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# Can / Am EMTP News

Voice of the Canadian / American EMTP User Group

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## Salford FORTRAN Compilers

The symbolic directory name [] was introduced for \$INCLUDE use in the October, 2001, issue, and is mentioned for HIGH ORDER PI CIRCUIT ( HOPC ) use in the July, 2002, issue. But why not other uses of file names, such as the \$OPEN statement? No good reason. The desirability suddenly was realized as DC-46 was

changed to use DC45WIDE.011 (see mention elsewhere). So, Salford code was enhanced to provide such support on December 14<sup>th</sup>, when DC-46 was changed again. Unfortunately, the new service is installation-dependent, so will become universal only after CIMAG2 for other versions are changed correspondingly.

## Fortran 95 from Lahey Computer

KIZILCAY F-DEPENDENT ( KFD ) elements were variably dimensioned for F95 as explained in the January, 2001, issue. As stated therein, the 4<sup>th</sup> subcase of DC-23 illustrated use. True. However, what DC-23 failed to demonstrate was *lack of use*. That high-order KFD data from Ricardo Tenorio of ABB in Vasteras (see mention in the January issue) had no such LIMITS declaration preceding the first KFD data, and execution promptly died after reading the first card of KFD data. Without the LIMITS declaration, tables had not been created, so could not be used to store incoming data, obviously. This was prior to November 19<sup>th</sup>, when the F95 logic was corrected. The F77 logic never was a problem, and should not be changed. In order to confirm the correction, the LIMITS declaration of DC-23 has been moved from the 4<sup>th</sup> to the 6<sup>th</sup> subcase, and the data remains universal.

Quadruple precision (128-bit) computation solved the initial stability problem of Ricardo Tenorio of ABB in Vasteras (see mention in the January issue). This was November 19<sup>th</sup>, when your Editor and Dr. Liu reported: *"Increasing the precision did stabilize the simulation. Whereas 64 bits became unstable between 10 and 15 msec for all 4 versions, 128-bit Lahey is stable through 1.0 sec. This was for dT = 55 usec. ... Orlando Hevia first*

*suggested use of quadruple-precision F95 Lahey. This seems to be the solution. We will attach the Lahey KF4.DAT and .LIS files showing simulation to 1 sec."*

The 7<sup>th</sup> subcase of BENCHMARK DC-23 was added November 26<sup>th</sup> in order to demonstrate, using 64-bit Salford EMTP, the effect of time-step size DELTAT on KIZILCAY F-DEPENDENT ( KFD ) modeling. New data from Orlando Hevia was added after the former 7<sup>th</sup> and final subcase became the 8<sup>th</sup> (because of \$STOP, it must be last in order for the solution to remain unchanged). Some 25 lines of comment cards document changes to the screen plots as dT is varied between 1.9 and 3.0 microseconds. The chosen dT = 2.0 usec is interesting because for some unknown reason it is an island of stability surrounded by instability (both 1.9 and 2.1 usec are quite non-sinusoidal during the first 40 msec, and obviously are growing exponentially during the second 40 msec. For dT = 3.0 usec and above, everything looks sinusoidal to the eye, as it should. Note that order is not that high (six), but data is very simple. There can be no confusion as to the cause of the distortion (initially) and finally instability (below dT = 2.0 usec). Your Editor prepared a series of 12 stacked subcases to demonstrate the effect as dT decreases from 3.0 usec to 1.9 usec in steps of 0.1 usec. While interesting for 64-bit salford, the show was boring for 128-bit Lahey because all of the solutions were identical and sinusoidal as far as your Editor and Dr. Tsu-huei Liu could see from the screen plotting. A final note is about data. Your Editor originally had hoped that Ricardo Tenorio's data named KF4.DAT could be used. Unfortunately, as so often is the case for data of commercial consultants, this was secret. But Orlando Hevia was able to take other, public data from Mr. Tenorio, and simplify it. Finally, your Editor took 1/3 of this (a single phase was enough to demonstrate the problem). In the end, there are no regrets. Very small and simple data demonstrates minimum step size very clearly.

## News from Outside USA & Canada

*"Easy ATP installer" was the "Subject:" of an announcement from Dr. Hiroshi Arita, the JAUG Chairman. Dated November 3<sup>rd</sup>, this contained writing from Dr. Hajime Urai of the Hitachi Ltd. Power & Industrial Systems R&D Laboratory. This summarizes the contribution: "I would like to introduce a valuable project in Japan. This aims at creating an easy-to-use installer program for ATP and related software. ... JAUG supports it. This installer is published on the following URL ... The same password ... is required to access."*

*"Black market for software is sidestepping export controls" is the title of a New York Times story dated December 2<sup>nd</sup>. Recall your Editor's comment about Iran and Canada (EMTDC) in the July, 2001, issue. Well, listen to this: "A black market has emerged for scientific and engineering software powerful enough to fall under United*

*States export restrictions. ... Much of the specialized software cannot be exported legally ..." Yet, it is being sold on the Internet, and it sounds as though the U.S. government is powerless to enforce its own export laws. Consider this example: "The illicit copies of the software from Intelligent Light, which in licensed versions typically sells for \$12,000, was being sold by Chinese entrepreneurs for \$200. The posted advertisement for the wares promised that a 'step-by-step install guide and crack file make it easy to install and use!' Which means that anyone with a modem and a little cash can evade the export control rules, even those that apply to prohibited countries." If a company such as Intelligent Light complains to the U.S. government, what happens? Typically nothing. Such companies "often find themselves frustrated -- whether because the United States government is reluctant to crack down on emerging trade allies like China or because software piracy over the Internet is almost impossible to stop, even when there are attempts to do so." Of course, lack of a price protects ATP. The profit motive is removed.*

Diamonds might supplement gold as a fuel for hawala (see the October issue). *"Report says Africans harbored al Qaeda"* is the title of a *Washington Post* story dated December 29<sup>th</sup>. The story, filed from Europe, has subtitle: *"terror assets hidden in gem-buying spree."* Written in Antwerp, Belgium (*"where 90 percent of the world's diamonds are cut and polished"*), the story begins: *"An aggressive year-long European investigation into al Qaeda financing has found evidence that two West African governments hosted the senior terrorist operatives who oversaw a \$20 million diamond-buying spree ..."* This goes on to summarize *"an elaborate plot that began in 1998 to hide substantial terrorist assets in diamonds. ... European and Latin American investigations also found evidence that a group of people buying diamonds on behalf of the terrorists were simultaneously attempting to procure sophisticated weapons, such as missiles that could shoot down aircraft ... Investigators have been unable to trace the diamonds since they left Liberia and Burkina Faso."* Unlike gold, diamonds have the disadvantage of being traceable, of course. But this would be only if individual stones had been catalogued ahead of time. Once again, the money launderers seem to be at least one step ahead of all police. The story is full of names, dates, and dollar amounts as well as gaps (missing details).

Kazaa is the name of improved file sharing of the Napster variety --- an example of the *Undernet* as mentioned in the July, 2000, issue. Napster was easy to shut down because it was the creation of a legitimate business in the USA. But Kazaa is a more elusive target. Recall the prediction that *"it is already too late"* (to halt such unauthorized sharing). Well, a *Washington Post* story dated December 21<sup>st</sup> seems to confirm this. The title is: *"File swapper eluding pursuers."* The story, filed from Estonia, begins with a picture of *"one of the two Scandinavian businessmen who conceived Kazaa."* This guy describes the Internet as a *"global hard drive."* Listen

to this summary of Kazaa success : *"the oddly named product has become the most popular online file-swapping system in the world. Roughly 160 million people have downloaded the software, primarily to trade music, TV shows and movies over the Internet. At any given time, more than 3 million people are running the program, double the number that Napster had at its peak."* So, the entertainment industry is in hot pursuit. Or, it thought it was: *"But going after Kazaa is proving more difficult. That's because Kazaa is a multinational creation. The three young men who developed the software hail from Estonia. They were commissioned to do the work by a company in the Netherlands. That company has since sold the software to another based in the Pacific island nation of Vanuatu, whose executives work in Australia. Filing suit against Kazaa, therefore, has forced the entertainment industry to negotiate the legal rules of no fewer than five countries on three continents."* Remember when a French court tried to control American Yahoo (see the April, 2002, issue)? Well, that involved a mere two countries. Already an American court has been frustrated by courts in Estonia and The Netherlands --- just as an American court frustrated a French court a year ago. Do not look for final resolution any time soon. Meanwhile, the file sharing continues.

A moving train was the unusual source for E-mail from Mustafa Kizilcay of FH Osnabrueck in Germany. Dated January 24<sup>th</sup>, Prof. Kizilcay wrote: *"I am now in the train from Berlin to Osnabrueck, and I am writing this message. Using my PDA (Palm) and mobile phone, I hope to send it to you before arriving at home."* Needless to say, your Editor expressed interest, and additional details were received 4 days later: *"Yes, the operation was successful in a moving train. Both PDA and mobile phone have an infrared interface. The mobile phone acts as a modem. On my PDA, an e-mail program (WebToGo) is installed like Outlook or Pmail. It has incoming and outgoing folders. For data transfer, GPRS technology is used, and this allows a high speed Internet connection (up to 115 kBit/s). The cost of Internet access is based on the amount of data transferred, not on the connection time. This is an advantage since one can keep the connection open, and at the same time receive phone calls. There is also an Internet browser on PDA."*

## More about the Internet and E-mail

Alcatel was mentioned in the October issue. Alcatel is yet another large company that has been financially troubled during the continuing depression of Internet-related business (see *dot-com stocks* in the July, 2000, issue). A story posted at *The Register* on September 20<sup>th</sup> is entitled *"Alcatel to shed 23,000 jobs."* Paragraph 2 explains: *"This massive round of job cuts comes on top of the 10,000 or so announced in June and will bring Alcatel's headcount down to 60,000 by the end of 2003."* Headquarters is understood to be Paris, France. The *"About Alcatel"* button at Web

page [www.alcatel.com](http://www.alcatel.com) claims: *"In 2001, Alcatel became the world's leading supplier of telecommunication infrastructures and was a market leader in high-speed Internet access and optical networks."* This latest cut does sound serious. However, Alcatel might be surviving better than American competitor Lucent, which once was part of Ma Bell. *"Lucent throws 10,000 more overboard"* is the title of a story posted at *The Register* on October 14<sup>th</sup>. It seems *"Lucent ... expects to employ only 25,000 workers by the end of 2003 ... that means two in three workers will have left their jobs since 2001, when it employed 106,000."* In comparison, global turmoil of the electric power industry seems negligible. Internet-related companies have been decimated since the bubble of technology stocks began deflating during late March of year 2000.

Junk E-mail from Nigeria has been mentioned in several preceding issues. About magnitude of the scam, the January issue mentioned *"hundreds of millions of dollars."* While impressive and serious, this estimate may be low. A story in the *Detroit Free Press* dated 19 April 2002 states: *"Globally, experts put the suspected annual take at \$1.5 billion. ... The State Department says 419 scams first surfaced in the mid-1980s when a collapse in the price of oil, Nigeria's biggest source of foreign income, led well-educated, English-speaking professionals to turn to crime."* But why Detroit? Because this large American city in Michigan is the location of a recent high-profile victim. *"Law firm out \$2.1 million in African fraud"* is the unlikely title of another *Free Press* story. Dated September 21<sup>st</sup>, this tells of a con artist who *"offered to pay a \$4.5-million fee to a 59-year-old Rochester Hills woman if she would help him transfer \$18 million from South Africa ... But what Ann Marie Poet did next gave new meaning to the so-called Nigerian scam letter fraud, the FBI said. The FBI said Poet, a bookkeeper for a small Berkley law firm, embezzled \$2.1 million from the firm's accounts between February and August, after scam organizers persuaded her to wire huge amounts of money to bank accounts in South Africa and Taiwan to expedite the transfer of money to the United States. ... Poet was indicted this week by a federal grand jury in Detroit on 13 counts of wire fraud. ... The alleged scam ended Sept. 4, when the Olsman Mueller & James law firm was told that a \$36,000 settlement check to a client had bounced. ... Poet had worked for the firm for nine years" and "is married and is very active in her church."* Yeah, right, as though God was going to protect her (joke)! But what about the stupid bank? *"Olsman said ... a manager at a Southfield branch ... approved all of the wire transfers even though Poet was not authorized at the bank to make such transfers. Bank officials declined to discuss the specifics Friday."* Incredible. It is absolutely incredible what the Internet hath wrought (Morse-speak).

