Can / Am EMTP News

Voice of the Canadian/American EMTP User Group

Note :   The present file is a modern recreation of the original 3-column manuscript produced at Virginia Power by Editor Grebe using keyboard text (no fonts, etc.) that was supplied by W. Scott Meyer. Editor Grebe wrote the final story and the subscription form at the end (shown in somewhat collapsed form, without graphics). During July of 1994, the old issues published by Virginia Power were recreated in Portland using 1994 newsletter publishing standards. I.e., Dr. Meyer used Word-Perfect with two, non-threaded columns. This present issue is the third to be recreated, after SEP88, using the same general method as SEP88. Editor Grebe dated it May, but it should have been April (three months after the preceding, January issue) as seen at the top.   Spelling and other minor mistakes were corrected as they were discovered. The subscription form (no longer valid) has had the blanks shortened. Finally, all of Editor Grebe's clip art is missing except for the reminder to resubscribe, which has been keyed as regular text preceding the subscription form.

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4-Day Florida EMTP Short Course :   April 10 - 14

The 4-Day Florida EMTP Short Course was given on schedule between about noon of Monday, April 10-th, and noon of Friday, April 14-th. This was on the campus of the University of Florida in Gainesville.

The course was organized and managed by Dr. Dennis P. Carroll, Professor of Electrical Engineering. The user group was represented by Co-Chairman Meyer and newsletter Editor Grebe, both of whom shared lecturing duties with Profs. Carroll and Domijan of the University of Florida, Prof. Saul Goldberg of Cal Poly, Mark McGranaghan of Electrotek Concepts, Inc., and William Roettger of Roettger Engineering Co.

There was no artificial separation between classroom lectures and laboratory, fortunately. Just as at the Cal Poly EMTP short course last summer, a single room was used. Each student sat at a table with an MS-DOS computer (either Intel 80286- or 80386-based) in front of him. At the front of the room, the instructor used an 80386-based computer (including 80387 math coprocessor) that produced displays on both its own monitor and also on a large screen next to the wall.   Due to the projection system that was being used, the   big-screen graphics unfortunately had to be reduced to monochrome CGA. But each student had his own EGA monitor, so could see his own higher-resolution graphics. Some monitors were monochrome, and some were color. There was quite a mixture of hardware, all of which the laboratory manager, Mike Lewis, kept working smoothly throughout the course.

Although most of the 17 students came from the Southeast upon which advertising for the course was concentrated, there were exceptions. Students also were drawn from the states of Missouri, Kentucky, New York, Pennsylvania, and Washington.

Mustafa Kizilcay's interactive plotting program "PCPLOT" was used extensively by students. It looked particularly good on the larger (14-inch?) IBM EGA color monitors that accompanied the several 80286-based IBM PS/2 computers. The only complication was that special care had to be exercised when TP1.EXE created the ".PL4" files. For details, see the MS-DOS summary elsewhere in this issue. Special thanks are due Mr. Kizilcay, who competently responded to a last-minute request for a version of PCPLOT that uses coprocessor emulation. Since ATP developers still are unable to use GEOGRAF without a coprocessor, Mr. Kizilcay's special efforts were critical to success in the Florida laboratory where about half of the computers -- all the 80386-based machines except the instructor's -- lacked coprocessors. As for speed differences of the 80386-based computers, look in the June issue of *EMTP News*.

"TPPLOT" and "WINDOWPLT", the two new interactive plotting programs, were demonstrated for the class using projection   on the big screen using a GEOGRAF CGA driver. But the SPY "PLOT" command gave trouble because of changes in the new Lahey FORTRAN compiler. For   details, see the MS-DOS summary elsewhere in this issue.

Bill Roettger gave a complimentary copy of his load flow program that runs under MS-DOS to students and faculty. Dimensioned for 250 busses and 600 branches, the program runs in 384 Kbytes and uses common MS-DOS graphics (CGA, EGA, etc.). Extra copies can be purchased for $99 each. For more information, see the announcement in IEEE Computer Applications in Power, April, 1989, page 47.

