Can / Am EMTP News

Voice of the Canadian/American EMTP User Group

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News about Salford EMTP

Messrs. Robert Chafer and Tony Webster of the Salford compiler team visited BPA on May 13th to answer questions about the current state of Salford products FTN77 and DBOS . In attendance for the 09:00 AM meeting, which lasted until about 12:20, were about a dozen persons. Participants having EMTP interest were the author, Dr. Tsu-huei Liu, and BPA contractor Laurent Dube (TACS, MODELS).

Enhanced graphics, including direct support for H-P LaserJet series II, have been delayed until Rev. 2.51 according to Robert Chafer. Yet, the new DOS offers some relief while we wait (see separate story below about MS-DOS Version 5.0).

The /VDISK qualifier of DBOS was explained in the previous issue (see the final paragraph on page 1). Then the following was found in the ENHANCEM.DOC file of FTN77 / 386 Rev. 2.50 as one of the changes that occurred between Rev. 2.42 and 2.43: "*DBOS now invokes /VDISK by default. It seems that a large number of new machines require this option. Users of old Compaq machines may find they lose some memory. This can be solved by using the new /SEARCHMEM option.*"

Microsoft Windows 3.0 is usable by Salford Rev. 2.50 in a reduced sense. The following brief mention was found in a Salford .DOC file: "*6) DBOS will now run under an XMS driver. This means that FTN77 can run in a Windows 3 DOS session provided that Windows is in Real or Standard mode. The most common XMS driver is HIMEM.SYS.*" BPA's Gerald Lee demonstrated this on June 29th for Salford EMTP and TPPLOT without any apparent difficulty.

LEC has upgraded its DBOS / 386 license number 582 to DBOS / 486 , and ATP developers in Portland now have a copy.

C-like files have become the default choice of Salford EMTP users beginning June 5, 1991. Both STARTUP.ZIP and ALLDAT.ZIP files of the distribution assume this choice. There no longer is any file ALLSEE.ZIP for those data cases that required change; all of these files now are in ALLDAT.BAT. Another change to the latter was made June 22nd: DC-68 was updated to include error messages of MODELS which have been appended at the end. This change was made many months ago, but somehow the revised DC68.DAT disk file never made its way into the archive that is distributed to others. Bob Wilson of the University of Idaho in Moscow deserves credit for alerting ATP developers to this oversight.

The CURSOR subcommand of SPY PLOT has been replaced by the "#" command to allow the selection of variables to be plotted by number rather than by name. Operation is identical to the same command of TPPLOT. This quicker interactive alternative to the NAMES subcommand of SPY PLOT was completed July 4th. Concerning cursors, the Microsoft mouse is not yet usable with SPY, but that will come eventually; and when it does, the graphic cursor will be activated by a function key (the present usage of TPPLOT) rather than a key word.

Prof. Gerard-Andre Capolino of the university in Marseille, France, inspired correction of the FOURIER subcommand of the PLOT command of SPY. The complaint of trouble reached the Editor in FAX dated June 6th from Prof. Ned Mohan of the University of Minnesota who had just returned from the week-long short course in Marseille. The old hollow rectangles no longer were being used, yet the conversion to polygon filling of the Salford Rev. 2.40 compiler had not been debugged. This correction was made during the weekend of June 8th and 9th. An illustration is provided by INCLSPY0.DAT (@0) .

Scalable and rotatable fonts were applied to SPY PLOT as they have existed for Salford TPPLOT since last fall. This work, too, was done during the weekend of June 8th and 9th. New font sizes are controlled using STARTUP variables as explained in the usual disk file of information, READ_ME.DOC .

C-like .PL4 files can be loaded from disk into RAM and plotted using SPY PLOT . This extension began July 6th. Previously, such capability that is illustrated by either @9 or @0 was restricted to UNFORMATTED .PL4 files. The only restriction on initial coding is that all points are loaded (it is fruitless for a user to specify any multiplicity other than unity or any timespan less than the full timespan of the available data)! Note that this is of more than academic interest for those who want Fourier bar charts of harmonic content (a feature that is not yet available in the separate Salford TPPLOT) .

The parametric study of @5 generates a family of simulations as an inductance is varied. This first executed perfectly using Salford EMTP on July 11th.