*"ATPGROUP.COM -- USD \$560."* This was the first line of a sales message that was received by Deputy EEUG Chairman Laszlo Prikler on October 10<sup>th</sup>. Your Editor, satisfied with **emtp.org**, can not imagine why any ATP developer would have any more interest in this group

nonsense than in the preceding *info* nonsense (see atp.info in the January issue). The price is interesting, however. \$560 is not much. This seems to be yet another sign of how badly Internet commerce has collapsed during the past 3 years. Why is the name atpgroup now being sold? The pitch is this : *"After years, the registration ... was not renewed and this domain became available ... we have been approached to market this domain name ... As a result, atpgroup.com is now available from us for immediate transfer."* Right, send your money immediately! But who is the *we*? The spam is terminated by *"Lara; Marketing; ThePortal.net"*

Cable is preferred to DSL by an estimated 86% of the persons who have a choice. I.e., the telephone company loses once again if and when there really is consumer choice. This from a story at *The Register* that was posted on October 25<sup>th</sup>. It seems Blueyonder is the *"broadband outfit"* of Telewest, and its research concluded that *"given the option of cable or ADSL, 86 per cent chose cable."* This seems to be in England, however, where the telephone company is British Telecom. In the USA, the situation is more confused because AT&T, the original monopoly telephone company (Ma Bell), is a major supplier of cable access. By conventional mail, your Editor continues to receive colorful advertising from AT&T Broadband.

Both fee-mail and MS Hotmail were mentioned in a paragraph of the October issue. One change noted during mid-November is this: what once was a single Hotmail advertising line has become two, and the message no longer is fixed. Your Editor's cousin Anne is a user, and her message dated November 15<sup>th</sup> ended as follows: *"Tired of spam? Get advanced junk mail protection with MSN 8. Http: // join. msn. Com / ?page = features / junkmail"* As explained in the October paragraph, free Hotmail users have problems with spam. So now MS advises that the problem be solved by sending money? Two days earlier, the advertising for MSN 8 did not mention spam, but it unmistakably **did** involve money : *"Add photos to your e-mail with MSN 8. Get 2 months FREE\*. ..."* Presumably this MSN 8 is comparable to, or competitive with, that premium Yahoo service mentioned in the October issue.

*"Europe bans spam"* is the start of a paragraph in the preceding issue. As part of pre-publication review, Orlando Hevia was inspired to observe the following in E-mail dated December 1<sup>st</sup> : *"I have a free program named BSM18 (Bounce Spam Mail, by Albert Yale). This program sends a message to the spammer saying that xxxx@yyyy is a non-existent address. After the spammer's program receives such messages two or three times, it will delete you from its list. I know this might sound too simple to be true, but I used BSM18 with success on some recurrent spam."*

sopron@pannoniahotel.com is the address of the first hotel to which your Editor plans to send E-mail. This address was provided by Laszlo Prikler in E-mail dated December 5<sup>th</sup>. Of course, the hotel is in Sopron, Hungary.

This is the Best Western Pannonia Med Hotel, which is the site of the year-2002 EEUG meeting. Yet, Prof. Prikler did indicate an alternative to the hotel address: *"I can read my own e-mails from the hotel ... using a notebook PC. However, connection speed is not suitable for large files (36K modem only)."* Your Editor was impressed: *"Plenty fast. At this late date, we are just talking about words: questions and answers. Even 9600 baud would be adequate. Of course, it remains to be seen how the hotel notifies you, and passes a message to you ..."*

*"A billion a day"* is said to be the junk E-mail capacity of a spammer in suburban Detroit, Michigan. *The Register* revealed this interesting statistic in a story dated December 11<sup>th</sup>. The title was intriguing: *"Spammer gets junk mailed."* It seems *"a US bulk emailer is threatening legal action after so-called 'anti-spammers' signed him up for lots of junk mail"* of the snail-mail variety. Mike Wendland has been writing about the story for the *Detroit Free Press*. Size of the operation is documented in his column dated November 22<sup>nd</sup>: *"You might call it the house that spam built. Alan Ralsky's brand new 8,000-square-foot luxury home ... has been a busy place this month. ... In the lower level of the home, tucked away in a still-unfinished room, will soon be an array of 20 different computers -- the control center of what many believe is the largest single bulk e-mailing operation in the world. ... Racks of computers instruct scores of other computers halfway around the world to fire off millions of e-mails every day."* It seems that Verizon (the telephone company) had sued under *"Virginia's tough anti-spam laws,"* and settlement had forced the guy to revise his business plan: *"I've gone overseas,"* is Ralsky's explanation. *"I now send most of my mail from other countries."* Where overseas? *"The computers in Ralsky's basement control 30 more in Canada, China, Russia and India. Each computer, he said, is capable of sending out 650,000 messages every hour -- more than a billion a day -- routed through overseas Internet companies Ralsky said are eager to sell him bandwidth. All this is bad news to the anti-spam movement."* Indeed. According to a critic, *"He uses hundreds of domains (Internet addresses) to send his spams."* A London-based expert of the Spamhaus Project explained: *"There are probably about 150 major spammers who are responsible for 90 percent of all the spam everyone gets. ... Ralsky has been the biggest of them, and is certainly still in the top five."* How big is the problem with spam? *"Unsolicited messages now account for 36 percent of all e-mail, up from just 8 percent a year ago, according to Brightmail ..."* So what is Ralsky's background? How did the guy go from rags to riches using spam? Listen to this history : *"In 1992, while in the insurance business, he served a 50-day jail term for a charge arising out of the sale of unregistered securities. And in 1994, he was convicted of falsifying documents that defrauded financial institutions in Michigan and Ohio and ordered to pay \$74,000 in restitution. He lost his license to sell insurance and he declared personal bankruptcy. But in 1997, he sold a late model green Toyota and used the*

money to pay back taxes on his house and buy two computers. A friend had told him about mass marketing on the Internet, and he thought it made sense. He bought a couple of mailing lists from advertising brokers and, with the help of the computers, launched a new career." Then there are employees: "One of them, Ralsky's list man, concentrated on finding new names to add to the 250 million e-mail addresses in his database and weeding out canceled accounts." Ralsky seems confident, and portrays himself as an underdog: "There is no way this can be stopped ... It's a perfectly legal business that has allowed anybody to compete with the Fortune 500 companies." Fundamentally, the problem exists because some recipients respond, of course. It is no different from illegal drugs: there would not be supply if there were not demand. Junk E-mail is effective for advertisers, unfortunately. According to Ralsky, the response rate is about one-quarter of one percent. Because E-mail is so cheap, this is enough to make the operation profitable.

"Stealth mass mailer" was mentioned without comment in the April, 2001, issue. The name *stealth* has been seen again --- this time in the writing of a professional spam fighter. Dr. Liu's mailbox at BPA continues to attract messages of the "Nigerian 419 fraud" type (see the January issue), and your Editor generally has followed the advice that a copy should be sent to the abuse @address of whoever provides the mailbox that the spammer uses. Well, December 18<sup>th</sup>, a sympathetic reply was received "From: BigMailBox Abuse Dept. [abuse@bigmailbox.com]" and this provided the following explanation: "BigMailBox.com does not support the sending of junk email. ... By cancelling the user's account, we have also blocked the individual from signing up for this account in the future ... However, as you are probably aware, this person may still send email from external email clients using 'stealth mailers,' which enable the person to disguise their identity and make it look as if the email originates from another email address. A significant amount of junk email reported to us is forged to appear that it originated or routed via our service." Once again, note the explanation that the "From:" address might not be meaningful. This is one reason ATP licensing continues to require signed paper.

Use of "abuse @ address" to fight West African 419 fraud was mentioned in the January issue. Most satisfying was "MSN Hotmail Support [abuse@css.one.microsoft.com]" which replied as follows on January 16<sup>th</sup>: "Thank you for writing to MSN Hotmail. This is Ruby and I am writing in response to the unsolicited mail you've received. I know how frustrating it is to receive unwanted messages in your email and I apologize for any inconvenience this matter has caused you. I appreciate your bringing this matter to our attention. I have closed the account you reported in accordance with the Hotmail Terms of Use (TOU). It is a strict violation of the TOU for our members to send objectionable material ..." This ended with the name Ruby S. of MSN Hotmail Customer Support.

## European EMTP User Group ( EEUG )

"A proposed 1-day short course" was mentioned in the preceding issue. Explanation of the last-minute cancellation can be found in the story about ATP licensing problems.

MS Netmeeting is the name of video conferencing that was mentioned by EEUG Deputy Chairman Laszlo Prikler for possible future use. His E-mail dated December 5<sup>th</sup> explained: "The hotel has such facilities (we have no time to arrange it and I do not know the cost), but technically, it would be easy to connect you on-line. Maybe next year? Netmeeting software makes it possible for you to run Powerpoint in Portland and we project the screen here, and we hear your voice. My wife communicates with foreign colleagues this way. If they can use it, it must be simple." Your Editor did not refuse: "Finally, some incentive to look at Powerpoint, maybe!" Note that this present explanation is an expansion upon the general concept that first was summarized in the October, 1997, issue. Five years after Prof. Prikler's original suggestion of the idea, specific software is mentioned, and it is known to be available at the hotel that will host the year-2002 meeting. This does sound like progress. Yet, one can imagine potential trouble due to the substantial time difference. Such communication typically might be wanted at the opening of a meeting in Europe, which might occur at 09:00 AM. But this time in Central Europe would be midnight at BPA. What if Internet service were not available at that time? For many hours, the BPA computer establishment would be unavailable to attempt restoration. Thus reliability might be a serious concern. G.E. might be able to make this work, but that does not mean that BPA could (read the story about locks on the PPOC-2 building ).

A PDF copy of transparencies (or slides) for projection was another first for your Editor. Time was running short, and Prof. Prikler had advised as follows on December 5<sup>th</sup>: "I will take a notebook PC with me. Acrobat Reader has a full screen show option. I.e., the audience has no way of knowing whether the show is driven by Acrobat rather than PowerPoint." The technology of conferencing advances.

The possibility of European law was discussed in the April, 2002, issue. Recall Dr. Murari Saha of ABB in Sweden had proposed modification from a German-based association to a *European association*. Yet, nothing has happened, so your Editor asked EEUG Chairman Kizilcay why not. The following answer was received in E-mail dated December 5<sup>th</sup>: "The problem is, at present there is no regulation (law) for a European association. Jurists speak about this, but no one knows about it." So it appears that EEUG is on the cutting edge of European evolution (Rush-speak). The European user group will remain anchored in Germany for a while longer, it would seem.

"EEUG has 179 members" is the impressive summary statistic that your Editor noted in list server mail to EEUG members dated December 13<sup>th</sup>. Outgoing EEUG Chairman

Mustafa Kizilcay had made several observations about changes during the past 8 years, and one was about growth: *"The association was founded by me with 11 founding members in 1994. The EEUG had no starting capital. All activities started from scratch, i.e. the office was our working room at home and my wife supported me fully and steadily to set up a well-functioning organisation."* Yes, and readers are reminded not to forget the political uncertainty, either. Although not mentioned in Professor Kizilcay's message, do not forget *"Copenhagen Coup"* as explained in the April, 1994, issue. Powerful and obscure forces in Europe seemed not to want an ATP user group there. Yet, Prof. Kizilcay and his free ATP supporters prevailed, and have prospered since those uncertain early months that followed the collapse of LEC at K.U. Leuven in Belgium (see newsletters beginning with the July, 1993, issue). Of course, the price of ATP was right (commercial competitors do have a problem).

## News About TACS and MODELS

Inverse hyperbolic functions ASINH, ACOSH, and ATANH of MODELS produced wrong values prior to a correction to XPR2 on September 21<sup>st</sup>. The original indication of trouble came from Orlando Hevia of UTN in Santa Fe, Argentina. Two days earlier, his E-mail reported: *"I send you a case from Ferley Castro at UPC in Barcelona, Spain, which I simplified greatly. Data use ACOSH and ASINH (I added ATANH), but the results are 8888.8888 ... Yet, all functions can be found in the MODELS manual."* Yes, this value 888... is the value used by MODELS author Dube to indicate an undefined cell. Your Editor found that it was being assigned within XPR2 where MODELS handles all library functions. It would seem that code dated to a time when Dube was using a compiler (VAX/VMS in the late '80s?) that lacked these library functions. So, rather than end execution, he returned a garbage value? Not good! Upon learning this detail, Mr. Hevia seemed to be even less appreciative than your Editor: *"May be, but the functions are easily programmed, if they are not in the library."* It would seem that no one ever used the functions until now. Or, if someone did use them, he did not look at his answers (GIGO). Anyway, once the problem was understood, correction was easy enough using existing ATP library functions of RFUNL1. To ensure that operation remains reasonable, the three named library functions were added to the otherwise-trivial (single output variable) 3<sup>rd</sup> subcase of standard test case DC-68. Substantial comments document the addition.

