellout.

News about Laurent Dubé's MODELS

Laurent Dubé has moved again -- this time a mere five miles, into permanent quarters on the Oregon Coast. In E-mail from the Fargo list server on January 19th, Mr. Dubé provided the following new address:

7000 Rowan Road
P.O. Box 848
Neskowin, Oregon 97149

Telephone numbers have changed, too. They are (503) 392-4551 for voice or 392-4569 for FAX .

Compiled (as opposed to interpreted) MODELS data has been worked on by Mr. Dubé this past year. A bill that included some 574 hours of such work was submitted to BPA on February 3rd for payment. The work is understood to have been a resounding success: compiled MODELS typically will simulate **much** (an order of magnitude or more) faster. This is a big win for those serious enough to have a compiler, but it poses a problem for the more

frugal, typical, Salford EMTP user. More will be said about this problem later.

The old **!comment!** structure for comments became invalid on February 8th. By telephone, Mr. Dubé explained that this is an old data structure that merely had been tolerated long after it no longer was being recommended. The new form of a comment on the right is **--comment** (note that no ending marker is required). One test case required modification: the 3rd subcase of DC-68. No, this is not a deliberate plan to confuse users, as your Editor at first suspected. Rather, Mr. Dubé made the change in order to recover the exclamation point for use with English (or other human) language comments. Previously, comments had to be less emotional (joke)! Mr. Dubé credits Massimo Ceraolo of the University of Pisa in Italy for inspiration to make the change.

The compensation interface for MODELS was redesigned conceptually by Laurent Dubé and your Editor during Mr. Dubé's visit to Portland on December 9th and 10th. Then that initial, new design was redesigned during a later visit on February 3rd. Finally, details were refined during a subsequent visit on February 10th. The immediate need is for corona modeling of Prof. Maria Teresa Correia de Barros of IST in Lisbon, Portugal. Current thinking is that this initially will be limited to a single phase, and will be isolated from other uses of compensation. But coding will be multiphase. Also, there will be no restriction to corona (Mr. Dubé envisions the possible representation of almost any component --- linear or nonlinear --- in MODELS). Included in the initial design is a single-phase element of MODELS that can be mixed with conventional, single-phase, compensation elements of the electric network (e.g., the exponential ZnO model). Developers in Portland will concentrate on the electric network whereas Mr. Dubé will be responsible for all programming within MODELS and the user-supplied FORTRAN of Prof. Correia de Barros.

The 1986 interface for corona modeling was removed from the UTPF by your Editor on the 10th of December following discussion with Laurent Dubé. With the newer MODELS alternative working, it was agreed that the earlier, never-completed approach no longer was of much if any interest. It is worth noting in passing one enormous difference in approach. In both cases, a single transmission line was being considered, and it consisted of a cascaded connection of many shorter sections. But the 1986 approach used regular old EMTP data to represent the short line sections themselves. There were three basic choices, of course: 1) Pi-circuit; 2) constant-parameter distributed line; or 3) Marti frequency-dependent line. The current code using MODELS has none of this, since propagation is modeled within the corona model. There may not be the possibility of accurate frequency-dependence such as Marti modeling, but the newer interface certainly is cleaner. Your Editor was able to

remove a total of 154 lines from the UTPF (all 11 of DEKCOR, 72 from OVER3, 43 from SUBR3, and 28 from PSEUDO).

Prof. Bob Wilson of the University of Wyoming has confirmed that the burden of MODELS dominates his relay simulations. During a December 10th phone call from Laramie, Prof. Wilson indicated to Mr. Dubé and your Editor that his most recent simulation without any relay modeling requires only 2.6 minutes. But with relay modeling (represented using MODELS, of course), the simulation requires 10.7 minutes. The reader might wonder whether the difference is worth caring much about. Probably not in Laramie, where Prof. Wilson uses a 50-MHz 486. Of course, there was quite a different perspective in Moscow, Idaho, where former graduate student Wilson was able to use only a slow 386 last year. Remember, a 16-MHz 386 is about an order of magnitude slower! Prof. Juan Martinez of the University of Catalunya in Barcelona, Spain, recently voiced a similar opinion: High-speed 486s have eliminated most former objections about the slowness of MODELS --- at least for the educational simulations in which he has the greatest interest.

Revised Can/Am Licensing Form Letter

The form letter that is used for Can/Am ATP licensing was updated on December 26th in minor but important ways. That is, there is a new copy of pages DAEP-1 through 6 in printed form. As computer stored for WordPerfect under MS-DOS, this is disk file LICENSE.ZIP of the GIVE2 disk of Salford EMTP distribution.

