
Can / Am EMTP News

Voice of the Canadian/American EMTP User Group

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Bruce Mork's Electronic EMTP Mail

Text associated with ATP usage finally can be shared electronically thanks to the initiative of Bruce Mork of North Dakota State University (NDSU). This is described in the final three pages of this issue which are devoted to an exceptional, self-contained article. The EMTP world has changed again, and all readers are advised to consider this latest extension closely.

For those who have not followed Mr. Mork's recent activities, it should be explained that he returned to NDSU during August to begin writing his doctoral dissertation about transformer modeling under Prof. Donald Stuehm. This followed some 22 months of work using EMTP in Norway, with the most recent 12 months being spent at the University of Trondheim where Salford EMTP was installed on many 386- and 486-based computers. During this recent involvement with Salford EMTP, Mr. Mork made several important contributions, and he gained the respect of ATP developers for his competence in computer matters. This had little to do with Mr. Mork's doctoral research, but it has proven to be important for Salford EMTP users everywhere.

Prof. K. S. Rao is another individual at NDSU who should be acknowledged for his computer work with EMTP while the spotlight is on Fargo. During the mid-80s, Prof. Rao debugged batch-mode plotting of the Prime EMTP using a connection to the Basin Electric computer in Bismarck. More recently, he has worked on graphics to support the VAX / VMS EMTP on campus. Most recently, Prof. Rao has been involved with electronic mail (he was on the receiving end of that prodigious electronic transfer of Salford EMTP from Trondheim to Fargo).

Salford Compiler & DOS Extender

DBOS / 386 no longer is being distributed to Salford EMTP users by the user group. The switch to DBOS /

486 was made at the Dallas short course on September 24th. As far as anyone can tell, the 486 software runs optimally on both Intel 386s and 486s (as claimed by the manufacturer, of course). In retrospect, it is both amazing and unfortunate that this important detail was not known by anyone in the inner circle of EMTP developers 12 months ago when LEC was acquiring license number 582 upon which we all rely today.

Version 2.60 of Salford FORTRAN would seem to be very close. This should be important to EMTP users because of improved graphic hardcopy (both for Epson printers and also LaserJet series II) and also full compatibility with Microsoft Windows 3.0. During a telephone conversation very early in the morning of October 22nd, Mustafa Kizilcay of Lahmeyer International in Frankfurt, Germany, reported that version 2.60 could be ordered from the distributor in Germany. Earlier, Laurent Dube had been given an estimate of November from Salford distributor OTG Systems.

DR-DOS version 6.0 has been demonstrated to be compatible with Salford EMTP by Harold Wehrend of the University of Hannover in Germany. This news came in FAX dated October 15th. Readers having interest in this new offering by Digital Research are referred to pages 228 and 229 of the October 29th issue of PC Magazine. Dynamic file compression (*"a space saver that can literally double your hard disk storage space"*) seems to be a dominant attraction. But does it have a screen editor like EDIT of MS-DOS 5.0?

Improvements to Salford TPLOT

The POST command of Salford TPLOT produces a disk file that can be displayed on the DEC VAX / VMS PostScript printer at BPA. But what about other PostScript printers or devices? Arne Petter Brede in Trondheim was the first to report trouble using a cartridge-enhanced LaserJet series III. But here in Portland, Brian

Furumasu's series III with a Pacific Page XL cartridge produces perfect plots. David Szymanski likewise had no trouble with his own PostScript-compatible Microtek laser printer.

A mouse is assumed to be installed as TPLOT is configured by the user group. Those who do not have a mouse are reminded that variable MOUSE of the initialization file TPLOT.INI should be toggled from unity to zero. Otherwise, execution might not go far. This was found to be the case with both Prof. Mohan's Toshiba 5200 and Bob Wilson's H-P Vectra, which would not accept any input at all (the keyboard was locked).