RELATIVE TACS DIMENSIONS ( RTD ) had not been used for years. Prior to its addition to the 6<sup>th</sup> subcase of DC-21 for illustrative purposes, this request was broken. The result was a KILL = 1 overflow error message complaining about List 19. Presumably this has been a problem since that addition of TACS table number

9 to variably-dimension the storage of Type-53 devices (see the October, 2001, issue). So, a correction was made to REQUES on November 10<sup>th</sup>, and use was added to the 6<sup>th</sup> subcase of DC-21 in order regularly to verify the continuing correct operation. Otherwise, DC21.LIS was changed inconsequentially (there was a slight expansion of the List-19 usage as documented at the end of the file).

The definition of a series R-L-C branch by TACS began during December as explained in a separate story.

Use of ALPHANUMERIC variables to store and manipulate individual input characters was removed from TACS data input on January 3<sup>rd</sup>. This is the date enhanced OVER2 and GUTS2A entered the UTPF following a day or two of strenuous modification. The average reader probably does not understand the need, so a few words of explanation will be provided. TACS in EMTP dates to 1975 when Laurent Dube developed it as a BPA contractor. Then, some 5 years later, TACS was extended to allow free-format supplemental variables (except for the equal sign in column 11, which was fixed). Data input of this code required the storage and comparison of individual bytes of text. But this was before widespread use of FORTRAN 77 (F77), so the storage and comparison of text was not part of the available language. It could be done, but details were not the same for all computers. That is what gave rise to the ALPHANUMERIC declaration for A6 storage, which then could be translated to whatever was appropriate for the computer or compiler of interest. REAL\*8 was being used for byte-organized machines, as your Editor vaguely remembers. Of course, later, using F77, this could be standardized as CHARACTER\*6. But the use remained wasteful --- using six bytes to store one. There was a lot of such use, with TEXCOL(80) and BTMPBF(80) being the classic examples. To illustrate, consider 2 lines of "M28." vintage :

```
DO 4735 J=1, 80
  4735 BTMPBF(J) = TEXCOL(J)
```

This vector operation is gone, having been replaced by the faster and simpler scalar character assignment :

```
BTMPBF = ABUFF
```

How much faster? Consider Salford DBOS execution under real MS-DOS on your Editor's 133-MHz Pentium at home. The first test involves use of CHARACTER\*6 BTMPFL(80) and TEXCOL(80) whereas the second test involves CHARACTER\*80 BTMPBF and ABUFF. For 4 million operations (2 nested loops of 2000 passes each), 5 or 6 seconds (accurate to one second) is required for the new scalar alternative whereas the old vector alternative required 93 seconds. Case closed. Not only is the new input code simpler and clearer, it also should execute substantially faster. The ALPHANUMERIC storage was inefficient for individual bytes.

User-supplied source code for TACS is provided by a new Type-69 device as explained in a separate story.

## Line and Cable Constants

The previous issue began with a description of the new EIGEN CONTROLS output of CABLE PARAMETERS. Why was such output not provided years ago? Because order then was more reasonable (i.e., it was lower). In the past, EIGEN simply did its job in reasonable time (i.e., a blink of an eye). But those 151 conductors of Ashok Parsotam in New Zealand proved to be more of a challenge. Even using Dr. Liu's 550-MHz Pentium III, both she and your Editor had wondered while watching it whether possibly the computation was trapped in a tight loop. So, diagnostic printout was added to monitor the eigenvalue iteration, and this proved useful enough to become a standard production feature. For weaker computers, such output is important to reassure an impatient user. First tested using Salford EMTP on Dr. Liu's 66-MHz 486 DX2, your Editor noted that about 4 hours were required to produce the first 24 (of 151 total) eigenvalues. This was for data case ASHOK50.DAT --- named because 50 3-conductor, single-core, coaxial cables are involved (151 = 3 conductors \* 50 cables + 1 pipe). Execution eventually **did** end, and Robert Schultz's job timing showed 49060 seconds, which equals 13.63 hours.

EPSLNA is Prof. Ametani's convergence tolerance, and it had fixed value 1.E-8 prior to inclusion in the EIGEN CONTROLS data set. According to Dr. Liu's note in code, EPSLNA began with value 1.E-5 ("Aki's new cp-mode2,for changed it, 6/98"). Of course, as EPSLNA is decreased toward zero, the eigenvalue iteration generally is expected to continue longer, and answers might be slightly different. How much? Enough to be noted in production printout. To illustrate, again consider that 8<sup>th</sup> subcase of DC-27. The very first row of the characteristic impedance matrix [Zc] in phase variables compares as follows :

```
1.E-8: 67.81560 -15.16575 -14.01117 38.72070 ...
1.E-9: 67.81385 -15.16572 -14.00936 38.71894 ...
```

Unless and/or until Prof. Ametani recommends otherwise, however, the default tolerance remains unchanged.

"Akihiro Ametani's old code. Limits = 26 53" is the new interpretation of a CABLE CONSTANTS ( CC ) request as seen many times within the output of standard test case DC-27 beginning September 29<sup>th</sup>. Some days earlier, BPA's Dr. Tsu-huei Liu had observed that lack of visible limits represented a problem for high-order users. Yes, the interpretation of CABLE PARAMETERS ( CP ) always has included the limiting number of conductors, so why should CC lack this important statistic? No really good reason, so your Editor agreed to restructure REQUES and MAIN27 in order that CC be treated comparably to CP. Those just-mentioned values 26 and 53 are parameters LDM and LDN for normal dimensioning (List 31 = 240K words). If a user had turned on diagnostic printout, he would have seen LDM and LDN described as the limit on SC coaxial cables and the limit on the number of conductors, respectively. For the record, the new

interpretation replaces text such as: "Find parameters of cables. Type = 0." In total, the reform has reduced program size slightly. The new uniform structure allowed code to be removed from MAIN23, SUBR26, and REQUES.

A blank line should separate adjacent rows of matrices in CP printout. This was the practical suggestion of Ashok Parsotam in E-mail dated October 16<sup>th</sup>: "*The improvement I am thinking about would make various [Z] and [Y] matrix outputs in CP similar to CC .LIS output. In CC output, each row of the [Z] and [Y] matrices is separated by a blank line which makes the matrix easier to read. It is easier to identify conductors. In CP, each matrix is a continuous set of data and very difficult to identify ...*" Oh yes, it is strange that program developers did not notice this years ago. Of course, for small matrices, there is negligible practical difference. The extra blank is nice for cosmetic (aesthetic) reasons, but as long as each matrix row spans no more than one printed row of 132 columns, there is no confusion. But for high-order data, the difference becomes important. Normally, one might hope to detect the end of each row from blanks on the right of an incomplete, final line for each row. But this was of no use for ASHOK50 because the 150 numbers per matrix row were exactly divisible by the 10 numbers per printed line. Each matrix row required exactly 30 full printed rows (the complex nature contributes an extra factor of 2, note), so there was continuous, uniform printout of 4500 rows of 10 numbers each. The effect was quite overpowering. This was prior to your Editor's addition of 2 lines to CPRINT on October 19<sup>th</sup>. Numbering of the new blank lines is another change. Early that morning, your Editor proposed : "*I do have adjacent rows of matrices separated by a blank line. That was simple enough. But which row is which? Should we add a label giving the row number? I can imagine indenting this within the new blank line. For example ...*" This is what was provided later that same day for 20 or more conductors (two or more complete printed rows per matrix row ) .

Possible omission of the eigenvalue calculation and output of CP was another important extension suggested by Ashok Parsotam in his E-mail dated October 16<sup>th</sup>. Once again, for low order, the difference is not significant. But for high order, the difference might be considerable (e.g., those 13.63 hours on BPA's 66-MHz 486 DX2-based PC). Dr. Liu's note to your Editor dated October 18<sup>th</sup> documents this progress: "*MAIN27.F has changes for blank lines (a little better than yours) and a user-ordered bypass of the modal calculation and output ... To AKIKOM, add KMODE to the block. I edited DC27 and 28.DAT to illustrate use of KMODE. Mingw32 TPBIG was sent to Ashok.*" Yes, DC-27 and 28 have KMODE changed in numerous places from value 0 or blank to unity. This is to keep output the same (except one subcase of 28), now that the flag no longer is hardwired to have value one. For DCNEW-6, however, data was left unchanged. JMARTI SETUP is the one use for which KMODE will be given value unity internally regardless of what the user keys.

Finally, output of the characteristic impedance [Zc] in the phase domain will be correct if and only if KMODE has value unity. For value zero, output will be limited to the labeling. Your Editor explained this to Mr. Parsotam in E-mail dated October 20<sup>th</sup>: "One slight error is the missing matrix for [Zc] in the phase domain. At first I thought that Tsu-huei had misplaced her IF ( KMODE statement, but experimentation indicates otherwise. If I allow output of the matrix, values are wrong. So I believe output of just the labeling is reasonable; it reminds the user that a matrix is missing." Final change October 24<sup>th</sup> : the labeling of missing [Zc] was removed because Dr. Liu did not like it.

"A \$UNITS declaration should precede the punching of branch cards for a Pi-circuit ..." Thus began a paragraph in the October issue, and SUBR25 was mentioned: "this was the most complicated of all ..." Well, a final change was made November 24<sup>th</sup> at the request of Orlando Hevia of UTN in Santa Fe, Argentina. He had been alerted to the problem by Francisco Javier Peñaloza Sánchez of CFE in Morelia, Michoacan, Mexico. This seems to be the first person to complain to developers that your Editor had failed to provide a separating comma between two non-zero power frequencies (one of 3 possible cases) of a \$UNITS declaration. In E-mail dated November 23<sup>rd</sup>, Mr. Hevia explained that "ATP GNU aborts when it receives the '\$UNITS, 60. 60.' card ..." The following day, your Editor agreed: "Oh yes, if the separating comma is missing, this should be an illegal number for any compiler ... I would not be surprised if all choked on it."

## EEUG Winter Meeting in Sopron

A summary of the annual EEUG meeting in Sopron, Hungary, first was received from Laszlo Prikler. The day after Prof. Prikler's closing workshop (on Wednesday, December 11<sup>th</sup>), E-mail reported a total attendance of 45 persons including representatives of four foreign user groups : 1) Gabor Furst (Can/Am); 2) Akihiro Ametani (Japan); 3) Chul-Hwan Kim (South Korea); and 4) Keith Walshe (Australia and New Zealand). Another exceptional 7 consisted of "1 colleague from the Hungarian Power Companies, 3 professors from our department, and 3 Ph.D. students. A total of 22 papers were presented in ... 6 technical sessions ..."

Your Editor had agreed to assemble a presentation on user-supplied source code, with emphasis on compiled TACS. This was to be co-authored by, and presented by, Dr. Harald Wehrend of SEG in Kempen, Germany --- the industrial-strength user of such capability during years past (see newsletters Oct97 and Jul00). As so often happens, this was yet another last-minute operation. Fortunately, computer hardware, software, Dr. Liu, and the Internet all cooperated; the 31 "slides" reached Messrs. Wehrend and Prikler in time. Prof. Prikler reported the conclusion as follows : "Presentation ... was delayed one day (from

Monday morning to Tuesday morning) to allow Harald more time for preparation. He did his job very well, I think. Your slides were given a brand new PowerPoint jacket, so not only the content but also the appearance of the presentation was pretty good."

The Sopron meeting marked the 8<sup>th</sup> anniversary of EEUG, and for Prof. Mustafa Kizilcay, the end of his second of two 4-year terms as EEUG Chairman. Prof. Prikler reported: "At the end of the last technical session, outgoing Chairman Prof. Kizilcay gave a 15 minute overview (he used the word retrospect) of the last 8 years of EEUG history, then projected your kind welcome note to the audience."