The primary motivation for change was the need to curb abuses that have been all too frequent this past year. These fall into three classes: 1) requests from 2nd or later persons within one plant or one university campus in the United States or Canada; 2) requests from persons those who work for organizations that have participated in EMTP commerce; and 3) requests from overseas that fail to supply a domestic mailing address. Of course, not much could be done about point 3. But an attempt has been made to solve the first two problems by the addition of a new, mandatory, organizational connection -- if only for purposes of mailing. That is, personal licenses still exist, but mail must go to some appropriate organization, not a home address. To be excepted, a user must attach a good (convincing to us) explanation of the need. This is the belated implementation of new restrictions that were announced in general terms 9 months ago. Recall that these followed four requests from Metropolitan State College in Denver, Colorado (see page 5, column 2, of the April, 1992, issue).

A few other small improvements reflect progress in communication this past year. Your Editor's E-mail address has been added, and there is mention of the availability of newsletter disk files from NDSU in Fargo using FTP transfers of Internet. Finally, about other computers of interest, there is mention of VAX/VMS EMTP distribution by BPA, and of CDC EMTP distribution by the University of Hannover.

Windows Compared in Hannover

Harald Wehrend of the University of Hannover supplied ATP developers at BPA with an interesting evaluation of the efficiency of windowing. This is for the most popular version of the program: Salford EMTP as used on Intel 80386- or 80486-based PCs. The initial report, a 21-Kbyte disk file of E-mail dated the 3rd of December, compared 3 different alternatives: 1) ordinary DESQview; 2) DESQview /X; and finally, 3) Microsoft (MS) Windows 3.1

The efficiency of MS Windows is what probably interests the largest number of readers. Recall the preceding report (page 2, column 2 of the October, 1992, issue), which showed a 30% loss of speed even when DISK was used to eliminate nearly all output to the bit-mapped screen). This was for the 50-MHz, 80486-based COMPAQ used by Ralph Folkers. The latest results from Hannover are particularly interesting because they were obtained using slower, and probably more common, hardware: a 25-MHz, 386-based machine having Super VGA (800 by 600) output. Again considering DC-1, there are three sets of times in seconds as appear at the end of printed output. First, for execution without any windows:

22.8 4.7 5.5 272.0 2.0 307.0 total

For execution within a DESQview window:

38.5 10.5 11.4 567.0 5.6 633.0 total

Finally, for execution within an MS window:

226.0 17.4 18.7 813.2 9.9 1085. total

It should be mentioned that both windows were set to absorb only 50% of the processor power, so these numbers should be cut in half prior to comparison with the first row. Considering just time spent within the time-step loop, DESQview has $567 / 2 = 283.5$ sec, which is not much bigger than the 272 sec of the first row. I.e., DESQview windows are efficient. But MS windows are not: $813.2 / 2 = 406.6$ sec involves a lot of extra time. Expressed in terms of lost simulation speed, the overhead for DESQview is 4.1% whereas that for MS Windows is 33.1% .

Can any reader make Salford EMTP simulation within MS Windows appear more efficient, somehow? After all, there are many user-controlled parameters with an infinite number of combinations that could be tried. Who is to say that both Messrs. Folkers and Wehrend did not overlook

some critical detail that would speed the simulation significantly using MS Windows? As in years past with the embarrassingly slow simulation using EPRI's OS/2 version (see pages 2 and 3 of the January, 1991, newsletter), present critics of Microsoft Windows do want to be fair and open-minded. Your Editor wants to offer the many supporters and users of Microsoft Windows every opportunity to respond. So, knowledgeable readers are encouraged to perform their own experiments, and report to this Editor any results that would please Bill Gates substantially more than those published thus far.

DESQview /X is the newer DESQview product from Quarterdeck that is compatible with the X Window System of MIT. Researchers in Hannover seem enthusiastic about it. In fact, Mr. Wehrend thinks that the /X variation might be the appropriate starting point for the Salford EMTP user who now has neither. Like Microsoft Windows, DESQview /X uses bit-mapped displays. Unlike Microsoft Windows, DESQview /X seems to be efficient. To begin the support for this contention, it is easy to add a row for DESQview /X to the preceding table:

38.4 9.0 11.6 581.1 4.2 644.3 total

Note the similarity of this row to the one for regular DESQview. This should not be surprising, since output goes to disk (the bit-mapped window is little used).

