Compendium No. 3

by Lowell A. Benson

INTRODUCTION

Many website readers do not review our archived newsletters, so it is quite appropriate to do another re-cap of Legacy associated articles in our newsletters.

- www.vipclubmn.org/Articles/LegacyCompendium.pdf has newsletter articles from March 2006 through 2015.
- www.vipclubmn.org/Articles/CompendiumNo2.pdf has newsletter articles from 2016 through 2021.

Contents

Edited with Microsoft Word**.**

NEWSLETTER ARTICLES, 2022

January/February

www.vipclubmn.org/Newsletters/Enews2201.pdf

The Black Briefcase by Gish Devlaminck

My current project was nearing completion in fall of 1980. My manager told me they needed someone to work a Contract Research and Development (CRAD) project. I met with the CRAD person at Corporate Center Building C. He briefed me on the program and said we would be developing a secret software tool to be hosted on Digital Equipment Corporation VAX that would fingerprint communication signals. The software would be written in C. I told him, "I've never heard of C." He said, "That's OK. It is a relatively low-level language for applications like this." He handed me The C Programming Language book by Brian Kernighan and Dennis Ritchie and said, "Based on what I've been told about you, you'll figure it out."

A month into the project, a second person was assigned who had her master's degree in statistics. She would be writing the data analysis code, but like me, she had never heard of the C programming language. So, I taught her what I knew about C. We spent many long days in one of the secure vaults in the basement of Plant 8. Eight months into the program, we were required to do a Phase 1 demonstration at the Air Research lab located at Griffiss Air Force Base (AFB), which today is Griffiss International Airport by Rome, NY. We were in a mad scramble to get the final touches done. Our flight to Griffiss was on a Sunday, so we could be there to start the demonstration on Monday morning. Late on Saturday afternoon I met with Security to get the user manual and two eight-inch floppy disks wrapped in a secure package that was then put back into the safe with the courier letter I needed to carry secret documents from Eagan to Griffiss.

My coworker lived in an apartment near Plant 8. On Sunday afternoon, I stopped to pick her up on my way to Plant 8 where we picked up the secure package and courier letter from the

safe. I put the secure package in my black briefcase, and we headed to the airport. Carrying the secret package required me to always hold on to my briefcase. It was even with me in the public restroom stall, and I could not go to bed until I had the package locked in a safe at Griffiss AFB.

We flew to Syracuse, NY via Detroit. Instead of staying in Rome, NY, my partner had requested to stay in Utica, NY, because she had a sister living there. I was fine with this arrangement. Our plan was to drive from Syracuse to Griffiss, drop off the secret package, and then head down to the hotel in Utica, about 15 miles from Rome.

In Syracuse, walking from the arrival gate to the rental car desk, my travel partner stopped at every restroom. I wasn't sure what was wrong, but at the rental car counter she told me she had forgotten to bring her Dramamine. She said she had a history of getting airsick, but she'd be OK. As darkness was setting in, we left Syracuse, but we had to make a few stops along the tollway so she could clear her upset stomach issue. We changed our plan. Instead of going to Griffiss first, we decided to go directly to our hotel in Utica. We had no cell phones at that time, so we had the hotel front desk person call her sister to come to the hotel. I was worried about dehydration and thought someone should be with her while I took care of the secret stuff in the black briefcase. When her sister arrived at the hotel, we briefed her on the situation and then I headed to Griffiss AFB.

Arriving at Griffiss AFB, I showed my courier letter to the security guard at the main gate. He said, "I don't know what to do with this; come back in the morning." I explained to him that I could not do that and asked him to call someone on his walkie talkie that was in charge. An officer drove up to the gate in a

pickup truck and told me I had to go the control tower. Pointing down the road from the main gate he said, "Go down this road toward the hangars. There will be another gate with a guard. He'll tell you where to park."

I got to the second guard. Pointing to the hangar he said, "Park over there, walk through the hangar and then across the tarmac where the B52s are parked to the control tower. There are guards walking the tarmac."

I looked at him with his M16 rifle slung over his shoulder and asked, "Are those guards on the tarmac carry M16 rifles? Could you get on your walkie-talkie and tell them there is a civilian crossing the tarmac and heading for the control tower?"

He got on his walkie-talkie and after a bunch of back-and-forth chatter, he said, "Go ahead, they know you're coming." When I pulled up to the hangar, one of the guards met me at the car, escorted me across the hangar and tarmac to the tower, where I dropped off the secret package and got my letter signed.

Heading back to Utica I thought I made a wrong turn coming out of the base. I ended up in an unfamiliar deserted strip mall parking lot. I parked under one of the parking lot's lights to figure out where I was. As I was standing outside of my car looking at my rental car provided map, I noticed three guys wandering toward me at 11:00 p.m. on a Sunday night. I hopped in the car, turned onto the street, and at the stop sign saw the street sign said Highway 49. I wasn't lost after all! That was the highway I took from Utica to Griffiss! I was comfortably on my way, and an hour later I was peacefully asleep in my hotel room, secret package-free.

Reply E-mail by Tony Jenkins

As a Univac/Unisys employee from 1969 to 1996, and a Roseville employee from 1976 to 1991, I am responding to your request in the latest Newsletter in connection with the Milestones.

I transferred from the London Development Center to Roseville in April 1976 to work on the Roanoke Program. Discontinuation of this effort at Thanksgiving, 1977, left Univac with no growth path for 1100 Series customers, so many of the hardware and software engineers who had worked on Roanoke were redirected to design a new generation of 1100 hardware, codenamed the C-Series. Three sizes of systems were envisaged: the high-end Cirrus (which became the 1100/90 to replace the 1100/80), the mid-range Centurion (to replace the 1100/60) and a new entry-level system, Chaparral (which became the System 11). I was part of the System Design team which produced the high-level specs for this new family, culminating in the delivery of the first of the 1100/90 systems in 1983.

This team went on to do the system design for Eagle, the Integrated Scientific Processor (offered as an attachment to the 1100/90), followed by the next generation of 1100s (by then the 2200s) starting with Mercury. Happy days! *Tony Jenkins*

March/April
www.vipclubmn.org/Newsletters/Enews2203.pdf

Rediscovering the Origin of the Blinking Cursor by Mary Beth Ruhland

Thanks to Ghislain (Gish) Devlaminck, Ron Voight, Lowell Benson, Sarah Wells, and especially Charles Kiesling: This story started out as a simple Letter to the Editor in response to the Jan/Feb newsletter that included a late remembrance of Charles Kiesling, but step by

step has grown beyond that. Board member Gish Devlaminck referenced an interesting online magazine article, published on 12/3/21, about the blinking cursor (54 years ago, a computer programmer fixed a massive bug — and created an existential crisis (inverse.com)). Gish said, "it has a section on the Charles Kiesling from Sperry Rand in Eagan who got a patent in 1967 for the blinking cursor." Then Ron Voight, a VIP Club friend from Unisys, said the following in his e-mail about the same Inverse magazine article that Gish referenced, "Here is an article written about the history of the blinking cursor invented by Charles Kiesling who was mentioned in the newsletter."

As editor, I check the link to the article to ensure it's working and referencing what is being mentioned. It talks about the blinking cursor and Charles Kiesling, so we're good to go! But then there's a follow-up to one of the e-mails from former board member, Lowell Benson, telling us all to "take a look at http://vipclubmn.org/deceased.html#Kiesling.
Here I find some of the same text used in Sarah Wells' Inverse article: "Chuck was the father of the logical expansion circuitry for display systems, or 'Graphical Computer Video Card' and the flashing or 'Blinking Cursor.' . . . One of these seemingly innocuous advancements was a 1967 patent filing Kiesling made for a blinking cursor. According to a post on a computer science message board from a user purporting to be Kiesling's son, the inspiration for this invention was simply utility. 'I remember him telling me the reason behind the blinking cursor, and it was simple,' Kiesling's son writes. 'He said there was nothing on the screen to let you know where the cursor was in the first place.'" Lowell was also thanking Gish for the link to the VIP Club patent page—wait a minute, my editorial eyes don't see that link, where is it?

After searching the website, I found it here: http://vipclubmn.org/Patents.html#Kiesling.

I was also able to access the United States Patent and Trademark Office patent award link (Patent Images (uspto.gov)), thanks to an e-mail I was copied on to ensure Charles Kiesling's remembrance made it into the newsletter. Just to close the loop a little, Ron Voight was also in that original e-mail chain. Back in August of 2021, the Unisys PR team received an inquiry from an innovation and science reporter at Inverse working on a feature story about the blinking cursor. That reporter, Sarah Wells, had traced the history of the invention back to a patent for the underlying technology, which Charles Kiesling, while with Sperry UNIVAC, applied for in 1967 and received in 1970.

The reporter wanted to learn more about that moment in history from anyone at Unisys who knew of Kiesling. That inquiry was circulated around Unisys, and eventually to the VIP Club and retirees. In doing so, the reporter helped us rediscover the origin of the blinking cursor and helped put Charles Kiesling prominently in our VIP Legacy.