A mouse has eliminated the necessity for most keyboard input to TPLOT. This is the big news of the past three months. Details can be found in a current READ_ME.DOC file (search for "mouse") as well as the HELP utility which displays disk file TPLOT.HLP (part of the distribution). The basic principle can be summarized easily in words: Screen displays (including prompts for the next input) show alternatives, and the user now can select among these using the mouse. Of course, not all choices of TPLOT are naturally true-false or multiple choice, so substantial adaptation has been required to make mouse input easier.

The SKIP command of TPLOT provides a good illustration of minor adaptation. As before, SKIP requires the input of an associated integer. Although in theory this multiplicity (of skipped time steps) could have any value, in practice a few common choices should satisfy nearly all users. The common choices are offered as new mouse targets.

The LABEL command of TPLOT illustrates a complete change for interactive (not @-file) input by mouse users. In response to a suggestion by BPA's Gerald Lee, a special screen editor has been provided to allow the user to see all graph labeling at the same time, and to modify easily whatever text might be of interest. Once inside, the mouse can be clicked on any of 4 buttons of the heading, or it can be used to indicate the desired location for subsequent editing. The **Delete**, **Backspace**, **Insert**, and **<CR>** keys operate in intuitive fashion except that erasures are limited to a single line (there is no wraparound).

A color monitor is more strongly recommended today than it was three months ago. Color is being used more now, to assist the mouse user; and the switch is far from complete. Without color, the TPLOT motorist can still drive on the same mouse road, but it is more difficult for him to distinguish between critical road signs and the advertizing of billboards. More and more, color is expected to provide the distinction between what is mouse-sensitive (can be clicked on) and what is not. Computer

expert and BPA consultant David Szymanski suggested one such important extension as he watched a Salford TPLOT demonstration during his stay of October 15th through 18th. More color probably is inevitable.

C-like .PL4 files that have not been terminated properly by a normal exit from the time-step loop were not usable by TPLOT prior to October 23rd. Now, repair of an incomplete C-like file is just one more automatic service of Salford TPLOT, which will issue a 2-line warning of the correction. Should there be no plot points at all in the file, a third line will warn of the hopelessness, however.

User Group & BPA Break with LEC

LEC (the Leuven EMTP Center of the university in Leuven, Belgium) presently enjoys a monopoly on ATP licensing in Europe. This will not extend into next year, however. The North American user group has decided to sever its present tie to Europe no later than year's end, and begin ATP licensing based on its own authority as first suggested to the general public in the April issue (see the story entitled *"Ultimatum to CESI Task Force"* on page 2).

BPA ended its formal, written connection with LEC in a letter dated October 25, 1991. Signed by lower-level managers Hasibar and Liu, photocopy of this letter, as well as a draft of the present article, were hand-carried from Portland to Leuven by Laurent Dube during the weekend of October 26th and 27th that preceded the 1991 annual LEC meeting.

One fundamental problem that the Can/Am user group has with LEC is LEC's apparent lack of any fundamental, unchangeable prohibition against EMTP commerce. It is convenient to quote from the Editor's April contribution to the CESI task force: *"What distinguishes LEC from DCG? Formed in 1982, DCG formally agreed in 1983 to keep the EMTP proper (the UTPF in its universal form) in the public domain. But then, the following year, DCG reversed itself and decided to try to sell EMTP --- including work paid for by BPA and other agencies of the U.S. government. What is to prevent a similar quick change of colors by LEC? Unless LEC goals and principles are clearly understood, and practiced, who at BPA should want a stronger LEC? Who at BPA would trust LEC? What has changed since 1984 when Chairman Van Dommelen formally proposed cooperation between the European EMTP User Group and DCG / EPRI? ... Well, task force members should understand that those at BPA have very long and very good memories of European EMTP politics during 1984 and 1985."* Your Editor is not reassured that majority rule provides any meaningful guarantee. After all, the reversal by DCG was done by majority vote of the

Steering Committee! No, non-commerce in ATP must be chiseled in stone like the Ten Commandments.