The DIR alternative at the beginning of EMTP execution has been refined. A paragraph has been added to READ_ME.DOC about DIR use. If the user fails to specify which files are of interest (i.e., if nothing follows DIR) , Salford EMTP now will ignore the request. If the following name ends in a period, the implied file type .DAT will be assumed. Finally, a one-line message reminds the user that **Esc** will abort the operation while the Salford menu is open.

Intel 80287 acceleration of Salford EMTP execution does not have much to recommend it. This report comes from yet another BPA employee, Jerry Almos, who supports Salford EMTP on a 386-based computer at home. In the early days of the 386, the 387 was more expensive than many customers could bear, so some manufacturers socketed their motherboards for both the new 387 and also the old, cheaper 287 math coprocessors. Mr. Almos says that although his 386 is being run at 20 MHz, the 287 (manufactured by AMD) only runs at half this speed. Salford EMTP simulation is retarded considerably as a result. For standard BENCHMARK DC-1, a regular 20-MHz 386-based computer (Brian Furumasu's AST at BPA) requires only 420 seconds for the time-step loop whereas Mr. Almos's computer requires 1568 sec. Of course, the clock rate explains a factor of two, but this still is short by a factor of 1.87 to explain the difference. This extra retardation is surprising in light of the situation for the previous generation of Intel math coprocessors. Remember, the 80287 was identical in speed to the original 8087 at the same clock rate (see Ref. 23 of Herbert Konkel's 22-page paper that was first printed on 28 February 1987).

Free-format numbers no longer require usage of a comma as the separator provided both of the numbers being separated are nonblank. Any Salford EMTP created July 6th or later will behave this way. An important corollary is this: any imbedded blank henceforth will be interpreted as a separator between two adjacent numbers. So, users, beware! This is a change from 15 or more years of past practice that ignored imbedded blanks while requiring commas. Commas can still be used, but any blank imbedded within a number no longer will be tolerated.

Weitek 3167 testing by computer expert David Szymanski was successful, after which object files were sent to production user Merlin Gerin in Grenoble, France. Messrs. Lucien Bompa and Thierry Rutge already have made interesting comparisons of hardware (3167 vs. 387) and also software (Salford vs. Lahey). Look for a report in the September issue of EMTP News. Preliminary results were received in Portland on June 10th. Object files produced using /WEITEK and /OPTIMIZE qualifiers were sent on June 24th.

Salford TPPLOT Improvements

The /SHIFT_INTERRUPTS qualifier of DBOS execution was suggested by Messrs. Chafer and Webster as possible medicine for incompatible mice. This modification has proven to be of value for two known computers: 1) the 33-MHz Micro Express used by BPA's Gerald Lee, and 2) the 20-MHz Toshiba 5200 portable of Professor Ned Mohan in Minneapolis. Yet, an enhancement to TPPLOT FORTRAN was found to be required, too. Mr. Lee deserves all credit for this since it is he who did his own independent programming that supported the mouse better than TPPLOT. Careful comparison revealed the problem: prior to June 5th, Salford TPPLOT was missing the critical statement CALL INITIALISE_MOUSE@ .

The previous need for COMSPACE has been reduced. A Salford .DOC file says: "*DBOS will now increase comspace from 30000 to 45000 when invoked under DOS 4.0 or later. This is to allow for the increased size of COMMAND.COM.*" Using DBOS Rev. 2.50, the author has confirmed that COMSPACE no longer is required to execute MS-DOS DIR commands. But CHKDSK still fails (it requires more than the default amount of memory).

The EXPORT command of TPPLOT has been expanded to support C-like files. Also, the temporary status window of TIMESPAN now indicates progress during the conversion. This addition was inspired by Bruce Mork in a telephone request on May 28th. Work was completed by May 30th.

RELAY is a new command of TPPLOT for those

wanting to produce simplified output to drive foreign software or hardware such as relays. The HELP command fully describes this work that was completed July 27th. Output includes only the variables being plotted, and only the timespan of the plot.