Life Story Interviews by LABenson

Ryan Barland at the Minnesota Historical Society has a two-year oral-history-grant to interview and capture computer history before life stories are lost forever. Keith Myhre is the VIP Club's point person, originally contacted via the Lawshe Memorial Museum. The grant started last summer. The interviews will be transcribed and reviewed by interviewees prior to finalization. The audio tapes and transcripts will then go into the Minnesota History Center's collection for future use. There are no set plans beyond that. Interviews completed to date are: • David Andersen • Keith Behnke • Lowell Benson •

Rich Daly • Bill Geiger • Carl Johnson • Don Mager • Keith Myhre • Harvey Taipale • John Westergren • Don Weidenbach

Others in Mr. Barland's queue are: • Jim Andrews • Paul Hove • Frank King • Fred Vihovde • Earl Vraa . . . Plus some non-Univac people.

Note that Rich Daly is on the list, but he recently passed away. Ryan noted that he was able to interview him back in November "It was short, but I really enjoyed listening to him discuss his early life." Rich was an ERA employee and a promoter/supporter of the fundraising that developed TPT's MN Computer History documentary.

Ryan will continue working on getting the interviews transcribed and sent to the narrator until mid-March, at which time he will be going on leave for 6 months. While he is out, the project will be paused, but he will pick up on it when he returns in the fall.

May/June
www.vipclubmn.org/Newsletters/Enews2205.pdf

Valiant Workstation Resurrection by Keith Myhre

In 2004, Lockheed Martin Tactical Systems–Eagan developed a ruggedized display workstation to demonstrate key Commercial Off-the-Shelf (COTS) technologies. It was given the nomenclature Valiant Workstation. Lockheed Martin donated both a Valiant and a Valiant/SE Workstation to the Lawshe Museum in South St. Paul. The following photo showing both Valiant Workstations next to a CP-2044 computer used onboard Japanese Navy P-3C Anti-Submarine Warfare (ASW) aircraft was taken February 16, 2021.

In early 2021, I decided to see if I could get a Valiant Workstations operational so it could be demonstrated to Lawshe Museum visitors.

That effort began July 6, 2021. I assumed that the computing power was provided by a Virtual Machine Environment (VME) Reduced Instruction Set Computer (RISC) processor, like the AN/UYQ-70 display family. However, when Les Nelson and I removed the workstation's back panel, we unexpectedly found the "Wizard of Oz:" a Dell Precision 530 PC was "behind the curtain" running things. So, we weren't surprised when we removed the back panel on the dual vertical screen Valiant Workstation SE and found a Compaq Evo 6000 behind its "Wizard of Oz" curtain.

Time to plug in the workstation and power it up. Whoops! The power connector is a round, 3-pin connector. Perhaps a 220-volt connector? There were three 110-volt power strips inside the workstation, so we ignored the primary power input connector and plugged the power strips into a 110-volt power strip. I pressed the power button on the Dell Precision 530 computer. The BIOS booted up, but the operating system wouldn't load, even after multiple tries. The date and time always defaulted to midnight, January 1, 2000. Not a surprise for a circa 2002 computer. Time to quit and try again another day.

Two weeks later I replaced the CMOS memory lithium battery, but still was unable to boot up (not unexpected). I determined that the IDE hard drive was electrically dead. Another two weeks before trying again. I had a spare, new IDE drive at home that I brought to the museum and installed. The computer recognized the drive, but without an operating system I couldn't do anything more. I purchased Windows XP Pro on eBay, downloaded it to my home PC and burned it to a DVD.

Hmmmh – Windows wouldn't fully install, no matter how many times I tried. I figured that the 40X DVD that I burned couldn't be read by the archaic PC's drive without errors/hanging. So, I burned an 8X DVD and brought that to the museum two weeks later. That was able to load. Then I went through the hassle of having to call Microsoft to get the XP Pro validation code (no internet access, of course, from the Valiant Workstation) Once Windows XP Pro was installed, I could only get two of the four LCDs to work. After a lot of trial and error, Les and I determined that one of the two video graphics cards was bad. Each card drives two LCDs. I tried to scavenge a video card from one of the five Dell tower PCs that came from Lockheed Martin but weren't being used. None of the video cards physically fit. They were either too new (newer PCI Express interface vs. older PCI interface needed by the Dell Precision 530), were the wrong physical size or had different type connectors.

I managed to find and purchase a PCI video graphics card on eBay: "PCI Graphics Card ATI Rage XL 8MB VGA Video Module Adapter for Desktop." However, it didn't work with the Windows XP Pro default Microsoft driver. So, it took me another two weeks to search online for an ATI driver package and download it to a flash drive.

Now, it's October 5, 2021. I installed that ATI software and was able to get the three vertical displays operational. Earlier, Les and I took apart the back panels on the vertical displays and the bezel on the horizontal LCD. We removed that LCD screen and determined that although the Windows XP Pro device manager recognized the display screen, the screen didn't illuminate. There must be a broken wire or pixel driver circuitry that has failed. We checked the spare LCDs that were donated to the Lawshe Museum, but none of them were a fit. So, we gave up on getting the horizontal LCD screen operational.

Les and I had one last issue to resolve: Finding a mating connector for the Valiant console's primary power connector. The power connector is a round, 3-pin, 30-amp connector. Les purchased two different 220-volt mating connectors, but neither fit. It appeared that the shape/keying of the pins was non-standard (i.e., not the same as for a range/stove/dryer). We finally determined that the input power is 110-volt, not 220-volt. With that realization, Les was able to purchase the proper connector.

Once installed, we were able to power up the Valiant Workstation using the rocker switch on the bullnose, as designed, and built. That switch is also wired to the Dell Precision 530 computer's motherboard power connector, so the Valiant Workstation now powers up and automatically loads the Windows XP Pro operating system without any operator intervention, as intended. I also installed Microsoft Office 2000 on the Dell Precision 530 computer, primarily to have PowerPoint available for slide show presentations.

As a side note, after the Valiant Workstation was buttoned-up and operational, I was rummaging through a large box containing cables, spare cards and other miscellaneous items and came across a backup IDE disk drive containing the Windows 2000 operating system and the workstation software. I decided not to swap it for the Windows XP Pro disk drive, since the console was working after four-plus months of effort!

Legacy and Lawshe Memorial Museum: When Will We Be Done?

Recently, Earl Vraa asked: "Is there a summary list of things not yet cataloged?" Keith Myhre answered: "There is not (never has been) a list of things not yet cataloged. If you would like to volunteer to help Bob Pagac, Les Nelson, Jon Simon, and me catalog/scan remaining items, we would LOVE your help. I've been doing this for 9½ years so far and figure it will take us 3-5 more years.

Some Key Points:

• Status as of October 2020 was published here: http://vipclubmn.org/Articles/CatalogingStatus.pdf • Since then, all photos have been cataloged into the Microsoft Access database, except for several hundred Failure Analysis photos (close-ups of failed cards/components) remaining to be cataloged (Bob Pagac has been working on this cataloging task for 5[+] years) and recent photos donated to Lawshe (less than 100). All except the Failure Analysis photos have been scanned. • I have scanned, and Jon Simon has cataloged 10,000 35°mm slides so far. I estimate we have 3,000-5,000 yet to go. • Early last year I copied/converted most of the VHS tapes (100+) and CD/DVD files (100+) to MP4 files. They have all been cataloged. • All the negatives and documents donated to the Charles Babbage Institute (CBI) have been cataloged in our Access database. • CBI has cataloged all the items that they received from Lockheed Martin: https://archives.lib.umn.edu/repositories/3/resources/328."

As far as Legacy work on the VIP Club website, Earl and Jim Andrews are collaborating on an update to the website CAD section,° http://vipclubmn.org/Engineering.html#CAD. Jim just wrote the Autogram story, http://vipclubmn.org/Articles/AutogramSystem.pdf. One of the technocrats mentioned therein is Lee Granberg; without his creative inventions we would not have had Cathode Ray Tube characters, nor the 'blinking cursor' invention as discussed on page 3 of http://vipclubmn.org/Newsletters/Enews2203.pdf.

All the Legacy chapters have been reformatted to make reading with iPad and cell phones easier; the left navigation column has been eliminated in favor of industry normal horizontal tabs just below the header. The footers also now have quick links to the major legacy chapters as well as to the site map which has a table of contents for both the club pages and the legacy chapters, http://vipclubmn.org/sitemap.html.

DONE? Not yet, but we are getting close. Check for your name in http://vipclubmn.org/PeopleIndx.html. If we have missed your anthology contribution, write it and we'll find a place to post it. Or, if you have a supplementary paragraph or experience for any site chapter or section – those, too, are welcome. If only a dozen readers were inspired to spend two Tuesday mornings per month at the museum, Keith's estimate of 3-5 years might drop to a year or less! Happy summer! By LABenson

July/August
www.vipclubmn.org/Newsletters/Enews2207.pdf

Our Web Site Evolution: by *LABenson*

Sixteen years ago, we merged an IT Legacy information page with the VIP Club's web page. Rather than spurious entries into a Wikipedia page, we decided to solicit, then control submitted entries into the theme **People** at **Locations** in Minnesota **Engineered Computers** and **Systems** used throughout the world. Then in April 2007 we initiated the Our Stories chapter as a monthly Legacy feature. In 2012 we added the Exhibits chapter as we moved artifacts from the Eagan Lockheed Martin facility to the South St. Paul Lawshe Memorial Museum. In 2017 we effected a partial separation of the VIP Club information pages from the 60 Legacy chapters. Over 500 people have contributed to our IT anthology mentioning almost 2,000 coworkers and customer personnel as listed at www.vipclubmn.org/PeopleIndx.html. We indeed are information technology pioneers!