The bitmapped burden of either MS Windows or DESQview /X was not stressed significantly by the preceding test, however. More revealing of display inefficiencies are the results of Salford EMTP execution in a window **without** the use of DISK to divert printed output from the screen to disk. First, for execution without any windowing environment:

39.5 7.2 7.0 302.0 3.8 359.6 total

For ordinary DESQview first, then DESQview /X:

81.0 13.6 12.8 556.5 7.2 671.0 total

80.7 14.5 11.5 605.9 5.1 717.8 total

Finally, for execution within an MS window:

1697 156 44 1884 25 3806 total

These latest results are for DC-1 simulation using Harald Wehrend's same 25-MHz, 386-based computer. They reached Portland in E-mail dated December 11th. Whereas the two DESQview products are able to scroll the screen without much added delay, industry-leading MS Windows is slowed to a crawl. Of course, the delay is a function of hardware. Recall that your Editor recently found it necessary to explain this to LEC staff (see the last paragraph of column 1 on page 11 of the July, 1992, newsletter). Mr. Wehrend's older computer is **very, very** slow for scrolled output in MS Windows whereas Ralph Folker's 50-MHz COMPAQ was only **slow** (see page 2, column 2, October, 1992). The new local bus machines (see separate story) are expected to do much better, of course. The moral of this story is simple: Unless newer, improved hardware is being used, the direct output of Salford EMTP to MS Windows can be painfully slow --

- like molasses in January, or maybe those famous OS/2 simulations using the DCG / EPRI EMTP !

Automatic font scaling to maintain a fixed number of columns (users have interest in 80, most commonly) as a window is widened or narrowed would seem to be a dominant attraction of DESQview /X . Without question, this is a major step beyond capabilities of the Apollo and Sun workstations with which your Editor has had experience in years past. The key is the use of soft (scalable) rather than hard (fixed) fonts that draw the characters. Previously, the user would be forced to select a font prior to the opening of a window. Your Editor remembers well the Apollo default font named **f5x9** , which was both weak and small. His own preference for the SPY dialogue window was **f7X13.b** (7 pixels wide by 13 pixels high, and bold). About the automatic scaling of DESQview /X , Mr. Wehrend offers the following summary opinion: *"If you use a high-quality monitor (i.e., >16"), this is really good. ... I'm now writing in a window that covers only a quarter of my monitor, with all 80 columns of Norton Editor being visible."*

Using a network to open a window to a remote computer that is running The X Window System is a final, possible advantage of DESQview /X. Typically the remote computer would be running Unix. The new DESQview /X allows a DOS computer to receive text and X-window graphics that are outputted by a program running on the remote computer provided one has purchased an extra, special (not standard) window manager. Probably not many Salford EMTP users would find such usage to be attractive. But there may be some who have networking that would allow reliable access to a much more powerful, remote, largely-unused processor.

The price of DESQview /X is higher, of course. In E-mail dated December 18th, Mr. Wehrend explains that a current introductory offer puts the price at only DM 299, but the price is scheduled to rise to about DM 650 later (about \$192 and \$418, respectively, using that day's conversion rate of .6435 dollars per Deutschmark). So, quality is not cheap by the standard of MS Windows. As for the burden on the hard disk, this is on the order of 10 Mbytes. This is the one area in which DESQview /X seems to be comparable to MS Windows, Mr. Wehrend writes!

The Fargo list server broadcast a draft of the preceding paragraphs to its more than 90 subscribers on December 25th. Thus far (this text is being frozen for publication on February 15th), no one has contradicted the Hannover findings.

A new (current) VAX / VMS version of ATP is available from BPA as first announced to the general public on November 14th via the Fargo list server. A number of aspects of this development are new, and worthy of note.

The VAX / VMS version of ATP joins Salford EMTP for Intel PCs as a second program version that has been made available by BPA to its dozen or so primary EMTP contacts (which include compatible foreign EMTP user groups). For this initial, free distribution, a standard 9-track, 1600-bpi, 1200-foot reel of tape containing object files and VARDIM has been made available upon simple demand.

BPA will copy its VAX ATP files onto the tape of a licensed American or Canadian user, and it will return that tape by conventional mail. For users in other parts of the world, BPA will mail the tape only as far as the domestic address of a cooperating contact who is expected to forward it the rest of the way. Note that this latter condition is the same as that already established by the Can/Am user group for Salford EMTP.