Salford TPPLOT no longer requires naming of the subset number for SET DATA usage provided the user accepts the usual association of "1" for EGA, "2" for VGA, or "3" for Paradise 600 x 800 Super VGA. Instead, if two contiguous question marks appear in place of a number, the program will make the appropriate association based on what the user already has told the Salford program CONFIGDB prior to the execution of DBOS. Most commonly, this command SET DATA ?? will be the first line of the initialization file TPPLOT.BEG , which finally is independent of the graphical standard.

Also, TPPLOT will terminate execution if the user has failed to select his graphical standard by running CONFIGDB. This latest protection exists whether or not the just-described SET DATA ?? is used.

A bug in the TIME command when used with large C-like files was reported first by Bruce Mork (in Trondheim, Norway), and shortly thereafter by Dr. Ivano Bonfanti (of CESI in Milan, Italy). The trouble was caused by INTEGER*2 overflow, which somehow did not halt execution, but rather merely gave erroneous results (interpolation is used to locate data points corresponding to the beginning time T_{min}), so the command erroneously would be rejected. It was during the latter half May that this bug was removed.

The PL4 display of available file names has been reordered so that entries now appear in chronological order. This was done June 22nd in response to a request from Bruce Mork a few days earlier. The request made sense. Previously, relative position of the entries was not guaranteed. Now, newly-created files are always added at the end, so the user knows where to look for them. At the same time as this change, a trap was added to catch any errors that might occur during the automatic deletion of empty .PL4 files (a standard feature of the PL4 command). There were two cases of potential trouble: 1) the file might have been protected against writing or deletion; and 2) Salford DBOS might not have been given enough memory to perform the deletion. Previously, an infinite loop of repeated, failed deletions was the result. Now, a 2-line message warns the user for each empty .PL4 file that can not be deleted.

FONT is a new command of TPPLOT that was added June 15th and 16th to satisfy yet another need that was suggested by Bruce Mork. The question from Trondheim was: How is a user to learn quickly and painlessly what fonts are available, and what they look like? Making font changes in TPPARAM.DAT by trial and error would be slow and cumbersome, of course. So, the new FONT command of TPPLOT was created. Five different fonts are shown at any one time on five different lines of the monitor that display the same illustrative character string. Although the user can define his own, the default characters consist of letters and numbers, which should satisfy most. Using binary signals from the keyboard, the user has control of which fonts are displayed, which portion of the character string is displayed, and the color and the magnification of the display. Details are provided by the associated HELP display.

The COLOR command of TPPLOT is not new, but it was enhanced with a new display option at the same time FONT was added. The average program user has a VGA monitor, and he simply wants to see an illustration of all 16 possible colors. This will be the result if **<CR>** is hit twice following the initial command: an elliptical pie will cover the screen until terminated by **<CR>** or **Esc**. Each slice (one radial and the connected portion of the circumference) of the pie is drawn and numbered using a different color. It is immediately obvious why color number 16 for black is ignored: the associated slice of the color ellipse is missing (assuming operation on a black background)! Also obvious is the periodicity of 16, and the fact that colors numbered 10 through 15 are strong or bright whereas colors with lower numbers are weak or dim.

Multitasking within Salford TPPLOT would seem to be possible. The Rev. 2.50 documentation says: "*A simple form of multi-tasking is now possible. This allows multiple subroutines to run concurrently.*" Yet, examples rely on the use of CALL YIELD@ to define the place and / or time of task switching. Discussion on May 13-th centered on the need for time-sharing without such explicit switching. A good example would be execution of an MS-DOS COPY command to send a .EPS file to PRN (which is assumed to be connected to an Epson printer) . Perhaps 2 minutes is required for completion, so it would be nice to have time-sharing for this. Messrs. Chafer and Webster are working on modifications.

Default colors for VGA usage of TPPLOT are contained in the 2nd data subset of TPPARAM.DAT which is the disk file associated with the SET DATA command. As Bruce Mork pointed out, only the first 5 colors had been defined, and some of the comment text explaining these choices was wrong. Correction occurred on June 30th when entries for curves 6 through 8 were added. In order, the default colors now are:
1) 14=yellow; 2) 10=lime green; 3) 15=white; 4) reddish-orange 5) 13=purple; 6) 11=aqua; 7) 9=deep violet; 8) 8=gray.