A biproduct of the Legacy documenting is the VIP Club's 'biography'; our History page has milestones since the 1980 founding. The Activities page has the history of half-a-dozen periodic group gatherings since the 1950s.

Now, for July 2022, we are posting the 194th Our Stories: A compendium, Snapshots in Time; 18 years of periodic presidents' messages extracted from newsletters. Our Site Summary report now lists: ✓ All files in the current site: 1,314 – 8,683,333 KB ✓ Files in the current site that can be reached by starting from the Home page: 1,274 – 8,564,026 KB ✓ Files in the current site that have been created in the last 30 days: 15 – 28,58 KB ✓ Files in the current site that have not been modified in over 72 days: 1,203 – 8,534,180 KB ✓ Hyperlinks pointing to files outside of the current site: 655 ✓ Hyperlinks pointing to other files within the current site: 5,665 ✓ Pages in the current site exceeding an estimated download time of 30 seconds at 56 KBs: 70 ✓ Picture files in the current site (GIF, JPG, BMP, etc.): 369 – 229,324 KB.

My apologies if I missed you when creating the index chapter. If you would like to update your entry(ies) or want to add to any chapter's sections, send the change or new 'stuff' to webmaster Jim Andrews [webmaster@vipclubmn.org] or to me, his back-up [la.gj.benson@comcast.net]..

More Legacy Bits by LABenson

From the 1956 UNIVAC Scientific Reference Manual: The first type 1103 computer was delivered to the Bureau of Ships several years ago; in 1954 several commercial versions

which contained 1,024 words of electrostatic storage were delivered to Consolidated Vultee Aircraft, Elgin Air Force Base, White Sands Proving ground, Ramo-Wooldridge Corporation and Westinghouse. In 1955, delivery of a later version of the ERA 1103 computer began. These were logically the same as the first but incorporated an important engineering development – magnetic cores replaced the 1,024-word electrostatic memory. The introduction of magnetic cores made the ERA 1103 the first computer system to be delivered using this improved form of high-speed memory. Organizations receiving this version were the Operations Research Office of Johns Hopkins University, Wright Air Development Center, Lewis Flight Propulsion Laboratory of the National Advisory Committee for Aeronautics and Remington Rand UNIVAC, St. Paul, Minnesota.

The UNIVAC Scientific Model 1103A is an expansion of the earlier ERA 1103 system with several engineering and logical improvements. One of the improvements is that the magnetic core storage has been expanded to 4,096 words of core as standard equipment, with one or two banks of 4,096 words as optional equipment. Receiving 1103A installations are the Missile Systems Division of Lockheed Aircraft Company, Boeing Airplane Company, Holloman Air Force Base (two 1103A's), Ramo-Wooldridge Corporation, Applied Physics Laboratory of Johns Hopkins University and Wright Air Development Center. (Two years after this manual publication; in 1958, 1103 S/N 4 was transferred to the U of MN, along with Dr. Stein, to begin the University's computer science department, http://vipclubmn.org/processors.html#Customer%20Lists)

USS Minneapolis-Saint Paul (LCS 21) Commissioned on May 21, 2022

The U.S. Navy commissioned its newest littoral combat ship for duty in ceremony at Duluth Port (see https://www.usff.navy.mil/Press-Room/uss-mpls-saint-paul-lcs-21-commissions / by Julie Ann Ripley and https://www.startribune.com/uss-mpls-st-paul commissioned by Christa Lawler, from which this article is quoted).

The USS Minneapolis-St. Paul is a speedy combat ship built for near-shore missions that was put into active service during a ceremony at the Port of Duluth on May 21, the first time a U.S. Navy warship was commissioned in Minnesota. From a platform in front of the 387-foot, steel-hulled vessel, the ship's sponsor, former deputy undersecretary of the Navy Jodi Greene, gave the first order to, "Man our ship and bring her to life."

As the Navy Band played "Anchors Aweigh," dozens of sailors dressed in whites jogged in a single file line up an aisle through the crowd and to the ship. There was a gun salute, singing of "The Star-Spangled Banner", and a military helicopter flyover. Sen. Amy Klobuchar, one of a handful of politicians and military leaders who spoke during the commissioning ceremony, said, "We are so proud of the name — the USS Minneapolis-St. Paul. And the ship's motto, which translates to 'I will either find a way or make one,' is a perfect reflection of the resolve and determination of our state's service members and our veterans."

Rep. Betty McCollum, Minnesota 4th District, was the principal speaker for the commissioning ceremony.

"The strength of America's national security, and the democratic values we hold dear, are being tested today like they have not been in decades," said McCollum. "I can think of no two names that represent that strength more than Minneapolis and Saint Paul. Together we are one team – those who built this fine ship, and those who will serve on her. It is the strength and determination of the American people that is the backbone of our national security."

The Honorable Erik Raven, Under Secretary of the Navy, reflected on attending his first commissioning ceremony. "The Twin Cities represent the Great State of Minnesota's economic, cultural, and political center. The Twin Cities play a significant role in our nation's economic network," said Raven. "Now, more than ever, it is fitting that a Littoral Combat Ship is named Minneapolis-Saint Paul - honoring the legacy of work and contribution of the people whose work ultimately impacts our daily lives nationwide and globally."

Minnesota Governor Tim Walz also attended. "This is a unique opportunity to gather ourselves as Minnesotans and Americans," said Walz. "We're not just a country; we're an ideal." Guest speakers for the event also included Jon Rambeau, vice president and general manager of Lockheed Martin Integrated Warfare Systems and Sensors.

Other attendees of the ceremony included: • Mayor Jacob Frey, City of Minneapolis • Mayor Melvin Carter, City of Saint Paul • Mayor Emily Larson, City of Duluth • Rear. Adm. Casey Moton, Program Executive Office, Unmanned and Small Combatants • Mark Vandroff, chief executive officer, Fincantieri Marinette Marine • Capt. David Miller, Commander, Littoral Combat Ship Squadron 2 • Capt. Andy Gold, Littoral Combat Ship program manager,

Program Executive Office, Unmanned and Small Combatants • Brian Kriese, deputy officer in charge, supervisor of shipbuilding Bath Detachment Marinette • Matrons of Honor, Nicole Sunberg and Carly Olsen Rep. Pete Stauber, Minnesota 8th District, assisted in placing the ship into commission.

Built by the Lockheed Martin and Fincantieri Marinette Marine in Marinette, Wisconsin; the Minneapolis-Saint Paul was launched and christened in on June 15, 2019. The ship completed acceptance trials, Aug. 21, 2020, and was delivered to U.S. Navy, Nov. 18, 2021. LCS is a fast, agile, mission-focused platform designed for operation in near-shore environments yet capable of open-ocean operation. It is designed to defeat asymmetric "anti-access" threats and can support forward presence, maritime security, sea control, and deterrence. Minneapolis-Saint Paul will be homeported at Naval Station Mayport, Florida.

September/October
www.vipclubmn.org/Newsletters/Enews2209.pdf

Legacy History Capturing

A decade ago, I discovered the bitsavers.org website. Knowing that some websites tend to disappear, I downloaded about a couple of dozen files that were relevant to our computer history. If you look near the bottom of most computer chapters, you'll find tech manuals listed that were/are on their site. The stimuli for doing this was that Al Reiter had a website with two excellent UNIVAC I chapters. When he had dementia a few years before passing, his site was shut off. I had, with his permission, grabbed a copy of his pages, and am glad that I did! Look at Our Stories 169, June (www.vipclubmn.org/OurStories.html#2012), a doublet created by Al Reiter has two web pages. The first is about maintenance people who worked on and with the UNIVAC I computer {Ed note: Updated 3/28/2020}.

168, the second, is about the UNIVAC I hardware. If I hadn't grabbed those two pages, some detail UNIVAC I history would have been lost.

The Unisys Blue Bell Retires' club had a website that our club was linked to. Unfortunately, when they shut down, their site was lost. I hadn't grabbed a copy of their site; therefore, we only have a few of their final newsletters: http://vipclubmn.org/newsletters.html#BlueBell. What if our VIP Club dissolves as Blue Bell did? A lot of 'stuff' will remain at the Lawshe Memorial Museum, thanks to Keith Myhre, and several other volunteers. Almost annually, I have burned a disc with the complete website and provided it to the Charles Babbage Institute for our history preservation. This article is my reminder to do another disc burn. *Lowell A. Benson*

Looking Back: Ladies' Legacy?