Prof. Carroll was pleased with the evaluation by students. In a telephone conversation two weeks after the end of the course, it was learned that Prof. Carroll already has decided to repeat the offering next year. However, in order to minimize the impact on others at the University who want to use the computer laboratory, the date probably will be modified to correspond to a week of student vacation.   Also,   an introduction to the laboratory computers and their software (MS-DOS, the PCWRITE editor, EMTP, etc.) probably will be added Monday morning. This would be designed for those students who might not be regular users of MS-DOS. If there are any questions about next year, telephone Prof. Carroll at (904) 392-0918.

Laurent Dubé to Show New TACS at Cal Poly, JuIy 17-21

Cal Poly of San Luis Obispo, California, again will offer an EMTP short course this coming summer. This will be the week of   July 17-21, which is the week immediately following the IEEE PES Summer Meeting in Long Beach (which is located perhaps 200 miles south of Cal Poly).

The new control system modeling (TACS) will be unveiled to the general public by its author, Laurent Dubé, at the Cal Poly EMTP short course. Although this is just one of many EMTP topics to be covered by the course, Laurent Dubé will be present to provide after-hours consultation and advice for those with particular interest in the new TACS. The Cal Poly course provides a rare opportunity for those having interest in control system modeling. It is matched only by the Leuven (Belgium) EMTP short course that follows at the end of July (yes, Mr. Dubé will be there, too).

For general information about the Cal Poly EMTP short course, read the preceding (January, 1989) issue. As an update on earlier speculation, it can be reported that the new TACS does already execute correctly as a separate program using the extended-memory of Intel 80286-based computers. This runs under the DOS extender named OS/286 by A.I. Architects. Since Prof. Goldberg has two 80286-based computers with adequate extended memory, and either of these could be connected to the high-quality (expensive; $10K) projection system of the laboratory, on-line demonstrations of the new TACS for the class would seem to be guaranteed.

Dr. Meyer plans to represent the Can/Am EMTP User Group at the Cal Poly course much as he did at the Florida course earlier this month. This year, he plans to be available the entire week. Although his formal lecturing will be confined to the opening introduction (supported by 56 transparencies) and a possible explanation of EMTP interactivity (SPY), Dr. Meyer will be available to answer any questions about EMTP development and usage at any time. It can not yet be promised that the all-new, 80386-based Unix package of Dave Szymanski will   be demonstrated at the Cal Poly course. However, ATP developers are working hard with this goal in mind.

News About MS-DOS Version of ATP

Mustafa Kizilcay's old "PCPLOT" program is incompatible with ".PL4" plot files produced by a new TP1.EXE unless the user is careful. The problem was first observed by Prof. Dennis Carroll of the University of

Florida the weekend before the EMTP short course in Gainesville. The solution must be credited to Mr. Mike Lewis, manager of the personal computer laboratory. Somewhat by accident, Mr. Lewis observed that a freshly-created ".PL4" file was incompatible, but that if a ".PL4" file had been created by overlaying any old ".PL4" file, then the problem disappeared. The "new" refers to usage of Lahey FORTRAN compiler version 3.0, whereas "old' refers to the preceding compiler (version 2.2). To conclude, if an old ".PL4" file exists, carefully save it by copying to some safe location. Note that user-specified file names must be used, rather than the automatic naming of the program based on date and time. For a model, see BENCHMARK DC-3. Last minute addition on April 28th: Mr. Kizilcay indicates that the new Lahey compiler has some special qualifier to request compatibility of UNFORMATTED files. ATP developers in Portland will experiment with this soon.

Low-density (360-Kbyte) floppy disks no longer will be used for distribution of the MS-DOS version of EMTP once the present supply of such disks in Dr. Liu's basement is exhausted. Compared with high-density (1.2-Mbyte), the low-density alternative just is too much of a burden. Others agree. LEC of Leuven, Belgium, never did offer distribution on low-density disks, and Prof. Saul Goldberg of Cal Poly will be dropping such service for his next EMTP short course (July, 1989). Prof. Dennis Carroll of the University of Florida offered only high-density copies at his EMTP short course earlier this month. Since ATP distributors in Portland received no negative comments about their idea three months ago (see the bottom of the middle column on page 6), the low-density service is to end soon. Those having only a low-density floppy disk drive will be expected to locate an MS-DOS computer with a high-density drive in order to perform their own conversion from high- to low-density disks. Recall that a good, high-density drive can copy files onto a low-density disk.

