Can / Am EMTP News

Voice of the Canadian / American EMTP User Group

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Salford FORTRAN Compilers

Exponents of 100 or more, either positive or negative, became possible for Salford EMTP following a change to FLTOPT that was made September 30th. Of course, there is little or no practical engineering significance to such very large or very small E-field numbers, but sometimes it is convenient to allow them. It always should be better to handle such a number properly rather than replace it by GARBAGE for output purposes. Yes, GARBAGE is what was found, for exponential decay. Output of the dT loop decayed from E-98 to E-99 to the symbolic GARBAGE. The same should have been true of positive exponents, in theory, although in practice the average user would have execution killed earlier by the creation of a single-precision plot file (numbers within this are limited to about 1.E+38). Well, following a generalization of the optimal encoding logic, Salford ATP can go all the way to the 32-bit Intel limits, which are approximately E+308 and E-308. For an illustration, see the 4th subcase of DC-37 , which now includes disconnected nodes UNDER to demonstrate underflow and OVER to demonstrate overflow. Branch parameters R and L are carefully selected so as to produce extreme values on the final time step number 400 (note the E+304 and E-303) .

A .PL4 file having COMTRADE format should be plottable using TPPLOT, but it seems this capability was lost at the time complex output variables of ATP were generalized. Recall the choice among magnitude only, polar, rectangular, or both, was described in the July, 1998, issue. The first person to report the trouble using TPPLOT was Orlando Hevia of Universidad Tecnologica Nacional in Santa Fe, Argentina. Attached to E-mail dated November 4th was an illustration, although it turned out this was not necessary. Any COMTRADE file seemed to be equally troubled (your Editor investigated using the familiar, existing example associated with DC-53) . Because the number of variable parts was not defined to unity as it should have been, counting of a loop became infinite, and eventually was halted by Salford DBOS itself : *"Page memory exhausted at User ..."* A correction to POSOUT was made the following day, after which a copy was sent to Mr. Hevia. While on the subject, let's document Mr. Hevia's concluding observation: *"About COMTRADE, I downloaded the new IEEE Standard (1999 version) and I*

see that it is the same as IEC COMTRADE (fortunately!), but surely there are differences from the 1991 version."

TPPLOT might be another promising use of that F95 Salford compiler. Writing in the preceding issue mentioned only ATP. Well, it was the discussion about TOP2000 (see mention elsewhere in this issue) that prompted thinking about TPPLOT. Recall the complaint about overflow of Electrotek Concept's product. Well, Massimo Ceraolo of the University of Pisa in Italy contributed an interesting observation about his own alternative PlotXY. Quoting from E-mail dated October 9th: *"I want to stress ... the fact that the ATP plotting program PlotXY ... has not ANY limit on the number of plotting points and of the plotting variables on the file."* Existing F77 Salford TPPLOT has very large dimensions, but very large is not the same as infinity (more precisely, the unknown limit imposed by the operating system and computer being used). It would be nice to remove Salford TPPLOT limits, and the F95 compiler should make this possible. But F95 Salford has other problems (most importantly, lack of support for existing, scrollable DBOS windows), so the proposed use is not really a general replacement. Instead, the result would be a special version that would be useful for huge .PL4 files. Also, it would extend Salford TPPLOT graphics to MS Windows NT (fundamentally incompatible with existing F77 Salford ATP and TPPLOT) .

But are Salford F77 graphics really available via F95? This is a key consideration, and current understanding is worthy of documentation. Your Editor had asked Masahiro Kan: *"Are DBOS graphics present, as they were in the 1996 compiler?"* For a summary of that 1996 compiler, see a special story in the July, 1996, issue. Mr. Kan's response was contained in E-mail dated 4 December 1999: *"Yes, it **is** supported in the win32 version of Salford FTN95. It seems to be implemented in ClearWin+ library."* About ClearWin, Salford documentation (more about this next time, when there is more room) of FTN95 states: *"Salford is famous for its easy-to-use Windows GUI builder - ClearWin+. This library comes as part of the standard run-time system for FTN95, and with it you can write simple Windows programs ... GUI features are specified using format strings reminiscent of traditional Fortran I/O. Many of our customers have produced very complex GUI applications including graphics, tool bars, edit boxes, etc. using ClearWin+."* For a less-enthusiastic and more-impartial review of the product, read what Walter Dykas of ORNL in Oak Ridge observed more than five years ago (see the July and October, 1995, newsletters). Your Editor's conclusion is this : maybe Clearwin is not as great as Salford claims. But if it provides access to DBOS-compatible graphics, that **is** an important advantage. Another critical detail is keyboard input (recall trouble was documented in that July, 1996, story). About this, Mr. Kan wrote: *"Get_key1 function is not supported in the win32 version of FTN95, but getw_key1, which is the equivalent for the ClearWin window, is supported."*

F95 ALLOCATE of ATP Tables

Kizilcay frequency dependence was changed from fixed to variable dimensions on October 20th in response to a semi-public complaint by Wlodzimierz Kalat of Warsaw University of Technology in Poland. In E-mail of the EEUG list server the previous day, Dr. Kalat had mentioned trouble using more than 30 $INCLUDE files, but veteran users Orlando Hevia and Bernd Stein rapidly explained that use of $INCLUDE was not the problem. Your Editor then added documentation of the three, presently-fixed Kizilcay limits: 1) 30 = maximum number of F-dependent elements; 2) 1000 = maximum sum of all component orders; 3) 25 = maximum order of any one F-dependent element. While he waited for variable dimensioning, Dr. Kalat was offered a special expansion of fixed limits. He was using Watcom ATP, and was updated by E-mail on October 20th (fixed Kizilcay limits 60, 2000, and 40, respectively, were believed to be adequate). About proposed use, Dr. Kalat explained: *"The problem comes from the modelling of a 7-terminal transformer, where 28 node-to-node admittances (two-terminals) are needed. Approximation of their frequency characteristics yielded rational functions, which have: 1) a common denominator of order 26 (27 coefficients) ; and 2) 9 different numerators (because of the assumption of the three phase symmetry) with 29 coefficients. Due to the limit of 25th order of the F-dependent Kizilcay element, we had to divide each admittance into 2 parallel parts, so at the moment we need 56 elements of order 15."*

The 4th subcase of DC-23 has been modified to illustrate the new dynamic definition of Kizilcay storage limits. See comment cards for details, and note the mention of both old F77 and new F95. The new data structure is accepted by both ATP versions, although it is only for F95 that dimensions actually can be changed. If the F77 ATP user attempts to set any Kizilcay table to a non-default size, execution should be halted by an error message mentioning routine HANNIN. Interpretation of the new dimensioning declaration begins: *"Limits on Kizilcay tables."* Of course, this should precede the first Kizilcay branch data (tables must be established prior to the first use). If a second or later stacked subcase should have different table sizes, the declaration could be repeated as needed. But this is not required. Once created, the Kizilcay storage remains in effect until a subsequent request results in either recreation or elimination. If there is no later request, the Kizilcay storage continues to exist until the end of execution. About elimination, the following interpolation is used: *"Cancel the existing Kizilcay storage. Close it."* The 7th subcase of DC-23 illustrates such closure after the last use.

No list size has thus far been mentioned. Usually, when some table is to be variably dimensioned, a VARDIM list size is involved. Not so for Kizilcay F-dependence, which will not be seen in any documentation of VARDIM data.

Had additional unused space remained on the first three VARDIM data cards (for lists 1 through 30), this more conventional procedure might have been used. But space has been exhausted, and your Editor wanted to avoid trauma associated with the expansion beyond 3 data cards (not trivial). That is why the truly dynamic procedure, with dimensioning a part of branch cards, was adopted. This works only for F95 ATP, unfortunately.

News from Outside USA and Canada

The Middle East, and a possible user group to support it, were mentioned in the preceding issue. That story now is being continued. That March 14th letter from your Editor, as distributed by the Fargo list server on May 17th, follows (remainder of this story):

Hi, Drs. Eissa and Khalil!

Sorry for the long delay in this response to your message having date February 12th. I began almost immediately, but quickly interrupted the work. Now, on March 14th, I am returning to the project.

- .... there is no problem to start the procedure of
- making the MEUG to have the same target and rules
- like the JAUG and EEUG but in Arabic Language.

In principle, I can think of no objection. Using Japanese language, JAUG (the Japanese ATP User Group) does what you have proposed for a Middle Eastern ATP user group using Arabic. The precedent for language already is established. As for the involvement of 2 or more countries, JAUG does not illustrate this aspect, but EEUG certainly does.

- Based our extensive study to our AREA and the
- educational need for undergraduate and researchers
- we found that MEUG will attain its role successfully.

Maybe. You would be offering a unique feature that is not now available : language. Certainly this should dominate when it comes to education. Yet, note carefully that you do not need a user group to do this. One can teach a course (e.g., Prof. Dennis Carroll in Florida) or exchange ATP information without a special user group. I can not imagine any present contributor objecting to the translation of his work to another language, as long as the original author was appropriately acknowledged, and his prior approval for the operation was sought.

- Finally we purse to know the essential rules
- and restrictions to start our procedure.

This is the hard part. This is what can not yet be answered. In fact, negotiations are ongoing with respect to the Fargo list server. ...

Of course, about licensing, any new user group would be expected to keep computer-readable records, and to share these with other cooperating ATP user groups.

But what about the Internet? I recall asking in a preceding message whether you exchange Arabic-language E-mail with countries of the region. Would you operate an Arabic-language list server or Web site for the exchange of ATP-related information among licensed users who read and write your language?

I also recall expressing an interest in what Laszlo thought of the idea. Later, I generalized this to all subscribers of the Fargo list server. Yet, I have no information that such a discussion has begun. This would be my recommendation: see what other important contributors think of your idea. I can not imagine the Can/Am user group agreeing to any proposal from you without first giving others a chance to consider the matter, and offer opinions. As a rule, we try to operate openly, and by consensus, in matters affecting other user groups. Note that I began the story in the April newsletter (now available), and it could be continued in the July newsletter.

When translation into another language (in this case, Arabic) is contemplated, my opinion would be that the approval of all authors would be required. This would be because translation would represent a new, unforeseen use of the original English-language contribution. Translation is comparable to the problem of FREEP, which wanted not only to distribute existing ATP materials, but to repackage ATP materials its own way. The FREEP problem was explained in the April and July, 1997, newsletters, as I recall. This would be another reason to inquire semi-publicly via Fargo: involve as many contributors as one can. If there might be objections by others, it is better to have them sooner rather than later. If in doubt about different usage, ask as publicly as possible. That is my opinion. WSM. 14 March 2000 03:50

More about the Internet and E-mail

ISDN sometimes is better than DSL (see explanation in the preceding issue). This is the view presented by Ted Mittelstaedt in the July issue of *Computer Bits* magazine (see *"The Network Community"* on pages 35-42). The long story begins with some hard-hitting criticism of DSL customer service: *"If you, as an ISDN customer, have a problem with your ISDN service and you call the Telco, they are required to fix it. ... If you, as a DSL customer, have a problem with your DSL service and you call the telco, they are required to do ... nothing. That's Nothing with a capital N. DSL is classed as a data service with no specified bit rate. If the bit rate is zero, the telco is within the terms of the contract. The PUC has absolutely zero control over it."* Here PUC indicates Public Utilities Commission, which is a regulatory agency of local government. About speed, ISDN should easily beat poor

DSL because the telephone company must give it priority: *"When your ISDN equipment places a call, it brings up 2 channels that total 128k of bandwidth. During the **entire** course of the call, you will always have that 128k of bandwidth. It does not matter how busy the telephone network is. ISDN is a circuit-based service."* Not so for DSL, which time-shares the available work using available resources. DSL *"data packets are marked with a header that says 'data - unspecified bit rate'..."* so can be delayed like cars during rush-hour traffic. *"The expectation that DSL will always be faster than ISDN is quite wrong."*

BPA management creates its own virus-like junk E-mail, it would seem. There are these internal mailing lists adl_x_all where the "x" in the middle stands for a letter such as "a" --- presumably for all names that begin with the letter "a". Management uses these lists to inform employees of developments. Unfortunately, employees sometimes *"Reply"* to such messages, and the result is not always what one might expect. On July 20th, Jay Coleman issued a warning to groups a, c, e, g, k, l, n, p, s, and t having *"Subject : schedule cancel from Jan O'Rourke."* It explained: *"There is a problem with a schedule cancel e-mail from Jan O'Rourke. At this point we don't think it is a virus, but it does send to several ADL_ALL groups each time someone replies to it."* To conclude, not a great deal of progress since the great *"Reply All"* problem of years past (see the January, 1998, issue).