With all the talk of trying to get more women serving on the VIP Club Board, a 2017 newsletter article caught my eye as I searched the website archives for information recently. The article addressed Legacy activities and properly asked: "Where are the Women of our Legacy?" It went on to say that the question was raised at a Unisys open house, and they also noted that "none of the 16 Legacy Story Boards in the exhibits mentioned a female worker," and "only 6 of the 173 career summaries posted on our website Legacy Anthology were submitted by ladies." So, I'll repeat that call made in 2017 for Career Summaries and Project Stories: Telling the story of our legacy is never complete—and it's barely started for the ladies! Look at any career summary or project/program story submitted by "our" coworkers, and those pioneers that came before them, then write your story for our website anthology. Stories and experiences from two paragraphs to 20 pages

and anywhere in between are acceptable. No legacy is too big or too small. We'd like to hear from ladies who worked in Admin, HR, Finance, Planning, Contracts, Marketing, Business Development, Security, etc.; wherever you worked, tell us your story! We'll edit for spelling, punctuation, awkward writing (and blasphemy??) before posting on the web. E-mail to webmaster@vipclubmn.org or via U.S. mail to the P.O. Box in the footer of this page. *MB Ruhland*

Curt Nelson tribute:

We took a look back at Curt Nelson's 1952-1981 career path http://vipclubmn.org/People5.html#CurtNelson William [Curt] Nelson first started working at ERA in 1952. About that same time, ERA was being sold to Remington Rand. He went to work on an automated TNT production system for the government at Joliet, Illinois, where it was his job to design an alarm and warning system. In 1954 he got onto a computer project when he was assigned the design of the input power system for a large-scale computer called the ERA 1104 for Westinghouse to be installed at Patrick AFB near Melbourne, FL. Its function was guidance of the BOMARC missile to attack enemy aircraft.

He was involved in another large-scale system to be installed at Eglin AFB in Florida. In 1959, he was assigned design responsibilities for portions of the Titan I ground guidance computer, and project engineer follow-on duties. He was moved to the A-NEW program, supervising computer checkout of the missile borne computer program, then became supervisor of design and development for the 1830, an Anti-Submarine Warfare (ASW) aircraft borne computer system project.

This subsequently developed into a production program and where he was assigned the systems engineering task. He was involved similarly with the ongoing P-3C program until his early retirement in 1981. Curt wrote this about his 29-year career on the website: "In retrospect, I cannot point to any outstanding achievements since for the most part I was a "plugger," filling in holes in the programs that needed attention and mostly jobs nobody else wanted. However, the jobs I had gave me an opportunity to work with the finest people imaginable and count them as my friends. I put in nearly 30 years of doing what I was assigned to the best of my ability with a company that I highly respected."

MORE LEGACY TIDBITS by Keith Myhre

Keith Myhre spent several weeks updating/editing/ cleaning up the tables in the artifact Access database: ✓ Merged the Failure Analysis table with the Photos – Scanned table and deleted the Failure Analysis table: ✓ Entered descriptions and categorized all slides needing same; all of the slides are now fully categorized and up to date ✓ Made major editing/corrections/categorization/spelling/identification/description changes to the Photos – Scanned table ✓ Made editing changes to all other tables The current status of cataloging efforts: ✓ 35 mm Slides table: 10,091 scanned and cataloged ✓ Scanned Photos table (CBI negatives and DCHS prints): 21,035 database records cataloged (front and back of 13,170 prints have been scanned) ✓ Digital Photos table: 2,680 cataloged ✓ Public Relations table: 1,845 DCHS records cataloged (not scanned yet) ✓ Document Inventory table (Documents/ Brochures/Manuals/etc.): 4,448 items cataloged (only a few have been scanned) ✓ Publications (Newsletters): 2,400+ cataloged (none scanned) ✓ Transparencies:

13 cataloged (none scanned) ✓ Videos (VHS/Beta/DVD/CD): 280 (156 digitized) The collections have over 200,000 images between CBI negatives and DCHS prints/slides/digital photos: ✓ Slides = 10,091 images ✓ Scanned Photos (assumes 5 images/record primarily because of negatives) = 5 x 21,035 = 105,175 images ✓ Digital Photos = 2,680 images ✓ Public Relations (sampled 100 records = 4,290 images) = 43 x 1,845 = 79,335 images

Remaining tasks: 1. Organize/scan/catalog remaining 35 mm slides (estimated 3,000-5,000) 2. Scan already cataloged Photo prints that haven't yet been linked together (500??) 3. Scan Public Relations photos (1,845) 4. Organize/catalog documents/photos/items donated in past 1-2 years 5. Scan/catalog transparencies/viewgraphs (500-1,000??) 6. Scan employee directories/phone books 7. Scan technical descriptions 8. Scan data sheets 9. Scan brochures 10. Scan selected manuals that aren't available online via the bit-savers website, http://bitsavers.informatik.uni-stuttgart.de/); it has over 32,000 documents.

When the Lawshe Museum reopens early next year, we plan to get our Legacy equipment back in operation to restart work using the updated Access database. The database is not available for website posting yet. If a club member wants to do some individual research using the 'incomplete' database, ask either Keith Myhre or Lowell Benson for a copy. AND it is time to reconstitute our volunteer cadre at the museum for 2023—five workstations are available! We work on Tuesdays when the museum is not open to the public, thus can focus on the job without visitor interference. More hands and minds on scanning and cataloguing could lead to a SUCCESS declaration in 2024! Thanks for Keith Myhre's unwavering diligence! *Lowell A. Benson'*

Legacy Success!

We just met the goal of 200 career summaries set January 12, 2006, at the Legacy Committee's first meeting. Thanks to Les Nelson, we also posted his Programmable Signal Processor (PSP) development paper as Our Stories, September 2022.

November/December

www.vipclubmn.org/Newsletters/Enews2211.pdf

A Big Thank You.

To these ~400 people who have contributed to our Legacy Anthology during the 17 years of the committee's existence: http://vipclubmn.org/PeopleIndx.html#Writers. We have chronicled our successes here: http://vipclubmn.org/Legacy.html#Sucesses, and highlighted the major accomplishments with Our Stories Article #297: http://vipclubmn.org/OurStories.html#2022.
2008: Set up a sesquicentennial display at the State Capitol and at the MN State Fair: http://vipclubmn.org/Articles/It'sAWrap.pdf
2013: Started a permanent artifact exhibit at the Dakota County Historical Society (DCHS) Lawshe Memorial Museum in South St. Paul: http://vipclubmn.org/Exhibits.html#Lawshe
2017: Celebrated moving shadow boxes from Roseville to Eagan with an open house: http://vipclubmn.org/Articles/ThroughTheAges.pdf 2018: The Minnesota High Tech Association, in conjunction with the Charles Babbage Institute (CBI), the Legacy Committee and the museum, developed a MN Computing History website: www.mncomputinghistory.com 2019: The Minnesota High Tech Association, in conjunction with CBI, the DCHS Lawshe Memorial Museum and Twin Cities Public Television , Inc. (TPT, aka Twin Cities PBS), developed this Minnesota Documentary: http://vipclubmn.org/Articles/TPTclips.pdf; it

was based on Dr. Tom Misa's Digital State book: http://vipclubmn.org/Articles/BookReviewDigitalState.pdf 2019: Provided information for Computer History Archives Project (CHAP) videos: http://vipclubmn.org/Articles/CHAP_SummaryRev1.pdf

2022: Submitting our Legacy Anthology website as a CBI Human-Computer Interaction History award candidate. Stay tuned! We also thank the VIP Club leaders http://vipclubmn.org/history.html#Leaders) who have served us since 1980. by LABenson

When did they pass? A tradition of the annual Unihogs/Technologists' luncheons (they predate the VIP Club formation http://vipclubmn.org/activities.html#Hogs, has been to read the names of pioneers who passed away since the previous luncheon. Since we cancelled that event this year, there was no reading. However, we have posted the list in Section 2 of website Chapter 19 http://vipclubmn.org/deceased.html.

New this year are annual Obits List links, available with the previous newsletter links at http://vipclubmn.org/newsletters.html#Archives. Plus, Jim Andrews has updated the comprehensive alphabetic listing, which was initiated by Paul Dickson a few years ago, at http://vipclubmn.org/PeopleDocImg/AlphabeticDeceasedEmployees.pdf. If you lose this newsletter link or are reviewing our website at the library, a link is also available as noted in the deceased chapter and from our membership page. that we had to cancel Unihogs! Our planned venue of the Lawshe Memorial Museum was not possible due to reconstruction. We are monitoring reconstruction and intend to have a wine and cheese event there, when possible, in 2023 to show the artifact collection. By *LABenson*

Legacy Updates:

Recent additions to our Legacy Anthology are noted as NEW at http://vipclubmn.org/Legacy.html. We have posted the Our Stories for both November and December: • Sperry Rand's Third Generation Computers 1964- 1980 by George T. Gray and Ronald Q. Smith was published in 2001 in the IEEE Annals of the History of Computing. • Historical vision used as the foundation of St. Paul computer developments; John von Neumann's First Draft of a Report on the EDVAC, found as Lowell researched computer history. As usual, we are almost in need of new Our Stories. And if your name isn't an anthology contributor at http://vipclubmn.org/PeopleIndx.html#Writers, we welcome your story to fill in missing data. Thanks, *LABenson*

Anticipation

We are anxiously awaiting the reopening of the Lawshe Memorial Museum after the

Americans with Disabilities Act (ADA) improvements are completed. The great room floor has a pictorial map of Dakota County; the periphery has our Legacy artifacts and displays. From left to right are a Quality Control (QC) inspector's jacket behind an automatic antenna coupler, an Input/Output Processor (IOP) rack-mounted FAA computer, the micro-1100 wafer set with development project poster highlights, an AN/UYK-43 large scale Navy computer, an AN/USQ-69 display, the AN/UYK-44 mini-computer, the CP-2044 airborne computer, two variations of the Valiant displays, and four more poster boards. We expect to receive a completion notice from the museum in January 2023, and we will need volunteers to reposition the display from storage. Contact Keith Myhre, Les Nelson, Bob Pagac, or Jon Simon to schedule a day/time to volunteer.