Pull-down menus by Harald Wehrend of the University of Hannover first reached the Editor under cover of a letter

dated June 11th. The executable illustration PUDOTEXT.EXE certainly proves that movement of the mouse cursor, creation of a menu, highlighting of an entry in it, and finally, collapsing of the menu, are plenty fast enough. ATP developers in both Portland and Hannover now are thinking how best to exploit the new capability for TPPLOT.

The POST command erroneously aborted the execution of Salford TPPLOT as first observed by Bruce Mork (still in Trondheim, Norway). Mr. Mork mailed an illustrative .PL4 file on June 10th, and Salford TPPLOT was corrected on June 30th. In fact, an extraneous error stop was occurring, but it was difficult for a user to see this because the error message appeared on the screen just for an instant prior to erasure of the screen as execution was halted. Both problems have been corrected. I.e., no longer does the POST command abort extraneously, and no longer is the screen erased at the end of execution.

The POST command required non-blank vertical and horizontal axis titles prior to July 9th when this limitation first was realized. Once again, it was Bruce Mork in Trondheim who reported trouble. Symptoms were not observed earlier by ATP developers in Portland because @LAB2 within TPPLOT.BEG would automatically define the vertical axis label at the start of execution --- always. If instead the labeling went undefined, the Salford debugger window would open and display the message: "I/O error on Fortran unit 20. Error: A zero or signed repeat count is not allowed. Source File: In POSTPT at ..."

New MS-DOS 5.0 Supports Salford

The new MS-DOS Version 5.0 has been used successfully to support Salford EMTP and TPPLOT. Compatibility was first reported during the morning of June 25th by Gerald Lee of BPA who installed Version 5.0 on his 33-MHz 386-based home computer the previous evening.

An available reference for any reader is the July, 1991, issue of PC Magazine which advertises this important development on the cover: *"First Look! DOS 5. Should you Upgrade? 600K Free! Better Memory Management. ... Goodbye, EDLIN ..."* On page 35, the headlines read: *"Everything DOS should have been. DOS 5.0 Loads in High Memory, Undeletes Files, Has On-line Help and Task Swapping."* This is going to be important. Readers are advised to follow this latest revision of the operating system closely. With an upgrade price of $40, DOS 5 promises to be a big hit.

The **Print Screen** key provides free graphic hard copy of the screen using the new MS-DOS Version 5.0. This important news comes from Prof. Mahmoud Riaz of the University of Minnesota who telephoned to report success on June 27th. Whereas DOS Version 4.01 provided only very limited support for graphical hard copy, it seems that Version 5.0 supports many printers including H-P DeskJet as used by Prof. Mohan. No extra software is needed, so this is a universal solution that all can use while waiting for direct Salford support. Prof. Riaz recommends the use of white for all colors (assuming a monochrome printer), explaining that he established a special subset of SET DATA in which all colors are set to 15 (corresponding to brilliant white). Of course, Prof. Riaz has been encouraged to detail his findings in a short summary for the September issue of EMTP News. Postmarked June 28th, two sample copies produced on an H-P DeskJet printer were mailed to Portland as proof. This is big news --- at least in the United States. It is hoped that Canada has equally easy access to DOS Version 5.0 since Europe apparently does **not** ... yet. Early in the morning of June 28th, Harold Wehrend of the University of Hannover reported two problems for Germany: 1) DOS Version 5.0 is not yet available; and 2) pricing is not yet known (it is not yet obvious that an upgrade will be cheap). July 8th, Guido Empereur of LEC reported that DOS 5.0 has not yet been seen in Leuven, Belgium, either. On the other hand, Bruce Mork reported from Trondheim, Norway, on July 10th that a colleague already had received MS-DOS 5.0.

EDIT is the new MS-DOS command for access to a screen editor, which is an enormous improvement over the old line editor EDLIN. Prof. Riaz explained that EDIT in fact is the programming editor of MS QuickBASIC, which now is a part of MS-DOS itself. Whether shareware product PCWRITE by Quicksoft will continue to play much of a role for Salford EMTP users is unclear. The new DOS editor certainly is easy to use with or without a mouse, and it seems capable of handling big enough files for most users. Gerald Lee successfully edited the 291-Kbyte disk file KILLCODES.MUP, but failed to load the 344-Kbyte DC1.LIS which aborted with a clear enough error message: Out of memory. In any case, this is a big improvement over the 65-Kbyte limit of EDLIN. It was possible to use EDIT within TPPLOT following the command COMSPACE d'400000' .