The name **www.atp.com** already is in use --- by Aircraft Technical Publishers.

Electronic signatures became legal in the USA on October 1st, although they are little used. A CNN story dated September 29th is entitled *"Legalized e-signatures bring convenience, risk."* About the latter (good reasons for non-use): *"... the expanded definition of legal signatures and flaws in the technology could contribute to fraud. The law does not specify a type of technology for e-signatures. They can be obtained through secured processes, like secret passwords or digital fingerprints, as well as unsecured ones, such as faxed signatures or clicking an acceptance button on a Web page. ... Although many e-signatures are secure when stored in a personal computer, malicious hackers could remotely break in and snatch them, said Bruce Scheier of Counterpane Internet Security Inc. and author of 'Secrets & Lies: Digital Security in a Networked World.' He said an attack from a hacker 'could take your signature and ship it across the Internet to someone else. It could show you one document and sign another. It could show you one document, sign that document and also sign several others. It's like having a signature stamp, where you give your signature to someone you don't trust.' The results can be costly. Someone stealing an e-signature, for instance, could pilfer an unsuspecting victim's bank account."* It does sound as though this is one technological advance that is not likely to be used for ATP licensing any time soon. About alternatives: *"Schneier was wary of individuals using fingerprints, eye scans or voiceprints to identify themselves. 'If there's a big database of fingerprints and someone hacks it, what do you do, issue everybody a new finger?' he asked."* Are we sure lawmakers were wide awake when this one was passed?

"Digital signatures now legal, but still not accepted" is the title of a story dated October 2nd that was found at *ABC News*. At the bottom, your Editor sees *"Copyright 2000 ABCNEWS.com from TheStreet.com"* (*from*? Strange how ownership is being acknowledged these days). First, Clinton is given credit (or is it blame?): *"... passage of the e-sign bill earlier this year (thanks to a presidential push) ..."* But is this a legacy anyone should want? *"Analysts say the new law won't necessarily mean the use of digital signatures will be widespread."* Following the introduction, there is a section entitled *"Insurance industry unmoved."* There seems to be no shortage of incentive: *"an increase in the use of digital signatures has the potential to increase the amount of insurance products bought online."* But it turns out insurance is not easy to sell online: *"the nature of applying for insurance online is so complex that most insurance consumers are scared away and want a broker to help them through the process."* See that mention of Allstate strategy in the April, 2000, issue. The next section is entitled *"Reluctant financial service firms."* After that comes a section entitled *"Like offering a free root canal"* (painful dental surgery). So what is a favorable application? *"Because a digital signature file is complicated and difficult to download, the best application for the technology may be between companies and businesses to authenticate transactions."*

The sale of electronic books is more difficult than the creation and distribution (see preceding issue). *"Study: U.S. reads e-books, but won't pay"* is the headline of a story by Steven Zeitchik. Dated August 30th, this was found at the CNN Website. It concludes: *"a new study shows that a large percentage of people in the U.S. are willing to read books on a variety of electronic platforms, including laptops, PDAs and dedicated e-book devices. They just won't pay for them."* This from *"a survey of nearly 3,000 people sponsored by Seybold Research ... The results of the survey were announced Monday on 'E-Book Day' at Seybold SF, a digital-publishing convention taking place this week in San Francisco. The results were released the same day that Microsoft and Amazon.com announced their own e-book partnership. Specialty sites and portals are expected to soon follow Amazon and its main competitor, Barnesandnoble.com, which announced a similar partnership several weeks ago."*

The Emulex stock hoax (see preceding issue) had a happy ending for police. *"FBI Arrest Mark Jacob in Emulex Hoax Case"* was the title of an AP news story that was found at the *ABC News* Website. Dated September 1st, this summarizes: *"A student employed by Internet Wire allegedly used a computer at his school to construct and send a press release that knocked about $2.5 billion off the market capitalization of Emulex."* The guy was tricky, but

was not tricky enough considering the magnitude of the crime. The *"23-year-old ... El Segundo man ... went to great lengths to cover his tracks, going so far as to register at one Las Vegas hotel and make stock trades from another."* This is a Los Angeles-area story (El Segundo is next to the LA airport). About seriousness of the crime: *"Jakob, charged Thursday with securities fraud and wire fraud, faces a maximum of 15 years in prison if convicted."* About terminology, note use of the word *fraud* rather than *embezzlement*. Readers may recall your Editor's explanation in the January, 1994 issue. This was in the story about unverifiable and deficient accounting of money by LEC (the Leuven EMTP Center in Belgium), which closed its doors in 1993. About motive for the Emulex hoax, the prevention of losses due to leveraged stock trading is alleged: *"Jakob made his short sales on Aug. 17 and 18, using a computer at Internet Wire to execute some of them. Instead of the stock price declining, as Jakob had hoped, it began to rise, leaving him with the probability of having to repurchase the shares at a loss of approximately $97,000 ... Instead, authorities say, Jakob made more than $241,000 from Emulex trades after the phony press release was delivered."*

A 14 year old boy is alleged to have used the Internet to earn $285K by trading and hyping volatile small stocks. In an AP news story dated September 20th, posted at the *ABC News* Web site, Jeffrey Gold tells the story. The New Jersey kid, named Jonathan Lebed, is alleged to have *"bought large blocks of penny stocks, hyped them on financial message boards and then dumped his shares after the price rose."* Is this obviously a crime? No, and presumably this is one reason no criminal conviction was obtained : *"Lebed, now 15, of Cedar Grove, neither admitted nor denied the commission's findings, but agreed to refrain from similar behavior. His lawyer, Kevin H. Marino, described him as an intelligent, well-rounded youngster 'who has been very interested in the securities industry for some time and has been an avid investor.' ... Lebed traded in custodial accounts ... that were in his father's name, the SEC said."* Here SEC indicates the federal American regulatory agency, the Securities and Exchange Commission. *"The SEC found that after Lebed bought a stock he sent hundreds of identical, false e-mail messages, each under a fictitious name, touting the stock he had just purchased."* In exchange for return of the $285K, the SEC agreed to abandon its investigation and accusation, it would seem. There is a moral to the story: *"Regulators said the case demonstrates the risks of Internet stock tips."*

Amazon.com continues to lose money, but its more recent problem is bad publicity. Several stories found at *The Register* during the first half of September show just how clumsy Internet retailers can be. First, some customers were angered by Amazon's revelation that it probably was preparing to sell personal information about its customers. This ended with a story posted on September 14th with title *"Civil liberties group cancels Amazon partnership."* The organization is the Electronic Privacy Information Center (EPIC), and its letter summarizes objections as follows: *"Recently Amazon announced that it could no longer guarantee that it would not disclose customer information to third parties. Because of this decision, and in the absence of legal or technical means to assure privacy for Amazon customers, we have decided that we can no longer continue our relationship with Amazon."* But that was just the beginning. Next came stories about discriminatory pricing. A story dated September 8th has title *"Amazon's Loyalty Tax: IE users pay more."* The complaint is this: *"DVD shoppers have discovered that Amazon's prices can vary wildly, with loyal registered users paying up to 16 per cent more for the same items than first-time purchasers. It's also emerged that Netscape users can gain discounts over Internet Explorer users ..."* In a story dated September 10th, the phenomenon was summarized as follows: *"... users discovered they could gain bargains by deleting their cookies or switching to another browser. Amazon claimed it was a temporary experiment."* Finally, there was refusal by Amazon to fill orders at advertised prices. The title of a September 13th story is *"Amazon reneges on DVD prices."* Summarizing recent bad decisions: *"Amazon has lately launched an aggressive campaign to become its own worst enemy. ... The company has since decided to back away from the price-test disaster, and will reimburse customers whose orders it affected."* A couple of weeks later, an *ABC News* story had title *"Amazon Accused of Sneakiness."* Dated September 27th, this concluded with a quote from seemingly-repentant Amazon head Jeff Bezos: *"I think what we did was dumb, dumb, dumb."* Story author Kevin Newman observes that this is *"a lesson the company says it regrets, but online customers may remember."* Really. Meanwhile, competitor Barnes and Noble (see the July, 1999, issue) seems to allow a customer to prevent the disclosure of personal information. Found at the B&N Web site on September 17th was the following explanation: *"From time to time, Barnes & Noble.com shares customer information -- never credit card information -- with trustworthy third parties. You can tell us not to share this information at any time by clicking here."*

"Votes for sale online in the US" is the title of a story posted at *The Register* with date October 5th. It seems there is this Web site *"Voteauction.com where people can register to sell their vote to the highest bidder."* Chicago was the original home of the site, and local politicians there were quick to demand closure (buying votes is illegal, obviously). But the dispute is not so simple. It seems that entrepreneurial ownership has moved offshore. According to the story, the Web site includes an announcement that *"Voteauction.com has recently changed ownership. It is now owned by an Austrian holding company that has invested in many of America's new, emerging industries. We feel that the American Election Industry provides unique new opportunities for the foreign investor."* Who can deny that? According to the story, *"the new owner is running the site from Austria, and might just be outside the jurisdiction of any American authorities."* Your Editor can not resist the analogy to offshore gambling (see the October,

1999, issue). So, what does a vote cost, anyway? It depends on location. *"The value of a vote varies widely from state to state. In Illinois, where 168 votes have been registered for sale, the asking price is a mere $15.79. California votes, by contrast, are going for more than $5,000."* If legendary Chicago gangster Al Capone were still with us today, not doubt he would be proud!

Domain names number 30 million today, and are expected to double to 60 million by 2002. This according to a story posted at *The Register* with date October 4th. *"The top Internet suffix is the prized .com --- more than 18.3 million ... .net has more than three million domains, and .org two million. .uk, with 2.2 million, is the most popular country level domain, followed by Germany's .de with two million."*

Priceline (the *"name your own price"* people) was introduced in the July, 1998, issue. For travel, the concept seemed great. But what about groceries and gasoline (more recent extensions)? *"Priceline Drops a Bombshell"* is the title of an *ABC News* story (from The Street.com) dated October 5th. The subtitle is *"Priceline.com discontinues name-your-price groceries and gasoline."* So what happened? Did Priceline's bubble finally burst? *"Shares of Priceline.com plunged today after Priceline WebHouse Club, a privately held licensee of Priceline that offered name-your-price groceries and gasoline, said it will shut down. Jay Walker, the founder of both Priceline and WebHouse, said managers did not think they could raise the money needed to complete the business plan."* Conclusion: Nearly seven months later, the March crash of technology stocks (see the July issue) has extended to larger and better known Internet companies. More than just the weaker ones are being rudely reacquainted with real-world (as opposed to *new-paradigm*) financing. Yes, it still **is** important to make money. Oh well, travel remains: *"The announcement today does not affect Priceline services such as air travel, hotel rooms, rental cars ..."* But there was another, smaller failure, too: *"Also today, a second Priceline licensee, Perfect Yardsale Inc., announced it was going out of business. The company offered used merchandise to consumers through the Priceline Web site."* The following weekend, the written summary of Bob Brinker's radio talk show stated: "*business models are being studied for flaws. And that's what happened to Priceline, which saw its stock decline by over 95% in less than a year,"* Also, radio advertising heard October 9th continued to mention groceries. About company value that same day, CNNfn *"Snapshot"* reported the following for PCLN: *"52 week high $ 104.25 … 52 week low $ 4.63"*

"Airlines Push Wireless Internet Access" is the title of an AP story found at the Web site of *ABC News*. Dated October 8th, this explains that airplanes are not directly involved. Rather than connection within planes, it is connection within airports --- while waiting for planes --- that is the latest innovation. The reason is not reassuring, either: *"Hoping to soothe delayed passengers, several airlines want to install wireless Internet access in airport terminals that will allow travelers to work, surf the Web or even watch digital movies to pass the time. Delta Air Lines is already offering the service at its terminal in Vancouver, British Columbia, and plans to have it available by the end of next year in its main hub cities ... United Airlines ... announced plans to start its own Internet service next year at 30 airports. Passengers will need only a computer with the right wireless modem ... and a few dollars to pay for access. Frequent fliers will be able purchase an unlimited access account for $40 to $60 a month."* So, that is for airports, where the new service looks like a win-win offering. But what about the planes? *"In-Flight Access Further Off"* is the title of a later section. According to an American Airlines spokesman, *"it's probably going to be 2001 until we even have a beta test. ... There's a lot involved in flight. It's a lot more complicated than it might seem."* Beyond the technical problems, there is some concern about priorities and demand. One traveler is quoted as asking sarcastically : *"Who's worried about e-commerce on an airplane when they don't even have seats that are comfortable?"*