So what new leadership has emerged? Laszlo Prikler was elected Chairman and Dr. Harald Wehrend was elected Deputy Chairman. Other elected officials were Prof. Dr. Friedrich Veuhoff of TFH Berlin, Germany, as Treasurer and Dr. Marek Michalik of Wroclaw University of Technology in Poland as Secretary. Finally, members of the Executive Board were chosen: 1) Prof. Dr. Mustafa Kizilcay of University of Osnabruck in Germany; 2) Prof. Dr. Daniele Menniti of the University of Calabria in Italy; and 3) Mr. Andrea Mansoldo of Pirelli Cables & Systems S.P.A. in Italy.

Internet-related services should not be affected much, from what your Editor can imagine: "Maintenance of the ATP-EMTP-L mailing list remains the task of Mr. Michael Havekost and operation of the [www.emtp.org](http://www.emtp.org) web site will remain under control of the outgoing Chairman Prof. Dr. M. Kizilcay."

How might the location of business change? It is not yet clear. See separate mention of *European law* in the EEUG story. The continuing connection to Germany is confirmed: "The Association will continue its operation according to German law; book-keeping and the EEUG bank account remain in Germany. The first task of the Deputy Chairman and the Treasurer will be to ..."

The workshop Wednesday morning "was attended by 8 persons. Only one of them was a real ATP beginner. Gabor Furst was so kind to support me during the TACS part. The agenda was quite tight, and I had to speak fast to cover all of those many things within just 3 hours."

About the setting for the meeting : "The hotel was perfect. Participants really got 4.5-star service for that 2.5-star price. This was the first EEUG 'winter meeting.' The temperature was quite low (~ minus 5) and we got some snow, too. But it just supported the Xmas feeling of the hotel and the city."

Finally, a word of appreciation for the man who made the meeting possible. In private E-mail dated December 19<sup>th</sup>, Gabor Furst complimented the incoming Chairman : "I very much enjoyed the Sopron Meeting. You should be

*proud of organizing this EEUG meeting single handed, and in a short time, with such excellent results."*

*"Photo album of EEUG Meeting 2002" was the "Subject:" of list server mail dated January 17<sup>th</sup>. The new EEUG Chairman, Laszlo Prikler, used this note to advise meeting participants: "The EEUG Meeting 2002 photo album is now published at the web site of the conference ... You can download high resolution photos by clicking the right mouse button and selecting Save As ... / Save Target As ... Happy surfing."*

## Brain - Damaged MS Windows

*"Bill G's DOS window is troubled by amnesia." This is what your Editor wrote in the January issue. As part of pre-publication review, Laszlo Prikler observed the following in E-mail dated December 1<sup>st</sup>: "Amnezia is true for Win9x windows only. The DOS window of Win2000 is scrollable, and it supports a 132-column display." Yes, Windows users in Portland understand ( see the story entitled "Scrollable MS-DOS windows" in the July, 1999, issue). However, your Editor was neither sympathetic to the claim nor apologetic for his own remark. The following day, he responded: "I am not impressed. More than 20 years later, Bill G still does not do windows acceptably. I was just commenting on this to Tsu-huei a week or so ago. At least Sun Microsystems got this part right 15 or 20 years ago. There were other problems, but at least the Sun windows were unlimited (within available disk space, of course). Bill G's windows are not." Recall the 1999 writing indicates that "a limit of 9999 lines exists" for Bill G's top-of-the-line Windows. Also, performance within this limit seemed poor, as your Editor vaguely recalls.*

MS might eventually need to pay dividends to its stockholders. This was the conclusion of a paragraph in the October issue. Little did your Editor then suspect how quickly MS dividends would materialize, however. Dated January 17<sup>th</sup>, *The Register* posted a story that states: *"For the first time in its history as a public corporation, Microsoft will pay a dividend to its shareholders."* Your Editor next noticed a story by the *New York Times* dated January 17<sup>th</sup>. This has the title: *"In a surprise, Microsoft says it will pay dividends."* Yes, a surprise. But the dividend does not amount to much compared with the size of the MS bank account and income stream: *"The annual dividend payout will cost Microsoft about \$856 million a year. Today, Microsoft sits on a cash pile totaling \$43.4 billion, and its business generates cash at the rate of \$1 billion a month."* Yes, monopolies are cash cows.

*"Experts: Microsoft security gets an F" (F is a failing grade within the American educational system) is the title of a Reuters story found at the CNN Web site. Posted February 1<sup>st</sup>, the story begins: "Computer security experts say the recent 'SQL Slammer' worm, the worst in more than*

*a year, is evidence that Microsoft's year-old security push is not working." So, the cost of doing business with Bill G continues to rise : "The worm, which exploited a known vulnerability in Microsoft's SQL Server database software, spread through network connections beginning January 25, crashing servers and clogging the Internet." MS had recommended patches, but many users had not installed them, it would seem. An ironic twist was this: among the unprotected was MS itself! "Microsoft didn't follow its own advice as executives confirmed that an internal network was hit by the worm." One security expert is quoted as saying: "It took them two days to get out from under it. ... It's as hypocritical as you can get." Well, what about the competition? One dissatisfied MS user stated that he was thinking of switching to Apple Macintosh. We seem to have more printed confirmation of Stu Cook's advice (see the October, 2001, issue) : "A Consumer Reports survey last year found that virus infection rates on Macs are half what they are on Windows."*

## New EEUG List Server

Disguised auto-reply messages are even worse for the list server than normal auto-reply messages. Recall the January issue documented the first instance of an auto-reply message that was submitted to the list server as a contribution. This was from SCE.COM Yes, this was bad. But at least everyone knew what it was. It was overt, so was easily recognized and ignored by moderators. Less obvious are polite acknowledgments of reception. A few had been seen previously by moderators, but meaning was confusing to your Editor. Deputy EEUG Chairman Laszlo Prikler was the first to interpret these meaningfully as disguised auto-reply messages. His July 17<sup>th</sup> explanation to a contributor at maxell.co.jp follows : *"Moderators received 6 messages from you for approval. The content of these messages is shown ...*

*Dear \$B!! (BUser of the \$B!! (BATP-EMTP \$B!! ...  
thank you  
I surely received your email "Three single ..."*

*We must assume that these messages are generated automatically by your mail server as **acknowledgment receipt**. Would you be so kind to deactivate this service on your side for mail delivered to you by the ATP listserver? Until you take the appropriate action, moderators must delete these messages manually, so 500+ subscribers are not bothered with them, fortunately. Thanks for the cooperation."*

Yahoo address ashiddin\_1981@yahoo.com was used for online licensing Saturday, November 23<sup>rd</sup>, but then did not exist the following day? Often enough, free mailboxes might be unavailable because they are full; but that was not the reason given by mx2.mail.yahoo.com (sent mail was returned rapidly). Instead, a "permanent fatal error" was signaled : *"554 delivery error: dd This user doesn't have a yahoo.com account ..."* Registration lines that were of concern included those summarizing geographical location :

City: tmn. universiti

State\_and\_country: skudai, johor.

Not recognizing any of the names, your Editor had requested clarification using the "Reply" button. But, as stated, Yahoo refused the message. Strange.

"More than 700 subscribers ... of the EEUG list server" were mentioned in the January issue. Well, this milestone did not last long. October 25<sup>th</sup>, moderator Laszlo Prikler rejected a proposed contribution as follows: "This question is simple, so I think we do not need to bother the 800+ subscribers." Prof. Prikler went on to provide the new user with detailed information in private.

"Problems with new subscriptions" was the "Subject:" of E-mail from Michael Havekost, Manager of the ATP-EMTP list server. Dated December 10<sup>th</sup>, the following was sent "To: AEUG; CANAM; CAUE; CLAE; IEUG; JAUG; KEUG; SAAUG" as well as EEUG management. "Some chairmen collect new subscribers for a while before they notify me who wants to be put on the list. This has two effects: 1) For some people, there is a huge delay ... and 2) Some e-mail addresses are not valid anymore (because of the long delay). In order to avoid such problems, I would like to ask you, can you please wait no longer than two weeks before you forward new subscription requests." The first point, your Editor understands. But the second? If an address is legitimate, why or how would it disappear within two weeks? Your Editor is confused.

ieee.org is a popular E-mail address that prevents contributions to the EEUG list server. Any such subscriber will receive messages from the list server, but he can not send messages to the list server; he can **not** participate in any discussion. In E-mail dated December 16<sup>th</sup>, moderator Laszlo Prikler explained why. This was in answer to an inquiry from Prof. Lionel Orama at the University of Puerto Rico in Mayaguez : "Yes, you are registered ... The problem is that your registered e-mail address is just a mail forwarding one. You can not produce outgoing e-mails with From: xxx@ieee.org ... The listserv software checks each posting to see whether or not it was sent by a subscriber. The 'From:' address is used for this check. ... Your license status is OK, but you purchased only a one way ticket ... by specifying that @ieee.org e-mail address."

Thank you notes and religious quotations are examples of list server mail that was questioned by moderators late in December. First came a thank you message on December 23<sup>rd</sup>: "I would like to congratulate ..." To the author and other moderators, your Editor responded as follows two days later (the message had not been approved for another reason): "This certainly does involve ATP. I know of no rule that would prohibit such messages. Yet, I can imagine that such messages could become a problem. Moderators might think about the matter. Should 'thank you' messages be permitted? I note that the prohibition on trivial questions would seem not to apply since the present example involves a statement, not a question."

About religion, list server mail dated December 29<sup>th</sup> ended with a 1-line quotation from the Bible (Job 12:10). Although some other moderator approved, Laszlo Prikler later replied to the author and other moderators with technical advice followed by this recommendation about the appendage : "Please deactivate this feature of your mailer when you post to the ATP-EMTP-L list." Privately, your Editor responded to Prof. Prikler : "I agree with you, but do not know where this would be covered by existing rules. Like 'thank you' messages, religious or other non-commercial advocacy could become uncontrollable in a hurry, I can imagine." Prof. Prikler's explanation surprised your Editor: "I did not understand the sentence, and I was too lazy to look for a dictionary ... Was it from the Bible? In that case it might be 'abusive or derogatory language' for someone else. 'use simple wording and avoid local idioms and slang' could be another reason to reject it" Yes, in this case, the English probably was nearly four centuries old (the King James version of the Bible), so the requirement of clear, simple English might be applicable. But such logic would fail if a modern translation were to be used. So probably "abusive language" is the best way to justify the prohibition on religious advertising that seems to be in effect (no moderator was noted to have disagreed with Prof. Prikler's evaluation). If any reader disagrees, he is invited to submit his reasoning for consideration.

"Subscription probe for ATP-EMTP-L ..." first was explained in the July, 2001, issue. Then the October, 2002, issue explained how "Dan Durbak of PTI was inadvertently disconnected from the EEUG list server ..." as a result. Well, soon various subscribers at BPA were warned by the list server of such potential trouble. BPA's Dr. Tsu-huei Liu received her first warning on January 15<sup>th</sup>, and it had "Subject: Probe failure for ATP-EMTP-L." Fortunately, this was just a warning : "Typically, LISTSERV will send you one or more additional probe messages, on a daily basis, to determine whether the failure persists ..." Most important was advice about manual preemption, which was followed promptly: "Assuming you have not been removed from the list yet, you can stop this process by sending the following command ... CONFIRM ATP-EMTP-L This will tell LISTSERV that your account actually does work and that you still want to receive mail from the ATP-EMTP-L list." Observant EEUG Chairman Laszlo Prikler had noticed the BPA problem, and personally had written about it.

BPA's lack of response to probes is deliberate, as first suggested by Gerald Lee, a neighbor on BPA's Van Mall campus. Responding to Laszlo Prikler and EEUG, he wrote: "Spammers want the same thing: good e-mail addresses." In a reply dated January 21<sup>st</sup>, Prof. Prikler did not disagree : "Good point." Suddenly, BPA's lack of response made sense. Your Editor wrote: "The more I think about this, I wonder about the validity of the concept of probing. Remember Mischa in Florida, who tried to send a message to Goldsworthy using a bad address. This

was explained in the April, 2002, newsletter. BPA did not refuse the mail as most services would. At the time, I thought that this was quite strange. But, the more I think about it, spammers would appreciate such service (the return of undeliverable mail). BPA's behavior could be considered a defense against spam." Finally, in E-mail dated January 31<sup>st</sup>, Gerald Lee confirmed his speculation: "I talked to Kevin Dorning" (a recognized name within BPA's computer establishment). "He indicated that our policy is not to respond to probes. Read the new issue of PC Magazine, which has a long article on spam."