NEWSLETTER ARTICLES, 2023

January/February
www.vipclubmn.org/Newsletters/Enews2301.pdf

Legacy Milestone:

We have posted the January 2023 Our Story, a status update of Telling the Story. At the Legacy Committee's first meeting in January of 2006, we resolved to tell the then-to-fore untold story of Engineering Research Associates, "flipping the switch to start Minnesota's computer Industry." The http://vipclubmn.org/OurStories.html chapter now has 200+ stories. We have 200+ career summaries posted and listed in. Chapters 11 through 22 have those career http://vipclubmn.org/People.html#bios summaries and lists of article contributors. These story authors as well as contributors to

legacy chapters are listed in http://vipclubmn.org/PeopleIndx.html#Writers. Our Corporate Name History is at http://vipclubmn.org/lmcolegacy.html#Names while our General Managers are listed in http://vipclubmn.org/lmcolegacy.html#Mgrs . A Legacy initiative byproduct is the VIP Club's history, http://vipclubmn.org/history.html and social activity history. This 200th item catalogues Our Stories with their authors plus a Lawshe Memorial Museum overview. Are we done telling the story yet? Almost!

Hidden Kudos

The Vintage Technology Association http://www.decadecounter.com/vta/ posted the following on December 2, 2017: "For nearly 10 years, we have been attempting to

research the history of the so-called Western Electric SAGE hybrid logic ICs, part number series GF401xx and 112946xx. Although the Smithsonian had long ago published an anecdote which claims these devices are from the "processor of the SAGE system," this statement never really matched the reality of the AN/FSQ-7 Central Computer System, a tremendously large tube-based machine built by IBM. After years of dead-end research and much speculation, the true origin of these devices has finally been discovered. They are discrete logic Integrated Circuit Packages (ICPs) developed for the experimental Bell/UNIVAC DPS-1 and DPS-2 defense computers. The DPS-1 and DPS-2 were incredibly powerful real-time multiprocessor supercomputers used to guide the operations of the Nike-X and Sentinel anti-ballistic missile systems. The article for these devices has been rewritten accordingly. We would like to give **special thanks to retired UNIVAC component engineer Larry Bolton** for his assistance in this research effort."

Tricia Tribute:

On April 10, 2019, the VIP Club awarded the sixth Volunteer Extraordinaire certificate honoring Patricia Myhre's five-plus years of Photo ID work at the Lawshe Memorial Museum and other volunteerism (http://vipclubmn.org/Documents/VolunteerAward6.pdf), delivered posthumously to husband Keith Myhre, at the Volunteer Recognition Luncheon.

She also was a female computer pioneer during the era of "that's a man's job." Extracted from Keith's Minnesota Historical Society interview: "She was a math major from Creighton University. She graduated from St. Margaret's high school in Hopkins. Benilde Saint Margaret's today had a name change, and she graduated in '76. The job market was even worse than when I graduated [sic. 1972]. She only had one job offer and that was with Sperry UNIVAC. She got into the side of testing software. Eventually got into testing entire systems, including… she got involved for 20 years in the P-3C anti-submarine warfare aircraft, ASW aircraft. Four engine turboprops, built by Lockheed, commercially was sold as an Electra. She did some traveling to Norway and some other places as well, but mostly domestic travel. She was the only woman to be flight qualified to fly on a P-3 for the testing on that program. Flight testing was out of Patuxent River Maryland Naval Test Center.

Tricia, thank you for serving the retirees club and thank you for serving the world by pioneering women in computing. Her career details are part of our legacy, http://vipclubmn.org/People5.html#PatMyhre.
We indeed were blessed to have had you in our lives, amen! Keith's MHS interview transcript is our February 2023 story, http://vipclubmn.org/Articles/KeithMyhreOralInterview.pdf. By *LABenson*

March/April
www.vipclubmn.org/Newsletters/Enews2303.pdf

Anticipation of Excitement

Lowell Benson received the following from Chad Roberts, President of the Ramsey County Historical Society: "Thanks Lowell, [personal note redacted out.] I do have some related news, and this just happened so I have not reached out yet, but RCHS (the Ramsey County Historical Society) is planning on installing a plaque at the original ERA headquarters [sic. 1902 Minnehaha Ave., St. Paul] this June (probably the 15th or 22nd) and holding an unveiling event that we want to invite the VIP Club to attend. I'll have a bit more information soon and will follow up when I do."

Our Stories of August 2020 has the background http://vipclubmn.org/Articles/40-Yr%20Plaque.pdf. Watch for an update in the May/June newsletter and/or the home page announcements.

Computer History Archives

Mark Greenia from the Computer History Archives Project (CHAP) sent the following to Lowell Benson: "Greetings Lowell, one month into 2023, I have been updating the Computer History film playlists of various categories. The first one updated is the UNIVAC/ERA playlist. You are familiar with most of these YouTube videos; you and VIP members helped with the development of several. The "Playlist" simply makes them easy to access through one link {CHAP background, http://vipclubmn.org/Articles/CHAP_SummaryRev1.pdf}. These YouTube videos provide a fascinating early history of UNIVAC/ERA family of computers from the beginnings of the top secret "Engineering Research Associates" (1946) to the UNIVAC I of 1951 and beyond (Computer History Archives PLAYLIST for UNIVAC/ERA family of computers); hope you enjoy this look back into history. The Playlist includes original Remington-Rand, Sperry, and Burroughs films. It currently contains 32 films, with room for more in the future – not in chronological order.

From South of the Equator

We received the following newsletter e-mail: "Hi VIP Club news editor: My name is Dirk Stoffels, living in Canberra, Australia. Earlier in my working career (now retired), I used to work with the Submarine Fire Control System (SFCS) used on the Australian Oberon submarines. Part of this Singer-Librascope system was the U1600EM Data Processing Set (similar to an AN/UYK-20, but different). I have recently become associated with a couple of submarine museums, and we are trying to locate copies (physical or electronic) of the technical manuals for the U1600EM computer. Is it possible for your organization to spread the word asking if anybody knows where copies of these manuals may be located and are they accessible? I know the documents as being:

➢ NAVELEX 1427-0001-1 U1600 Data Processing Set – Technical Manual Volume 1
➢ NAVELEX 1427-0001-2 U1600 Data Processing Set – Technical Manual Volume 2
➢ NAVELEX 1427-0001-3 U1600 Data Processing Set – Technical Manual Volume 3
➢ NAVELEX 1427-0001-4 U1600 Data Processing Set – Technical Manual Volume 4 Referred to in a SFCS training course notes manual. Sperry Univac manual. NAVELEX stands for Naval Electronic Systems Command, but UNIVAC may have used different identifier numbers."

Keith Myhre responded to Mr. Stoffels with some electronic links on behalf of the VIP Club. If any of our readers happen to have hard copies of any NAVELEX documents, we'd be happy to take them out of your basement and get them to Mr. Stoffels for their submarine museums. *LABenson*

Human Computer Interface History

Last October we submitted a candidate for the Charles Babbage Institutes' (CBI) 2022 Annual Ben Shneiderman HCIH Award: our Legacy Anthology website chapters. We were not selected; however, we are proud of our place in this technology history. Where would the world be: ♦ If Lee Granberg hadn't invented and patented CRT painting of characters on screen ♦ If Charles Kiesling hadn't invented and patented the blinking cursor ♦ If our Speech Group hadn't invented voice mail including voice recognition for computer responses

♦ If Don Weidenbach hadn't project engineered the first-in-the-world order call-in catalog system running on the Speed Tally in the early 50s? Browse 'Our Stories' to enjoy the submittal, http://www.vipclubmn.org/OurStories.html#2023 for March, #302. *LABenson*

More Legacy Inputs

One more letter from a former employee to Lowell: "Good morning Mr. Benson. My name is Dave Gunderson. Like yourself, I'm retired and probably spend too much of my free time on the &y@#! internet. I did a web search yesterday on the MPC-1616 and ended up on the VIP website.

A little history here: I was employed by Sperry UNIVAC in the 1976–1980-time frame. I worked in the field installation of both EARTS and ARTSIIIA Systems. My time at Eagan was limited as most of my time was spent at the EARTS and ARTS test beds. Then out to the field on the various installations. When ARTSIIIA wound down, I moved on to a second career in the Federal Government. EARTS Test Bed Installation I see that you have an 'Our Stories' section and thought that I'd like to offer a story on my learning the 'trade' (field support) and my EARTS experience in Alaska. In addition to my story, I have a dozen photos of the installation in Anchorage (equipment in place) and the installation team enjoying life in the last frontier. The real treasure in this is the photos in their Kodachrome glory.

Also, in my post UNIVAC career, I worked in the DoD and ran across system issues that the Army had with the Quicklook System and the UYK-23 computers. That is another interesting story. I supported the Quicklook II system as a Depot level Tech Rep. As with the problems, my experience with the MPC-1616 previously solved the problems that the Army had had.