Cyber cars are what the Japanese have named their new Internet-connected automobiles. This according to an AP news story that was found at the Web site of *ABC News*. Dated October 9th, the picture near the top has caption: *"A Tokyo driver tries out one of Honda's new cyber cars. The auto comes with Internet access, so drivers can get information on thousands of restaurants or local restaurants right on the dashboard."* While skeptical of the practicality of initial implementation, the article goes on to explain that *"Honda Motor Co. and other Japanese auto makers are touting their cyber cars as the wave of the future. Honda's Internavi --- offered as a free service --- already has 40,000 customers in Japan. The Honda system builds off a computer satellite navigator found in some five million cars in Japan. To the navigator --- a dashboard-mounted paperback-sized screen that shows maps --- technicians have added a modem, browser capability and a mobile phone. The navigation machine costs about $1,800, and the extra parts for Internavi cost about $640, including installation fees. Honda has no plans yet to introduce Internavi in the United States. The idea is exciting."* But what about some practical problems of implementation? According to story author Yuri Kageyama, *"the trouble starts with what's missing: a keyboard. To type in an Internet address, for example, drivers have to keep pushing a button to move a cursor along an alphabet list on the monitor, entering the letters one by one."* At least the Internet service is unavailable while actually driving (no joke) ! *"The Net function of the machine turns off automatically when the car is in motion as a safety precaution required by Japanese law."* No doubt about it, Japanese auto makers are ahead of Detroit when it comes to innovation. On the street this year are extremely efficient hybrid (gasoline and electric) cars. From time to time, Clark Howard talks about the 70+ miles per gallon attained by his new Honda Insight on the highway (for city/highway,

61/68 mpg was the official rating at **www.epa.gov** as seen October 14th). Too bad he is not yet able to add the Internet connection! About other Japanese manufacturers: *"Nissan Motor Co. has put cell phones in their cars that connect to an operator who finds the requested information and sends it back through the cell phone into the car's navigation machine. Toyota Motor Corp., meanwhile, has a voice-activated system. The driver shouts out items such as 'news' from a set menu, and the data pops up on the screen. Honda engineer Satoshi Murata says his company is banking on a future when Net access will be taken for granted everywhere, not only at home but also in cars."*

"Canada torches all .ca domain names --- owners must reapply" is the title of a story that was posted at *The Register* with date October 12th. As incredulous as it sounds, re-registration seems to be Canada's way to solve the problem of disputes involving names. November 1st is the registration deadline set by CIRA, the Canadian Internet Registration Authority. As story author Kieren McCarthy concluded, *"this is still an extremely odd way of sorting out URL disputes ... Oh, and you have to pay another $20 to get back your domain. God, we hope WIPO and ICANN don't get to hear about this – this kind of lunacy is right up their street."*

Recall MUNPACK was mentioned in the October, 1995, newsletter. If the header of an encoded message mentions base64, this is the tool that would be applied by your Editor. But MUNPACK failed on October 13th, when applied to a message from Hong Kong. Peculiar about this message was a final line of the header: *"X-MIME-Autoconverted: from 8bit to base64 by marble.bpa …"* Since your Editor did not know what else to try, he sent a copy to Orlando Hevia of Universidad Tecnologica Nacional in Santa Fe, Argentina. Some two hours later, the answer was received: *"I decoded the text with Windows Commander, a shareware program similar to Norton Commander. The text follows (I deleted some strange characters):"* Unfortunately, encoding was just half the battle. The attempt to send a reply bounced as follows: *"This is the Postfix program at host mx8.263.net. I'm sorry to have to inform you that the message returned below could not be delivered to one or more destinations."*

Rush Limbaugh's Web site was mentioned in the October issue. Since then, it has been the subject of considerable media attention because it seems to be a clear winner. First seen at Yahoo was a Reuters story dated October 30th which had title: *"Traffic to Rush Limbaugh Web site jumps."* Here are some numbers *"according to leading Internet audience measurement service Nielsen// NetRatings. ... Rushlimbaugh.com attracted 399,000 unique visitors ... Men comprised 70 percent of the total traffic ... Traffic to Limbaugh's Web site has grown 250 percent over the past eight weeks."* But what about the competition? Popularity as a television host does not easily translate into popularity of the associated Web site, it seems clear. November 1st, a Forbes (see www.forbes.com) story explained the numbers in more detail, and compared with 276,998 for Martha Stewart (see www.marthastewart.com) and 203,838 for Oprah Winfrey (see www.oprah.com) --- both popular television personalities. On the other hand, measurements were for the week ending October 22nd, which is 2 or 3 weeks prior to a presidential election that occurs once every 4 years. Rush specializes in politics, and there is a lot of interest this year because of the close race between George W and Algore (the latter is one of Rush's jokes; Algore is pronounced to rhyme with Igor, as in the vampire Count Dracula and his semi-mythical, 15th-century Transylvanian castle).

European EMTP User Group (EEUG)

The year-2000 annual meeting of EEUG was held in Wroclaw, Poland Sept. 25-26 as should be summarized in detail in the following issue. As this January issue is being closed for pre-publication review on November 6th, your Editor does not yet have a report to summarize, and total document length is close to the desired 20 pages.

Watcom ATP for MS Windows

Watcom TPBIG required 200 Mbytes of local paging file to link, according to the April, 1999, newsletter. Well, that waste continues to grow. September 11th, to satisfy a request from EEUG, BPA's Dr. Tsu-huei Liu expanded the NT resource to 250 Mbytes. But this, too, was inadequate to create a new, FGH-dimensioned TPBIG, so 300 Mbytes followed, and this was found to be adequate. Good thing we now have Gigabytes to waste (see mention of new 550-MHz PC in the preceding issue)! About Watcom and EEUG, it should be explained that EEUG Chairman Kizilcay first had asked for, and was supplied with, Salford and GNU Mingw32 ATP versions. But he had mentioned preparation of a CD for members, and everyone knows that a 550-Mbyte CD would be mostly empty. So, your Editor offered the Watcom alternative, too, and Prof. Kizilcay agreed. Although Watcom TPBIG no longer is much used for development, it is created from time to time --- when free time exists, or when there is need for an independent evaluation. The Watcom compiler provides a fourth alternative (after Salford, Mingw32, and F95 Lahey) that is useful when the other three do not all agree (e.g., in the preceding issue, see mention of voting about DC-60) .

Watcom STOPTP failed to show the card-image ruler and the last-read data card prior to enhancement on November 4th. Elsewhere, a new 8th subcase of DC-37 is mentioned, and this deliberately terminates execution using STOPTP, the installation-dependent error stop. Following WATCOM execution using RUNTP DISK, your Editor failed to find the desired output in DC37.LIS but did locate it in DC37.DBG (where it did not belong). When BOTH was used, the output in question was sent

to the screen only. Not the best, so very old output to LUNIT6 was changed to OUTSIX as has been used for years by Salford EMTP. In retrospect, it is strange no one ever complained about the Watcom lack.

Brain - Damaged MS Windows

"Supreme Court declines to hear antitrust case" was the title of a September 26th story by *ABC News*. About context: *"... the government tried to bypass the lower court under a statute known as the Antitrust Expediting Act. This obscure law makes it possible for a district judge like Jackson to send an antitrust case to the Supreme Court if he determines the case is important and in the public's best interest to be heard by the higher court. ... Today the nation's high court tossed it back down to the appeals court by an 8-1 decision ..."* MS wanted to delay any decision, and this guarantees added delay: *"Legal experts' estimates for the time to complete the case now range from a year to more than two."* Do not forget the November elections, either: *"... a new Republican administration under George W. Bush in January could decide to abandon the case"* according to an ABC News legal analyst. A view from the financial sector was offered by Morningstar (M*). That same day, *"Microsoft finally wins a round in antitrust case"* was the title of an opinion by Joseph Beaulieu. Under the section heading *"What it means for investors,"* the author begins: *"This is very positive news for Microsoft investors. The court of appeals is generally considered to be more sympathetic to Microsoft than was Jackson ... Given that the prosecutors got just about everything they wanted in Jackson's courtroom, Microsoft has nothing to lose -- and much to gain -- in this appeals process. Microsoft stock has gained about 5% so far on the news ..."*

"Microsoft hacked" is the headline of an AP story dated October 27th that was found at the Web site of *ABC News*. The subtitle is: *"Hackers break into software giant's network."* Unlike previous incidents (e.g., see *breached* in the January, 2000, issue), no one is minimizing the potential seriousness of this latest incident. The story begins: *"Hackers reportedly broke into Microsoft Corp.'s computer network and may have stolen blueprints to the latest versions of the company's Windows and Office software. Microsoft and the FBI are investigating the break-in, which was discovered Wednesday by the software giant's security employees, The Wall Street Journal reported on its Web site Friday ..."* About the technique used: *"... it appeared the hackers accessed Microsoft's system by e-mailing software, called QAZ Trojan, to the company's network and then opening a so-called back door through the infected computer."* A CNN story that same day indicated probable loss: *"The Wall Street Journal said the unknown hackers were believed to have stolen blueprints to its most valuable software, including latest versions of Windows and Office. ... A source close to the matter told CNNfn.com the hackers could have had access to internal systems for as many as 60 days."* As for possible motive, *"anyone getting access to the underlying code might be able to use it to write their own software, or sell the code to other unscrupulous operators. The hackers could try to blackmail Microsoft into paying to win back the swiped source code - what industry experts call a 'data hostage' ploy. Industry experts said that getting access to Microsoft's source code could theoretically be of benefit to the software giant's competitors."* There is no reason to believe that the thieves were Americans, or even that they might be punishable by American law. Like offshore gambling, this theft might be beyond American jurisdiction: *"passwords used to transfer the source code behind its software were being sent from the company's computer network in Redmond to an e-mail account in St. Petersburg, Russia."* Days later, MS was trying to spin the story differently, however. *"Damage Control"* is the headline of an AP story dated October 30th that was found at the Web site of *ABC News*. This begins: *"Microsoft Corp. says a hacker had high-level access to its computer system for 12 days -- not up to five weeks, as the company had first reported -- and that the company monitored the illegal activity the entire time."* As your Editor has observed before, MS is about as credible as the White House when it comes to matters of real importance. *"Experts Skeptical of Microsoft Claims"* is the title of a later section of the story. Note the ironic connection to that famous ILOVEYOU virus (see the July, 2000, issue): *"The most recent hackers apparently used ... a sneak attack concealed as an attachment in an e-mail."* What goes around, comes around (colloquial adage). This looks like poetic justice: it is only appropriate that MS itself finally has contracted the disease that it made possible for others (see the July issue).

New EEUG List Server

Anonymous moderation was mentioned in the preceding issue : *"from this distance, I have no idea who is responsible for allowing the flood of messages through."* Responsibility for this, too, can be traced to Bill G's brain-damaged MS software as used at BPA. In E-mail dated September 21st, fellow moderator Laszlo Prikler explained: *"See the 'Approved by' field after activating the 'Show all headers' flag in your e-mail reader. Unfortunately I was not able to find any such switch in Outlook, when I searched for that after your inquiry some weeks ago. I hope you will have more success, or already find that in the meantime."* No, neither Dr. Tsu-huei Liu nor your Editor knows how to learn more about header information than the selected four lines that Bill G wants us to see. The *"Format"* button would be a logical place to put such control, but seems to offer none. The *"View"* button does offer *"Message Header"* which sounds promising enough, but which serves only to turn off the 4 lines that one normally is allowed to see. Not good, this brain-damaged software from MS.