## Monte Carlo ( STATISTICS )

Explanation about the DISK subcommand of FIND continues from the preceding issue. This is a continuation of the request for re-simulation by Dan Durbak of PTI.

/OPEN is an optional binary switch related to any \$OPEN or \$CLOSE data card. Such \$-cards to connect or disconnect disk files are common within STATISTICS data (e.g., see DC-24), but they typically serve no useful purpose for deterministic simulation. So, the default choice of handling is this: any \$OPEN or \$CLOSE card will be converted to a comment card, and will be followed by an extra comment that emphasizes the conversion. Yet, this treatment is voluntary. It can be prevented by a /OPEN declaration on the line of the DISK subcommand.

OMIT BASE CASE ( OBC ) is one of half a dozen or so requests that are important for STATISTICS or SYSTEMATIC data, but which have no significance for the re-simulation of any particular energization. For a complete list, see comments at the end of the 5<sup>th</sup> subcase of DC-48. While such requests could have been converted to comments, this was not done. Instead, OBC and similar requests simply are destroyed (not passed through to the SHOT\*.DAT output file) .

/MEMSAV is an optional binary switch related to integer miscellaneous data parameter MEMSAV. In the absence of such a request on the DISK subcommand line, columns 49-56 will be blanked. This is because positive MEMSAV might have considerable value for data that involves STATISTICS (e.g., see use in DC-24 or 40), but it is unlikely to have value for the re-simulation of any particular energization. Yes, the user is allowed to dump program tables at the end of the simulation, but he must make such an explicit request on the DISK subcommand if this is his desire. DC-40 provides an illustration (note that value zero is passed through rather than being blanked).

Text of DICTAB was overhauled at home on October 13<sup>th</sup>, as your Editor continued to be locked out of work after normal working hours (see explanation involving PPOC-2 in the preceding issue) . Text of the DISK command was removed from code, and all messages were

ordered naturally. So, a new KILLCODE ( BLOCKD51 ) is required.

## ATP Licensing Problems

MODELS author Laurent Dube failed to sign an ATP licensing agreement when asked to do so around the end of October. This surprising development caused the cancellation of the proposed 1-day short course that was to have followed the annual EEUG meeting. The EEUG story in the January issue quotes from Prof. Prikler's list server announcement, but this does little to explain why. More detail can be found in a prior explanation to the EEUG Executive Board (EB) earlier that same day. Having "*Subject: EEUG course in Sopron (canceled)*," this message from Deputy Chairman Prikler included the following summary of events after minor grammatical correction: "2) As a very last measure I suggested to have an ATPDraw // MODELS / TACS course as members requested in Bristol. ... the proposed teachers (Dr. Hans Kr. Hoidalen and Laurent Dube) were contacted by me on a personal basis and they accepted the invitation to the course faculty. 3) I expected that Laurent Dube as EEUG honorary member fulfills the requirements to be a faculty staff member (having been ATP licensed as required by Can/Am form letter). He already gave such a course in '95 in Hannover and nothing has changed in his EEUG membership status, as far as I know. Unfortunately neither the EEUG Chairman nor the Can/Am EMTP User Group Chairman was in a position to confirm Laurent's ATP license status. What I got from Scott was a simple advice: 'be sure to have his signed license'. 4) To short this issue out, I asked Laurent to file a new ATP license application on-line at <http://www.emtp.org>. As he wrote, he is an ATP developer and he does not need such a 'user license' because he does not use ATP. All the work he has contributed to ATP as a contractor with BPA is in the public domain, and therefore not included in the ATP materials subject to ATP licensing. All teaching he can conduct is about public-domain matters and is therefore not subject to ATP licensing."

Your Editor's reply the following day was long (10 Kbytes), and it supplied some missing information. First, about necessity of the signed license : "*Interesting. Dube claims that he may participate in an ATP short course without being licensed? This is not what our form letter says. This detail is specifically covered. Quoting from a copy dated 5 August 2000: 'all course faculty are subject to the same restrictions as students.' This dates to 1988, as I recall ... Question: did Dube ever read our form letter? I am beginning to wonder. Alternatively, did he try to bluff his way past security?'*"

Dube is assumed to lack a valid, current license to use ATP, readers are warned. What does *current* mean? Your Editor explained to Prof. Prikler: "*A critical date*

would be late 1991. Prior to this date, Can/Am licensing depended on LEC, which closed in 1993. Any licensing prior to 1992 is questionable at best. As a general rule, any such old licensing no longer is honored" because authority for it no longer exists. For the record, Prof. Prikler accurately stated your Editor's prior warning: "be sure to have his signed license." This was not advice (Prof. Prikler's polite term); this was a warning. Your Editor confirmed the importance of EEUG having the signed ATP licensing agreement: "Yes, because I have no reason to believe that we do. Recall Prof. Eissa in Egypt. It was impossible to say that this guy was **not** licensed. All we could say was that no trace was found. So, this is the information that I published (in the October issue)." Note, however, an important difference: When asked to do so, Prof. Eissa **did** promptly submit a license form for the use of ATP at his Helwan University. Mr. Dube has not made any such application for his own use of ATP materials, as far as your Editor can determine.

About that ATP "course in '95 in Hannover," your Editor observed: "This is believable. But it also may be irrelevant. At that time, Dube was performing work on ATP under contract with BPA. He had access to ATP as an agent of BPA. But since 1997 or thereabouts, this no longer has been true. For about 5 years, Dube has been excluded from access to ATP materials, as far as we know. Certainly the Can / Am user group has had no contact with him. Recall the April, 1999, newsletter contained this mention: ... We have had no contact with Dube since then, and no one has supplied a quotable explanation of what happened ..."

The tense of a verb sometimes is critically important, and this is one such case. Prof. Prikler wrote about Dube: "As he wrote, he is an ATP developer ..." Not true. The correct statement would be: "Dube **once was** an ATP developer" (past not present tense). For years, Dube has **not** been an ATP developer. He is a **former** ATP developer. As far as this user group knows, Laurent Dube is **not** licensed to receive or use ATP materials of consequence (other than Can/Am newsletters, which are available to anyone, including persons who are involved in EMTP commerce).

Might it have been possible for Dube to participate in the ATP short course without being ATP-licensed? Your Editor did not deny the possibility. However, care would be required. Recall Prof. Ned Mohan's short courses between 1991 and 1995 as mentioned in the October, 1990, issue. Your Editor advised Prof. Prikler: "This might be workable if Dube were excluded from the class during all other times, and if students were instructed not to communicate any other ATP information to him. Were you prepared to impose such a restriction? I doubt it. Certainly I would not have been, if I had been in your position. We came close to this problem with Tom Grebe in Florida. Recall Grebe was not ATP-licensed, yet he gave an excellent lecture that dated to when he was

(at Virginia Power, prior to movement to Electrotek Concepts). So, the agreement was that Grebe could continue to give his same old lecture as long as he came and went quickly (he participated in no more than 1 of the 5 days). That was during the early '90s. Fortunately, Prof. Carroll found a replacement after a few years. The problem with Grebe was timed out. ... Note the difference between Grebe and Dube: Grebe could not be licensed to use ATP free of charge because his employer was a partner with EPRI in EMTP commerce. What is Dube's excuse for not signing a licensing agreement? I am becoming increasingly suspicious. I am glad I insisted that you have his signature when you first raised the subject. ... As far as we know, Dube is not licensed to use ATP today. It is possible that Dube is licensed, but we have no such information. In the absence of proof of licensing, we must assume the contrary. We are not Prof. Bruce Mork (remember his honor system during all years prior to 2000)."

Your Editor concluded with sympathy for Prof. Prikler, who had expressed regret about cancellation of the course. About being disappointed, your Editor wrote: "I am too. Gabor is too. No question, this is bad. But why not explain the reason publicly? ... I much prefer public disclosure to secrecy. I do believe that you were victimized. But unless this story is told publicly, how is the average ATP user going to know?" The preceding summary has been offered by your Editor in this spirit.

## Comings and Goings

"Obituary: OS/2" is the title of a column by John C. Dvorak of *PC Magazine*. Dated December 16<sup>th</sup>, this memorial to the passing of OS/2 begins like a tombstone: "Born April, 1987. Died Dec. 10, 2002. Cause of death: neglect. Place of death: Armonk, New York. Next of kin: none. Attending funeral: nobody. Official announcement appeared on IBM Website." Of course, suburban Armonk is where IBM has its headquarters following flight from Manhattan decades ago. About motivation and history, Dvorak wrote: "Backing away from OS / 2 was a pragmatic move, since IBM could not compete with Microsoft or its tactics. But how amazing to see a company that large cowed into submission by a bunch of whippersnappers in Washington who already had taken IBM to the cleaners when they convinced the Goliath to let them own PC-DOS at the outset. The death of OS/2 must be humiliating for IBM. The history of OS/2 is a ragged mess. Although begun as a joint Microsoft-IBM project to create the next generation of operating systems, it was apparent early on that the partnership was not going to work. Microsoft had too many coders who hated to work with IBM, and IBM was too slow-moving ..."

For readers who may not remember, your Editor's first reference to "brain-damaged MS Windows" was inspired

by what some MS spokesman once said at a press conference about OS/2 --- that Intel's 80286 was brain-damaged. Recall IBM wanted a new OS for its existing, 286-based PC hardware whereas MS did not want to be handicapped by the burdensome shortcomings of the 286. Along with the New York Bobs, Dvorak was an early advocate of IBM's OS: *"I was an OS/2 fan, and even did a book on the OS for Random House. The OS was generally faster and less prone to crashing than any of the early versions of Windows. But IBM didn't know how to prime the pump and get people to develop for OS / 2. The company stupidly reckoned that if you give developers a good operating system, coders will code for it. Microsoft saw this issue differently, and would do anything to get people to code apps for Windows. Many of the early Windows programs ran on OS/2 through a piece of shared code that let Windows code work. But we all knew that wouldn't last. Microsoft was forever changing the Windows API, and had done so since the first release of the product. The API has only recently stabilized, and we still don't know how long that will last."* The real battle occurred nearly a decade ago. Since then, Bill G has improved his product some: *"Over the years, I noticed that many of the cooler features of OS/2 became incorporated into Windows. For all practical purposes, if you are using Windows 2000, you are probably running what would have been OS/2. The only exception is that all the money goes to Microsoft. And before you object to that, you should note that the original OS / 2 was called Microsoft OS / 2."* About Dvorak's earlier suggestion that OS / 2 should have been made freeware, there is this later understanding: *"Someone pointed out to me that there was no way that IBM would ever do such a thing, since much of the code was likely under license or, worse, much of it owned by Microsoft anyway!"*

Prof. Laszlo Prikler again has suffered organizational change. Recall the way T. U. Budapest became BUTE (Budapest University of Technology & Economics) as mentioned in the July, 2000, issue. BUTE remains. But the department and organization within the department have changed as explained in E-mail dated January 14<sup>th</sup>: *"Note the new affiliation at the end of this mail ... At the beginning of this year the former Departments of Electric Power Systems, Electrical Machines & Drives and High Voltage Engineering and Equipment have been merged into one operational unit called Department of Electric Power Engineering. The name of the team I work with is now called Power Systems and Environment Group."* Your Editor was cynical about the motivation: *"There must be money for environmental study over there, too."*

## **Power Company Politics and Religion**

*"Locks on the PPOC-2 building"* were the subject of a paragraph in the preceding issue. Curiously, BPA seems as troubled by the old technology (mechanical keys) as the

new. Yes, eventually a mechanical key was obtained for your Editor. In fact, several have been obtained! After 2 or 3 weeks of successful use of the first key, suddenly it failed. Inquiry then revealed that the lock had been changed, so a second key was obtained. That one seemed to last less than a week, however. The note left by Dr. Liu on November 27<sup>th</sup> explained: *"XXX just gave me this new key. The security guard told her the key you just received a few days ago does not work now."* But it **does** still work. Now your Editor has two identical keys. Hmmm ...