Mr. Gunderson's micro-bio is now in Chapter 13, People G-H. His EARTS history is Our Stories for April and for May his AN/UYK-23 story, being formatted as this newsletter issue goes to press. *LABenson*

Museum Resetting

On January 10, several of us volunteered at the Lawshe Memorial Museum to reconfigure our artifact exhibit. Thanks to Jim Andrews, Lowell Benson, Matt Carter, Keith Myhre, Les Nelson, Greg Oxley, Bob Pagac, and Earl Vraa for a full morning of 'move crew' work. Another half-day on January 17 got the exhibit ready for the museum's public reopening on January 21.

May/June
www.vipclubmn.org/Newsletters/Enews2305.pdf

ERA Plaque Unveiling

VIP Club members, families and friends are invited on June 15 at 3:30 p.m. The Ramsey County Historical Society (RCHS) will unveil a commemorative plaque recognizing the importance of Engineering Research Associates (ERA) and spinoff companies to the local economy and the world. The new plaque theme is "ERA and spinoffs' technologies came to rival agriculture and mining as a leading industry in the state." "From this plant, an enormous contribution was made to human welfare throughout the world, and the benefits to the local economy are almost beyond measure." The disappeared 1986 40th anniversary plaque only noted ERA and 100 spinoff companies as the start of Minnesota's computer industry. Speaking for the VIP Club, Lowell Benson will note a few significant time points of the ERA through Unisys corporate lineage, including the club's participation in a documentary and volunteerism at the Lawshe Memorial Museum.

❖BTW, the president of the RCHS is Chad Roberts, who was previously executive director of the Dakota County Historical Society (DCHS) and who brought us to the Lawshe Memorial Museum in 2011!

Our Legacy Anthology has data about this historic building that was ERA Plant 1, then UNIVAC/Unisys Plant 2; browse to https://vipclubmn.org/Locations.html. Plan to attend. Scheduled to speak, 3-5 minutes per person, are: ➢ History of Building/Why ERA in St. Paul: Don Hall, 2014 author of Generation of Wealth – the Rise of CDC ➢ Unveiling: Chad Roberts, Ramsey County Historical Society President ➢ ERA Successors: Lowell Benson, Unisys retiree, VIP Club historian ➢ Personal Experience: Dean Laurance, ERA engineer ➢ Control Data: Norb Berg, close associate of Bill Norris ➢ Cray Research: John Rollwagen, close associate of Seymour Cray ➢ Medical Industry: Manny Villafana, founder of Cardiac Pacemakers and St. Jude Medical ➢ Audience comments, questions and photo opportunities. If you can't get to this 'free' event, watch for the July 'Our Stories' or for a report in the next newsletter.

Company Tidbits:

➢ Unisys is the last ERA direct lineage corporation in MN https://vipclubmn.org/Exhibits.html#Unisys. ➢ For the 2008 Sesquicentennial on the Minnesota State Capitol Mall, Quint Heckert, one of our volunteers created a poster that showed the MN impact; Picture 1 on page 2 in https://vipclubmn.org/Articles/It'sAWrap.pdf illustrates over $100 billion in economic contributions to Minnesota. ➢ Our Legacy website Chapter 6 has a table of many of the spinoffs from the ERA lineage, as well as from CDC, https://vipclubmn.org/Spinoffs.html#Corporations

. We have added a few since a June 23, 1986, St. Paul Pioneer Press and Dispatch listing. ➢ A speaker at the 1986 original plaque unveiling was then Sperry general manager, Wilfred 'Bill' Geiger https://vipclubmn.org/Locations.html#Commemorated.

➢ Unisys is the last ERA direct lineage corporation in MN - https://vipclubmn.org/Exhibits.html#Unisys.

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Air Traffic Control was International:

Browse to Our Stories in the Legacy Anthology https://vipclubmn.org/OurStories.html#2023, then open the June article, a story from Glen Hambleton about his trials and tribulations working the ZKSD proposal. ZKSD stands for Zentraler Kontroll Streifen Druck (literally, Central Control Strip Printing), or more descriptively, Central Flight Plan Data Processing and Strip Printing System. Flight strips were UNIVAC's original entry into Air

Traffic Control (ATC); i.e., the file computer was used for 'strips' in the mid-50s before Automated Radar Tracking Systems (ARTS). The Legacy Committee welcomes more stories like Glen's; innovations in business often complemented technology to solve problems. *LABenson*.

That Little Instrument in Your Pocket by G. Devlaminck

In 2003, Richard Rubin interviewed 102-year-old Frank Buckles for his book, The Last of the Doughboys. Buckles still lived and worked on his farm at 102. He died at the age of 110. At the end of the interview, Rubin asked Buckles, "You have lived to see so many changes. What kind of things have you seen that you could never have imagined?" "That little instrument you have there in your pocket," he said, pointing to Rubin's cell phone.

Alexander Graham Bell invented the telephone in 1876, and 97 years later (1973), Martin Cooper, a Motorola engineer, made the first handheld cellular phone call while walking along Sixth Avenue in New York between 53rd and 54th Streets. Now we have smartphones that are like a computer in our pockets. The first programmable, electronic general digital computer, the Electronic Numerical Integrator and Computer (ENIAC), was invented in 1946. It was primarily used to calculate artillery firing tables for the U.S. Army's Ballistic Research Laboratory and was heralded as a "Giant Brain" by the press. It contained 18,000 vacuum tubes, 7,200 crystal diodes, 1,500 relays, 70,000 resistors, 10,000 capacitors and approximately 5,000,000 hand-soldered joints. It consumed 150 kW of electricity, weighed about 27 tons, and occupied roughly 1,800 sq. ft.

The smartphone is the most common computer today, and we carry it in our pockets. You may not think of it as a computer, but the functionality is enabled by multiple computers working together. The cell phone is something the designers of the ENIAC could never have imagined but let us jump ahead to the transistor-era computers, because those ENIAC vacuum tubes would be too hot in our pockets.

Today's smartphone has the equivalent of 2 billion transistors, or as many as 6 billion. Assuming a 2-billion transistor smartphone and 1 cubic inch for each transistor using 1950s technology, the size of that little instrument in your pocket would be a 4-story building approximately 240 feet long and 100 feet wide (1,157,407 cubic feet). Would it fit into a building the size of Plant 8 that was located at Pilot Knob and Yankee Doodle in Eagan or the Roseville facility? A smartphone with 1950s technology will not fit in your pocket, and you would need to be connected to the grid to power it. Don't forget that you also would require a cathode ray display and a big camera. That little instrument has changed the way we socialize. At gatherings, many people are texting or playing games on their little instruments instead of conversing with each other face-to-face. There are also smartphone applications for many other functions, such as continually tracking your location, whether you are driving, riding a bike, or walking. You get reports via e-mail from all the places where you've been. If you're having a secret rendezvous, you better turn off your smartphone before leaving home or someone may find out where you went! Smartphone apps can also monitor your sleep and record what you say while 'sleep talking'. When you wake up in the morning, you can listen to your phone to hear stories you have forgotten about the adventures of your youth.

I think old Frank Buckles was right when he told author Richard Rubin that the little instrument in his pocket was the biggest change, he had seen in his

July/August

ERA Plaque Unveiling

On June 15 a commemorative plaque recognizing the importance of Engineering Research Associates (ERA) and spinoff companies to the local economy and the world was unveiled at the original ERA site by the Ramsey County Historical Society (RCHS).

The plaque theme is "ERA and spinoffs' technologies came to rival agriculture and mining as a leading industry in the state." "From this plant, an enormous contribution was made to human welfare throughout the world, and the benefits to the local economy are almost beyond measure." The event emcee was Donald Hall, author of Generation of Wealth: The Rise of Control Data and How It Inspired an Era of Innovation and Investment in the Upper Midwest. Speaking for the VIP Club, Lowell Benson noted a few significant time points of the ERA through Unisys corporate lineage, including the club's participation in a documentary and volunteerism at the Lawshe Memorial Museum.

Our Legacy Anthology has data about the historic Minnehaha Ave. building that was ERA Plant 1, then UNIVAC/Unisys Plant 2; browse to: https://vipclubmn.org/Locations.html. Other speakers were from the RCHS, ERA/Sperry Rand, Control Data Corporation (CDC), Cray Research, and Cardiac Pacemakers, Inc./St. Jude Medical, Inc. See more details in ERA History Talk, the July Article for the Month, see event pictures later

in the newsletter and browse through more in the VIP Club Photo Gallery (vipclubmn.org).

CHAP

From Mark Greenia of the Computer History Archives Project (CHAP), referencing a rare film not seen for 45 years: (https://youtu.be/h3e8Nqefx8M) The film description states that in 1978, "J. Paul Lyet, Sperry Chairman & CEO, gives a high-level overview of Sperry UNIVAC products and computer systems used in defense, business, medicine, aviation, agriculture industry, maritime applications and more."

CHAP is: • An independent educational research project dedicated to the research and preservation of vintage computing technologies and related electronics tech. • Educational and documentary style computer history videos, and vintage computer company histories (IBM, UNIVAC, RCA, Burroughs, Sperry, etc.). • Vintage technical and scientific presentations, for discussion, comment, and historical interest.