Laszlo Prikler solved the just-stated problem of anonymous moderation for **some** users of MS software. In E-mail dated October 9th, he advised: *"I found how you can see that piece of information: Open the message as you normally do (now you can see the basic header info in the top 20% of the window, and the message body). Click on File | Properties. You can see here a General and a Details tab. Click on Details. The complete header info is there. On the lower right corner there is one more button (I forgot its name). If you click on this, you can see the complete header info plus the message itself in a Notepad like window. It worked for me using a colleague's MS Outlook Express, so I hope it will work for you too."* Well, at BPA, using Outlook 98 under NT 4, the first deviation is at the top, where your Editor sees *"General"* and *"Message ID"* tabs (not a *"Properties"* tab). Clicking on the second of these, this is all the window shows. For Prof. Prikler's own informative message, this is the single line

```
c=US;a=;p=BPA;l=EXCH0300100917254H78JADB
```

Really revealing, eh (joke)? Buttons at the bottom are *"OK"*, *"Cancel"*, *"Apply"* (inactive), and *"Help"*. Conclusion: BPA paid Bill G too much for this top-of-the-line MS software.

Headers of E-mail messages were seen for the first time at BPA on October 12th, following Prof. Prikler's 3rd attack on the problem. He wrote: *"I found 'real' (i.e. not Outlook Express) MS Outlook 2000 on a colleague's machine. The complete header information could be displayed there this way: a) If the message is still in the 'Inbox', a right mouse click pops-up a floating menu. You should see there an 'Option' item. b) if the message is already open for reading, the Option dialog box can be activated via the 'View | Option' menu. After selecting Option, you can see a dialog box having a scrollable window at the bottom called 'Internet headers' It is strange how differently this header info is offered in different MS products. MS Outlook Express completely differs from MS Outlook 2000 in that sense. My colleague's PC runs Win98, so I would not be surprised much if the above advice did not work with your NT and Outlook 98. Anyway, I am sending the new advice."* Yes, this third recipe did work. Prof. Prikler is to be thanked for his persistent efforts, which finally paid off --- at least for a short period of time (a month or two). In response later that same day, your Editor explained the problem with time: *"This ability to read now does not preserve the information in our archives. 'Save as' results in storage that is missing the headers. So after a month or two, as old E-mail is purged, it appears to me that the information will be lost. Too bad."*

Rejection of advertising of a journal unrelated to ATP was the progress of moderators during mid-September. The story began September 8th with a proposed message that had salutation: *"Dear power-globers, atp-neters, electrical engineering researchers and educators."* That is the closest the message came to ATP: *atp-neters*. The message continued: *"From time to time I am here in this forum to invite researchers and educators around the world to submit their work ... The Journal is included in the Engineering Citation Index since the beginning of 1999. Further information on how to publish in the journal can be obtained at the Journal's pages ... We also would like to ask you to spread the news around through personal contacts and local lists. Thanks in advance for you attention."* EEUG Chairman Kizilcay had volunteered to discuss the problem with the proposed author, and 4 days later he explained: *"Only messages closely related to ATP and electromagnetic transients are accepted ... At present, we are in the transition stage. The operation and moderation rules of the new list will be announced publicly ... soon. When you think the … Journal is suitable to submit papers in the field of electromagnetic transients, I kindly ask you to modify your announcement indicating the relation to ATP and transients."* This was not done, however. Instead, 3 days later, the author replied: *"I think that [it] is not up to me to think if an indexed journal in the technological area (I think Electromagnetic Transients is inside Electrical Engineering) is suitable or not to be announced in your list server. This is your job. I also thought the announcement of a Journal in the Electrical Engineering field could be of a help for researchers in the Electromagnetic Transients field. I am very very surprised with your refusal."* A day later, your Editor reviewed these two messages, and observed the following to fellow moderators. Prof. Kizilcay's request *"seems clear enough, and reasonable, to me. Next I read"* the response which *"does not respond to the request. Of course transients are a part of engineering, and engineering is a part of science. Science is also a part of life and modern civilization. So what? None of this responds to the need for ATP-related writing. It is irrelevant. ... It is curious that the author mentions electrical engineering explicitly. The title of his journal does not. Connecting to … his Web page, I see the officially-declared purpose: '... to promote scientific technical work from ... and foreign researchers, in some Engineering areas ... Computer Sciences, Mathematics, Physical Sciences, Chemistry and related fields.' Not only is there no mention of transients, electricity clearly is just a small part of a big total. ... Even if one accepted the premise that ATP users might be interested in the subject, why should they have special interest in this particular ... journal as opposed to some other?"* About being surprised by EEUG's refusal, your Editor wrote: *"I believe it. After years of free publishing via the Fargo list server, the imposition of rules such as relevance to ATP might come as quite a shock to ..."* About the salutation, your Editor had wondered whether the same message also might have been sent to Power Globe (see the October, 1996, issue). Apparently so (another good reason not to be a subscriber). In E-mail dated September 18th, moderator Laszlo Prikler observed that *"ATP-EMTP-L@ received just a cc: of his message. I deleted the power-globe message, but I clearly remember ..."*

The so-called *"=20 problem"* was explained by your Editor at the end of EEUG list server mail from Tom Field of Southern Company Services in Birmingham, Alabama,

USA. Mr. Field included an attachment from Dr. Ing. Walter Gimenez in Spanish-speaking Argentina, and this was broken frequently by extraneous "=20" or sometimes just by a lone equal sign. Let's illustrate using the start of the main paragraph: *"In t= his=20 respect, I have made my PhD thesis in the topic and I have written some pape= rs=20 (IPST=B499, Lusas 97 and 99), I have also carried out my own programs for th= e=20 calculation of the parameters of the pattern (Mayr, Cassie y/o Mayr+ Cassie)=20= and=20 invented a new way ..."* This was September 26th, when your Editor asked in an appendix: *"What are such extra characters, where were they inserted, and how can they be avoided in the future?"* Moderator Hevia, a colleague of Dr. Gimenez, offered the following opinion: *"I think that this =20 is really ASCII 20 (or ASCII 32 (hex20)), and is added by the email program. The =20 is not a Spanish character, ... but is due to some Spanish Outlook feature."* October 24th, Mr. Hevia added an interesting observation about possible avoidance: *"I received two copies of a same message --- one directly and another via my IEEE alias. The first message has the =20 as you see in some Spanish Outlook messages, the second apparently was filtered. Maybe the same procedure could be applied to the listserver."*

Corrections to This Newsletter

Directories \DISLINL and \DISLING were mentioned in the preceding issue. That much is correct: separation of Lahey DISLIN from Mingw32 DISLIN is accomplished this way. But there was a following claim that *"associated DISLIN and PATH environment variables"* can not be separated. While true, this is irrelevant as first pointed out October 3rd by BPA's Dr. Tsu-huei Liu. What she showed your Editor is this: GNU Mingw32 DISLIN graphics require neither the DOS symbol DISLIN nor any PATH definition. Lahey DISLIN does, but Mingw32 DISLIN does not. Fortunately, free DISLIN for Mingw32 is simpler. As a result, RUNTP for Lahey could be restored to its original two lines, and AUTOEXEC could be used for all definitions. Those definitions, it follows, are for Lahey only (none is required for Mingw32). This is the good news: separation is simpler than was portrayed in the October issue.

ATP Licensing Problems

EPSRI (the Chinese EPRI) outside Beijing, China, continues to isolate EMTP commerce as required. Yet another department (see the April, 1999, issue for mention of the first) applied for a license to use ATP during September, and it was not necessary for the user group to raise the issue of required isolation from DCG / EPRI EMTP. Jiang Weiping, Director of Power System Simulation Center, clearly stated what was required in an attached note: *"There may be some people ... who have engaged in EMTP commerce. But in the Simulation Center none of our staff is related to their activities."* It does sound as though ATP finally has reached those persons who specialize in electromagnetic transient simulation: *"The Simulation Center is a consultative lab for many power system projects (e.g. Three Gorges, Tian-Guang AC/DC engineering etc.). We use Hybrid Simulator, real-time software and off-line software but will never sell them. The Simulation Center is a public lab to which visitors from all over the world are welcome."* Of course, the Three Gorges dam is world famous (the world's largest hydro generation site?).

EDF was the source of a request for ATP. This according to October 5th E-mail from EEUG Chairman Mustafa Kizilcay, who was answering a request from *"Robert jeanjean; 1 ave G. de gaulle; 92300 Clamart FR."* Of course, EDF indicates Electricite de France, the national electric authority; and Clamart is a suburb southwest of the center of Paris where research has been located for decades. As justification: *"Using a lot of simulation for transient analysis, I'd like to use the last version of ATP. Can you send me that software, or can you give me the right way to obtain that software."* Prof. Kizilcay correctly noted the complication of EMTP commerce by EDF, and referred the inquiry to the Can/Am user group for a response. This was simple enough, later that same day: *"… this is our understanding over here, too. In years past, EDF certainly was involved in 'EMTP commerce' as defined by our form letters. As a result, instead of free licensing, reciprocity would apply. Since I am going to send a copy of this note to Mr. Jeanjean, I will append our LICENSE.PDF for his consideration. … It does sound as though this person is unaware of the complication caused by EDF's participation in the sale of EMTP-like programs (including MORGAT). To check the spelling of MORGAT, I searched old messages from the Fargo list server. I saw where a couple of EDF authors wrote a paper for the 1995 IPST conference. As far as we know, MORGAT, too, is being sold commercially."* More next time (complication of the story increased rapidly).

TOP, The Output Processor from Electrotek Concepts in Knoxville, Tennessee, USA, first was mentioned in the July, 1992, newsletter. Because Electrotek is not licensed to have and use ATP materials (see the October, 1996, issue), compatibility of TOP with ATP .PL4 files is problematic. From time to time, an ATP user will complain of trouble, and your Editor must deny all knowledge. He explains that Electrotek created its own problem, and has only itself to blame for no longer having access to ATP and its specifications. The issue arose again --- this time in semi-public E-mail of the EEUG list server dated October 6th. A summary follows. First, there was a general question : *"Does anyone know if TOP 2000 has a limit in number of nodes?"* Next came a recommendation of help from the factory: *"Electrotek has a TOP Forum on their website. In the past, they have*

been very responsive for bug fixes." It was the following morning before your Editor saw these messages, and was able to issue the warning that follows: *"Readers are reminded that Electrotek Concepts no longer is ATP-licensed. ... Electrotek Concepts lost its previously-free ATP license no later than July of 1989 because of 'EMTP commerce' (which is prohibited by the free licensing agreement). Apparently after losing EPRI support, Electrotek had expressed interest in re-acquiring ATP. But reciprocity then applied, and the price no longer was either free or reasonable. Instead, the price was Electrotek's own price! Not surprisingly, Electrotek showed no further interest. Today, Electrotek Concepts remains unlicensed, and is not entitled to view ATP materials. So how can anyone effectively report trouble using TOP2000 on an ATP .PL4 file without disclosing the data that was mishandled? The Can/Am user group* ***does*** *consider program output to be ATP materials as mentioned in licensing agreements. This includes .PL4 files, which are not to be disclosed to any unlicensed person or organization."* Conclusion: moderation did not prevent questionable information this time. The learning process continues (list server moderation is very serious business, and it requires both experience and care; if in doubt, do not approve).

Power Company Politics and Religion

Deregulation of electric power in Australia and New Zealand was mentioned in the preceding issue. October 2nd, the same Ashok Parsotam of Southpower in Christchurch sent E-mail that included a *"Press Release: New Zealand Government."* The document supposedly comes from www.newsroom.co.nz It does seem that San Diego (see preceding issue) is not the only place where theory and practice fail to exhibit the hoped-for correlation. About deregulation in New Zealand: *"Recent changes to the electricity industry have not brought the expected benefits to domestic consumers. This led the Government to establish the Caygill Inquiry into the Electricity Industry."* Included in the report is a warning more threatening than Bill Clinton's attack dogs: *"Electricity lines companies and Transpower will be placed under price control if they breach thresholds or criteria to be developed by the Commerce Commission."*

The hvdc intertie to California was mentioned in the July, 1992, newsletter. Its future now is being debated openly by an increasingly-hesitant BPA. A 6-page brochure dated October, 2000, was published by BPA as part of public discussion. Facts and issues are interesting. Age is approximately 30 years, and California utilities would like BPA *"to commit to maintaining its end of the DC intertie at the current 3,100 megawatt capacity for the next 30 years."* But the original mercury-arc valves remain in service. Replacement by thyristors eventually (e.g., in 10 or 15 years, perhaps) will be required, if capacity is to be maintained. The other alternative is simply removal: *"retiring the mercury arc converters at Celilo would reduce the intertie capacity to 1,100 MW."* BPA estimates the cost of replacement at $57 to $100 million --- nothing compared with $400 million/year that are wasted on fish (see the July, 1999, issue). But economically and/or politically, there no longer seems to be commonality of interest between north and south. Californians want the high capacity for continuing access to cheap northwest hydropower, and perhaps also for added security during summer outages down there. But new BPA management no longer is the resourceful collaborator that old management once was. It looks to your Editor as though management wants to protect itself from criticism that might result from a simple decision to upgrade. Doing nothing might be safer politically. Also, if the upgrade is to be made, it might be safer for BPA politicians to appear to be forced by others to perform the work.