The interactive plotting program "TPPLOT" (see Section I-L of the ATP Rule Book) has been converted to MS-DOS. This should be reported in more detail in the June issue of *EMTP News*. GEOGRAF by GEOCOMP is used for vector graphics just as was the case for "WINDOWPLT". In case this is not understood, the reader is referred to Dr. Tsu-huei Liu's article in *EMTP News* (Section I, pages 12-14 of the issue dated March, 1988). Several test sites in USA already exist, and copies of the program are being distributed free of all charge upon request by those licensed to use GEOGRAF. Those attending the EMTP short course at the University of Florida should have received copies of both programs, and copies will be available at the California EMTP short course this coming July.

Coprocessor emulation now is available for the MS-DOS version of ATP thanks to use of the new Lahey F77L compiler version 3.0. That is, simulation can now be performed on an Intel-based MS-DOS computer without a math coprocessor (Intel 8087, 80287, or 80387). Yet this really can not be recommended for any Intel-based microprocessor other than the 32-bit 80386. As reported by Dr. Liu in the March issue of *EMTP News*, a 10-MHz COMPAQ Portable III without a coprocessor will only simulate at about one third the rate of her own 6-MHz IBM PC AT with a 4-MHz 80287. The slow-down for "JMARTI SETUP" is even worse (nearly ten to one!).

Optimization of Lahey F77L version 3.0 has resulted in simulation that is 24% faster, on average (for the seven BENCHMARK test cases that were times). For most users, this is a much more important benefit of the new compiler than is the possible new coprocessor emulation. It is a dominant reason for switching to the new compiler.

The new TACS will not be supported by the MS-DOS version, it appears. There just is not enough memory for the code. So, the old TACS should be retained for years to come. The ATP UTPF will contain both new and old TACS, and probably both will be passed along for most virtual computers. However, the MS-DOS translator will destroy the new TACS, allowing only the old TACS to pass through.

The window plotting program "WINDOWPLT" for MS-DOS was illustrated on page 13 of the March, 1989, issue of *EMTP News*. However, that sample plot involved extraneous output that since has been corrected. Note that each window has numbers beside tic marks of the time axis. Since all time axes must be identical, this is redundant. After a recent correction, numbers are seen only for the bottom time axis. This change affects the CalComp mode for Apollo, too (the screen output has always been right, but the seldom-examined paper suffered the same way the MS-DOS version did).

SPY "PLOT" no longer works properly, apparently due to properties of the new Lahey FORTRAN compiler. The plotting itself works correctly, but subsequent resumption of a simulation will be killed by the operating system with a complaint about the ".PL4" file ("Data transfer beyond End of File, File= .... Position=75 in PLTFIL; Called by SUBTS3; ..."). Whether ATP developers can circumvent the problem, or Lahey can correct it, remains to be seen.

Bob Zavadil of Nebraska Public Power District (NPPD) objected to the accumulation of empty ".PCH" punch files. ATP developers in Portland agreed that this is sloppy, and will be eliminated. Previously, for each data subcase that was processed by TP2.EXE, a ".PCH" file would be created whether or not any cards were punched. In the future, when the ".PCH" file is disconnected, it will be deleted unless two or more card images exist.

The list of GEOGRAF-compatible devices for EMTP plotting can be expanded once again. Original information can be found on page 2, columns 2 and 3, of the January issue of the newsletter. Now Dr. Rambabu Adapa of Cooper Power Systems in Franksville, Wisconsin, has reported two more successes. For the Hewlett-Packard Laserjet Series II laser printer, Dr. Adapa reports correct operation at 300 pixels/inch. This adds to the earlier report of correct operation with minimal memory at 75, 100, and 150 pixel/inch (see page 12 of the March issue of *EMTP News*). For an inexpensive, narrow-carriage Epson LX-80, Dr. Adapa also can produce plots --- slower, and in lower resolution than for the H-P laser printer, of course.