September/October

PO Box Package By Ghislain Devlaminck

On June 24, 2023, I checked the VIP Club PO Box and there was a package in it. My first reaction was that it had been put in the wrong PO Box. But then I saw the package was addressed to the VIP Club. Inside was the book *Boot Strap Entrepreneur*, written by John Miller.

Being a history buff, I immediately started reading the book when I got home. It was a very good read for me, and I recommend it to those of you who like history and have worked in the tech business. There are also several UNIVAC names mentioned that many of you old-timers may have known.

John Miller worked for UNIVAC for 10 years when he left the company to join a start-up company called Atron, where he was responsible for manufacturing.

In 1971, Louis Amyotte, a Native American technician in the Atron core memory group, suggested they shift production to the Turtle Mountain Indian Reservation located in northern North Dakota, the land base for the Turtle Mountain Band of Chippewa Indians, which they did. This caught my attention because I had just finished reading An Indigenous People by Roxanne Dunbar-Ortiz, which also mentioned examples of manufacturing being done on Native American reservations.

When Atron started to shut down, John Miller started his own company, Turtle Mountain Corporation (TMC), headquartered in St. Paul, MN, with a contract manufacturing facility on the Turtle Mountain Indian Reservation. Customers included IBM, UNIVAC, Honeywell, and 3M, among others. The coauthor of *Boot Strap Entrepreneur* is Christina Schweighofer, who is an award-winning journalist and memoir ghostwriter in Los Angeles. She helps people turn their life and business stories into inspiring books. I recommend you check out Boot Strap Entrepreneur; it is a well-written book available from Amazon, Thrift books, eBay, Walmart, Better World Books, and other sources, and is also available as an audiobook. You can also contact John Miller at jmbigturtle@comcast.net or 952-334-0066. He likes to hear from his readers and hopes other VIP Club members enjoy his story.

More on John Miller: John Miller attended the plaque unveiling in June and chatted briefly with Lowell Benson. John had signed Lowell's timecard for a few months in 1967 during the CP-901 initial checkout and test. John previously contributed to Our Stories

https://www.vipclubmn.org/Articles/TurtleMountainCorp.pdf) in December 2021; his career summary is at People M-O, Ch 15 (vipclubmn.org).

A Snapshot in Time

Les Nelson found the 1971 Press Release draft by Jack Nichols while cataloging documents donated to the Lawshe Memorial Museum. The release recognized the 25th anniversary of Engineering Research Associates (ERA), 1946-71, and is posted as our August story, https://www.vipclubmn.org/Articles/1971Paper.pdf. To several of us who have been documenting ERA-Unisys history for 18 years, the most surprising words of this Press Release are in the third paragraph on page 1: "the IBM Room." See Harvey Taipale's The Other Side of Our Legacy story that follows.

The Other Side of Our Legacy

We all have heard of the early computers built by our founding company, Engineering Research Associates (ERA), but some of ERA's side activities are also a bit interesting and perhaps entertaining. As a startup, ERA was cash-strapped and tried many things to raise money, including:

• **The Airport Service Vehicle** ► ERA's founder, John Parker, was involved with the early aviation industry, and ERA developed a low profile (to fit under an aircraft wing) vehicle built on a Crosley car chassis. Crosley Corporation, later Crosley Motors Incorporated, was a small, independent American manufacturer of subcompact cars, bordering on microcars. The Cincinnati, Ohio, firm was active from 1939 to 1952, interrupted by World War II production. One vehicle version delivered fuel to airplanes, while another (sometimes casually referred to as "honey wagons") was used to drain the lavatory holding tanks.

See
https://www.vipclubmn.org/couplers.html#Crosley.

• **Atomic Tests** ► ERA was involved with instrumenting atomic tests and developed a boresight camera for inspecting drill holes and a number of sensors to measure explosion effects. The Charles Babbage Institute has a 1950's era film where hundreds of tons of high explosives were ignited, with ERA remotely measuring blast effects. This was a massive experiment to find ways to calibrate the yields of atomic bomb tests.

• Antenna Coupler ► One of the most successful side products was the Antenna Coupler. Early aircraft radios had to be electrically retuned to match the antenna impedance whenever the frequency was changed—a manual job for the radio operator. The Antenna Coupler did it automatically, reliably and in the rugged aircraft environment. The Antenna Coupler was a standard in the aircraft industry for years (virtually every early Boeing jet used them), and ERA sold thousands, providing a critical revenue stream for a fledgling company in the 40s and 50s. See
https://www.vipclubmn.org/couplers.html#Program.

• **Trudeau Candy** ► In 1947, ERA had two contracts with the Trudeau Candy Company for a "candy machine" and a "double-casting candy machine." Trudeau was famous for the Seven Up bar, a chocolate-coated candy with seven separate fillings (the bars were delicious). Trudeau was eventually purchased by Pearson's Candies and the 7-Up trademark was purchased by the well-known bottling company.

Ironically, Keith Myhre's mother, shown in center of photo below, worked for Trudeau after WWII and before Keith was born. He scanned the Trudeau Employee Handbook from his family records, including the pictures shown here.

• **IBM Room** ► One curious effort was in conjunction with International Business Machines (IBM). In 1947, ERA had a modest (perhaps no cost) contract with IBM involving patent exchanges. There was an "IBM Room" in the original Plant 6 (near the Ford Plant) housing many documents that apparently were available to IBM, who displayed great interest in ERA's memory drum technology. IBM eventually hired John Coombs, the original ERA inventor credited with the first drum patent, and soon after came out with the IBM 650, a commercial drum-based computer that was a huge market success. Many have wondered if this effort amounted to ERA eating their own seed corn. These are just a few of the many diversified efforts undertaken by ERA to remain viable in the early days. The historical record for most of them is terse, so if any of our members can provide additional insight on these or others, now would be a good time to put some of your recollections in writing. *Harvey Taipale*

TCRS Program

(Trident Carry-Onboard Reduction System), found   at www.vipclubmn.org/Articles/TCRSprogram.pdf.
The TCRS was a small program in the early 1980s. The Trident Submarine Combat System recorded a multitude of parameters whenever it launched a weapon {sic. torpedo or missile}. The purpose of this parameter extraction was to study and analyze results post-launch. A program that could record data faster and provide the means to look at the data onboard was needed.

Note: The author used program participants' initials to give them some anonymity.

As you read this, if you were part of the team's scenarios and want recognition, send us a note.

Computer Aided Design Personified.

Earl Vraa's career summary is being edited as this newsletter goes to press. Learn how a guy with an Aeronautical Engineering degree became a key person for our Computer Aided Design (CAD) and Very High-Speed Integrated Circuit (VHSIC).

Air Traffic Control Tidbit

Our ATC involvement started in the '50s with a file computer system (see www.vipclubmn.org/aircontrol.html#Genealogy). In the '80s, Dave Gunderson was on a team upgrading the ARTS III S/N 19 system to the ARTS IIIA configuration. Dave donated his S/N 19 nameplate plaque to the Lawshe Memorial Museum to be displayed near the Input Output Processor (IOP) exhibit. The base computer for the ARTS III systems was the 30-bit IOP. The Instruction Set Architecture (ISA) was a variation of the 30-bit ISA that started in the '50s with the AN/USQ-17 Navy computer. ➢ The first IOPs began operational use September 1971 in Chicago, IL. ➢ The last IOPs in operational use were retired June 4, 2011, in Dayton, OH.

A 40-year service life of an electronic design in the early '70s is a fantastic legacy now symbolized by this plaque. Thanks, Dave! *Lowell Benson*

November/December
www.vipclubmn.org/Newsletters/Enews2311.pdf

Is Unisys Leaving Eagan?

According to an October 17 Pioneer Press article, "Unisys plans to leave its 32-acre Eagan campus as the city envisions new development." A Unisys spokesperson confirmed that Unisys will maintain a foothold and continue its operations in the Twin Cities. VIP Club board member Keith Behnke unofficially heard that the Unisys Data Center will be moving to the Irongate Data Center in the Tamarack Village in Woodbury in 2024. No word on the balance of the Unisys operation in Eagan.

Regarding the VIP Club, our newsletter printing is subject to change, and a Shadowbox move committee will facilitate the preservation of historical artifacts, etc. The city of Eagan is developing the Northwest Central Commons Small Area Plan, for which the goal is "to balance the needs and desires of community members, the city council and property owners like Unisys," according to Jill Hutmacher, community development director for Eagan. The draft plan for the area includes mixed-use development with retail, office, residential and public space uses. The Small Area Plan will help the future buyer of the Unisys campus understand what the city council may approve in a development plan. See more at https://www.twincities.com/unisys-leaving-eagan-campus by MARAYA KING.

LEGACY STORY Our Stories –

Letter to the Editor In September we referenced the TCRS Program (Trident Carry-Onboard Reduction System) story, found at www.vipclubmn.org/Articles/TCRSprogram.pdf. We received the following response from Ron Schroeder, who called his letter "all part of the fun of remembering and the great times of being a UNIVAC employee:" It was with great interest that I read the recap and Legacy paper about the TCRS Program in the last newsletter. I happen to be the marketer responsible for Trident or 'Boomer' programs back in the mid-80s.