The split with LEC is not expected to affect ATP development greatly because LEC employees, who work at the University in Leuven, have not played a dominant role in the past. Neither should there be much concern about LEC support for ATP versions that run on other computers: Readers are to be reassured that the Can / Am user group never has distributed any LEC product. There simply has been little interest in an ATP version to run on IBM mainframe computers, or in GKS graphics for VAX / VMS computers. Those who use Intel 80386- or 80486-based personal computers that run MS-DOS or DR-DOS should feel particularly secure. This is because LEC involvement with this dominant segment of North American usage has been limited to its annual payment for DBOS license number 582, and this could easily be replaced.

Several individuals and organizations in Europe and Asia have made important contributions to ATP since its beginnings early in 1984. It is the hope and assumption of developers in Portland (both the user group and also BPA EMTP workers and engineering management) that such cooperation would continue with or without LEC dominance. This is critical to the plan to continue ATP development without LEC approval. It also is consistent with the original concept of ATP and its explanation to the first annual LEC meeting during early November, 1985.

For those readers who might be wondering "*Who controls what?*", the critical detail is this: at no time was control over ATP ever transferred permanently to LEC by those who did most of the work. As the Editor explicitly reminded his audience at an annual LEC meeting 3 or 4 years ago, the work remains the property of those who performed it and not much of this was by LEC staff. LEC will continue to act as spokesman for the ATP world only as long as those who have done the work, and will continue to do the work, want it to be so. Well, this is what now is scheduled to change by year's end. The Can/Am user group has decided to assert its independence from LEC. Following the break, the North American user group expects to pursue ATP development in cooperation with BPA and others who better share Can/Am goals, priorities, and methods.

BPA has been offered ATP by the Can/Am user group under conditions that are more satisfactory than those contained in the present written agreement with LEC. As Dr. Bonfanti of CESI was told during his visit to BPA on September 30th, BPA can not allow any outside authority to disapprove of work that would be performed by a BPA contractor. An example is Laurent Dube, who is being paid \$175K by BPA to work only on MODELS (the newer EMTP control system

modeling) through February of 1994. Under the present agreement, LEC approval is required for any changes beyond the correction of isolated errors. As BPA's own public-domain EMTP is increasingly abandoned in favor of ATP, it has become critically important that BPA have the right to modify and further develop ATP according to its own needs. The Can/Am user group is prepared to satisfy this BPA need subject only to approval of the legitimacy of any changes. An illustration of potentially suspicious changes would include those that do not affect program execution at all. For example, changing statement numbers or imbedded blanks without need.

Relevant U.S. law (the *Freedom of Information Act*, abbreviated FOIA) would be carefully observed during all BPA (or other U.S. government agency) contributions to ATP. For non-prose computer files, the rule would be simple: any card image or similar record of line-oriented files would enter the public domain after being legitimately modified by BPA. This would apply not only to ATP itself (only the UTPF is covered in such a fashion by the February, 1990, written agreement with LEC) but also to all associated FORTRAN programs such as TPLOT or the many translators and their associated files. It also would apply to EMTP data such as the BENCHMARK DC-XX test cases. For line-oriented files, then, the procedure is both clear and simple: lines legitimately modified by BPA would be marked as being in the public domain.

Written English-language prose, which is clause-, sentence-, paragraph-, and chapter- or section-oriented rather than line-oriented, is less clearly regulated by FOIA. No final rules have yet been agreed upon for this aspect of program development. Yet, something workable certainly will be agreed upon as the need increases. One possibility might be to ignore isolated changes completely by dealing in no unit smaller than an entire paragraph --- which would become public if half or more of it were modified by U.S. government workers or agents. When it comes to the segregation of records, is this *reasonable* (the criterion that has been established by U.S. courts)?

It is possible that EMTP information might continue to be exchanged freely with LEC --- even after the inevitable break. If not, LEC (or its members) most likely would be the bigger loser, in the Editor's opinion. Certainly the Can / Am user group would not continue to share its work on the likes of Salford EMTP and TPLOT with LEC if LEC refused to reciprocate. Yet, this is a question for those in Europe; it is not for us in North America to decide whether LEC will cooperate with us.