The Enron bankruptcy was summarized in the April, 2002, issue (filing occurred at the start of December). Twelve or thirteen months later, lawyers seem to be the obvious winners. The *New York Times* summarized the problem in a story dated December 25<sup>th</sup>: *"In the bizarre yet lucrative world of Enron's bankruptcy, everyone seems to have a complaint these days. The \$300-an-hour lawyers complain that the \$500-an-hour lawyers are charging exorbitant fees. ... Creditors accused of ethical conflicts question the ethics of the examiner appointed by the court to question theirs. The only thing people seem to agree on is that the case ... is likely to be the costliest bankruptcy in history. Already, lawyers and other professionals have billed Enron close to \$300 million in what some critics say is an unparalleled fee bonanza."* A lawyer representing some creditors observed: *"These fees are extraordinary and appalling, when one considers that most shareholders and small creditors are likely to see little recovery ..."* Has there been reasonable progress? *"One year after Enron filed for Chapter 11 bankruptcy protection, the company does not have a reorganization plan, or even an official tabulation of its assets and liabilities. The company's recent cost-cutting measures included a plan to hire 15 new restructuring experts at \$864,000 apiece."* Only in an American bankruptcy court. *"The costs in bankruptcy are huge because everyone wants a piece of Enron, legal experts say. It is estimated that more than 3,000 lawyers and other professionals have worked on the case ..."* An Enron executive summarized the problem this way: *"We're like a big, fat dead carcass, and everyone's feeding off of it."*

\$45 billion might have been the total cost of that disastrous attempt by the state of California to regulate the price of electricity during years 2001 and 2002. Recall *deregulation* was the name used, but in fact it was *re-regulation* dominated by Cal ISO. Rules were changed, bankrupting the state's largest utility (PG&E). So, a year or two later, your Editor noted this huge estimate of total cost in the January 17<sup>th</sup> issue of BPA's *Hot Issues* newsletter. BPA, in turn, attributes the figure to the California Public Policy Institute. But how could the number be so big? A lot of speculation is involved. The estimate includes *"the costs attributed to blackouts and a slowdown in economic growth due to the crisis. ... This is approximately 3.5 percent of the state's total annual economic output."* Amazingly, the governor who presided over this debacle, Gray Davis, was reelected last November. In spite of the stupidity of government, economic times remain relatively

good (e.g., unemployment is under 6%), and Democrats remain in control of the state.

January 24<sup>th</sup> was Dr. Tsu-huei Liu's last day in the PPOC building. Temporarily (for 3 months), she is to be spending her time in the Dittmer Building as acting Manager for Control Center Software Design/Maintenance. This is bad for ATP because there might not be time for ATP work.

## Publishing Programs and Viewers

Searching the family of all Can/Am newsletters long has been recognized as a need of the average ATP user. Satisfaction was provided January 28<sup>th</sup> by the new EEUG Chairman, Laszlo Prikler, as the remainder of this story will explain.

For several years, newsletter searching has not been a great issue for your Editor, who has his own text files that have been maintained precisely for this purpose. But such text files have never been made available to others, so they do not directly assist the average user at all. Also, these text files suffer from the presence of a carriage return <CR> at the end of each line, so searches must not span more than one line of one column. Finally, graphics and fonts are missing in the files. In any case, before documenting the better solution, let's describe your Editor's storage, which began during 1999. The following paragraph was written then, although it never was published until now.

NEWS19XX.TXT is a family of twelve text (DOS EDIT) files, with one for each year of newsletter. I.e., XX consists of two decimal digits (of course, 1999 will roll over to 2000 next year). ... These files are useful for locating key words using Vernon Buerg's freeware file-viewing program LIST. The need for a means to search the entire family of newsletter files in a single operation was explained in the preceding [July, 1999] issue, recall. Because publishing files have changed from WP 5.1 to MS Word to Adobe PDF over the years, the job has become impossible using the original newsletter files. So, as an alternative, files of "MS-DOS text with line breaks" (MS Word terminology within "Save as") have been created, edited, and unified in groups of 4 (along yearly boundaries). During recent years, each consists of between 450 and 500 Kbytes of text. About editing, it should be explained that the loss of proportionally-spaced fonts (originally, Times Roman) provided plenty of opportunity for smoothing of the right margin. This was true for both WP 5.1 and MS Word files. As for other problems, each publishing program had its own weakness. WP 5.1 failed to align entries of tables (including the Table of Contents) correctly, and it sometimes mapped apostrophes and quotation marks into slugs (filled rectangles). Why sometimes and not always is not known. MS Word, on the other hand, did better with tables and had no trouble with apostrophes and quotation marks. However, it reduced strings of periods (typically 3,

bounded by blanks) to a single period. About location within any one year, the start of text for each issue of the newsletter has been marked by a line such as "Begin 1 of 4 for 1999 \*\*\*\*\*" ( seen at the start of NEWS1999.TXT ).

What really was needed by the average user was the ability to search the family of PDF-stored newsletters using free Adobe Acrobat Reader. Let's document the recent breakthrough. William Veerkamp of Dow in Freeport, Texas, had asked an ATP question in private E-mail having "Subject : Multiple UM machine variables passed to TACS?" Your Editor had referred to newsletters, and Mr. Veerkamp had responded on January 23<sup>rd</sup> that he had been "unsure where to look. My newsletters didn't go back that far (this has now been remedied). This brings up another interesting quandary though. They are all now PDF files. Do you know of a search utility good for finding word strings in the PDF versions?" Of course, your Editor mentioned Robert Meredith's great work for BPA's EMTP Theory Book (see the July, 1999, issue), and stated: "My understanding is that this can be done easily. Whether Laszlo in Budapest knows how, I do not know. I will add a copy to him because I seem to recall that he bundled newsletters into a package maybe a year or two ago. No question, it would be more valuable if an entire set of newsletters could be searched using a single command." Prof. Prikler's response on January 28<sup>th</sup> was quite a surprise: "Not only can be, it was done this afternoon."

What has Prof. Prikler done? He wrote: "The full set of text-searchable Can/Am EMTP newsletters was made available on the secure EEUG web site ... earlier today. The file ALL\_INDEXED.ZIP (9.3 MB) includes all issues of Can / Am newsletters published between Sept'88 and Jan'03 in PDF format and the index files needed by the 'Search' tool of Adobe Acrobat Reader for the full text search." Regarding use, Prof. Prikler advised Mr. Veerkamp: "1) Download ... and unzip the files and directories. Keep the directory names and structure. 2) Open Acrobat Reader and select Edit | Search / Select Indexes (or Ctrl+Shift+X or the 'Search' icon on the toolbar). Select 'Add' to add index EMTP\_News.pdx to the list and click OK. 3) Enter the search string in the Search dialog box and click on the 'Search' button. The returning list shows the issues of the newsletters where the requested string was found. E.g., entering 'Pisa format' string will return 6 newsletter titles. Click on one of them in the score title list and then on the View button to display the occurrence of the string. That's all. What I did today is part of a bigger project having work title 'ATP knowledge base'. Besides Can / Am News, EEUG News, Theory book, all e-mail listserver communications, ATP Rule Book and any other existing documents could be included in such an indexing process. The plan is to distribute something valuable in this field to EEUG members on the next CD. At least the pilot project today has finished with success ..." Indeed it has. Can/Am congratulations to Prof. Prikler.

Subscribers of the EEUG list server were informed of this important development via an announcement dated January 31<sup>st</sup>. Prof. Prikler began his explanation with some imposing statistics about newsletters: *"58 copies have been accumulated with total number of two-column pages roughly 1100."* About the technique of searching a family of files, he explained: *"The latter feature is widely used on CD editions of conference proceedings nowadays, like CIGRE sessions, IEEE meetings, etc."*

## USRFUN and CIGRE Sources

About precision, *"author Hevia is not convinced that there is an engineering problem."* This was where the story ended in the preceding issue. In E-mail dated September 7<sup>th</sup>, author Hevia explained: *"CIGRE says nothing about absolute times, only relative times (or virtual times). The T-front = (T90 - T30) / 0.6 But T90 and T30 values are not important in and of themselves. Only the difference is important, and it is correct. ... When I say accurate I want to say that the calculated virtual front time is exactly (not approximately) the required value. I have the same result in all versions."* The explanation continued on December 1<sup>st</sup>: *"I want to explain why I think it is not an engineering problem. You are doing a comparison of values at same time. If two waves have: 1) The same time difference (T90% - T10%); 2) the same maximum slope and at T90% (not at same time, T90% can differ!); 3) the same virtual tail time (another difference of times); and 4) the same amplitude, then both waves are compliant with CIGRE. The proof of CIGRE compliance is in the .dbg file."*

The USRFUN alternative for Type-15 sources of the electric network was expanded November 29<sup>th</sup>. In E-mail two days earlier, Orlando Hevia explained his addition: *"I was trying to model corona. The field measurements that are used for comparison involve a source that is defined by a complicated function. I added the sources (types 8 and 9) to USRFUN."* Use is illustrated by new variable USER8 that was added to the 5<sup>th</sup> subcase of DC-19 on December 10<sup>th</sup>. Only one of the two requires illustration because the two differ by nothing more than a final scaling factor. Author Hevia explained: *"The 8 and 9 are due to 850 and 995 kV amplitudes of these sources. The shapes are the same. To show the shape, a resistance is sufficient."*

## Cross - Sections of Cables and Lines

That cable cross-section at the bottom of page 16 of the preceding issue is worthy of some explanation. Graphics have been scarce in newsletters during recent years because they usually represent a challenge. That picture in the preceding issue was no exception. For the record, it came from ATPHPGL.003 of DC-28. Curiously, this HP-GL file can be taken right into one column of a newsletter using Word 2000 on Dr. Liu's Pentium. This would be using

"Insert | Picture | From File | HP Graphics Language" which results in normal size (i.e., a width of one column). But as explained previously, use of Word 2000 is not the goal, unfortunately. Your Editor needed to insert the picture into MS Word 7 as used at home under Win 95. Exporting the picture from MS Word 2000 was easy enough, but the graph then became the size of a large postage stamp at home; there was enormous blank space on the left and below. Your Editor did not know how to correct this, or a comparable problem using either WP 5.1 or WP 9 for the original storage. The former (i.e., original WP, now more than 11 years old) automatically produced a nice-looking plot, and this could be read by Word 7; but size was lost during input by Word 7. Results using WP 9 were no better after export in the format of Word 7. Eventually, your desperate Editor remembered that his MS Word 7 accepts HP-GL (even though newer versions of Word did not), so he directly inputted Salford-produced ATPHPGL.003 at home. Color and proportions looked decent, although a heavy price was paid in terms of file size: expansion from 152 Kbytes (if no picture) to 232 Kbytes (with picture). Normally HP-GL storage is compact, but not in this case of cable cross-sections. Remember all of those concentric circles that are used for shading, each approximated by straight lines. The HP-GL file was huge: 133 Kbytes. Yet, what was the alternative? Your Editor did later consider Salford .PCX output. File size seemed reasonable enough, considering that a full-screen, color VGA bitmap was involved. Word 7 took the 34-Kbyte disk file ATPVIDEO.003 without complaint, and width correctly was one full column. So far, so good (the appearance was acceptable). However, upon saving the newsletter, file size was noted to have grown to a staggering 462 Kbytes. What could Bill G be doing? Is this another paragraph for that brain-damaged MS story?

A detail about the HP-GL of the preceding paragraph must be disclosed: your Editor massaged it a little. The X axis was shortened by a couple of inches (units) and the right-most number was removed because it contributed nothing to understanding or aesthetics. Also, the declared size (the SC0 command that begins HP-GL output) was modified. A week later, as best your editor recalls, the original 11K and 9K were increased to 12K and 11K, respectively. The vertical expansion was necessary to avoid substantial clipping of the top cable. The horizontal expansion was not necessary, but it seemed to balance the right margin with the left (an aesthetic consideration).

## TACS User - Supplied Source Code

*"TACS foreign functions"* was the *"Subject:"* of E-mail dated January 3<sup>rd</sup>. This was the inspiration for a new Type-69 TACS device that first became available in the UTPF on January 8<sup>th</sup>. Orlando Hevia of UTN in Santa Fe, Argentina, wrote: *"We know about foreign functions and their relatives in MODELS. What about a similar feature*

for TACS? Say, a supplemental device with the name of a function ... and the input passed as parameters. Only one result is returned, but it adds more power to TACS. Of course, the source of this function(s) can be open to all, in the same manner as foreign MODELS functions, or *usrfun*, or *analyt*." Your Editor did not disagree, but initially was skeptical. The following day, he responded: "Well, who is asking for it? What is the need? Any electric network source can be passed to TACS, so I do not see any new modeling capability. On the other hand, the extension would save dummy electric network nodes." Of course, ANALYT already can be employed by the user to define electric network sources. About feasibility: "It is true that a device is a function. This matches. ... Yes, we could add one ... You make a reasonable argument, even though I do not yet see the practical need." But your Editor went home that day, and rapidly began the programming (not trivial). Mr. Hevia responded later that same day with clarification that he was thinking in more general terms: "I was not speaking of sources exclusively. With a function, we can have an iterative function to calculate a variable, or a more complex IF-THEN-ELSE-ENDIF structure, DO loops, etc. The result might be a source, but it might be a complex control system, too. ..." Yes, as Mr. Hevia wrote, *more power to TACS* (yet another good reason to avoid slower MODELS from Laurent Dube) !