More-convenient 3.5-inch floppy disks of a nearby DECstation 3100 most likely will be used in the near future, if and when the art of VAX / VMS file compression might be mastered. But if this is not easy, one could use MS-DOS disks and PKZIP for the compression. This surprising news came on November 16th in E-mail from Stephen Boroczky of Pacific Power in Sydney, Australia. Your Editor says *surprising* because the idea was tried and abandoned here at BPA some 2 or 3 years ago. But apparently those in Sydney were more resourceful or knowledgeable about the use of file-transfer protocol Kermit: *"We often transfer software via PC floppy. This involves KERMITing the relevant VAX files across to a PC ... We have found that we can transfer not only text files, but binary executables and object files in this way quite successfully, provided we set the file type correctly for the KERMIT. Usually done with a SET FILE TYPE FIXED on the VAX end."*

A superb interactive plotting program PLOT for VAX/VMS has been contributed by Randy Suhrbier of BPA . Of course, it requires graphical hardware. Among the list of compatible displays are said to be DEC terminals numbered VT240, 330, or 340 (ReGIS graphs). Even better would be a VAX / VMS work- station such as VAXstation 3100. But even the old Tektronix 4014 is said to be supported. The .HLP file indicates several choices for paper output as well: *"hardcopy is supported in Postscript, ReGIS, Tek4014, or HPGL."* Mr. Suhrbier's program has been a favorite among production EMTP users at BPA for years, so is a proven commodity. Prior to its extension to include compatibility with ATP, Mr. Suhrbier wrote the program for use with BPA's EMTP.

VAX / VMS ATP Distribution

Dr. Ivano Bonfanti of CESI in Milano, Italy, reported trouble using his Tektronix emulator with Mr. Suhrbier's program. This was in E-mail dated the 18th of December. Yet, operation was correct using an "old Tektronix emulating graphics terminal (Plessey)." BPA now uses only genuine DEC hardware (workstations), so could offer no advice. On December 23rd, John Bleyer of Eastern Utilities reported perfect operation using whatever emulation his company has (the name has been forgotten). In response, Mr. Suhrbier wondered why so many persons had interest in the Tektronix emulation. The alternative of Regis graphics is substantially better, he said.

IEEE COMTRADE .PL4 Files

Randy Suhrbier is the BPA engineer who has made most decisions related to application of the IEEE COMTRADE standard to ATP .PL4 files. This follows disappointment with the involvement of others (see pages 9 and 10 of the July, 1992, issue).

Doble Engineering in Watertown, Massachusetts, is an exception to the general disappointment, it is important to note. Your Editor wants to recognize encouragement of this project by Bob Ryan of Doble --- most recently in a 6-page letter dated January 8th. In fact, this letter was the catalyst that sparked reconsideration of the task by Dr. Liu, Mr. Suhrbier, and your Editor. During a short meeting about the Doble letter, a new, revised approach was adopted, and this worked well. COMTRADE is here for ATP!

Those wanting the official definition of COMTRADE are referred to IEEE publication number C37.111-1991. 25 pages in length, this book is entitled "IEEE Standard Common Format for Transient Data Exchange (COMTRADE) for Power Systems." According to the *Forward* section, the IEEE Standards Board approved COMTRADE on the 27th of June, 1991.

Actually, it is Salford TPLOT rather than any version of ATP that has been extended to allow COMTRADE output. Direct COMTRADE output of ATP is not now available, and it may never be available.

Much like plotting itself, the creation of COMTRADE files now is viewed as being most properly a postprocessing operation. The manual scaling (as opposed to use of floating-point numbers with automatic scaling) means that creation generally is possible only after the simulation is complete. By building the logic into Salford TPLOT, the user has added flexibility to omit some variables, consider less than the full time interval, add logical signals for simple switching, etc.

Mr. Suhrbier's decisions about COMTRADE had been added to his own plotting program (see separate story about VAX/VMS ATP) many months ago. It was

natural enough, and easy enough, for your Editor to code similar logic in Salford EMTP as should be explained in detail in the next issue. The TPLOT archive first was changed on February 6th, and this includes an illustration (send @COMTRADE as a plot command).

E-mail was the medium that first notified the general public of this progress. A "News:" bulletin was issued from the Fargo list server on March 9th following a special mailing to Lahmeyer International (Dr. Mustafa Kizilcay), Virginia Power (Jeff Peggs), Multi-Amp Corporation (Stanley Thompson), and the University of Catalunya (Prof. Juan Martinez).