BSTS Ltd. in England is mentioned elsewhere in this issue. Because the name meant nothing to your Editor, he asked Steve Nurse, the person who had used the name, for clarification. His response on October 12th illustrates once more the global turmoil of the electric power industry: *"Regarding your query about BSTS, I am not surprised that you have not heard of us, we have been taken over by so many different companies and had numerous name changes that I sometimes forget myself who we are. For your information, a brief company history: 1) A. Reyrolle Ltd; 2) NEI Reyrolle; 3) Rolls Royce Reyrolle Technology; and 4) British Short Circuit Testing Station (BSTS) Ltd (VA Tech Reyrolle Ltd)."*

www.emtp.org for ATP Use

Web termination **.org** indicates *organization*, and it is widely used by non-commercial operations such as IEEE (see **www.ieee.org**). Since ATP is non-commercial, **.org** really was preferred. Fortunately, during mid-September, EEUG Chairman Mustafa Kizilcay was able to reserve **www.emtp.org** for use by cooperating ATP user groups of the world.

About *emtp* in the middle, this, too, was your Editor's preference. In E-mail dated September 12th, Prof. Kizilcay had offered several alternatives: *"Today I learned from my provider that you can visit http://www.internick.de to check free international domain names. My search results ... are as follows : emtp.com ..., atp.com, atp.org, and atp.net are not available. But the following domain names are available : emtp.org, emtp.net, atp-emtp.com, atp-emtp.org, emtp-atp.com, and emtp-atp.org. We should be quick to snatch one of the above free ones or a new one that you propose."* Two days later, your Editor agreed as follows: *"Interesting. Well, that answers the question about emtp.com, which I was inclined not to use, anyway. ATP is not commercial. The more I think about it, I prefer .org if this is understood internationally to be non-commercial. I*

guess my preference would be emtp.org provided most Europeans understand that .org means non-commercial." Note this choice re-emphasizes what ATP is: a version of EMTP. The name EMTP never was abandoned when DCG/EPRI attempted commercialization beginning in 1984. Rather, a non-commercial version of EMTP that was not in the public domain was planned. This is what was given the name ATP the following year, as explained in the September, 1988, newsletter story.

E-mail can be addressed to various parallel mailboxes that involve the domain name. This is yet another of Prof. Kizilcay's great ideas. **canam@emtp.org** is the Internet address of the Can/Am EMTP User Group as first used September 19th. Considering E-mail on Dr. Liu's PC at BPA, MS Outlook 98 indicates that Prof. Kizilcay's inaugural message of this date was *"To:"* this address rather than the usual **thliu@bpa.gov** The "Subject:" of Prof. Kizilcay's message was *"Please visit www.emtp.org"* and he concluded: *"There is something new in this Email I sent you. Have you noticed it? No? Then check the header."* Yes, amid all the other messages to the BPA address is this exceptional one to **canam@emtp.org** That Prof. Kizilcay can give Dr. Liu this alternative Internet address without any change within BPA is surprising. But not being able to see full E-mail headers using Outlook 98, it is not possible to see the trickery involved. However, it works; and the Can/Am user group is happy with the alternative, which henceforth is recommended for user group business. Of course, other user groups can have parallel E-mail addresses, if this is desired. So, if the user group acronym can be remembered, the appropriate Internet address for ATP business sometimes can be guessed. Nice.

The official announcement of the new home page for ATP was made by EEUG Chairman Kizilcay in semi-public E-mail of the EEUG list server dated October 24th. *"Improvement of the mailing list ATP-EMTP-L"* was the subject, and the message began with a mention of JAUG and Can/Am participation. Prof. Kizilcay continued: *"Other user groups have also assured their support. The mailing list is open only to licensed ATP users. In the future, subscription will be performed by user groups after checking ATP license of the user concerned. As you may have noticed, the list is being moderated by several ATP experts around the world. We are at present in the transitional stage. ... A new official WWW page for ATP has been established with the URL http://www.emtp.org This Web site is not complete, but all necessary general information can be found there including operation and moderation rules of this mailing list. Please visit ... and read these rules carefully. These rules have been approved by major user groups. Next, the present subscription list will be revised and replaced by verifying the ATP license of subscribers. Different procedures are used by different user groups for this purpose. All ATP users from Canada, U.S.A. and countries of North America are asked now to fill in on-line the new WWW form ... whether or not they already are licensed. ... After clicking on 'Send data' button, the user should wait until a new Web page appears on the screen. This ATP licensing agreement is generated automatically. The user should sign and send it by mail (neither fax nor E-mail is accepted!) to the user group address given there. Other user groups first will try to identify their own licensees among the present list server subscribers. In cases of uncertainty, subscribers should be asked to demonstrate that they are ATP - licensed . Details regarding subscription procedure will be announced by user groups in the mailing list. In this respect, on-line Web ATP licensing forms are available also for subscribers licensed by EEUG and JAUG. The deadline of the re-subscription is 20 November 2000. As single action, all old subscribers will be deleted and replaced by the new subscription list on this date."*

Standler Surge Function from Hevia

The Standler surge function was made available in ATP on September 29th as a third basic alternative of Type-15 sources of the electric network. Inspiration came from Orlando Hevia of Universidad Tecnologica Nacional in Santa Fe, Argentina. The first time your Editor can recall seeing or hearing the name Standler was in E-mail from Mr. Hevia dated September 14th, which had *"Subject: a new source for ATP?"* This began: *"I send you the code for a new surge source, the so called Standler function. This function is similar in shape to the Heidler function, but it is defined by* $V(t) = C * (t / A) ** B * exp (-t / A)$ *The program I send estimates the best parameters A, B and C for this source ..."*

The name Standler comes from an electronics expert, not a power system expert, it should be mentioned. As a reference, Mr. Hevia mentioned a decade-old book, which Barnes and Noble (B&N) lists as: *"Protection of Electronic Circuits from Overvoltages"* by Ronald B. Standler, 1st edition, 464 pages, John Wiley & Sons, November 1990. At a B&N price of $145, your Editor does not plan to order a copy any time soon. According to B&N, *"bn.com customers who bought this book also bought"* two other books. These had titles *"Microchip Fabrication ..."* and *"Printed Circuits Handbook."* According to the publisher, the book *"includes protection methods for equipment operating from mains with nominal voltages up to 1 kV rms."* To conclude, this clearly is not high voltage engineering of power systems, so there is some concern about applicability to high-voltage surges on power lines.

"Surge Function by Gabor Furst" was the title of a story in the July, 1996, issue. This is good background reading to understand the extension of Type-15 sources to Standler. Mr. Hevia mentioned the Heidler alternative, which can be traced to Bernd Stein of FGH in Mannheim, Germany. The Heidler source is old, with the third subcase of DC-19 mentioning a letter dated 30 July 1986. Like Mr. Stein's

implementation of the Heidler function, the Standler function is being hard-wired in ATP FORTRAN. This contrasts with Gabor Furst's work, which was confined to MODELS data. Alternatively, today it could be done using the pocket calculator (e.g., a Type-10 source). Recall parameters of Mr. Furst's model could be determined interactively and graphically : *"SURGE1 and SURGE2 are small, interactive, graphical programs that were written to allow the Intel-based PC user to see his surge as a function of time, and adjust all three parameters interactively."* Well, author Hevia relies on no such interactive assistance. He performs his parameter fitting without reliance upon user judgment. About similarity of functions, note that the Standler term (t / A) ** B corresponds to Mr. Furst's independent discovery *"that simply raising (t / T) to the power of k provides the answer."*

Orlando Hevia's fitter began as separate program STANDLER.FOR which was explained in E-mail dated September 18th. This began with an explanation of the need for Heidler or Standler: *"The double exponential surge function has two limitations: a) Short waves as 8/30 usec of IEC 60-2, ANSI/IEEE Std 4-1978, and ANSI C62.1-1984 cannot be represented by a double exponential function, and b) The maximum slope occurs at t=0, but the measured waves has the maximum slope near the peak. The Standler function ... is more appropriate for short waves. The user can input the three parameters A, B, and C directly. But if he does, he has no direct control over the peak, the rise time, and the time to decay to half of the peak. My fitter, which uses a Newton-Raphson procedure, allows the user to specify such statistics of engineering importance. My fitter determines A, B, and C for the user."*

Node STAN1 was added to the 3rd subcase of DC-19 to illustrate the basic Standler function. Little else has changed. The Standler function simply is appended to the existing first PRINTER PLOT as a fourth curve having symbol D. This was the simple change September 29th, with parameters A, B, and C picked arbitrarily to make the Standler curve nicely visible.

STANDLER SURGE FUNCTION is the new request that connects to author Hevia's fitter STANDLER.FOR for batch-mode use. This is no different than many of the other supporting programs, with usage illustrated by a new 9th subcase of DC-13, which was created October 8th. Requests for Standler fitting (a single data card suffices to hold all data of each request) are read until terminated by a blank card. Outputs have been redirected and modified to accommodate ATP as follows. Whereas author Hevia used a separate file having fixed name STANDLER.PCH for ATP source cards, such output now is being sent to the ATP punch buffer just as for any other supporting program. It also is being optimally encoded so as to improve both readability and accuracy (source data, with a field width of 10, was a challenge for E-field encoding). The printed output of STANDLER.OUT has been redirected to the diagnostic file (normally having file type .DBG parallel to the .LIS file). Finally, STANDLER.GNU for GNUPLOT output has been replaced by CALCOMP PLOT graphics, which are provided automatically. This graphic treatment is similar to what was done for HEVIA HYSTERESIS (see the July, 2000, issue).

In-line use of Orlando Hevia's fitter also is possible, for a Standler source. The preceding paragraph was for batch-mode use, which punches Type-15 branch cards. This is most efficient, since the burden of computation then is performed only once. It also is safer, since convergence is not guaranteed (convergence depends on the user's data). But it may not be most convenient, so automatic parameter determination of a Standler surge also is possible *on the fly*, as part of the Type-15 source data. For an illustration, see node STAN2 of the 3rd subcase of DC-19 (modified October 28th).

Data interpretation for a Standler surge function is exceptional if data is fit in-line. This detail is worthy of some explanation. The usual *"Source. ..."* line will be seen, but this will document output of the Hevia fitter (Standler parameters A, B, and C) rather than the user's raw input data. To document input data, a special comment card has been created with "C " replacing the type code "15" in columns 1-2. This will be seen immediately before the *"Source. ..."* card, with fixed interpretation: *"Input data of user, for Standler surge function. |C ..."*

Heidler and other alternatives probably will follow. On October 9th, your Editor wrote Mr. Hevia: *"I agree. I will finish Standler and leave the other alternatives to you. Yet, for most of this work, you do not need new GNU ATP source code. I **do** plan to send you modified ... (the **real** source code). Note this is the same disk file as used for your TANH work."* This was in response to Mr. Hevia's explanation: *"My request for source code is because I can add the Heidler and double exponential fitters, following your work, and free you of this repetitive job."* Yes, this is the plan, as future issues should report.

Publishing Programs and Viewers

"PDF copies of newsletters …" was the start of a paragraph in the preceding issue. The story now continues. One contact who received copies of the archive was Dr. Tsuyoshi Funaki at Osaka University in Japan, and his response dated September 5th was quite unexpected. Dr. Funaki indicated that JAUG already offers PDF - formatted copies of the newsletter dating back through 1988 in location http://atp.pwr.eng.osaka-u.ac.jp/emtpnews *"I generated pdf files from your original .wp5 files, etc. If you have difficulty using our site, please inform me."* Later that same day, BPA's Dr. Tsu-huei Liu connected successfully.

WordPerfect 9 is the product of interest within Corel Office 2000 as first mentioned in the preceding issue.

