

Our Retiree's Newsletter Will Always Be Evolving

Bill Gellatly - Editor

When I began as editor of the Tek Retirees Newsletter, I hadn't thought much about of the many dimensions of technical writing. I felt comfortable writing short technical articles, and okay about interviewing those who didn't feel comfortable writing their own stories. After a couple of years, and trying a variety of approaches, I began asking you what you like.

The earliest Tek employees read newspapers, had at least a radio and had a phone for local calls. We added television, color, from film cameras to Polaroid, added stereo records and FM stereo, 8-tracks to cassettes and from cassettes to CD's. It's pretty rare to get a personal handwritten letter these days.

For perspective, I thought you might enjoy a run through the early days of TRVP and of this newsletter, and by comparison, there is an evolution of writing and printing that is paralleled by the changes we've seen in the measurement business. More on that in the next article.

When the Tektronix Retiree Volunteers Program started it had several activities, and they were all aimed toward retirees. As I recall, Newt Espe, a retired manager of manuals writers edited the newsletter for the first several years. The early stories were often about what retirees were up to, and there were occasional references to Tek history.

Bruce Hollister offered retiree's a defensive driving course called "55 and Alive." Insurance companies be-

gan offering reduced premiums for taking a defensive driving class, and Bruce took the lead as a service to any employee or retiree.

Monthly luncheons were held in building 58 cafeteria.

Although not a direct part of the TRVP, many will recall the luncheons at the Beaverton Elks Club on Canyon Road. Long-time Plastics engineer Al Foleen had started them just ahead of the formation of TRVP.

In the earliest issues I recall, there were articles about how you are spending your retirement, pictures of gatherings, travel journals and a bit of news about things going on within Tektronix.

We tell some company history in the process of telling "people stories." It's not pure history, nor is it a biography of just one person.

My preference is to have you write or tell me your story. To publish it among peers means that someone else will also know at least a part of it. I miss on hard facts now and then, but I'm not a research writer either, so I try to use my experiences ask enough questions, and still be sensible with my time. the time I spend.

In the next issue, I'll talk a bit about my growing appreciation for the diversity of you as an audience. But, before I close, I'd like to comment on our current team. Louis Sowa was editor for years, and has also done the layout using Microsoft Publisher. I give him finished articles, and he lays out everything else that you see in the final print or PDF, whichever you receive. Pete Nelson watches the snail-mail returned

items, strives to get a new address for every email that bounces back as undeliverable, and adds any new retiree names he receives. Pete also adds retirement dates and length of service notes for the obituary lists prepared by John Adis. I really appreciate John's discipline to track down and corroborate all the death Notices.

The Computational Revolution

Bill Gellatly

Bruce Blair added a question to his reader survey. He wrote: "**How about an article telling about how digital took over the world of scopes?**" I took the bait, and we exchanged notes as soon as I'd done a first draft.

Bruce was the manager of the group that designed the 2430, a digital scope released to production in about 1986. He writes, "My history at Tek started with Signal Processing Systems in 1976. It covered the transition of Tek analog scopes to digital scopes. The 7912 was the first waveform digitizer about that time and the 7612 came in the late 70s. Both were supported by PDP11 processors running SPS Basic for capture and analysis of the waveforms. I worked on the time base and memory for the 7612 before moving to Portable Scopes."

Reading his comment, I had no doubt that the PDP11 from Digital Equipment Corporation was performing computational work on the acquired signal. That is the notion I want to convey here. The computer he describes was literally getting data from the "front end" of the

oscilloscope, massaging it and then sending the results for display on the CRT

The harbingers (or forewarnings) of computation were features like the 7000-series with its on-screen read-outs of amplitude scale (volts/div) or for the time scale (seconds/div). With a Polaroid photo of the screen you no longer needed to write down the front panel settings. We didn't call this digitizing, but it was an indicator of future aspirations.

The earliest research and commercially-available oscilloscopes were qualitative. With the Tektronix innovation of a tightly calibrated (vertical) amplitude and sweep (time) signals, they became quantitative tools, but not yet precision approaching that of "traceable" standards for voltage or time. The many divisions that made up Tektronix were each finding was to do more with faster computers and cheaper memory. Here are some of those harbingers.

From TV Products

The product from Charlie Rhodes' group called a 527 Vectorscope used a display format that could be measured on a special graticule to assure that several characteristics of a transmitted color TV signal were within specified limits.