DEVT69 is the name of the new SUBROUTINE in which the user can define his own Type-69 supplemental devices. Before adding this new module, it should be explained that your Editor first studied FGNMOD ("foreign module") of MODELS, and wondered whether this interface module by Laurent Dube might be usable by TACS, too. The conclusion was: yes, it could be. The average user might even prefer such repetition. But the existing MODELS interface was rejected for reasons of efficiency. Dube used 8 arguments for his FGNMOD, for example, whereas the 30-year-old interface of your Editor's ANALYT continues to require none. Also, Dube searched for the appropriate function name at each time step using CHARACTER\*1 vectors (inefficient). So, an all-new module is being used by TACS, with the new supplemental device of type code 69 providing the interface. The 7<sup>th</sup> subcase of BENCHMARK DC-21 illustrates usage for two simple functions that are provided as illustrations. Source code has many comments that explain how the user can add an indeterminate number of functions of his own. As with MODELS, the names are arbitrary (although limited to 6 characters for reasons of execution efficiency).

"Garth Irwin of the Manitoba HVDC Research Center" had explained about "function evaluation for EMTDC control system modeling." This can be found in the January, 1997, issue. About functions, your Editor wrote: "If the user wants others, he is able to create and compile his own." At about the same time, your Editor was preoccupied with compiled TACS, which certainly

provided adequate opportunity for user modification (see the January, 1997, issue). But why was there not concern about ordinary (i.e., non-compiled) TACS? Six years ago, your Editor failed to take function evaluation to its logical conclusion. Fortunately, this shortcoming was recently realized by Orlando Hevia. The Type-69 device really should have been provided 6 years ago. But somehow, at that time, your Editor overlooked the now-obvious benefit of this extension.

The single-card limit on arguments of the Type-69 device was removed January 8<sup>th</sup> when CIMAGE and GUTS2A were modified. As already used with different modeling, \$\$ on the right is interpreted as a request for a continuation of arguments on the following data card. Just be careful not to split a name with the \$\$ (such support is **not** being provided). Also, be sure that the preceding name is followed by at least one blank, should it be shorter than the 6-character limit. While not realistic, use of \$\$ is illustrated in that 7<sup>th</sup> subcase of DC-21 ( see variable USERE ).

Free format is assumed to the right of columns 9 and 10 (which contain the device type code), users are forewarned. This implies a need for variable naming that is consistently adjusted, either left or right. Although NAMES ARE RIGHT ADJUSTED (NARA as first described in the April, 1991, issue) could be supported, this is **not** the case as availability begins. Recall that NAMES ARE LEFT ADJUSTED ( NALA ) long has been your Editor's choice, and left adjustment will be required --- whether or not declared by NALA --- by the initial Type-69 code. Continued in the following issue.

## Latin American User Group

The Latin American user group was stressed last fall by the retirement of Marco Polo Pereira from Furnas in Rio de Janeiro, Brazil. After some two decades, there is to be a change of management and structure. Organizationally, in effect, Argentina and Brazil have changed places. Remember that CAUE is the Argentine group (think "Committee Argentine") whereas CLAUE is the Latin American group (think "Committee Latin American"), and CBUE is the new Brazilian user group (think "Committee Brazilian"). The summary now being provided is based on E-mail dated December 9<sup>th</sup>. Written by Jorge Nizovoy, Chief of Network Planning at Transener S.A. in Buenos Aires, Argentina, this message summarizes changes to ATP user organization in Latin America. The remainder of this story is from the new CLAUE Chairman, Jorge Nizovoy :

*"On October 1<sup>st</sup>, the present Coordinators in the region (representatives of Argentina, Bolivia, Brazil, Colombia, Ecuador, Mexico, Peru and Venezuela) were informed about the changes in ... CLAUE by an e-mail signed by Mr. Marco Polo Pereira and me. Then, on October 3<sup>rd</sup>, I*

sent them my personal point of view and expectations. It covered these points :

1) The CLAUE organization should be useful, with minimal bureaucracy. It will be necessary to define and to formalize it by means of a statute.

2) The CLAUE will be a regional organization independent of the Argentine EMTP Users Group (CAUE), although CAUE infrastructure will be used. In order to make clear this independence, I will resign from the position of Chairman of CAUE, to devote myself completely to the CLAUE.

3) With the change of management of the CLAUE, an important event occurred : CLAUE and the Brazilian Committee stopped being the same. The great country of Brazil now has its own, distinct user group, and this is coordinated by Mr. Jorge Amon of Furnas.

4) We do not want to create any more ATP Web sites. The rational approach is to improve the existing CAUE Web site. Location of the server is a minor detail. The important thing is that Latin Americans help to maintain and improve it.

5) We want to take advantage of the two closely related languages of the region, Spanish and Portuguese. If well organized and supported, the many users of these languages can contribute worthy results.

6) The organization of the CLAUE will take advantage of the CAUE organization. The utilization of the existing services of the secure password-protected CAUE Web site, the Spanish/Portuguese Mailing List, the Ibero-American ATP Magazine, etc., will make easier the distribution of ATP and related information in the region, as well as the interaction among users. Common rules will be applied in the different geographical areas.

On October 10<sup>th</sup>, in a new report to the Coordinators, I explained responsibility for the granting of licenses to use ATP information as well as the delegation of those responsibilities. The concepts and basic requirements are the following :

7) The CLAUE, the CAUE (Argentina) and, now, the CBUE (Brazil), are the unique recognized entities in Latin America by the Canadian / American ATP-EMTP User Group ...” To be continued in the following issue.

## TACS Definition of Series R-L-C

TACS control of a series R-L-C branch has resulted from corona modeling by Orlando Hevia of UTN in Santa Fe, Argentina. The story began with Mr. Hevia's E-mail dated November 29<sup>th</sup> : "The file coro001.pdf describes the

capacitances to model corona. The first model is what I now am using, with TACS controlled switches to connect and disconnect the capacitors. The second model is the CIGRE (and other authors) model. Of course, this model requires variable capacitances. But only one segment is required. The C-V curve is linear. The Q-V must be a quadratic expression for a non-linear capacitor ..."

The SERIES command of SPY is used "to modify the values of series R-L-C branches within the time-step loop" (explanation that can be found within the HELP command). So when Mr. Hevia wanted to modify capacitance to model corona, this was one idea that occurred to your Editor. Whereas the RAMP command of SPY typically was used to vary R or L or C linearly as a function of time, corona modeling logically might profit from a new, alternative, arbitrary variation using TACS. Rather than interactive, the new control would be for batch-mode use (Apollo has been unavailable for nearly 13 years, unfortunately).

Piecewise-linear capacitance was a second alternative that occurred to your Editor. About the two possibilities, he wrote Mr. Hevia on December 9<sup>th</sup>: "I think we should do either one or the other --- either TACS-controlled or pseudo-nonlinear. I believe TACS-controlled would be simpler." TACS control is the more general, of course, since more than just capacitance can be varied. As for relative numerical efficiency, it is hard to estimate. The bottleneck might be the same for both : retriangularization of [Y] (the nodal admittance matrix). Finally, a truly-nonlinear (rather than pseudo-nonlinear) capacitor could have been provided, but reliance upon compensation would have complicated the use for many such elements in the same subnetwork. For previous discussion of such matters, see the January, 2002, issue.

TACS CONTROL is the new declaration to control a series R-L-C element by one, two, or three TACS signals (a maximum of one for each of the 3 parameters). Use is illustrated by the new 4<sup>th</sup> subcase of DC-38 which first became available December 27<sup>th</sup>. There is some similarity and relationship to the NORTON alternative of a Type-94 branch of MODELS (see Dube's TYP94-N\*.DAT illustrations). Your Editor reasoned as follows: if control system modeling is to change [Y] at each time step, why force the use of complex and numerically-inefficient MODELS? For the record, Mr. Hevia had tried to use MODELS, but without much success: "I was doing a test with type-94 variable capacitor from TYP94-T7.DAT. But surely I added a mistake to the file: the capacitance changes as I want, but the current is independent of the capacitance. I am weak in Thevenin, MODELS, etc. subjects." Your Editor was not at all convinced of the negligence. Having heard other such stories of frustration with use of the Type-94 branch, your Editor responded: "Dube could make Type 94 branches work, but I am afraid that others often have trouble. Use may not be as simple as it appears at first glance. As I myself have never tried, I certainly am not the one to advise."

The request word TACS CONTROL is not new. It has been used since the mid-'80s for the modification of nonlinear elements as illustrated by BENCHMARK DC-37 and 45. Note that use now is completely different, however. The nonlinear elements were interfaced with the network using compensation, so changes avoided modification and retriangularization of the nodal admittance matrix [Y]. Not so for the present use with series R-L-C branches. These are built into [Y], so in general there must be modification and retriangularization at each time step. As for the Type-58 S.M. from TEPCO (see the April, 1997, issue), slower simulation must be expected. Yet, PC speed has increased rapidly during recent years (see mention of Moore's Law in the July, 2002, issue). What was unthinkable a decade ago might be reasonable today --- at least for some of the better-equipped users such as Mr. Hevia, who simulates using a 2.4-GHz Pentium 4. In any case, if the new modeling is not used, it is not paid for. Assuming adequate memory to avoid paging within the dT loop, simulation speed of all other code is unaffected by the latest additions.

The new TACS control entered the UTPF on December 27<sup>th</sup> when 4 segments were changed: OVER3, OVER12, OVER16, and YSERLC. The last of these services the SERIES command of SPY, to which the TACS connection has been added. Until there is practical need, your Editor has refused to consider simultaneous use of the two sorts of control of series R-L-C branches. For the simultaneous use of both, further modification will be required, the user is forewarned. Another restriction is lack of table dumping such as would be required for Monte Carlo simulation. Use with STATISTICS switches should be possible, but such service is not yet being provided. Protection was added on December 31<sup>st</sup>. When table dumping and restoring is tested using TSTALL < 0, the last output seen in DC38.LIS prior to the familiar error termination of STOPTH is this message: *"TACS-controlled series R-L-C is involved. But such data is not yet being dumped. Halt in TAPSAV."* About the limitation (no STATISTICS), Mr. Hevia seemed not to be concerned. In E-mail dated December 31<sup>st</sup>, he wrote: *"I am not sure STATISTICS switches and corona are needed simultaneously. But maybe random surges parameters and corona are simultaneously required, and PCVP and \$PARAMETER is the adequate tool. Recall Gabor's work with back-flashover."* Of course, this is a reference to Gabor Furst's famous BACKFL.DAT data as first mentioned in the April, 1996, issue.

Retriangularization of nodal admittance matrix [Y] does not necessarily occur at every time step, it should be explained. Rather, retriangularization occurs only at those steps where one or more parameter change has been significant as measured by new tolerance EPSRLC (an optional parameter on any TACS CONTROL declaration). If the fractional change of a parameter R, L, or C exceeds value EPSRLC, [Y] will be retriangularized. If true for no parameter, the order to retriangularize will not be issued by the TACS control logic. How can the user learn whether

there has been any saving? Recall that for KOMPAR equal to zero, case-summary statistics are wide, and the List-5 row will include a mention such as this: *"Size List 5. Storage for [Y] ... No. times = 2 ..."* This is what results if the 3<sup>rd</sup> of the 3 disconnected subnetworks of the 4<sup>th</sup> subcase of DC-38 is extracted and simulated separately using default value EPSRLC = EPSILN = 1.E-8 (see note about this detail on comment cards). This is for capacitor switching, and the value 2 confirms that TACS control has been applied on the correct time step (at time 11 seconds). I.e., the number of triangularizations has not been increased by the addition of TACS CONTROL. Note that 2 would be the answer for conventional switching since one of the two would occur as the dT loop is entered and a second would occur when the switching was ordered. Had the TACS control been applied at a wrong time instant, 3 or more would have been the result.