Intel i860 RISC Processor

An Intel i860 accelerator card was mentioned in passing in the July, 1992, issue (see page 11, column 1). Well, planning began in earnest on January 21st when Edgar Thaxton of General Dynamics telephoned with news that he had both hardware and software (the FORTRAN compiler) on his desk, and was ready to begin testing. Following study of the MicroWay FORTRAN manual, it was determined that the new Apollo translator (see separate story) could be used without modification. Installation-dependent modules were established on January 25th, the translation was performed, and ATP FORTRAN for the i860 were rushed to Groton the following day by Federal Express. The successful simulation of DC-3 was reported by telephone on the 11th of February, and a disappointing 28 seconds spent within the time-step loop of DC-1 was reported on the 16th.

Intel and IBM Business Trends

Pentium is to be the trade name for Intel's 80586 microprocessor according to Peter H. Lewis's column on page D8 of the December 2nd issue of Portland's major daily newspaper, *The Oregonian*. Why not use the name 80586? Intel seems to believe it will have an advantage if it can prevent competitors from using the same name. Already established by earlier litigation (see the bottom of column 1 on page 19 of the July, 1992, issue) is the fact that Intel can not prevent others from using the number 386. It seems that a name such as Pentium can be trademarked whereas a number is more difficult to protect. According to author Lewis, Intel has forecast the sale of 20 million i486 chips during 1993. As reported at the Comdex / Fall trade show in Las Vegas, sales this year would seem to be brisk: "Some manufacturers ... said demand for their 486 machines was so great that they were having trouble getting all the chips they needed." Meanwhile, industry giants DEC and IBM continue to lay off employees as the demand for larger (and more profitable) time-shared computers remains weak.

Intel's P6 chip is said to contain 10 million transistors compared with 1.2 million for the 486 and 3.1 million for Pentium (the 586). According to John Dvorak's *"Inside Track"* column in the December 22nd issue of PC Magazine, *"Intel feels the need to make promises for the future to keep the Intel juggernaut alive."* If Intel named the P5 "Pentium," what will the P6 be called? Well, there is time to decide, since the P6 should not be ready for 18 months.

"IBM waited too long to think small" is the headline of the Business section of *The Oregonian* dated December 17th. Your Editor was thinking *"I told you so! I told you so!"* when he saw this. What has been obvious for years from a technical perspective has just recently been realized at the top of the power structure -- from those who control computer purchases to those who recommend the purchase of IBM stock to others. Author Bart Ziegler writes: *"On Tuesday (December 15th), grim IBM executives announced another huge downsizing, with 25,000 more job cuts and plant consolidations next year. More distressingly, they couldn't say when IBM would stop bleeding. ... In many ways, IBM's plight is similar to the deterioration of other large U.S. corporate giants, such as General Motors Corp. and Sears, Roebuck and Co. All three failed to respond quickly enough to fundamental changes in their industries."*

"As IBM wanes, Intel shines brighter" is the headline of a smaller story on the following page (E9 rather than E8) of the same newspaper. As the story explains, IBM was largely responsible for Intel's success by selecting it to supply the microprocessor for IBM's first personal computer, the PC, back in 1981. Although this story by Don Clark does not say so, the same was true of Microsoft on the software side (the MS-DOS operating system). But the three companies had quite different interests. Whereas IBM wanted to slow the progress of personal computers, Intel and Microsoft encouraged it by cooperation with PC clone makers. Intel and Microsoft have prospered in recent years, of course; and as they did, IBM fortunes have declined. The year-end panic of investors is all too evident. A share of IBM common stock was valued at less than \$52 on December 16th whereas at the end of 1991 it was around \$90; and at the end of 1990, the price was about \$120. IBM's most recent plunge has occurred while the stock market as a whole (measured by the S&P 500 index) has risen to record highs. The former *"Big Blue"* sometimes is referred to as *"Big Black and Blue"* these days by financial analysts.

Juan Martinez Corrects Type-59 S. M.

Saturation modeling of the Type-59 S.M. was corrected by Prof. Juan Martinez during another of those traditional, Tuesday, transatlantic, telephone conversations that first were described one year ago (see column 1 on

page 8 of the January, 1992, issue). It was December 1st that your Editor first learned of the need to move a single line of code within SUBROUTINE SMDATA. News of this modification was announced to the world in E-mail from the Fargo list server on December 9th, and the alteration was completed on December 17th when the archive of data cases finally was updated.