Charlie led a very imaginative and creative team whose innovations with broadcasters led to (pardon the acronyms) VITS and VIRS. They allowed the TV producers to lock-in on the transmitted signal. The knobs on your old vacuum tube TV no longer needed the HOR and VERT adjustments, and with better receivers and transmitters the "snow" was a thing of the past. We were delighted to stop chasing the little knobs hidden behind a door. The products were still analog, but even more sophistication was on the way for color TV.

From Lab Scopes

The next step is the addition of instantaneous signal measurements. High speed analog-to-digital convert-

ers could 'read' the level of a signal, and a clock would give the time of a pulse, and that data could be exported over an industry standard instrumentation interface called a bus. It was a standard from IEEE-488 called General Purpose Interface Bus. The same functionality was soon put into Portable scopes.

From Tek Labs

Two steps were needed to reach the next "harbinger" of computation. First was the use of the 1GHz- bandwidth 519 and a camera to capture a singly occurring event. The invention of the storage CRT allowed a single event to be captured and observed without the use of photographic film.

Those two innovations led to using the electron beam to write on a target, and a separate electron gun to read out what had been stored with the first. The first was relatively low resolution and must have been a challenge to calibrate.

A simplification was to scan the beam over an array called a charge-coupled device. Instead of the normal screen on your scope, imagine 1,000 boxcars on each of 1,000 tracks, and the means to count how many electrons had hit each car while a signal event happens. Now reassemble the train into a single train with million cars, and make a report showing the electrons in each car. With a high-speed computer, there are countless ways to analyze and present just what you want to know about that very complicated or expensive-to-test event that had been captured. You have just entered the arena of a computed display. It can be much, much more than just the original waveform. Once you have the time related information, it can be studied with statistics to see how frequently a signal contains an error. You can also take time-related information and convert it into display format of a spectrum analyzer, otherwise known as the frequency-domain. It uses mathematics devel-

oped long ago by Fourier. As a side note, we can credit some later mathematicians with developing the discrete and instantaneous Fourier transforms. But enough of the technical jargon. Now, back to one last harbinger of the computational revolution.

More from Tek Labs

Lab Scopes introduced the 7104 Microchannel plate (MCP) CRT. It was a 1-GHz analog scope with night-vision light amplification technology adapted to enable multiplication of electrons hitting the channels to make very rare events visible. Analog scope wizard Rod Bristol and David Bates of Tek Labs soon planned integrating the same technology with a new CRT shoe-horned into a version of the upcoming 400 MHz 2465B Portable. With the MCP CRT, technology it was introduced in 1987 as the 2467A, bringing the best of the 7104 to a 400 MHz analog scope. It took over 15 years to replace it with the DPO7104, repeats the earlier 7104 number as a tribute to the original, and its name as a Digital Phosphor Oscilloscope suggests how computation and display technology have been combined to bring even more features to circuit, as well as the rare improper signal, and exploit color to display what percentage of the time

In a future article, I hope to get the scoop on how the same efforts to perform computations in Spectrum Analyzers bring parallel enhancements.

My thanks again, to Bruce Blair for the suggestion and I hope I've put a few markers down for the Computational Revolution. They're my take, and not a polished representation contributors and ideas were the key harbingers of the computational revolution.

I was heavily inspired by the TV series Connections, first aired on BBC to describe how scientific advances in the 1600's were interdependent. My goal was to tie events together in a

similar fashion for this article.

Here's a link to the ten-show series:

[https://en.wikipedia.org/wiki/Connections_\(TV_series\)](https://en.wikipedia.org/wiki/Connections_(TV_series))

Finally, please tell your reactions. The many items I cut from this story will be in the next issues, and I'd like tell **your** stories. After this story, I'm ready to return to editing, and to get back to my wife's historically-significant non-fiction book set in 1964, just a year before I started at Tek.

Funding Changes for the Tek Retiree Newsletter

We're in the midst of another evolution; that of sponsorship for the Newsletter. The last issue described a Tektronix change that would have ended Tek's sponsoring the printing and postage for this newsletter with this issue. It was driven by what would strike most anyone as a sensible cost-avoidance measure.

Pete Nelson, Louis Sowa, Bob Beville and I sat down with two Tektronix representatives and pled our

case to have at least an additional issue sponsored while we conducted a readership survey.