September 12th, BPA's Dr. Tsu-huei Liu received her package, and installed the software on her 550-MHz PC. Although the Corel Website listed a price of $150, the good news is that only a $95 upgrade fee (from existing WP 7) was paid by BPA. Most important for ATP developers, Copy/Paste now does work as promised on the NT platform at BPA (no need for the $10 patch for brain-damaged NT). Also, that PDF output looked great in Acrobat Reader, for the simple tests that Dr. Liu performed initially. Later, such output failed for Dr. Kai-Hwa Ger's order form (pages 7 and 8 of the user group's old form letter LICENSE.WPD). The last two pages had been separated into separate disk file KAIHWA.WPD for use with Prof. Kizilcay's new on-line licensing procedure (see preceding issue), and although KAIHWA.PDF was produced without incident by WP 9, Acrobat Reader refused to display it properly (display halted with an error part way through the first table). So, temporarily (until Dr. Liu can avoid the trouble by using a simpler table), PostScript was created, and this was passed through Adobe Distiller to create the required PDF file for EEUG on September 12th. The following day, Dr. Liu changed the horizontal separator lines (all dotted lines became solid, and 4 extra solid lines toward the bottom of the first table were removed), and then WP 9 PDF output became usable. Continuing with observations about WP 9, your editor was particularly pleased by background color, which no longer was bright white (apparently a requirement of WP 7). When first seen by your Editor, the background was blue, which is much less tiring on the eyes. Dr. Liu explained that now the color comes from Windows (logical enough), and we changed this to black (your Editor's preference) just to prove it. About other changes, Dr. Liu mentioned that *Print Preview* is back, and it works as the command does in either Word or WP 5. Of course, WP 5 needed a preview because the working display in which one keyed and manipulated text used a text (not graphic) screen, so sometimes bore little relationship to printed output. But for WP 7, the working display was close to the final display. Close, but apparently not close enough. The return of *Print Preview* is seen as correction of a minor problem, and it is appreciated.

Too large PDF files is a problem of WP 9 that first was mentioned by Laszlo Prikler of Budapest Univ. of T&E in Hungary. In E-mail dated September 5th, he observed: *"I just downloaded the JAN96.ZIP from JAUG and loaded it into WP Office 2000. ... Using 'Publish to PDF...' under 'File' produced a 310 KB file. The PDF output looks normal and can be read normally by Acrobat Reader. Unfortunately, the size is almost double the size of current issues ... (~150 kB). So I tried an alternative method, too: producing PDF using Acrobat PDF printer driver. It works more effectively, because the output size was only 180 Kbyte. This 1/2 ratio does not change even if I modified the 'Compress method' under 'Details' tab of 'Publish to...'. Conclusion: Adobe sold an older version of its PDF mill to Corel, and this produces larger files than Adobe's own PDF writer."* Your Editor and Dr. Liu repeated the experiment at BPA on September 20th, and produced even more discouraging results. Beginning with JAN96.WP5 as the input file, a 412-Kbyte PDF output file was produced by WP 9. Not only is this huge, it can not be compressed much using PKZIP, either: the .ZIP file has size 394 Kbytes (a 5% saving was reported during compression). But the following day, Dr. Liu showed that she could reduce the PDF file to 219 Kbytes by dropping the fonts. After *"Publish to PDF"* in the *"File"* menu, click on *"Details"* to produce a window that shows a default check mark in a box labeled *"Include fonts in the document."* The removal of this check mark was Dr. Liu's medicine.

Perfect JAN96.PDF was created September 22nd by recourse to old WP 5. This was a sudden inspiration after frustrating struggle with fonts of WP 9 that did not match closely. On the very first try, "Print Preview" on the screen showed a perfect 20 pages, so the technique for PostScript output to a disk file was all that remained to be relearned. Thanks to superb pre-Novell documentation (the good old days), this was done easily enough, and then Adobe Distiller converted the .PS to a perfect .PDF file of 115 Kbytes. Of course, the same perfect 20 pages for this output file, too. But why the substantially smaller storage (compare with 161 Kbytes for the October, 2000, issue)? Once again, do we have a paragraph that properly should be moved to the *"Brain-damaged MS Windows"* story? What significant difference is there, other than use of a DOS program (WP 5.1) instead of a Windows program (Word from Bill G)? The following day, the archive of PDF copies was extended back through January of 1995, with only this last of the five involving minor difficulty. As first viewed within WP 5.1, there were 3 or 4 lines too many. But by comparison between the screen copy and a printed copy dating to 1995, it was found that the exact 20 pages could be restored by extracting a blank from each of 4 or 5 strategic locations. Somehow, the font today is slightly different, and requires slightly more space for display. Eventually it was concluded that a larger superscript probably was the cause (numbers within dates typically were involved), although no attempt to modify this was made. September 24th, your Editor sent a 934-Kbyte archive of 9 more PDF files --- JAN94.PDF through JAN96.PDF --- to persons who maintain newsletter storage on the Internet: *"Like the September 1st collection, this second set should be perfect : exactly 20 pages."* Not mentioned, however, was the first need to change a non-blank character: the period of *Dr.* on page 20 of JAN94 was removed in order to gain needed space.

Hyperlinks are possible within a WP 9 document. But this is no surprise, and is not the critical detail. Recall hyperlinks were tested using WP 7 as summarized in the October, 1997, newsletter. That they should continue to work within WP 9 is not a surprise. What **is** a surprise --- more precisely, a disappointment --- is this: hyperlinks in WP 9 are **not** passed into the associated PDF output. This is a serious limitation of the new PDF output of WP 9. Recall that hyperlinks **were** passed to Envoy output of WP

7, and they functioned properly using the Envoy viewer. But not so for PDF output of WP 9 as explained to your Editor by Dr. Liu on October 3rd. Her simple examples c:\eohb\dum*.wpd demonstrate a hyperlink in WP 9. Using Acrobat Reader on the resulting PDF output, the link is underlined, and is colored. That much is encouraging. Unfortunately, the hand (the cursor of Acrobat Reader) does not become a finger as needed to perform the transfer. A telephone call to Corel confirmed that this is a capability of Adobe PDF files that is not supported by the WP package. Hyperlinks are lost. Worse, Envoy, too, seems to have been lost! One step forward and two steps backward? The *"File"* menu has only 3 publishing alternatives: 1) Internet Publisher; 2) Publish to Trellix; and 3) Publish to PDF. About number 2, the index of Dr. Liu's *"Mastering WordPerfect 9"* book, by Alan Simpson and Gordon McComb, points to page 893 for Trellix. This is a section entitled *"More ways to publish Web pages,"* so seems to offer no hope. Conclusion: hyperlinks are not possible for our proposed writing within WP 9 (e.g., for a PDF copy of the Rule Book or the Theory Book). Hyperlinks certainly could later be applied to the PDF output (recall Robert Meredith's great unification of Theory Book chapters as mentioned in the October, 1998, issue), but that is impractical and inefficient for interior use (as opposed to a table of contents) because the work would be lost whenever the PDF output might need to be regenerated (e.g., following some change).

WP 9 acceptance of HP-GL could not be confirmed October 4th, as Dr. Liu watched your Editor experiment with both WP 7 and 9. For the former, the *"Graphics"* button at the top led to a menu from which one could select *"Image"* and then name the file (\gnunt\dc18.hpg was used without problem). But WP 9 has no *"Graphics"* button. There is an *"Insert"* button, which leads to a menu from which *"Graphics"* can be selected. But then, after naming the file, the response is an error window with message: *"! Unsupported file format detected."* Using Dr. Liu's great reference book (Simpson and McComb), the 40-page index includes HPg for hard page, and HTML, but no HP-GL. Another backward step for Corel, it appears to your Editor.

Unauthorized modification of a PDF file can be prevented as first was mentioned by Prof. Mustafa Kizilcay of FH Osnabrueck in Germany (see the April, 2000, issue). This was using Adobe Acrobat Exchange 3.01 (on BPA's nearby 90-MHz Pentium, this requires the separate icon labeled Acrobat Exchange rather than Acrobat Distiller), and it works well. Acrobat Exchange is an editor for PDF files, and security is set as part of *"Save as"* within the *"File"* menu. Clicking on the *"Security"* button on the right leads to a window that allows the user to specify two passwords for: a) reading the file; and b) changing security attributes. This is followed by 4 security choices: *"Do not allow: a) Printing; b) Changing the document; c) Selecting text and graphics; and d) Adding or changing notes and form fields."* Yes, WP 9 could create the PDF for such use directly. But if it is not as compact (see preceding paragraph), and if it is not better in some way (e.g., allowing hyperlinks), it is hard to imagine why WP 9 PDF output would be preferred. Instead, developers expect to use WP 9 to create PostScript, and Adobe Distiller to convert this to PDF. Finally, Adobe Exchange will lock such files to prevent unauthorized modification.

"Corel wins financial lifeline" was the headline of a story about recent financial problems of the current owner of WordPerfect (WP). Dated September 20th, this story emphasizes that finances are not yet desperate, but they clearly are serious: *"Struggling Corel has obtained some equity financing from an anonymous institutional investor ... Corel has already announced that by November its Dublin operation will be reduced by 130 people, leaving a skeleton staff."* Is the future viability of WP at risk? It did not take long to answer this question, and learn about that anonymous white knight in shining armor. *"MS bucks save ... Corel - save it for what?"* is the title of a story posted at *The Register* on October 3rd. This began *"Microsoft is to pump $135 into its (suddenly former) deadly rival Corel. The injection is approximately equivalent to 25 per cent of the ... Canadian company. ... Following the example of Apple, Corel is now a fully bribed-up supporter ..."* With MS now a dominant minority partner, what are the chances that WP will become significantly better, and will grab market share back from MS Word? Your Editor is discouraged.

Hoidalen Improves ATPDRAW

Hans Kristian Hoidalen of SINTEF Energy Research in Trondheim, Norway, continues to improve his graphical ATP-data-assembly program ATPDraw. In E-mail of his Fargo list server dated October 10th, Prof. Bruce Mork of Michigan Tech in Houghton announced: *"Hans Hoidalen has released V2.4 of ATPDraw today. He reports that there was '...an error in the latest ATPDraw version 2.3. The declaration and use of input variable names in MODELS was wrong when type 94 components where used or the input and output of a model had the same name. The bug in the LINERL_6 component is corrected as well (L22 replaced by R33).' I've updated the file atpdraw.exe that is contained in the patch file. It is available via …"*

Compensation Troubled by Switches

Switches that touch compensation - based elements occasionally have caused trouble; and DCNEW-16 was established late in 1995 to document the correction of such isolated problems. Half a decade later, another such simple case as that of Janko Kosmac in Slovenia (see the July, 1996, issue), has been found. In member-only E-mail of the EEUG list server eeug-l dated October 11th, Steve Nurse of BSTS Ltd. in England illustrated trouble, and

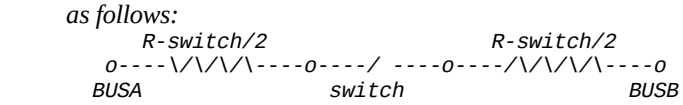
this is documented in a new 8th subcase that was added October 14th following correction of the error.

One line of code was added to OVER16 below S.N. 4319 to correct Mr. Nurse's problem. In fact, this addition is the same line that was replaced in 1995 to solve Mr. Kosmac's problem (see the 1st subcase). What your Editor did not understand then was this: both lines are appropriate. It took 5 years for demonstrative data to surface, but better late than never (Lubarsky's Law).

Special diagnostic printout, which normally will be hidden from view in the .DBG file, will notify the user whenever the aforementioned logic correction has made a difference. The following line was produced by the 8th subcase of DCNEW-16: *"October 2000 correction to compensation has modified the solution. In OVER16, BUSJ, N2, N10, T = LOAD 1 2 7.0000000E-03"* Of course, T is the simulation time at which the difference occurs, and BUSJ is the A6 name of the node at which the difference is noted.

About data, a Type-91 time-dependent resistance R(t) was used by Mr. Nurse, although there is nothing special about this choice. For example, the error also should have occurred for a Type-92 nonlinear resistance. The problem was with the compensation itself, not with details of the element that relied upon it. The compensation element shared at least one terminal node with (i.e., was touched by) 3 switches, and it was this unusual topology that challenged ATP logic.