External variables of linear machines are unaffected by the change, although internal variables MMF and MFORCE generally are different. Considering the standard DC-XX test cases, only the 1st subcases of DC-53 and DCNEW-11 have altered network solutions. For the first of these, the printer plots of torque and velocity remain recognizable. The shapes are similar, and scaling is changed by only a few percent as summarized by axis limits:

For TQGEN :	(-0.932, 6.044)	--- old
	(-1.138, 6.107)	--- new
For VEL 6 :	(-1.289, 1.165)	--- old
	(-1.311, 1.221)	--- new

Dr. Gary Thomann of Power Technologies (PTI) in Schenectady, New York, provided the first independent confirmation of the validity of the change in FAX dated December 14th : *"I used a simple salient pole synchronous machine connected to a 1.0 p.u. resistive load. The saturation curve was supplied with the machine model. Below are listed the field current values for the steady (initialization). ... I modeled the saturation in the d-axis. ... The AGLQ value made no difference, probably because there would be little or no saturation in the q-axis for a salient pole machine. You will of course be happy to note that the change to the synchronous machine model appears to have fixed the problem, at least for this simple model."* Dr. Thomann's table shows field current in per unit as follows:

Method used	With no saturation	With saturation
By hand	1.37	1.45
Old EMTP	1.37	2.84
New EMTP	1.37	1.45

Corrected Salford EMTP FORTRAN was mailed from BPA to Prof. Martinez on December 2nd. At the same time, corrected TP3 and TP20 were mailed to Prof. Akihiro Ametani and Dr. Naoto Nagaoka at Doshisha University in Kyoto, Japan (see separate story for an explanation of the special interest there).

Parameter fitting of input data is another change that Prof. Martinez has made to the Type-59 S.M. during the past 3 months. In fact, this precedes his just-described correction of saturation. The modified SUBROUTINE SMDATA came on a floppy disk that accompanied a letter dated 5 November 1992. Now runnable are one or more data cases that previously were rejected as having illegal Type-59 data as explained in a letter dated 17 July 1991

from Douglas Selin of Arizona Public Service in Phoenix. In order to update Mr. Selin, both the GIVE1 (with TP20) and GIVE2 disks of Salford EMTP were mailed from BPA on December 18th.

Yin Yuexin, the graduate student at the University of Florida in Gainesville, has discussed U.M. use with Prof. Martinez in recent months. Sometimes Mr. Yin has been added to those Tuesday telephone calls to Barcelona. That 197-Kbyte E-mail message that was mentioned earlier in this issue consisted of two different versions of the UTPF segment for the load-flow module FXSOUR, which somehow was related to the U.M. Following translation of both of these to FORTRAN, all 4 files were copied onto a floppy disk that should have been sent to Prof. Martinez from BPA's Mail Room on December 18th.

Miscellaneous Small Items

32768 or more input data cards first were used by Hatch Associates, Ltd., of Mississauga (a suburb of Toronto), Ontario, Canada. On October 26th, James Wikston of that consulting company telephoned to report that his enormous input data file was being rejected by some 16-bit limit of Salford EMTP. Within hours, your Editor had confirmed that the limit was not peculiar to Salford EMTP, but in fact applied to all computers. Later that same day, the bottleneck was removed, and a copy of the expanded Salford EMTP was mailed to Mr. Wikston for his simulation of static var control in the presence of an arc furnace.

Macintosh EMTP FORTRAN today is produced by a distinct translation. This is progress. Three years ago, your Editor remembers editing by hand the EMTP FORTRAN of another computer to produce materials that subsequently were tested by John Schwartzberg at Drexel University (see EMTP News, September, 1990). Work on a new Apple Macintosh translation began shortly after November 3rd when John Schwartzberg sent his file of installation-dependent FORTRAN to Portland by E-mail. On November 9th, one floppy disk was mailed to both Bozeman (Prof. Jim Smith and Dr. Matt Donnelly) and Drexel for testing.

H-P DeskJet 500 printers have been advertised in Portland newspapers by many computer shops for many moons at prices under \$400. An example is the \$397 offering by Alpha Computers on page E2 of Portland's main daily newspaper, *The Oregonian*, on August 8th. The description says: "3-year limited warranty; Affordable laser-quality printing; Wide variety of built-in fonts." But what about compatibility with H-P LaserJet series-II graphics of TPLOT? Prof. Riaz of the University of Minnesota was able to answer this question affirmatively during a telephone conversation on December 24th. That is the excellent news for those short

of money: full 300-pixel resolution now costs less than \$400. The only bad news is that the "500" in the name is critical. It seems that the earlier DeskJet Plus is not compatible, and neither is the original DeskJet.