DOSKEY.COM works within the DOS shell of TPPLOT (following the sending of "OS"). This allows the recovery and editing of former commands. But how could such capability easily be extended outside of the DOS shell to all TPPLOT input?

The COMSPACE utility is needed once again with MS-DOS Version 5.0 even when paired with DBOS Rev. 2.50. Without such use, the PL4 command of TPPLOT will fail. But if the user first executes COMSPACE d'50000' (prior to entering the plotting program), operation is normal. So, the burden of MS-DOS continues to grow, and Salford lags one step behind.

The prudent Salford TPPLOT user is advised to execute COMSPACE within the AUTOEXEC.BAT file that is used for EMTP.

BPA Buys 486 from Szymanski

A 33-MHz AT&T 80486-based EISA computer finally was ordered in writing from computer dealer David Szymanski on May 28th. This new computer is being acquired for EMTP developers at BPA as a replacement for one of the present, aging, Sun-3 (68020-based) Unix workstations that have carried the burden in less than satisfying fashion since the final Apollo broke (and never was fixed by BPA) toward the end of July, 1990.

Both 5.25-inch (1.2-Mbyte) and 3.5-inch (1.44-Mbyte) floppy disks will be available, and are expected to provide communication with the outside world in nearly all cases.

The Salford FORTRAN compiler, FTN77 , will be used with Microsoft's MS-DOS operating system. Whether it also can be used with AT&T Unix System V, Release 4, is not yet known.

On the Unix side, Szymanski's C-language extensions will be included. This software offers several exceptional features that include faster and more compact table dumping and restoring, dynamic memory allocation (the sizing of EMTP tables at execution time), and multitasking SPY. About windowing, OSF's *Motif* has been chosen to drive MIT's *X Window System* rather than the more conventional (for AT&T and its partner Sun Microsystems) *Open Look*.

Two different windowing environments will be available on the MS - DOS side: both Quarterdeck's DESQview and Microsoft's Windows 3.0 have been ordered. For electronic publishing, WordPerfect version 5.1 will be used with *Publisher's Powerpak* by *Atech Software* for the fonts.

Ethernet TCP / IP networking is to be provided for the 486 computer. Unfortunately, such an industry-standard connection is not available on BPA's main VAX / VMS computers. But Mr. Szymanski is thinking about loaning BPA the parts that would allow such a connection to some 80386-based PC running MS-DOS. The PC would require the addition of a network card, DOS TCP / IP software to use it, and possibly (not actually needed for the basic network connection) some windowing software to interface with the *X Window System* of the 486.

High-speed communication with others is to be provided by a special analog telephone line and quality MNP 5 modem. This should allow communication with another comparably-equipped Unix computer at 9600 baud using conventional telephone lines. How fast the connection could be run using satellite circuits to Europe, Japan, or Taiwan remains to be seen.

Work on COMTRADE .PL4 Files

COMTRADE is the impending IEEE standard for the exchange of EMTP-like data (COMmon TRansient Data Exchange). Mark Adamiak of General Electric in Philadelphia has prompted renewed interest by volunteering to make the necessary decisions for EMTP use. Prof. Leskovich of Penn State also has been considering the updated standard.

BPA DECstation 5000 Supports ATP

The March and June, 1991, issues of EMTP News (see pages 109 and 86-87, respectively) have carried less-than-satisfying reports about the attempted use of DEC's RISC workstation, DECstation 5000, for the support of EMTP at BPA.

First, there were warnings during linking, and the resulting executable program would die upon reading the first branch card. But then compilation with the -G 0 qualifier was suggested by a DEC analyst. This did remove all of the previous warnings about incompatible COMMON blocks, and greatly sped the linking (time was reduced from 7:46 to 40 or so seconds). The resulting EMTP solved many test cases correctly, too. But not all. Cases involving table dumping (e.g., DC-16, DC-24, and DC-32) still were wrong for unknown reasons.