In case of a complete rupture with LEC, we in North America would lose free access to *EMTP News* (the quarterly journal that we reprint and mail for \$15 per year), of course. For this reason, continuing subscription

for 1992 has not yet been offered. Do not send checks to pay for 1992!

Will *EMTP News* continue to be used by ATP developers in Portland to announce improvements and changes? This is far from clear --- even if such contributions might still be encouraged following the break with LEC. If BPA were to take over ATP development, an alternative would be to have BPA do its own publishing as in years past. There has been plenty of experience (prior to the spring of 1984, some 2000 pages of *EMTP Memoranda* were written over a period of about 11 years). Certainly secrecy is not a concern: the publisher of *EMTP News* has been selling subscriptions to anyone, including paid agents of DCG and EPRI! Reports about ATP might as well be in the public domain (which would be the case if they were to be published by BPA). Of course, technology has changed during the last 7 or 8 years. Rather than distribute printed volumes of *EMTP Memoranda*, a single MS-DOS floppy disk of WordPerfect files might instead be used. Not only would this be easier and cheaper for BPA, it also would be more useful for the readers. Not only can disk files be computer-searched for topics of interest, they also can be reproduced free of charge.

Following its break with LEC, the Can/Am user group plans to license ATP usage anywhere in the world by exchanging a single piece of paper (its AFFIRMATION). However, except for those with whom it is cooperating in development, it probably would **not** mail more substantial materials such as floppy disks or the Rule Book outside the United States or Canada. Intermediaries based in North America are expected to play an increasingly important role in world-wide distribution, therefore.

EMTP commerce is what presently is prohibited by the Can / Am user group. But is this a strong enough condition to remove conflicts of interest for those who declare that they want to cooperate? Now being considered is a change to: *no commerce in software related to any electromagnetic transients program*. Would the conflict of interest be any less if the program had a different name or a different heritage? All EMTP versions are competing products but not all competing products are EMTP versions. It is the commercial competition that reflects the conflict, not the program name.

The semi-annual European EMTP meetings, and EMTP short courses at K.U. Leuven, are no less deserving of praise as a result of preceding comments, it is important to emphasize. Criticism of some aspects of LEC does not imply criticism of others.

Final Call for Re-subscription

This is the second and final reminder that those who do not mail a written request for renewal to the Publishers and Mailers will be purged from the subscription list of this publication prior to mailing the next (January, 1992) issue. For details about the crayon and brown paper bag that are acceptable for the note, read the preceding issue (page 8, column 1 of the July, 1991, issue).

Static Var Modeling by Gabor Furst

Gabor Furst, formerly of the Montreal area of Quebec, Canada, but more recently of White Rock, Surrey, British Columbia, has contributed his own modeling of a static var compensator (SVC) as first communicated to ATP developers in Portland via 17 pages of FAX dated October 3rd. The cover letter begins as follows: *"I mentioned ... that I was looking for an SVC model, including 6 pulse thyristor bridge representation. My enquiries were not successful and I decided to develop one myself. I attach the print out with some test examples of one of the four alternative control models I have developed."*

San Diego and Dallas Short Courses

Prof. Ned Mohan's portable EMTP short course was given as planned in San Diego on August 1st and 2nd, and then again in Dallas on September 24th and 25th. Current thinking is that the course will be repeated next year in Seattle at the end of the IEEE PES Summer Meeting (Thursday and Friday).

The Sharp color VGA projector performed well. It represents an important improvement over previous EMTP courses. Last March in Florida, Prof. Carroll made use of a good monochrome VGA projector (see page 3, column 2 of the April issue). When carefully adjusted, this might have been a little crisper and brighter, as best the Editor can recall. But color conveys so much more information for plotting --- not only for graphic mode, but also for text mode. A recent, new need is to display the colored targets that can be used for mouse input to TPLOT, which was the only plotting program used (PCPLOT has been retired). The color display was dim, however, making it necessary to dim other lights when it was being studied. Yet, Prof. Mohan indicated that this problem could be alleviated by a brighter bulb (the courses relied on standard, hotel projectors only).