Special dimensioning of TP1.EXE was been performed on April 21st for John Reckleff in Columbus, Ohio. While ATP distributors in Portland can not afford the time for much of this, they are willing to accommodate users with really good reasons. In Mr. Reckleff's case, experimentation of graduate study required unusual proportions that overflowed the standard dimensioning. In the process of satisfying Mr. Reckleff, a special new data card for "VARDIM" was developed to allow the proportional scaling of all list sizes. The format is the same as for the "DEFAULT" request that has been widely used for many months, only the new key word is "SCALE". After establishing the correct proportions, this allowed easy scaling to exploit the maximum usable space of MS-DOS. To summarize, dimensioning controls have been strengthened in response to the need that was seen while working on special dimensioning for Mr. Reckleff.

No trouble with "JMARTI SETUP" has been reported in North America since the warning three months ago about European incompatibility. Recall that BENCHMARK DCNEW-3 would lock MS-DOS computers in Europe for reasons that remain a mystery. Well, no reports of any such trouble in North America are good news.

Use of a RAM disk to speed execution began with Bill Roettger of Naples, Florida, as reported in the last issue. Since then, your newsletter Editor has extended this to the program text of BLOCKD51.BIN, and input data. The location of BLOCKD51.BIN must be specified in the STARTUP file. No speed tests have been completed as of yet.

Intel 80386 - based
UNIX EMTP

David Szymanski of Wattsburg (near Erie), Pennsylvania, is the author of another valuable report about Unix and EMTP for Intel 80386-based computers. For details, see the article entitled "Refining Unix support of ATP EMTP for Intel 80386" on pages 7 through 11 of the March issue of *EMTP News*. Most of the rest of this news report has been extracted from that article.

To support SPY, Mr. Szymanski has departed radically from the structure that is used for Apollo. The same SPY commands exist, of course, but they are serviced quite differently on the 80386 using Unix. Rather than a single, large, integrated EMTP as is used for Apollo Aegis, Mr. Szymanski executes a collection of separate programs in parallel. Although details have yet to be finalized, the most recent experimentation relies on five separate programs that execute simultaneously under Unix. As a result, the user's impression of time-sharing within EMTP is substantially altered. Instead of EMTP logic determining when the processor should service SPY rather than advance the simulation, Mr. Szymanski's new formulation shifts this burden to the operating system (Unix). The result should be improved time-sharing (after all, time-slicing logic of the EMTP must be crude by operating system standards). The philosophy here is simple: as long as we are paying for, and running, a multi-tasking, multi-user operating system, it would be foolish not to exploit it fully for EMTP use. Fortunately, this has been possible within the framework of machine translation.

No longer is the use of SPY restricted to simulation only. Whereas most non-simulation computations of the program previously were inaccessible to SPY, no such restriction exists for Mr. Szymanski's modified formulation. For the 80386 Unix version, execution can be monitored, observed, and altered during any EMTP computation at any time. Although by no means identical, there is some similarity to what Dr. Meyer did in the earliest days of SPY using VAX/VMS shared COMMON, when three separate, parallel processes were used. Of course, many things have changed since those earliest of SPY days.

Customized windows for the EMTP are another development that has preoccupied Mr. Szymanski in recent months. X windows from MIT continue to have attraction for the long term, particularly for use with high-resolution monitors and networks. However, they seem less useful on isolated computers having common, present-day, low-resolution monitors. A tentative decision has been made not to rely on X windows for the initial release. Instead, Mr. Szymanski wrote his own program to manage text of the SPY and simulation windows. Permitted user control includes both vertical and horizontal scrolling. Dr. Meyer is particularly impressed by the latter, which is not even provided by BPA's more expensive Sun workstations (which run the latest Sun Unix

version 4.0.1). Whereas Mr. Szymanski does not display more than one window at any one time, it is trivial to switch from one window to another: pressing a function key is all that is required. Even the largest of data cases can be simulated by EMTP running under Unix on the 80386. Previously, this was just educated speculation, but now experimental confirmation can be reported. See *EMTP News* for details of dimensioning that exceeds anything ever seen or heard of at BPA.

Faster EMTP table dumping and restoring represent another improvement made by Mr. Szymanski. For details, see *EMTP News*. As an illustration, with dimensioning set to three times default, the tables created by BENCHMARK DC-32 normally would have 735 Kbytes. But with the new, more-sophisticated logic, only 322 Kbytes of data actually are transferred.