Next, a new DEC FORTRAN compiler was tried in place of the original MIPS compiler. At first, the new compiler seemed like a disaster. Although there was no serious trouble compiling or linking, most simulations would drop out of the time-step loop after the final step. Extrema, batch-mode plotting, and any following data subcases would be totally ignored as the program somehow returned to the opening prompt.

The next suggestion was to try again using the -fpe3 qualifier. This did help some, but all still was not well. Finally, early in June, the word from DEC experts was that perhaps trouble was due to BPA use of the wrong version of the operating system (Ultrix). The supposedly correct version eventually was installed: ATP developers were told on June 27th that experiments could be repeated. After compilation and linking that same day, DC-4 still dropped out of the time-step loop after the final time step.

PostScript preview does provide free screen graphics, although the operation is not yet interactive for EMTP use. That is, a disk file must first be created (e.g., by

means of the POST command of TPPLOT), and this then can be displayed graphically in a DECstation window. Variable magnification and the ability to scroll either horizontally or vertically (in case the plot is larger than the window) is a powerful advantage of the feature.

South Dakota ATP Short Course

South Dakota State University in Brookings gave an introductory EMTP short course to about 12 students of the region on May 21-st and 22-nd. In addition to local Professors Stephen Gold and Wayne Knabach, lecturers included John Kappenman of Minnesota Power. Unfortunately, ATP registration materials were not distributed to students. Next time, ...

PC PaintBrush Works on .PCX Files

"Zsoft's PC Paintbrush used to modify .PCX files of TPPLOT" is the title of a 7-page article by Stuart McKay of Toronto, Ontario, in the June, 1991, issue of EMTP News. This article details how the user can alter (graphically edit) the color bitmap of a screen plot that is written to disk by Salford TPPLOT in the form of a .PCX file.

Section VI of author McKay's paper summarizes the two accompanying pages of illustrations. Even without the accompanying pictures, this single paragraph conveys a good idea of the type of changes than can be made : *"Two sample .PCX outputs of Salford TPPLOT were modified with PCPB to exhibit the capabilities of the various tools. Figure 1 shows a photographic negative of the original plot while Figure 2 shows the enhancements. Several commands and tools were used to change Figure 1. The waveform itself was adjusted to show some 'noise' at the zero crossings and the peak. The axis numbers also show changes using the rotate and flip features. The number 3.77 was modified to give the 7's a more European look. The X-axis label was erased and replaced using the eraser and text tools. The text was then tilted to give an italic look. Finally, notice that the words 'second' and 'first' were switched in the secondary title block. Comparing Figures 3 and 4 shows how PCPB can be used to annotate graph curves with labels such as 'voltage' and 'current'. Text can also be underlined for further emphasis."*

Microsoft (MS) Windows 3.0 can be used to perform the graphical editing that author McKay has described in the preceding paper. Gerald Lee of BPA had this inspiration, and he proved that it worked by further modifications to author McKay's Fig. 2. The Microsoft Windows 3.0 program to use is PBRUSH.EXE which loads .PCX files of Salford TPPLOT without difficulty. This is a very important detail, considering the many millions of copies of MS Windows that already exist today. The Editor can only conclude that author McKay's work is even more universal than he had originally thought!

New DCG / EPRI EMTP User Group

EMTP Review of the University of Wisconsin is no more, it would seem. The morning mail of June 11-th brought BPA a copy (Volume 1, Number 1) of a new newsletter from Electrotek Concepts, Inc., of Knoxville, Tennessee. Named *Transients,* the new newsletter would seem to be the latest propaganda initiative of DCG / EPRI. The first sentence explains: *"The Electric Power Research Institute (EPRI), and the EMTP Development Coordination Group (DCG) are proud to announce the formation of the EMTP User's Group. ... EPRI has signed a license agreement with Electrotek to market and support the PC version of the EMTP and the User's Group."*

Portable EMTP Course Advertized

Advertizing for Prof. Mohan's new portable, 1.5-day, EMTP short course was mailed to some 6000 IEEE PES members on June 7th by media specialists at the University of Minnesota. This is for the presentations in San Diego on August 1st and 2nd, and then in Dallas on September 24-25 (maybe not 26-27).