Resistors that isolate switches are a standard feature of Microtran and Spice, according to Orlando Hevia of Universidad Tecnologica Nacional in Santa Fe, Argentina. Initially, your Editor had summarized for Mr. Hevia the Type-91 problem that was being studied. In E-mail dated October 12th, Mr. Hevia responded: *"MicroTran has a field for time controlled switches to add a small resistance R-switch = 1.E-4 Ohm. The resistance is added internally as follows:*



The R-switch is used by SPICE, too, with 1.0E-6 Ohm." Interesting. From time to time, your Editor observes that Hermann Dommel's Microtran is **not** derived from EMTP. Recently, see *"DCG Myth #2"* within the story entitled *"Continuing DCG misinformation"* in the January, 1998, issue. Rather than descend from EMTP, Microtran descended from Prof. Dommel's T.P. (Transients Program), which preceded EMTP by several years (Prof. Dommel left BPA in July of 1973). This looks like yet another good piece of evidence. The isolation of switches by means of small impedances was used in EMTP until the "M32." version, which dates to the summer of 1982, when new switch logic first was provided to improve the efficiency of hvdc modeling. Proof is contained in the August, 1982, issue of Prof. Dommel's own *EMTP Newsletter*. Pages 70-74 contain a paper by your Editor and Chinese visitor Ma Ren-ming. The title of this is *"Successful generalization of EMTP switch and source logic."* The abstract explains: *"this permits the nearly arbitrary interconnection of switches."* Had Prof. Dommel's Microtran been derived from EMTP newer than the summer of 1982 (the time of Volume XII *EMTP Memoranda*), there would have been no need for the primitive switch isolation that Prof. Dommel still seems to rely upon.

DC-68 is ended by one large data subcase from BPA Trainee Rod Price. From time to time, the solution has changed a little. Note comments that document one of these dated 8 Aug 91. Well, answers have changed slightly once again, following the just-described correction. To better document action in and around the switches and non-linearities, output variables have been modified. The first 3 now are currents. In order, these are gap current, fault current, and Type-92 ZnO current:

From bus name:	CR25A	CR20A	CRZ1A
To bus name:	CR30A	TERRA	CR20A
Old maxima :	27237.782	15421.096	.44551E-4
New maxima :	26931.178	15312.520	.44551E-4
Times of both :	.03175	.0375	.0125
Old minima :	-7552.244	-28033.65	-7291.149
New minima :	-7466.220	-28099.51	-7350.361
Times of old :	.0378	.02865	.02815
Times of new :	.0378	.02865	.02805

The gap closing time of 31.5 msec is unchanged, although opening is delayed one time step, from 49.850 to 49.900 msec. Why are changes so small, and hence difficult to note? Your Editor was not sure, but he remembered that Steve Nurse made the following interesting observation, which may provide the answer: *"... it was apparent that there was an additional 1 Ohm resistance being added to the circuit when a switch was closed to simulate a fault. ... I have changed the resistance values and the timing but the step increase in resistance is always 1 Ohm. Obviously, where the range of resistor values are very much higher than 1 Ohm, this effect would probably not be noticed."* Could be. The extra one Ohm might come from the +1 or the -1 of the Thevenin calculation (injected unit currents at the element terminals).

About Mr. Nurse's real engineering problem --- the one that first raised his suspicions --- your Editor offered a corrected copy of TPBIG with the suggestion that this be tried on the real data. Salford EMTP was sent October 16th, and news the following day was favorable: *"The package arrived safely and I have confirmed that the program runs OK. I ran my test data set and obtained the theoretically expected results, which is great. I will do further tests, with more complex data sets, in the next few days and let you know if all is well or not."* No news is good news (there has been no report of continuing trouble).

Branch Data Input Restructured

Kizilcay frequency dependence could not be followed immediately by USE AR prior to a small correction to OVER3 on September 13th. The problem first was

reported by Prof. Mustafa Kizilcay of FH Osnabrueck in Germany in E-mail dated September 5th: *"While I was preparing a paper with examples for the coming EEUG meeting in Wroclaw at the end of September on how to use ARMAFIT and KIZILCAY F-DEPENDENT (KFD) via GTPPLOT, I observed an input data error in relation to KFD input. I attach … nq110afs.dat ..."* Prior to correction, execution ended on the USE AR declaration with KILL = 4 in overlay 3 near S.N. 8383. The erroneous complaint was: *"The last card is a series R-L-C branch having zero impedance."* Of course, GTPPLOT is from Orlando Hevia of Universidad Tecnologica Nacional in Santa Fe, Argentina. For persons who want to avoid the trouble rather than upgrade ATP, consider his advice, from E-mail dated September 5th: *"Another temporary solution is to add a dummy branch immediately before the USE AR line."*

Column-80 punches of constant-parameter, distributed branch cards first were prevented November 1st. Which punches? Any number other than 0 (the same as a blank) or 2 (a request for branch voltage). To illustrate, consider what happens if a 1-punch is added to column 80 of the branch card for the first phase of the 3-phase line of DC-7: *"---- Halt in INDIST. Constant-parameter distributed line has column-80 punch other than 2 for branch voltage."* This is followed by the familiar *"Temporary error stop in ENTRY STOPTP"* which shows the offending card image. A cosmetic correction to this was made at the same time, as your Editor noticed that the ruler had been shifted one column farther to the right than the card image. The effect should be universal, although it was noticed using Salford EMTP, and initially corrected only for this version. Why no one complained years ago is not understood (hope: maybe the error was so small, and so obvious, as not to be considered worthy of complaint). For an illustration, see the new *"8th of 7 subcases"* of DC-37. On comment cards, the expected termination is documented. About the *"8th of 7,"* your Editor wrote: *"If and when (hopefully soon) improved coding removes the need, this subcase should be destroyed ..."*

Changes were made to three subroutines : INDIST, GETBUS, and WINDOW. At any later time, these can be located from the associated WSM00NOV idents. Later, with more-creative programming, the trap might be removed. This remains the hope, anyway. But the trouble is a decade and a half old. The addition of protection was long overdue. Finally, it was added in response to an inquiry by Guilherme Sarcinelli of FURNAS in Rio de Janeiro, Brazil. From E-mail dated November 1st: *"I was checking what the ATP would provide for the output current in a line branch and I've gotten a corrupted .PL4 file. ... ATPDraw just put a '1' in column 80, but neither TPPLOT nor PlotXY can open the PL4 file. ... Should ATP not provide an error message and ignore the request?"*

Historical perspective usually is valuable. Consider what was found in a copy of BPA's EMTP Rule Book dated Sept, 1980. On page 15, there is this explanation of column-80 data: *"Only for a single-phase line is branch-current output possible."* But that was in earlier, simpler times. The untransposed alternative of K. C. Lee came soon thereafter, and this substantially changed storage. On the same page 15 of a printing dated May, 1986, one sees: *"After the removal of Karrenbauer transformation, the output request for single-phase line is no longer honored. The branch voltage output request, by setting IOUT = 2, is now honored for multi-phase line only. These temporary restrictions will be removed in the future so that a full range of output requests ... will be honored for both single-phase and multi-phase lines."* The first ATP Rule Book followed some 14 months later (barely in time for the LEC summer short course), and your Editor recalls omitting the warning in the hope that generalization soon would follow. It did not, however. Fourteen and a half years later, the error remained, so it was decided that a temporary trap would be better than nothing.

Acceptance of a 2-punch in column 80 of a constant-parameter, distributed line is illustrated by the 2nd subcase of DC-37. Just for this purpose, output of the voltage difference (SEND, REC) was added November 2nd. While it is true that DC-9 involves several such uses among its 26 subcases, these are different because they illustrate CASCADE LINE (see the April, 1998, issue), which is handled by separate subroutine CASCAD. DC-37 provides a normal illustration.

TACS Control of Rotor R of U. M.

KILL = 9 is the error termination associated with an illegal mixture of compensation-based nonlinear or time-varying elements. It is supposed to halt execution if a single-phase element requiring compensation exists in the same subnetwork as a U.M. coil that requires compensation. Unfortunately, this protection was found to be lacking for data supplied on September 14th by Gabor Furst of suburban Vancouver, B.C., Canada. In order that the trouble not be forgotten, a new 6th data subcase has been appended to DCNEW-16. It will be noted that the dynamic logic (within the dT loop) is troubled, although the static logic of STEP ZERO COUPLE correctly halts execution prior to entry into the time-step loop. The dynamic logic of OVER16 seems defective, but might not be corrected anytime soon. Code is complicated, and your Editor does not want to make any change unless and/or until he is sure it has no adverse effect for other data.

TACS control of the resistance of a U.M. rotor coil was proposed by your Editor as a way to circumvent the problem of the preceding paragraph. Rather than vary the resistance of a Type-91 element (Mr. Furst's desire), your Editor proposed in E-mail dated September 16th that resistance within the U.M. equations themselves be made controllable by TACS. The U.M. author, Dr. Hian Lauw of EPC Inc. in Corvallis, Oregon (see preceding issue), is

thanked for his willingness to look into this possibility. Yet, this original idea never was pursued. Before Dr. Lauw could find the time to investigate, an alternative idea (next paragraph) had occurred to your Editor.

TACS R-thev is a new U.M. declaration that was added on September 19th in order to allow the Thevenin resistance to be defined as a function of time by TACS. Operation is illustrated by a new 7th subcase of DCNEW-16 which avoids the compensation-based Type-91 R(t) that caused trouble in the 6th subcase. The only known restriction of importance is this: the rotor circuit is limited to ordinary resistance. For example, neither inductance nor capacitance is allowed. Yet, this is the common, practical case: the user wants to vary linear resistance as a function of time, with no external coupling between one rotor phase and the other two phases. This now is possible, with a TACS variable defining the resistance that is connected to each coil. At the user's request, the TACS signal overrides the Thevenin impedance that the program otherwise would calculate and use. For details of use, see comment cards within the 7th subcase of DCNEW-16.

Although TACS is mentioned, much slower but more flexible and powerful MODELS by Laurent Dube also should be usable as an alternative, to control the rotor resistance of an induction motor. Recall Dube's imaginative redefinition of the name TACS: *The Alien Control Signal*. I.e., a control signal is needed, and it should not matter if this signal comes from MODELS instead of TACS. That is the not-yet-tested theory, anyway.

Storage for the TACS control of rotor resistance has been variably-dimensioned, and it requires one integer per coil as initially coded (wasteful of memory, but simple). This will change the memory usage reported at the start of any U.M. execution, and in case-summary statistics (List 25). For example, DC34.LIS now reports *"List-25 allocation = 347"* whereas it previously reported 337 cells. The difference is half (the number of REAL*8 cells vs. INTEGER*4 cells) the default limit of 20 machine coils because no ABSOLUTE U.M. DIMENSIONS declaration was involved.

A 3-phase motor is the most common case of practical industry interest, and initial testing is limited to 3 rotor coils. If and/or when any user wants to try a 2-phase servo motor (e.g., see Fig. 3 on page IEEO-20 of Volume XI *EMTP Memoranda* dated 17 July 1981), some U.M. expert had better study the logic block of SOLVUM having UTPF idents WSM00SEP. Now, the DO 7386 loop assumes 3 phases. Your Editor is not sure what will happen, if used with a 1- or 2-phase machine. Beware (no trap presently prevents such less-common use).