Whereas the attendance of 29 paying students in Dallas was satisfying, the mere 14 in San Diego was an obvious disappointment. There are several excuses for the poor start, however: 1) Many companies fixed their travel to the Summer Meeting in advance of the mailing of advertising; 2) Announcements were not mailed to Canada; 3) San Diego appeared to be more expensive (*"The room rate is \$115 single ..."*); and finally, 4) the recession discouraged registration (this was not the only

short course that failed to be filled).

Dr. Liu has agreed to represent ATP developers at future EMTP short courses. This will begin in March of 1992 at the University of Florida.

MAD for Directory of Archived Files

Mike's Achive Directory (MAD) version 2.0 is an MS-DOS shareware utility that is copyrighted by Mike Sax of Belgium. Unlike other shareware utilities from Laurent Dube, this one has a funnier author!

The following summary is from the .DOC file: "*MAD basically works like the DOS DIR command. ... (It) can list the directory of all popular archive types available and their self extracting .COM and .EXE files. MAD currently supports ARC, PAK, ZIP, ZOO, LZS, DWC and LZH archives and all self-extracting .COM and .EXE files created by SEA ARC, PK-ARC, PAK, PK-ZIP, SEZ (zoo), LARC (lzs), DWC and LHARC (lzh). ... MAD is a free program. You don't have to pay me anything to use it. There's no obligation whatsoever. I just think you would be one hell of a nice guy (or girl) if you would send me five bucks, anyway!*"

Miscellaneous Small Items

The tables of MODELS (new control system modeling) first were tripled in size during the summer, and then doubled during mid-October. The expansion was required to accomodate Bob Wilson, the doctoral student in Moscow (at the University of Idaho) who is creatively writing large volumes of MODELS data to represent over-current and impedance relays. List 28 accounts for 8^{9th} of the storage, and this has been increased from 9600 REAL*8 words to 57600. With a current total burden of 526 Kbytes, the need for variable dimensioning of MODELS is obvious.

The 33-page September issue of *EMTP News* is available, and will be reproduced soon. Unfortunately there is not room to summarize the contents here.

Lahey advertizing for F77L Version 5.0 indicates an interesting FORTRAN 90 feature: "*dynamically allocatable arrays.*" Unfortunately, this does not work on COMMON blocks as required for EMTP use!

Microsoft FORTRAN for Windows 3.0 might be used by Ebasco Services to support ATP on Intel 386-based computers. John Samuel expressed interest in the possibility during the Dallas EMTP short course.

The October issue of *Electrical Business* magazine of Canada contains an article about ATP by Editor Victoria Burris. Stuart M^cKay of Toronto is to be thanked for his

efforts to avoid errors in the text.

User-supplied FORTRAN for MODELS is a feature that appeared in user documentation, but had not been implemented before mid-October. Laurent Dube will carry corrected VAX/VMS and Salford FORTRAN to the annual LEC meeting in Leuven that begins October 28th, and will assist Vanderstockt and Correia de Barros in their use of the new feature for corona modeling at Laborelec on October 30th.

Multi-phase transformer modeling in ATP should be described in the next issue. Unfortunately, it is too big a story for the small, unfilled space of this issue.

BPA's Jerry Almos has converted from TACS to MODELS the set of 64 proprietary data cases by Prof. Ned Mohan that illustrate power electronics.

For WordPerfect disk files, how can one easily and automatically remove all graphics (figures, clip art, etc.)?

The Co-Chairmen already know how to do this interactively, by hand; this is the problem: it is tedious.

The Szymanski-supplied 33-MHz AT&T 80486-based computer (see page 5 of preceding issue) has been accepted by BPA. On the Unix side, Salford FTN77/ix was accepted following creative debugging.

DECstation 5000 still does not support ATP properly even though the compiler was corrected following analysis of the problem by *experts* at the headquarters in Atlanta. This is a continuation of the story on pages 5 and 6 of the preceding issue. Sad!