/INITIAL and /LOAD FLOW are declarations of data sorting by class. One year ago (see column 2 on page 16 of the January, 1992, issue), this was supposed to have been fixed; and DC-33 was supposed to have documented the repair. Well, a telephone conversation on November 24th with Prof. Juan Martinez indicated that /INITIAL still did not work, and no trace of such usage could be found in DC33.DAT! Somehow, the previous work had been lost. So, the repair was made a second time, on November 28th, as your Editor keys this paragraph. DC33.DAT has been updated in the archive this time. In addition to an initial condition for node GROUND that does not alter the solution (the phasor value of zero is replaced by the user-supplied zero), comment cards have been added following a /LOAD FLOW declaration to show that these are, in fact, sorted to appear immediately after the blank card ending source cards. The solution is unchanged. This time, the work really **was** done!

Gabor Furst of the Vancouver area of British Columbia, Canada, sent a colored Christmas card that arrived in Portland on December 4th, 1992. Now, at this point, the reader might be thinking: "But most Christmas cards are in color." True, but this is the first one seen by your Editor that was produced using a computer and a color printer (that H-P DeskJet 500C that was mentioned in column 2 on page 17 of the January, 1992, issue). Illustrated are both the use of color and fonts. Yet, typical of an engineer such as your Editor, Mr. Furst's 1992 offering is relatively primitive in an artistic sense. Mr. Furst now has the tools to do much more sophisticated work including real color pictures. As a CompuServe member, Mr. Furst should have noticed an example of this at the bottom of page 54 of the January issue of CompuServe Magazine. Under the headline "Graphic of the Month" is read the description: "a truecolor Targa Persistence of Vision (POV) rendering of Teapot on a Reflective Counter." It seems there is a contest to select the best of such art every month: "Provide the filename and identify the forum and library where the image is stored. ... If the image you nominate is published in this column, you and the image uploader/creator will receive a \$25 CompuServe account credit." Amazing! Who knows what Christmas, 1993, might bring in the mail.

Cost of that H-P DeskJet 500C is much lower today in Portland or Seattle than it was in Vancouver, B.C. (Canada), a year ago. Loose advertising by Bizmart that accompanied the Sunday Portland newspaper on January 3rd indicates an everyday price of \$500. The description says: "Now any user can afford a color-capable DeskJet printer. Prints in black or uses snap-in color cartridge.

Features a wide variety of built-in fonts, scalable typefaces and quiet desktop operation. Three-year manufacturer's warranty. #4502218" For those readers who might not have heard of Bizmart, the operation seems to be big enough. Although the advertising in question was printed for the states of Oregon and Washington, more than 100 stores are scattered across much of the nation.

FAX transmission of plots without the use of paper at the sending end was demonstrated by Ralph Folkers of Midwest Power in Sioux City, Iowa. This was on December 9th when your Editor received two sheets of FAX. The second contained a graphical screen image of Salford TPLOT having size 18 by nearly 24 cm. This was preceded by a cover sheet of text that contained the following explanation: *"The ATP output on the TPLOT bitmap was saved as a .PCX file and read into Windows Paintbrush. Then the Paintbrush print function was used through a FAX modem to send it to you."* The color has been lost, of course. But, do you suppose color FAX eventually will be available? Maybe. Yet, one does not want to become too enthusiastic about FAX. As impressive as Mr. Folker's demonstration is, note the superiority of E-mail for the task. The .PCX file could be sent without distortion, and the recipient then could load this onto his computer screen as a **color** bitmap. Your Editor concludes that FAX is merely an interim solution for those who can not yet transfer sizable files using E-mail. In a response dated January 11th, Mr. Folkers did not disagree. Instead, he provided a novel explanation for the experiment: *"The purpose of the FAX was to show an inexpensive method of getting close to laser quality output without a laser printer. I have an Epson compatible dot matrix printer attached to my computer. Plotting is time consuming, noisy, and not the highest quality (images are faint). By FAXing an image to a plain paper FAX machine, I can get much better quality without too much extra effort."*

WordPerfect seems to have survived the challenge to its dominance of electronic publishing that had been posed by the emergence of Microsoft Windows as the most popular working environment. In the past, from time to time this newsletter would mention that PC Magazine again had found WordPerfect to be the best-selling publishing program. But your Editor had not bothered to look for many moons, now. When finally he reviewed the situation again, he was surprised to see WordPerfect still in control.

The *"Top Retail Software"* list on page 31 of the December 22nd issue, shows only **TurboTax** by ChipSoft and **Quicken 6.0** by Intuit ahead of **WordPerfect 5.1 for Windows**, which sits in the third position. The only MS Word product on the list of 15 is **Word for Windows 2.0 Upgrade**, which sits in position 12. Immediately after it in position 13 is **WordPerfect Windows Trade Up**. The only significant change over the past year or two is the switch from text mode of MS-DOS to the graphics of MS Windows.