INDUCT is the ATP version of Gabor Furst's supporting program to determine parameters of induction motors for U.M. modeling. This is accessed by means of the request INDUCTION MOTOR DATA (IMD) and is illustrated by DC-15 as first described in the April, 1997, issue. Well, October 22nd, a minor change was communicated by Orlando Hevia of Universidad Tecnologica Nacional in Santa Fe, Argentina. His E-mail explained: *"The old program (the base of IMD) has an error. It is writing rotor bus names for all rotor types, but only the wound rotor type requires rotor bus names. I send now the INDUCT.F file with changes enclosed between CCCCC."* In the past, the ATP offering has not always been current. The small change from Mr. Hevia now is mentioned prominently because of this greater significance: ATP code has been made consistent with INDUCT.F (i.e., no longer is ATP dated). Yet, this happy status is not expected to last long. Upon his return from the EEUG meeting in Poland, Gabor Furst reported impending progress in E-mail dated September 30th: *"My presentation of U.M. induction motor modeling went very well. I showed the new version of INDMOT which is now INDSYN as it includes in addition to types 3 and 4 also Type 1 for synchronous motors. I will send you a copy. INDSYN together with examples including your latest for TACS control of a resistor connected to the rotor winding was distributed."*

Interactive Plotting Programs

GTPPLOT is the interactive plotting program from Orlando Hevia of Universidad Tecnologica Nacional in Santa Fe, Argentina. The account of development now continues from the preceding issue. Sixteenth, dated March 31st: 39) The PNG output format was added, as controlled by parameter NOPNG in the gtpplot.ini file. The normal black background can be changed to white with SET NOREV = 0. PNG indicates Portable Network Graphics, which is a very compact alternative that can be inserted in Word 97 documents. Seventeenth, dated April 15th: 40) Only the less viewer is allowed. The program is available in the same platforms as gtpplot. The option was dropped out from gtpplot.ini; and 41) The HELP command was enhanced. The name of a gtpplot command can follow HELP, to be searched for in gtpplot.hlp (e.g., HELP ALL TIME). Eighteenth, dated June 8th: 42) REAL*8 .pl4 files (C-like, PISA, and gnu UNFORMATTED) are allowed. The gtpplot.ini variable has value L4FULL = 0 or 4 for REAL*4 files (the default) or L4FULL = 1 for REAL*8 files. The PISA files are automatically detected; and 43) A lot of minor bugs were killed. Nineteenth, dated July 11th: 44) REAL*8 .pl4 files of Salford UNFORMATTED are allowed. The gtpplot.ini variable L4FULL = 0 or 4 for REAL*4 files (the default) or L4FULL = 1 for REAL*8 files; 45) Inline comments are allowed in CACHE commands using the '{' symbol; 46) A mistake in CACHE command of batch mode was corrected; 47) The scaling of log x axis for multiplot was improved; 48) Power and energy variables now will have the star after # or name commands; and 49) Protection was added to the TIME command. Twentieth, dated July 29th: 50) The inverse Fourier series may be either COS (default) or SIN. The gtpplot.ini variable IFOUR controls this choice (value

0 requests COS whereas value 1 requests SIN); 51) Inline comments '{...' are allowed in labels; and 52) The CACHE command now works for X-Y PLOT (the same X variable for all plots!). Twenty first, dated August 13th: 53) The RELAY command was enhanced for FSCAN cases; 54) Axis labels were enhanced; 55) A table of THD and harmonic content in % was added for HFS cases; 56) The DERATE plot was enhanced; and 57) Protection was added to the TIME command. Twenty second, dated August 20th: 58) TIME UNITS now allows -1 as entry. The NTIME variable of gtpplot.ini provides the same automatic selection of time units. For NTIME = -1, the time units will be milliseconds if 0.0001 < tmax < 0.01 seconds and either microseconds or seconds if outside this closed interval; 59) The command I2T was added to calculate sum (y**2 * dT) for all the chosen variables; 60) The command SLOPE was added to calculate (y(t+deltat) - y(t)) / dT for all the chosen variables; 61) The command RMS was added to calculate RMS at frequency FPOWER for all the chosen variables; 62) The command INTEG was added to calculate the INTEGRAL of each chosen variable; 63) The ZEROES command was enhanced. The slope is calculated for each zero of the chosen variable; 64) The PLOT command was added, to access some mathematical operations with time function variables. The PLOT command must be followed by one or more of the following subcommands, separated by a comma or space:

VAR(N) to plot a variable without change.
INT(N) to plot the integral of a variable.
DER(N) to plot the derivative of a variable.
RMS(N) to plot the RMS of a variable.
I2T(N) to plot the integral of a squared variable.

All the subcommands can be used simultaneously. All the options of graphics are allowed. 65) The Y axis can be symmetrical or natural. This is controlled by gtpplot.ini variable NOSYMM. Twenty third, dated August 27th: 66) Two subcommands were added to the PLOT command: a) POWER(N1,N2) to plot power as V(n1) * I(n2); and b) ENERGY(N1,N2) to plot energy as Int(V(n1) * I(n2)); 67) The DERATE plots were enhanced; 68) The command HSOURCE was added, to toggle on or off the generation of HFS sources from time variables; 69) A mistake in KIZILCAY output format was corrected (a strange change of '{' to '<'); and 70) The LOGX command was added for a plot with logarithmic x axis.

Miscellaneous Intel PC Information

"DEC's final demise" is the title of a story found by Walter Powell within the *Silicon Insider* subsection of the *MoneyScope/Business* section of the *ABC News* Web site. Dated September 19th, and written by Michael Malone of *Forbes ASAP* magazine, this provides interesting perspective about what went wrong. While your Editor doubts the relevance of religion (*"the sense of Puritan fatalism that underscores New England life"*), he certainly believes the asserted importance of timing (DEC's was poor), and in the value of strategic partners (MS and Intel had then-dominant IBM). Finally, as learned from Apollo before DEC, quality is not that important. DEC had quality, but *"technology isn't decisive. ... Intel has never had the best processor, Microsoft the best operating system or Dell the best PC, yet each has triumphed."*

The Cyrix paragraph of the preceding issue concluded with : *"Born in 1988, RIP 2000."* The acronym RIP sometimes is written R.I.P. It commonly is used as labeling for tombstones in cartoons of magazines or newspapers, where space is limited. It indicates *rest in peace*.

"Motorola set to ship 600 MHz G4?" is the title of a story posted at *The Register* with date October 26th. It shows how far behind Intel's primary competitor has fallen in the hardware race (see *PowerPC* in the April, 1996, issue). Of course, economics are at issue, and economy of scale favors Intel and AMD. Once again, Macintosh is handicapped: *"Apple is desperate for faster G4s, and it may well feel the need to swallow the cost in order to remain competitive with the Wintel world."* Of course, yield varies inversely with speed. Motorola has been able to produce faster chips, but they cost too much. Meanwhile, Intel and AMD see 2 GHZ on the horizon. A separate story posted the preceding day has title *"Intel cuts P4 pricing again."* This explains: *"The demise of the 1.3 GHz part, along with the earlier than expected move to 1.7 GHz (Q1) and 2 GHz (Q2) are strong pointers that P4 yields are now looking pretty healthy."*

A new home PC was described for your Editor by a BPA engineer on October 24th. The huge Frye Electronics (formerly Incredible Universe) store in Wilsonville (an extreme southern suburb of Portland) provided the following for less than $800 : No monitor (a 17-inch monitor would have added only about $170), but she has a 700-MHz Pentium III processor, a 20-GByte hard disk, a 1.44-Mbyte floppy disk, a write-able CD-ROM drive, 64 Mbytes of RAM, and MS Windows ME (but no Office).

Miscellaneous Small Items

Negative inductance of a series R-L branch is legal, but easily can cause trouble (an explosion). Negative resistance might be trapped by ATP, but not negative inductance. In E-mail dated September 4th, this point was made by Orlando Hevia of Universidad Tecnologica Nacional in Santa Fe, Argentina. To illustrate, the 3rd subcase of DC-19 was augmented by node HEVIA on September 30th. The positive R and negative L have a time constant such that the branch current doubles about every 20 steps (the frequency of the output). Although your Editor warns of an explosion, in fact this will be limited by FLTINF (floating point infinity), which has nominal value 1.E+19 as distributed by the user group. If T-max is extended beyond the present limit of 300 steps, one will notice the

following step numbers and currents: (1560, -.36468E19), (1580, -.71034E19), (1600, -.1E20) . As context of the original mention, consider Mr. Hevia's description. Recall a paragraph of the October newsletter began with mention of *instability of the saturable TRANSFORMER component (STC).* Well, as part of pre-publication review, Mr. Hevia had observed: *"I received a question about a similar problem with negative inductances: a filter to model an induction motor for transients. I don't know how the user calculated the filter, but some inductances are negative, and the case diverges to FLTINF. The positive inductance works, but then results differ from what was measured. The KIZILCAY F-DEPENDENT element might help here."* Three days later, Mr. Hevia added: *"negative inductances are bad for FREQUENCY SCAN, too. The negative inductance as capacitance has the correct value only at one frequency, as I am seeing now. The equivalent capacitance must be calculated as a frequency function. More about this in the next issue..."* In a separate message later that same day: *"I send you a text file with some words about the negative inductance = capacitance illusion. The file is ASCII text and includes a data case."* The title inside the file is *"Negative inductances are not capacitances."*

The opening prompt (*"EMTP begins ..."*) of OVER1 was split October 23rd after many months of procrastination by your Editor. The problem using a normal 25 x 80 DOS window was this: the prompt was 75 bytes long, and this allowed only 5 bytes for the user response prior to possible trouble at the column 80 edge. As long as the user continued to press normal keys, column 80 would be followed by column 1 on the following line. This was no great problem, although the break was distracting. The real problem occurred when **Backspace** was used across the discontinuity. The cursor did **not** appropriately back up from the continuation line to the original line. Yes, DOS windows wider than 80 columns are possible for some versions of MS Windows (see *scrollable* in the July, 1999, issue), and in theory, this is the better solution. But Bill G's wider windows are not available to all, and have problems of their own. So, to improve the use of **Backspace** for files having names of moderate length in normal DOS windows, the opening prompt has been shortened. The *"EMTP begins. Send"* has been split off into an initial, explanatory line that will be seen only once. It has been expanded to: *"EMTP begins. Send one of the following alternatives."* The remainder, which begins on a new line, is 53 bytes long, so it allows a 27-byte file name prior to the annoying discontinuity of column 80. Only the 53-byte list of alternatives will be repeated following a command such as DISK or KEY. To conclude, the idea makes a lot of sense, and has been used for many months with GNU ATP by Orlando Hevia. But your Editor delayed implementation for Salford EMTP because of complications associated with the mouse. Finally, those changes to FLAGER (where mouse input is detected) were made. As expected, the update required experimentation. Why the row number of input required change (from 23 to 24) is not known. Anyway, this is what was observed about LINE on Dr. Liu's 486 using DBOS version 3.51 after MOUSET was set for the first time in years. Finally, it should be mentioned that PRMSPY also required change --- to terminate the first half of the prompt in cases of LMFS (e.g., DC-51 and DC-52). This final change, from use of TFLUSH to use of PRMSPY, was made October 28th.

The number of lines of source code in Salford EMTP can be found in screen output at the end of translation. For the historical record, KTUTPF = 144293 (the number of lines of the UTPF) was seen October 20th.

PL42MAT converts ATP .PL4 files to MATLAB signal files. This utility comes from Massimo Ceraolo of the University of Pisa in Italy. As announced by Prof. Bruce Mork in E-mail of his Fargo list server dated October 30th, archive PL42MAT4 (release 4) now is available. The main improvements were summarized as follows: *"1) now is a full 32 bit program; 2) now it is able to understand pl4 files written with the option NEWPL4 = 2 in STARTUP file; and 3) this release also corrects some problems of the previous version that have recently been reported to me."*

FAULTS TO GROUND (FTG) was described in the April, 1993, issue, and is illustrated by DC-11. In E-mail dated October 31st, an error first was pointed out by Orlando Hevia of Universidad Tecnologica Nacional in Santa Fe, Argentina. His data case FTG1.DAT (as stored at home) involved two Type-59 generators and 3 faults, and resulted in value 6 for List 17 in case summary statistics at the bottom of the .LIS file. Mr. Hevia wrote: *"I see that each fault adds two SM-59 machines to the summation ..."* Yes, prior to correction in FAULTB later that same day, each pass incremented the machine count. No solution should change, however, as long as List 17 has not been overflowed. But overflow easily could happen because the number of faults might be huge. ATP does not actually run out of space. Rather, it might erroneous think it does, resulting in a serious consequence (a KILL = 1 error termination). Final point: Mr. Hevia used Type-59 S.M., but TEPCO's Type-58 S.M. was comparably affected (and corrected), since it uses the same program storage.

$STARTUP was allowed optional use of ATPDIR (first mentioned in the April, 1996, issue) beginning November 3rd. For details, see the illustration at the start of the 3rd subcase of DC-37. The first use of $STARTUP (DC37STAR) is local, and it remains unchanged. The second use, designed to restore standard STARTUP, relies on the new, universal declaration (ATPDIR). Note that none of the old flexibility has been lost. The user is just being given more rope with which to hang himself. Using this, DC-37 has been made independent of the directory of use (at BPA, C:\ATP). DC-37 has been made universal, and this is a desirable simplification (Watcom, Mingw32, and Lahey no longer need their own copies). Whether there might be more extensions such as this remains to be seen. The idea is late in coming, but seems promising. The user gains flexibility and program developers simplify test cases.