An avalanche of requests for information about obtaining royalty-free ATP has resulted from the Minnesota mailing. Judging from geographical location, it would seem that the mailing was confined approximately to persons west of the Mississippi. A few requests could be satisfied easily by telephone. For example, three large companies made multiple, separate requests! But there remained an enormous number (52 between June 15th and July 12th) to whom relevant information was mailed. As expected, most had interest in the Salford EMTP.

LEC Approves of BPA Work on ATP

In FAX to Leuven, Belgium, dated June 14th, BPA formally requested permission of LEC to modify ATP in several specific ways. This was in accord with the written working agreement between BPA and LEC that became effective February 16th, 1990. As the first such specific request and approval, this event is newsworthy.

Most proposed modifications will merely extend to ATP features that already have been available in BPA's EMTP for many months or years. At issue is coding by Dr. Liu that Dr. Meyer never had the time, inspiration, or competence to port to ATP during his spare time (when

not working for BPA). Remember, ATP split from BPA's EMTP during March of 1984, so there has been plenty of time for changes to be made to the latter but not the former. The proposed work should be to the advantage of both LEC and BPA . ATP should be made more useful by the additions, and BPA users should find it easier to port their old data to ATP .

In accord with the BPA-LEC agreement, which has the blessing of BPA legal specialists (Office of the General Counsel), any card image of the UTPF that BPA modifies will be reserialized to indicate that it has entered the public domain. For example, a change made this month would be serialized BPA91JUL (the 8-character UTPF ident). Should anyone file a FOIA
(U.S. Freedom of Information Act) request for ATP, it is only such marked card images of ATP (UTPF in its universal form) that would be disclosed.

Slow Creation of C-like .PL4 ?

C-like .PL4 files can be slower to create (than the UNFORMATTED alternative) if RAM fills during execution. Then EMTP must use SPY to flush the contents to disk prior to the final time step, and this was (but no longer is) very, very slow. The need for change was inspired by Dr. Ivano Bonfanti of CESI in Milano, Italy, who sent a floppy disk by DHL express mail on May 28-th. The 240K words of RAM filled after 18K of the 30K steps total, and then required about 2:10 to flush to disk. Most of the delay was traced to diagnostic: DEBUG.LIS was 2697 Kb. Removing diagnostic reduced the time to about 32 seconds. Finally, recoding to use just a single block transfer reduced the time to a respectable 3-5 sec.

ATP Pardon for GE Schenectady

The first ATP pardon for an organization rather than an individual involved special circumstances that are worth summarizing. A special agreement dated June 4th between the Power Systems Engineering Department of General Electric in Schenectady, New York (hereafter, GE), and the Can / Am EMTP User Group, has made possible ATP use by this former agent of DCG and EPRI in commercial EMTP development. This is a continuation of the story that began in the dominant paragraph of column 1 on page 2 of the newsletter issue dated October, 1990.

Although GE has been pardoned, carefully note that the individuals who actually did the work for DCG and / or EPRI have not. As any such individual retires, he will lose access to ATP, of course, unless he might be re-licensed. At the time of any such reconsideration, circumstances of the original involvement would be considered.

The second organization for which an ATP pardon had been proposed was IREQ / Hydro-Quebec of the greater metropolitan area of Montreal, Quebec. No progress can be reported, although IREQ interest in ATP would seem to remain high. In response to yet another telephone inquiry, the licensing problem was re-explained once again, verbally, on June 13th. A letter of response dated July 2nd represents yet another written record of the proposed ATP pardon.

Changes to DEC VAX / VMS .PL4

Negative KTRPL4 of STARTUP now does have meaning for VAX / VMS . This change was made on June 2nd along with the preceding correction. Any negative value will result in the .PL4 file being named in parallel with the input data file --- provided the input data file is not connected to FOR003 by VAX / VMS ASSIGN prior to execution. That is, the input data file must be provided in response to the opening prompt "EMTP begins. Send ..." If some VAX / VMS expert could inform the author how to find the name of the connected file from within the FORTRAN program (EMTP), this restriction could be removed, however.

DEC VAX/VMS .PL4 files were less than universal in their FORMATTED form through June 1st, unfortunately. This surprising observation came from Bruce Mork, the American who is working at the university in Trondheim, Norway, until August. No, there was nothing wrong with the contents of the FORMATTED file as stored using VAX / VMS . The problem was with file attributes, which could lead to the loss of column 1 when the file was passed to an MS-DOS computer. Salford TPPLOT then would refuse to connect such a file: "&&&& Trouble! The .PL4 file now connected has too many variables ..."