TCSC of G.E. in Schenectady has progressed since the previous mention (see the middle of column 1 on page 18 of the July, 1992, issue). Plans are well under way to make this Thyristor Controlled Series Capacitor logic available in ATP. No, MODELS is not going to be used. This might make sense technically, but it would not satisfy the need for secrecy by G.E., which will be releasing its logic to BPA only in the form of object code (compiler output). The latest round of this curious *cooperation* began on December 14th when BPA's William Mittelstadt talked to the Co-Chairmen following personal discussions in Schenectady. The plan now is for BPA to be given TCSC modeling in two versions of ATP: 1) for Intel microcomputers (Salford DBOS); and 2) for DEC VAX/VMS. For use at Oregon State University (OSU), Prof. René Spée has agreed to switch to Salford EMTP. Before any readers become excited, it should be explained that both G.E. and EPRI (which is expected to pay G.E. for its secret installation in ATP) must approve before an ATP version that includes TCSC modeling could be disclosed to anyone else. The first contact between BPA and G.E. about programming occurred on January 8th when Dr. Liu was telephoned. Three days later, BPA rushed Salford EMTP FORTRAN to Schenectady by Federal Express. OTG approved of a temporary loan of the user group's Salford compiler (not used here in Portland since last summer) to G.E.

The METRIC option of LINE CONSTANTS as used for JMARTI SETUP was treated at the end of the preceding issue. Unfortunately, correction was slightly more complicated than believed at the time. This was shown to developers in Portland on December 17th by Dr. Gary Thomann of PTI, who had observed that previously-correct untransposed cases had been made erroneous by the correction. Yes, the data case from FURNAS in Rio de Janeiro was transposed. So, a compensating correction for the untransposed case was made in module LCMODE on December 29th. To verify continued correct operation, a third data subcase has been added to DCNEW-5. This is identical to the 2nd except for the "1" punch in column 70 of frequency cards to indicate lack of transposition. Since only a single phase is involved, answers are the same. Corrected object files (PTI has the Salford compiler) were mailed to Dr. Thomann the same day.

FSCAN.ZIP on the GIVE2 disk of Salford EMTP distribution contains illustrations of the use of LINE MODEL FREQUENCY SCAN (LMFS). But the initial distribution was incomplete. Five disk files LNSCAN*.BRN were missing in the archive dated 28 March 1992. Presumably the first party to test the examples was LEC, which pointed out the shortcoming on January 27th in E-mail from Guido Empereur, LEC Manager. The missing files were appended to the archive the following day. They also were sent to Leuven by E-mail -- **twice** (see story about E-mail)! Finally, Dr. Tsuhuei Liu made minor changes to counting of the

logarithmic looping logic after it was noted that a new solution FSTHREE.LIS somehow had one extra point (for 6 kHz) compared with the old solution that was in the archive.

"*Crash Protection*" has been trademarked by IBM according to John Dvorak's column in the December 22nd, 1992, issue of PC Magazine. Appearing on page 91 under the title "*Screwball Sales Gimmicks*," this article begins with the explanation that IBM's slogan seems to have appealed to a lot of people "*because they don't know any better. ... Proclaiming the obvious and then trademarking it is a new marketing ploy. Don't fall for it,*" Dvorak warns.

Multimedia is the single word that seems to have stuck to PC usage that integrates new sound with old printing. Advertised pictures of such complete computers typically will show a microphone, even though few are sure how, and for what, it might profitably be used. PC Magazine staff member Jim Seymour address the challenge from a skeptical perspective in the January 26th issue (see pages 99 and 100). How and when the dimension of sound might come to EMTP remains to be seen.

DEC's Alpha chip first had its simulation speed measured and reported to your Editor by Randy Suhrbier of BPA. Only the VAX/VMS operating system has been used thus far (not yet any DOS NT or OSF Unix). On Feb 4th, Mr. Suhrbier reported DC-1 required about 10 seconds for the time-step loop.

RF expo West is a convention that is to be held in San Jose, California, on March 17-19. A full page of advertizing for it was glued to the cover of *RF Design* magazine as received at BPA during mid-February by Will Rogers. One of the 3 parallel courses that are offered during the afternoon of March 17th is entitled "*Power Amplifier Design*." The first of 3 titles under this is: "*Use EMTP (ATP) to Understand RF Power Amplifiers*." Ideas, anyone?