Other Unix computers will be considered for the support of Mr. Szymanski's EMTP-related software once work on the AT&T 6386 has reached a stable, usable plateau. Work is never done, of course, but there are convenient resting places. One of these should be reached soon. There are many other Unix computers of interest, including workstations from DEC, IBM, Apollo, Sun, Data General, etc. Regarding other 80386-based computers, the IBM PS/2 Models 70 and 80 certainly will be considered somehow. This will be to satisfy the demands of readers who either already have such hardware (and typically are wasting most of the elegance and power by use of just MS-DOS) or will find it easier to acquire such hardware in the future. Favorable prices (sometimes zero) can be obtained by universities, and many power companies favor procurement from IBM.

Intel is not far behind in the race to develop powerful RISC microprocessors. The new Intel i860 microprocessor, which was announced at the end of February, appears to be spectacular. It represents the start of a new Intel generation. Rather than being a 32-bit microprocessor, the i860 is a 64-bit microprocessor. It has a 64-bit instruction bus that transfers data at the incredible rate of 320 Mbytes/second. Etc. (see *EMTP News* or other publications for more). Unix already runs on the i860, of course.

Mr. Szymanski's latest information about Intel Erratum 21 comes by telephone from Ironwood Electronics on April 26th. Whereas "dx" chips may be improved, not all are guaranteed to cure Erratum 21. The corrected microprocessors are so-called "d-step chips." Look for printing on the chip under the "80386." There should be serialization "FX???," where "???" are three decimal digits. Ironwood knows of no Erratum-21 trouble if "???" is 132, 133, 213, 214, or 215. Also, the logic of the boards from Ironwood and Bell Technologies is said to be the same.

Miscellaneous Items of EMTP Interest

The BITNET computer network was mentioned on page 9, column 3 of the preceding (January, 1989) issue. Whereas nothing more has been heard from the BPA computer establishment, and there is no known connection at Virginia Power, two ATP users at universities in the United States have responded that they have such connections. The first was Prof. Ali Abur of Texas A&M in College Station, Texas. The second was Prof. John Aspness of the University of Alaska in College, Alaska, who included his BITNET address! The tentative conclusion is that universities in this country have easy access to the computer network used by ATP developers in Leuven and Hannover, but that most others do not.

Mustafa Kizilcay's "PCPLOT" program now provides royalty-free graphics for four different monitors (CGA, EGA monochrome, EGA color, and Hercules) and Epson-compatible printers. Many copies have been distributed in North America since it was enhanced toward the end of last year. Those ordering the complete MS-DOS ATP EMTP package for the first time should have no trouble installing and using the newest version since details are documented in the 10 pages of user instructions that are inserted in the ATP Rule Book immediately before chapter II (immediately after Section I-L-2). But for those who upgraded an earlier version (the $10 offer for all ATP disk files only), possibly several details are not clear. For one thing, the special directory \TGFONT must be created and loaded with the files 14X9.FON, 4X6.FON, 8X8.FON, and ERROR.MSG. Second, there is the new batch-mode of plotting, which is driven by data from a disk file rather than the keyboard. This is very important for production usage, where the same case may be solved several times with only minor variations. The batch mode allows the user to key his plot commands only once, and reuse the file for the second and subsequent plotting. Function key F2 is the gateway to this service, and Mr. Kizilcay provides a sample file named BATCH.DAT to illustrate the important new feature.

The OS/286 version (A.I. Architect's DOS extender for Intel 80286-based computers) now is being used by two consulting companies having computers with 4 Mbytes of extended memory. EMTP tables are sized at four times default dimensioning. Technical support has been provided by the first production user, Prof. Tom Leskovich of Penn State (the Beaver campus in Monaca, Pennsylvania). Whereas three months ago there was some concern about compatibility of ".PL4" plot files with MS-DOS plotting programs, the good news is that no known problems exist today. That is, ".PL4" files created by the OS/286 version can be plotted using either Mustafa Kizilcay's PCPLOT program or "TPPLOT" or "WINDOWPLT" (see ATP Rule Book, Section I-L).