In order to avoid this trouble, the user requires "Carriage return carriage control" rather than the default "Fortran carriage control" for "Record attributes:" as displayed by the VMS DIR / FULL command. This modification was made to VAX / VMS EMTP FORTRAN on June 1st. The only restriction concerns the means of connection: $OPEN on unit 4 must be avoided because associated logic has not been changed.

Electrical World Magazine Errs in Description of EMTP Use at BPA

BPA does not use the EMTP that is licensed and distributed by EPRI . Nonetheless, precisely such misinformation can be found in the May, 1991, issue of *Electrical World* magazine, which describes itself as "*a McGraw-Hill publication*." Pages 41 and 42 carry a short

article entitled "*Realistic relay tests need fault reconstruction*," by John Reason, Senior Editor. In the opening paragraph under the heading "*Fault simulators are costly*," the author and several of his colleagues at BPA were shocked to read the following: "*The first US utility to build a completely digital fault simulator and equipment to test relays under reconstructed faults is Bonneville Power Administration (BPA). This $450,000 laboratory simulator uses the Electric Power Research Institute's electromagnetic transients program (EMTP) to generate fault waveforms ...*"

Readers Must Re-subscribe for 1992

This is the first of two reminders that the mailing list for the newsletter will be purged at the end of the year. Those wanting to receive the January, 1992, issue must mail a written request to the publishers. Use of pencil or a crayon on a scrap of brown paper ripped from a shopping bag will do (keep it informal).

OLD TO NEW TACS for 1984 Data

TACS data last underwent a major change of format just prior to the M39. UTPF update of July, 1984. Before this, the different classes of TACS data had to be ordered, and each class had to be terminated by a blank card. Also, different types of TACS data did not have distinct type codes (cols. 1-2).

Such old TACS data is not accepted by ATP . However, a special conversion utility has been written for it. Accessed by means of the special request OLD TO NEW TACS, operation is illustrated by a new 2nd subcase of BENCHMARK DC-67.

Miscellaneous Concluding Items

OTG Systems, Inc., the Salford distributor located in Clifford, Pennsylvania, deserves a tip of the Can/Am hat. Accompanied by a letter from Ms. Tammy Gillen dated May 31-st, a new, 2-volume printing of the Salford FORTRAN manual was received unexpectedly by ATP developers in Portland. *"Traditionally, these manuals are sold for $60.00 with the trade-in of the client's existing manual. However, due to your continued support ... we are happy to provide you with this manual as a token of our appreciation."* For those who have not seen a copy, the new manuals are much more readable than the old one. There still is no color, but the use of fonts and a laser printer has improved the appearance greatly. No less important is all-new description of features that have been added to the compiler during the past two years. Thanks, Tammy!

IBM's share of the worldwide computer business has slipped to about 23% today from a high of 37% in 1983. This is an interesting statistic that was learned from a short article by Bart Ziegler of the Associated Press on page F4 of Portland's dominant daily newspaper, *The Oregonian*. The article is entitled *"IBM chief puts heat on workers as computer giant battles slump."* The first sentence summarizes the news succinctly: *"IBM Chairman John Akers has been making blunt speeches to his managers warning that the computer industry is in a crisis and that company employees are 'too damn comfortable' as it loses business."* The Editor's only comment is to observe that *old-world* IBM and DEC may be in trouble, but that *new-world* Intel has been making record profits while satisfied customers of personal computers applaud the shift of power all the way to the bank where they accumulate their new-found savings. It is true that the time-shared mainframe and minicomputer business is depressed. That is the good news --- not for IBM or DEC , but rather for the consumer.

More-powerful $INCLUDE capability should result from the creative suggestions of Prof. Jose Martinez of Universitat Politecnica de Catalunya in Barcelona, Spain. Ideas were first communicated verbally to the author last October in Leuven, immediately prior to the annual LEC meeting. Most recently, Prof. Martinez, who will be in San Diego, has sent an informative 3-page letter dated March 18th that clearly establishes the need for more generality.