Use of SSONLY (see illustrations in DC-30 or 42, which assume content PHASOR, note) conflicted with the new TACS control prior to December 25<sup>th</sup> when supporting code was moved from LAST14 to OVER12. Operation is illustrated by the new 4<sup>th</sup> subcase of DC-38. The solutions of other standard test cases were unaffected by the change. So, as far as your Editor can determine, the move was without consequence for former users. If any SSONLY user might believe otherwise, he is advised to communicate details rapidly to your Editor. This story will be continued in the next issue.

## Interactive Plotting Programs

MS Excel provides yet another way to plot ATP signals. Recall that Laszlo Prikler began the long list of ways with *"ten different alternatives"* as mentioned in the October, 2001, issue. Well, E-mail of the EEUG list server dated December 17<sup>th</sup> was written by Daniel Durbak of Power Technologies, Inc. (PTI) in Schenectady, New York. More than merely answering your Editor's question (was it possible?), this provided a recipe: *"You do not even need a .PLA file! Steps : 1) with any text editor, copy the EMTP output variable data from the 132 column ASCII output file and paste it into an Excel spreadsheet; 2) use the 'text to columns' function (find it under 'data'); 3) use 'chart wizard' or other means to set up the chart. (suggest X-Y scatter plot without markers and without smoothing). Note that you can also use this method to plot statistical distributions. I generally use PlotXY for plotting ATP results, however."* Mention of PlotXY is appropriate because this is where the long discussion had begun. On December 13<sup>th</sup>, John Ch. Dermentzoglou of TEI in Kavala, Greece, had asked how to circumvent a PlotXY limit: *"I can't plot variables from 4 or 5 different output files due to the internal limit of PLOTXY program, which limits it to 3."* Possible use of MS Excel seemed to be mentioned first by Laszlo Prikler: *"1) Use Relay command of GTPPLOT or TPLOT. This way you produce ... ASCII tables, which*

could later be merged, e.g., using MS Excel." Orlando Hevia in Santa Fe then observed that this expands the limit considerably: "In this case, the limit is in Excel, and it is big." Mr. Hevia also suggested another possibility: "You can use the CACHE command of TPLOT or GTPLOT. You can do all the work with a command file (I call it multi) with the contents as follow : ... up to 20 files or 20 variables." As your Editor has written many times, a user has so many different free ways to plot ATP signals.

ATP Analyzer seems to provide a direct way to combine signals from different .PL4 files. The first testimonial for this BPA-supported program was submitted by Danijel Krajtner of Koncar Mjerni Transformatori Inc. in Zagreb, Croatia: "For that purpose I successfully use ATP Analyzer (I once put 10 curves from 10 different .pl4 files into one chart)." Author Glen Fortner of Pacific Engineering Corp. in Portland (see mention in the January, 2000, issue) then summarized the mechanics in some detail: "It's possible to plot variables from many output files at once using ATP Analyzer. With the first file imported as the main case and the second file as the comparison case, select some comparison case signals to copy into the main case using Comparison, Copy Comparison Selections Into Main Case, Linear Interpolation. Then load the third file as a new comparison case. Select more comparison signals from this third case and copy them to the main case too. You can repeat this process as many times as necessary to combine cases from many different files into the main case. Now select all the main case signals and use Save As to save signals from all the cases together in a new file."

A final alternative seems to be TOP by Electrotek Concepts. Francisco Javier Peñaloza Sánchez of CFE in Mexico made this observation: "For the special -- rare -- case of ... more than 3 PL4 files, I have used TOP2000 ..."

Rapid improvement of PlotXY : On December 20<sup>th</sup>, list server mail contained this writing that was attributed to PlotXY author Massimo Ceraolo at the University of Pisa in Italy: "The maximum number of files (PL4 or ADF or mixture of these two) that can be simultaneously managed has been raised from 3 to 8. This is because the discussions on this mailing list of last week have suggested to me that there is a quite important need ..."

## Miscellaneous Intel PC Information

Real-time simulation was mentioned in the preceding issue. The discussion continues. Recall that Orlando Hevia and Laszlo Prikler had discovered Intel FORTRAN compilers at prices of \$600 and \$0, respectively. Well, in E-mail dated December 9<sup>th</sup>, John Schaad of BPA's Eugene ( Oregon ) office provided a link to a [www.eweek.com](http://www.eweek.com) story. He wrote: "We have the full set of these newest Intel Fortran and C/C++ compilers for the cluster development work." The eWeek story is dated December 3<sup>rd</sup> and entitled

"Intel upgrades compilers for developers." Your Editor learned: "Intel on Tuesday rolled out Version 7.0 of Intel C++ Compilers for Windows and Linux and Version 7.0 of Intel Fortran Compilers for Windows and Linux. ... According to Intel in Santa Clara, California, "the ... new compilers can be used for either its 32- or 64-bit architecture ..." Included is support for "hyperthreading, which enables a single processor to run as two virtual chips. ... The new compilers also include optional auto-parallelization capabilities that automatically search applications for ways to create multiple execution threads ... The Fortran compilers ... are available immediately, starting at \$499 for Windows and \$699 for Linux." Recall that the July, 2001, issue stated that the F95 Lahey compiler could "automatically parallelize your program" (the Lahey claim). Well, Intel now seems to make a comparable claim. Reviewing the preceding, Mr. Schaad explained that hyperthreading is a feature of "Intel's latest P4 hardware architecture. The P4 Xeons (like our cluster) have always had hyper-threading, and it has been added to the latest versions of the plain P4 chip."

"Worm spread worldwide in 10 minutes" is the title of a Reuters story that was found at the CNN Web site. Posted February 5<sup>th</sup>, this documented the lack of time for defense: "It only took 10 minutes for the SQL Slammer worm to race across the globe and wreak havoc on the Internet two weeks ago, making it the fastest-spreading computer infection ever ... The worm ... doubled the number of computers it infected every 8.5 seconds in the first minute of its appearance ... The tiny malicious program, which was also known as Sapphire, did not erase data or cause damage to desktop computers, but was designed to replicate itself so fast and so effectively that no other traffic could get through networks. ... The United States and South Korea were hardest hit by SQL Slammer ... making up 43 percent and 12 percent of the victimized computers."

## Miscellaneous Small Items

A widexx alternative for POSTPROCESS PLOT FILE ( PPF ) was the request of Prof. Mustafa Kizilcay of FH Osnabrueck in Germany. In E-mail dated December 2<sup>nd</sup>, he wrote: "I am a member of the CIGRE working group 34.17 that deals with relay models for use with electromagnetic transients programs. I wrote a small section regarding the testing and verification of relay models using recorded data from field tests. The relay would be modeled using TACS or MODELS, and the POSTPROCESS PLOT FILE ( PPF ) option would connect 'foreign' recorded voltages and currents in .PL4 format. However, the conversion of foreign data to a C-like file or an UNFORMATTED file is not easy. If it would be possible to allow widexx ... for PPF, this feature could be very useful for relay model testing because it is easy to convert numerical data obtained by measurement to this simple format." Subject to one

serious limitation, the widexx alternative first became available December 12<sup>th</sup>. Use is illustrated by a new 5<sup>th</sup> subcase of DC-46, which produces the same answer as the 1<sup>st</sup> subcase within the precision limit of FMTPL4 = wide11 that was used to create DC45WIDE.011 (the associated .PL4 file). The most serious restriction is the present limitation of the PPF .PL4 file width to 255 bytes. This was convenient as it allows use of variable NAMCOL that already is available. Yet, to support the creation of widexx .PL4 files, a 2550-byte buffer named CUNIT6 already exists elsewhere (see the April, 1998, issue). Although the change would not be trivial, existing CUNIT6 should be usable if and when the need to exceed 255 bytes might arise for practical data. Although easily removed by a lengthening of TEXTFMT in POSTPF, your Editor has no intention of making this second generalization, either, in advance of practical need. Regarding assumptions, several were made. One of these is about the nature of the .PL4 file that is to be postprocessed. Time signals (not results of a frequency scan) are assumed, so there is no question about multiple output parts or the need to consider a header of more than the 3-line minimum for the dT loop. Yet, if the user wants to omit the header --- either by manual editing it out or the alternative use of NEWPL4 = 1 in STARTUP, this should be tolerated, and should not change the answer. A final detail might be mentioned in order that it not be forgotten: the output .PL4 file type is unconstrained by the widexx file that is used as input to PPF. The user should be able to change L4BYTE and/or FMTPL4 in STARTUP however he wants without affecting the answer.

WindSyn is a program from Gabor Furst of suburban Vancouver, B.C., Canada. E-mail from him January 2<sup>nd</sup> contained two attachments : 1740 Kbyte WINDSYN.ZIP and 489-Kbyte WINDSYN.PDF About these, he wrote: *"Attached is the preliminary version of the WindSyn program which I showed in Sopron. I was tempted to call it 'U.M. for Dummies.'* I also attach the WindSyn.pdf file which is somewhat of a cross between a manual and a program description." About the term dummy, see the final paragraph of the April, 1996, issue. Three days later, list server mail explained: *"The WindSyn program, which is the Windows version of Indsyn.exe, is under development. I would like to add a DC option to the induction and synchronous machine options which are at the moment available in these programs. I would very much appreciate anybody having a U.M. type 8 through 12, DC machine simulation data file, sending me a copy of it. It will be treated confidentially."* Finally, E-mail of the EEUG list server announced availability to licensed ATP users. This contribution from Prof. Laszlo Prikler, dated January 7<sup>th</sup>, explained: *"The install kit (Windsyn.zip) and the manual (Windsyn.pdf) can be located in ... folder of the EEUG secure web site ... The program generates U.M. coil data for three phase, Type 1 synchronous machines, and types 3 and 4 induction machines. In addition to the coil data generated in a .LIS file, the program offers the option of*

*generating a .PCH file containing all the U.M. data records for insertion into a regular ATP data file. The start of the program development dates back to 1996 with the utility Indmot, which was developed to help users to generate U. M. coil data for induction motors, from performance data available from manufacturers or performance data commonly specified for induction motor studies. In the year 2000, the Indmot utility was merged with the author's Synmot utility into an Indsyn program. WindSyn is the Windows version of Indsyn. It uses the same analytical approach to generate coil data but it has a greatly improved user interface, and options for .PCH file generation which were not available in Indsyn. ... Users are kindly requested to send any suggestions or bug reports to the program author, Gabor Furst ..."*

List 13 limits the storage of batch-mode plotting. If overflow is approached as PLOTEV is loaded with points of the curves to be plotted, the loading will be terminated prematurely, and the resulting curves generally will be truncated on the right. Zhou Peihong of the Wuhan High Voltage Research Institute in China recently observed this phenomena in spite of large List 13 (72800 of the .FGH dimensioning), and he reported the problem in E-mail dated December 23<sup>rd</sup>. Your Editor was slow to diagnose the cause because he was under the impression that, if List 13 was the problem, there should be a warning message in the .LIS file. Upon investigation, it was found that the warning message was old, and was being sent to the .DBG file instead of the .LIS file for modern (post-Apollo) program versions. So, January 9<sup>th</sup>, LODPLT was modified to produce a single warning line for the .LIS file : *"Loading of plot points has been terminated prematurely ..."* Now, an observant user should understand the truncation.

The Type-58 S.M. code from TEPCO (Tokyo Electric Power Company in Japan) was improved by Xiang-lin Cao during September of 2001. Readers can find brief mention in the October, 2001, and January, 2002, issues. An unmentioned aspect of the improvement was faster simulation due to partial (as opposed to the normal full) re-triangularization of the network nodal admittance matrix [Y]. At the time (E-mail to Atsushi Kurita of TEPCO dated September 14, 2001), your Editor had written: *"Yes, this sounds reasonable. No question, your distinction is clever. Why retriangularize the whole [Y] if only the bottom has changed?"* Well, eventually, attached to E-mail dated January 20<sup>th</sup>, data was received that caused trouble for the year-2001 logic. What your Editor found was interesting: logic could be corrected by the addition to OVER16 of a single line of initialization. Following this change, which was made January 22<sup>nd</sup>, the previously-troubled data was added as a new 3<sup>rd</sup> subcase of DCNEW-20. Contributed by Dr. Eiichi Haginomori of Kyushu Institute of Technology in Kita-Kyushu, Japan, this data is interesting in its own right. It involves a U.M. in addition to one Type-58 S.M. The U.M. is Type-4 --- a doubly-fed, 3-phase induction motor.