A different transients program named EMTDC is said to have the following characteristics: "With multiple non-linear surge arrester elements closely coupled in the network model, severe numerical errors can result from their interaction. An iterative procedure provided a satisfactory means to eliminate any numerical stability problems due to modeling multiple arresters in a dc pole." This quotation comes from page 5 of a paper presented at a CEA conference in Toronto, Ontario (Canada) during the week of March 12-16, 1989. The authors are N. L. Diseko, G. D. Irwin, and A. Lee of the Manitoba HVDC Research Centre and R. L. Vaughan of IREQ, and the paper is entitled "Performance assessment of metal oxide gapless surge arresters from hvdc systems." BPA EMTP developers and users would like to hear from anyone who understands what the problem is. With EMTP, whether it be BPA's or ATP, ZnO surge arresters are solved as a coupled system. While it is possible that Newton's method might fail sometime, "severe numerical error" should never be a concern. Is it possible that EMTDC does not have or use multiphase compensation the way EMTP does?

Subscription forms for this newsletter should be mailed to Richmond rather than to Portland. The user group in Portland has received a few copies, which must then be forwarded to the Editor in Richmond. Time and effort are saved if subscription forms are mailed directly to Richmond.

Defense of the meaning of the name "EMTP" has been necessary in recent months, unfortunately. The most recent example of misuse occurred in a paper that was presented at the 1989 IEEE PES Winter Meeting in New York City. This is paper number 89 WM 043-1 PWRS, entitled "Adoption of Electromagnetic Transients Program (EMTP) on Personal Computers," by R. Natarajan and David B. Gentzler. As explained in more detail in the March issue of *EMTP News* (see pages 18-20), the Can/AM EMTP User Group recently submitted a formal discussion of this paper to IEEE Headquarters in New York. For more details, see the March issue of *EMTP News*. The first two paragraphs of the IEEE discussion follow: "The authors have converted a small transients program to a personal computer, and called it EMTP. Two objections must be made: 1) EMTP is a large program, not a small one, and 2) the real (the big) EMTP already is widely used on personal computers.

The program used by the authors is scarcely a shadow of production-grade programs that today are used widely by the power industry under the name of EMTP. The magnitude of the discrepancy in size and sophistication is revealed by close scrutiny of the figures in Section 3.1. To be contrasted with the 140 Kbytes mentioned for the program used by the authors are 2620 Kbytes for the public-domain EMTP of BPA. The ratio here is more than 18 to one! The authors may be using a 'transients program,' or an 'electromagnetic transients program,' since both of these terms generally are understood to be generic. But they certainly are not using an 'EMTP' version as most in the industry understand this name."

DOS Extenders Promise Virtual Memory for 80386

Minimal 80386-based computers might provide quality support for EMTP soon. Previously, the only unconstrained alternative for the 80386 was provided by Unix, which required more RAM and a bigger disk than many entry-level computers could support. Now there is hope for a DOS extender that includes the highly-desirable attribute of virtual memory management. This should be ideal for 80386-based computers having less RAM and smaller disk drives (e.g., 2 Mbytes and 40 Mbytes, respectively).

The first report of this exciting possibility was carried in the March issue of *EMTP News*. Pages 4 through 6 contain an article entitled "Salford DOS extender promises virtual memory management for ATP EMTP on 80386-based computers." The author is Mr. Chun-Heng Chiang of Taiwan Power Company (Taipower, located in Taipei, Republic of China). User of an 80386-based computer (Acer) that is manufactured locally in Taiwan, Mr. Chiang has been experimenting with a new FORTRAN compiler from the University of Salford in England. Although today the Salford compiler can page only code (not data), the extension to full virtual memory management should be available by early May of 1989.

In the United States, Mr. David Szymanski is leading the EMTP way with further investigation of the exciting research that began in Taiwan. But rather than use the Salford compiler, Mr. Szymanski deliberately has chosen a different, competitive product from a company closer to home. As should be reported in the June issue of *EMTP News*, Mr. Szymanski already has obtained correct solutions to some meaningful test cases that clearly require virtual memory management. EMTP execution has been successful using as little as 1 Mbyte of extended memory! Except for missing SPY (about 10K lines of FORTRAN), this is for a complete (unsegmented) EMTP without overlaying, with tables sized at two times default dimensions. This certainly proves that paging is working. But some problems remain. Not all test cases yet execute correctly, and the operations of compiling and linking remain fragile (some compiler options are usable whereas others produce erroneous results).