At this point, about 500 of you have replied to the survey in the last issue. They've been scanned, and the first hundred are giving us a subjective picture of your feelings. I'm very impressed with the number of unsolicited comments that describe preferences and needs. All were gratefully received.

Those replies represent a sample size of more than 6% of those receiving either printed copies or email notifications that a new edition has been posted on the TRVP website.

A summary of our findings will be shared with Tektronix management, posted on the TRVP Newsletter website, and published in the November issue. In God we Trust, says the motto, but as one of my favorite troubleshooting consultants said, "All others (must) bring data."

Bill Gellatly, Editor
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Death Notices

Baier, Arthur Louis – d9/10/2018

Boyle, Virginia Elsie Thompson-d2/2/2019 @Tek 25.14 years

Connor, David Thomas – d7/20/2019 @Tek 30.02 years

Johnson, John Waldemar –d7/21/2019 @Tek 30.20 years

Jumonville, Stephen An-sley --d8/6/2019

Kuch, Wayne W.-d6/8/2019

Matlock, Dorothy Alice Lamoreaux –d 4/26/2019

Mondell, Joe F. –d6/11/2019 @Tek 25 years

Morrison, Joe Colman -- d7/12/2019

Music, Walter Earl - d5/15/2019 @Tek 27.37years

Peterson, Bill V. – d5/25/2019 @Tek 34.19 years

Pichitino, John –d4/18/2018

Prichard, Edward L. – d5/20/2019

Reiney, Michael Goodwin –d6/4/2019

Rilatt, James 'Bernie' - d7/31/2016

Ross, Corrine J. – d6/26/2019 @Tek 24.42years

Rubin, Alise (Alyce) d5/23/2019

Senn, Ray --d6/4/2019

Sherbeck, Irvin Eugene – d3/26/1988

Wiemer, Theodore E. D5/6/2019 @Tek 20+ years

Wong, Marion N.K. - d5/25/2019

RETIREE BENEFIT INFORMATION & ADDRESS CHANGE PROCEEDURE Retiree Medical and/or Life Insurance

Anyone who is a past employee with Retiree Medical and/or Life Insurance will need to request information or make changes in writing to A & I. You must include your signature and Social Security number.

Tektronix Post Employment Services
A & I Benefit Plan Administrators, Inc.
1220 SW Morrison St., Suite 300
Portland, OR 97205-2222
Toll Free: 1-800-778-7956
Fax: 503-228-0149

401k Benefit

Anyone who has a 401k benefit must contact Fidelity for information or to change their address directly with them at:

1-800-835-5092

Cash Balance Plan

The Cash Balance Plan has been transferred to Danaher Pension Plan Processing Center with Hewitt. Questions or changes should be directed to:

1-800-580-7526

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Tek Retiree Newsletter is published quarterly by the Tektronix Retiree Volunteer Program. Send all correspondence to Tek Retiree News, M/S 13-400, PO Box 500, Beaverton, OR 97077

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Vintage TEK Hours

Friday - 10am to 6pm

Saturday - 10am to 4pm

Other times by request

CALENDAR

Engineering Breakfast

Wednesday 8AM Beaverton/
Hillsboro area. Lively discussion all
subjects. For details contact Steven E.
Rice pacemakerpete@hotmail.com

Redmond Breakfasts

8:00 a.m. 1st Monday monthly
Shari's Restaurant; Redmond, OR
1565 SW Odem Medo Way
Spouses welcome
Details: Nick Hughes 541-548-1201

Previous Tek-Employees Luncheon

11:30 a.m. 2nd Monday monthly
Peppermill Restaurant
17455 SW Farmington Road #26B
(Corner of Farmington
& Kinnaman Rd)
Aloha, OR 97007
Details: Annetta Spickelmier
503-312-8825

Ex-Tek Radio Amateurs

Weekly on Friday 5:30 p. m.
Giovanni's Restaurant
12390 SW Broadway
Beaverton
503-644-8767

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Would you like to help save postage and read your Tek-Retiree Newsletter on our webpage? Send your name, address, phone number and email address to:

tek-retirees@tektronix.com

We will send you a notice when the newsletter is posted each quarter. To preview the web page and previous issues of the newsletter go to:
www.tekretirees.com

Please send questions, information or correspondence not involving the newsletter online to TVRP at **tek-retirees@tektronix.com**