About the Salford software, Mr. Chiang reported extremely fast EMTP compilation on his computer in Taipei: 5 minutes and 53 seconds for the entire program. No workstation or minicomputer has ever come close to

such record performance. The speed of subsequent linking was less spectacular, but nonetheless fully acceptable: 3 minutes and 17 seconds. Those in the United States who are interested in such software for the 80386 are advised to contact Salford's American representative, who is:

Richard Suraci
OTG Systems
P. O. Box 5250
Scranton, Penna. 18505
Phone: (717) 343-8320
FAX: (717) 343-8200

Special User Group Connections with China

The Canadian/American EMTP User Group has formalized two special EMTP connections to China during the past nine months. As shall now be explained, these special connections represent exceptions to the general rule that foreign EMTP user groups have access to ATP information by special, free membership in LEC.

The general treatment of foreign EMTP user groups was explained in the preceding issue of this newsletter. See paragraph two in column two on page one of the January, 1989, issue. India, Latin America, Japan, and Australia (including Singapore) are all being serviced by special, free membership in LEC. But not China, which is a special case.

ATP developers in Portland have had special EMTP connections with Chinese for years. These began with Mr. Ma Ren-ming of Wuhan, China, who worked so creatively on EMTP development at BPA in Portland between 1982 and 1985. Since then, Mr. Li Jin-gui and Ms. Yang Min-ying of Peking, China, have worked on EMTP development at BPA (for two years and one year, respectively). More recently, Mr. Chun-Heng Chiang of Taiwan Power Company has connected the MS-DOS version of ATP to Chinese language, as reported in *EMTP News* four months ago. An interested reader is referred to the article entitled "Japanese and Chinese languages connected to ATP version of EMTP," which appears on pages 31-39 of the December, 1988, issue of *EMTP News*. Since then, Mr. Chiang has pursued his promising experiments with of a DOS extender that should offer virtual memory management for Intel 80386-based computers (see summary elsewhere in this issue). Obviously, the EMTP communication with China has been facilitated by the Chinese language fluency of Dr. Tsu-huei Liu. Chinese can communicate with EMTP developers in Portland easier than with developers in Leuven. As a result, whereas other foreign EMTP user groups joined LEC in the last half of 1988, Chinese continue to be provided with EMTP service directly from Portland. This is by mutual agreement of all parties concerned, including LEC.

Licensing of Chinese for ATP use is by means of the same ATP "AFFIRMATION" as used for ATP users in the USA and Canada. The text has been translated to Chinese language, however, and following the approval in Taipei or Peking, there must be approval by the Can/Am EMTP User Group, too. Distribution must be free of all charge, too.

Although both sides agree that there is just one China, long-standing political differences between Taipei and Peking have necessitated two separate EMTP user groups. The first, providing free EMTP distribution for Taiwan only, is the Republic of China EMTP User Group, which was finalized during the fall of 1988. As reported a month ago in *EMTP News* (see the final paragraph of Mr. Chiang's article), this is headquartered at Taiwan Power Company in Taipei. The second, providing free EMTP distribution for the remainder of China (i.e., for so-called "mainland China"), is the Chinese EMTP User Group, which is headquartered in the Ministry of Energy in Beijing (Peking).

ATP Benchmarking of RISC Microprocessors

The importance of RISC (Reduced Instruction Set Computation) Microprocessors was explained in the March issue of *EMTP news*. See the article by David Szymanski entitled "Refining Unix support of ATP EMTP for Intel 80386". The Motorola 88000 has already been integrated into products that have been offered for sale by several vendors including Data General, Tektronix, and Motorola itself. With entry-level ratings of 17 MIPS (million instructions per second), these new workstations promise a quantum leap in performance over present day CISC (Complex Instruction Set Computation) microprocessors. For those unfamiliar with MIPS, the original DEC VAX-11/780 was rated at about one MIPS and Motorola 68020 and Intel 80386 workstations are typically rated at about three MIPS. Clearly, the microprocessor revolution is continuing, with no end in sight.

The first RISC machine to be benchmarked using the EMTP is offered by DEC (Digital Equipment Corporation). The DECstation 3100 has a detached monitor and keyboard, with the system unit being of typical size for any modern personal computer: 18 inches wide by 16 inches deep by 4 inches high. But what is inside is quite atypical, particularly for DEC. The central processor is a high-powered RISC chip manufactured not by DEC but rather by MIPS Computer System, Inc., of Sunnyvale, California. This new workstation from DEC runs only Unix (i.e., the VAX/VMS operating system is

not available). As should be reported in the June issue of *EMTP News*, the MIPS workstation offered by DEC is very fast. For EMTP simulation, this little desktop computer easily beats the DEC VAX 8650 (which two years ago sold for about $400K, typically)! Recall that one year ago those Weitek-supercharged SUN workstations were reported to simulate at about 1/3 of VAX 8650 speed (see W. Scott Meyer and Tsu-huei Liu, "Weitek and Motorola microprocessors speed ATP simulation," *EMTP News*, June, 1988, pages 4 and 5).

IBM has offered a RISC-based Unix workstation for several years. Named RT PC, this unit has not received much EMTP attention until now. Although not a best seller, many IBM computer establishments have purchased a few, and there always has been more than the normal interest because of the RISC architecture. There was one IBM RT PC at the front of the computer laboratory during the EMTP short course at the University of Florida in Gainesville. Well, a good cooperating contact finally has been located, and ATP EMTP FORTRAN for RT PC was supplied on April 1st. It is hoped that initial results will be available soon (to be reported in *EMTP News*, of course). There also should be news about IBM's plans for the future of Unix and RISC. Compared with RISC offerings from Motorola and MIPS, the present-day RT PC looks very weak, indeed. Rumor has it that IBM will be taking a big step forward, but no details have yet been announced.

Free EMTP Theory Book Available from BPA

Every serious EMTP user should have a copy of BPA's 600-page EMTP Theory Book on his bookshelf. After all, it only costs the price of a postage stamp to mail the written request for this public-domain document that was paid for wholly by BPA. A few more details were given in the September issue of the newsletter. Most important of these is that the offer is limited to the United States and Canada (others in the world are advised to contact their national or region EMTP user group), with only one copy per company or university. Apparently many readers either did not see the announcement in the first issue of the Newsletter (September, 1988), or have procrastinated. An amazing 33 requests have been received and filled since then. Well, no doubt some readers still are unaware, so the announcement is being repeated. Written requests (yes, FAX would be acceptable) should be sent to:

> Dr. W. Scott Meyer or
> Dr. Tsu-huei Liu
> BPA, Route EOHC; Floor 4, S-14
> P. O. Box 3621
> Portland, Oregon 97208
> U.S.A. Voice: (503) 230-4402
> FAX: (503) 230-3212

From the Editor's Desk

The short course at the University of Florida provided an excellent opportunity for EMTP users to exchange information. Unfortunately this type of gathering occurs only several times each year. The Can/Am User Group and the newsletter can help fill the void for those users needing assistance. The newsletter mailing list is now over 50 members strong and there is a great deal of experience and variety of interests that can be utilized by all members of the user group. Dr. Meyer and Dr. Liu spend a large amount of time preparing information for the newsletter. However, much of what they report is related to new EMTP/ATP developments. I would like to see the members of the user group become involved in the newsletter by sharing their experience with other users. Members should feel free to contact me regarding any information that they would like to report to the rest of the group. Remember, what may seem a trivial task to one user may be a major stumbling block to another.

As was mentioned in the last issue of the newsletter, there would eventually be a deadline after which only registered subscribers would continue to receive the newsletter. Well, that day has arrived. This will be the last issue of the newsletter that is mailed to the original mailing list, which was supplied by Dr. Meyer. If you wish to continue to receive the newsletter, a subscription form must be returned by the next issue (near the end of July). Those members who have already returned a form need not send another, and any registered ATP user may apply for subscription at any time by contacting me.

Questions, comments, and subscription forms may be sent to:

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Reminder :

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If you wish to continue to receive the CAN/AM EMTP Newsletter be sure to return this subscription form.

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