The TCRS program was a competitive procurement that we won by using our technical advantage and submitting a superior proposal. Our primary 'technical advantage' was centered around the AN/UYK-502 because it emulated the AN/UYK-20/44, was fully militarized, could fit through a submarine hatch, worked with many peripheral devices and was affordable. Although this was a relatively small procurement in dollars ($1.4M?), we still had to go through most of the same hoops as a major competitive procurement. This was expensive and time-consuming. To make matters worse, the proposal effort took place at the closing of our fiscal year and that meant the B&P wallet was empty. In fact, there were a couple of times when the money ran out and we were told to shut down the proposal effort; but then the angel of financial miracles appeared and saved the day.

An engineer I remember that worked on the proposal and attended the negotiation session with the Navy at Newport, RI, was Doug McIntrye. Doug was a sharp-witted, seasoned engineer and an all-around great guy. His contributions proved to be invaluable. I left the submarine marketing group and lost track of the TCRS program shortly after it was kicked off. I do, however, remember some negative comments about there being 'too tight a schedule' and 'not enough money.' I dismissed these comments. *Ron Schroeder* Twin Cities

Software Process Improvement Network (TwinSPIN)

Jim Plasek, Unisys Eagan, asked Lowell Benson to make a Unisys presentation to TwinSPIN, a U of MN Software Engineering Center group, https://cse.umn.edu/umsec/twinspin. The talk, Unisys, Innovation History, is scheduled for February 1, 2024 when Lowell plans to

expand https://vipclubmn.org/Articles/ERA-History_Talk.pdf. More in the Jan/Feb news.

IBM Mystery Solved

Keith Myhre found an unpublished paper, The First Computer Company, on the Hagley Museum site https://vipclubmn.org/Documents/SperryUNIVAC . The First Computer Company – Chapter 3 ERA by George Champine – 1979.pdf). Section 3.3 Business Environment paragraph 2 on page 10 is: "Well before the 1101 announcement, ERA was becoming known in the infant computer industry. In 1949, ERA contracted to do a paper design for IBM on a punched card, magnetic drum computer system intended for business use. ERA's design was to be judged competitively with those of two internal IBM groups.

Few if any of ERA's technical contributions seem to have found their way into what eventually became the IBM 650. However, two extensive patents came out of the effort, and these were assigned to IBM as sponsor of the project. In addition, a cross-licensing agreement between ERA and IBM gave IBM access to ERA's then pending patents in magnetic drum storage." Lowell Benson

NEWSLETTER ARTICLES, 2024

January/February
www.vipclubmn.org/Newsletters/Enews2401.pdf

Lawshe Museum

Make it your New Year's resolution to help replenish our volunteer cadre at the Lawshe museum! We work on Tuesdays when the museum is not open to the public, allowing us to focus on the job without visitor interference. More hands and minds tending to the scanning and cataloguing documents and slides on the five available workstations could lead us to declare 2024 a SUCCESS!

Jerry Williams Tribute

The last VIP Club ERA employee has left us, laid to rest on December 29 in Northfield, MN. Jerry is from the WWII Greatest Generation, an inventor with seven patents, a life member of the VIP Club, and until 2010, a participant of the Geek Squad, https://vipclubmn.org/activities.html#Geeks . Our Stories of April 2021, https://vipclubmn.org/Articles/SatisfyingInventions.pdf, is a career summary extracted from Jerry's autobiography. He is also the last of the four **W**s, who were the UNIVAC File Computer principal designers in the mid50s: Jerry Williams [magnetic storage], Bob Wesslund [arithmetic unit], Jim Wright [control], and Don Weidenbach [input/output]. Over 180 File Computer systems were built; they were the beginning of automated flight strips for the Federal Aviation Administration (FAA). After ERA/UNIVAC, Jerry was a cofounder of Transistors Electronics in 1958, a Control Data employee (1963 to 1979), then a 1976 founder of Williams Sound Corporation (Williams AV) until he sold it and retired in 1987. My opinion (Lowell) is that his greatest invention is the 'Personal PA Broadcasting System' which allows those with hearing deficits to hear the audio of their church's worship. As of 2020, more than 40,000 systems with over 300,000 receivers were distributed. Bless you, Jerry, may you rest in peace.

I was able to reconnect with Jerry in early 2020 and receive a signed copy of his book, summarized at https://vipclubmn.org/Articles/SatisfyingInventions.pdf . The Epilogue references an IT Legacy Paper https://www.vipclubmn.org/Articles/75-Years_Ago.pdf.

December Our Stories:

ATLAS and the Early Days of Computers – written by a Harlan Snyder, LCDR USNR, Ret. who had experiences with ATLAS in both St. Paul and Washington, D.C. A customer's perspective of events the winter of 1950 (https://vipclubmn.org/Articles/HeWasThere.pdf). Thanks to Keith Myhre; VIP Club Volunteer Extraordinaire, a Sperry=>Lockheed Martin retiree, and U of MN graduate. Keith found The Link article while researching ATLAS history.

January Our Stories:

Keith Myhre was searching for ERA beginning documents. In the Hagley Museum archives, he found Chapter 3 of a planned book, "Sperry UNIVAC–The First Computer Company," authored by George A. Champine, Ph.D. It was prefaced with a March 1979 memo from B.R. Borgerson, Blue Bell, PA, Director, Research & Technical Planning to E.T. Michaud, DSD, requesting an expert review. The paper, https://vipclubmn.org/Articles/TheFirstComputerCompany.pdf , has details about the early 1100 series machines and the corporate evolution over its first decade.

Computer History Archives Project (CHAP):

Mark Greenia of CHAP found a 1975 film in the Hagley Museum archives about a Clearwater, FL factory tour and AN/UYK-20 manufacturing. He digitized it as a YouTube video and added it to the CHAP playlist for the ERA/UNIVAC family of computers; scroll down to the 32nd entry (https://www.youtube.com/playlist?list=PLsMFdolQPga49bN2aZlOu6SbZj57uZpZl). After you, the reader, watch the YouTube video, we would appreciate your personal stories about the Clearwater facility to fill a void in our Legacy Anthology. *Lowell Benson*

Browser Letter: From Betsy Wilson

"This comment addresses the UNIVAC 1530s used by Jet Propulsion Laboratory (JPL). I came to work at JPL in 1975, for the Voyager project (not called Voyager back then). The 1530s were used for Viking, Voyager, and Galileo. For Voyager and Galileo, they were part of a multi-computer system, comprising the 1530, a UNIVAC 1219, and several Modcomps. I note in the article about the 1530 (https://vipclubmn.org/CP30bit.html#top) it says they did image processing for Galileo, but that is not strictly correct. They did some early 'in the stream' telemetry processing, including frame synchronization; decoding for error detection and correction; extraction of engineering, science, and imaging data to be sent to other computers for further processing (including actual image creation); and de-commutation of channels (sometimes called measurands or measurements). The 1219 was used to further process and display the measurements. The 1530 was replaced sometime in the early to mid-1980s by VAXes (Virtual Address eXtension), then eventually by Suns and similar UNIX-based machines. As you may or may not know, the Galileo high-gain antenna failed to open, reducing the bit rate from 134,000 bps to no more than about 100 bps, by using the low-gain antenna for the full mission. It had been determined even before launch that the rate of 134,000 bps was not manageable by the 1530 anyway, so plans were started to make some switch in Central Processing Units (CPUs) before actual Jupiter operations.

Anyway, for some reason I was searching the Web for the 1530 and found the 30-bit chapter. I have fond, but complicated, memories of using this machine. It had no terminal; we just debugged using the console with the registers and memory accessed by 30 lighted binary switches. Clearing core was a long set of operations, and booting used a paper tape. Output was tape and some electronic links to the 1219 and Modcomps. We wrote in assembler that was compiled by another machine and output into binary cards that were then loaded into the 1530. The rest of the 1530 system was on a tape (9-track, I think, but possibly 7). We could patch directly into it with binary cards. Altogether much more work than later systems!

I was the only woman programmer of the 1530 as I recall at the time, and I have one picture of me with that console. Anyway, I thought somebody might enjoy these recollections. I retired as a principal telemetry engineer from JPL in 2012, having mostly stopped programming to just engineer the telemetry processing systems." Ms. Wilson's message along with her photo is now Section 1.1 of Chapter 52. We corrected the 'image processing for Galileo' (https://vipclubmn.org/CP30bit.html#Type1530) error to read 'preprocess telemetry from the deep space projects.' Thank you, *Betsy*.

Mailbox Letter:

Ramsey County Historical Society (RCHS) thanked us for the donation the VIP Club made at the June 15 plaque unveiling (https://www.vipclubmn.org/Articles/ERA-History_Talk.pdf). Also, Paul Dickson sent us a synopsis of the unveiling event in the RCHS semi-annual publication (https://www.vipclubmn.org/Documents/ERA%20RCHS%20Article.pdf).

UNIVAC Type 580:

We added a September 1962 delivery photo of the first UNIVAC 580 to Chapter 53 (https://www.vipclubmn.org/cp18bit.html#Computers); thanks to Keith Myhre who scanned it for the Lawshe Memorial Museum archives.

According to our Harry Weis history notes, this was the Westinghouse PRODAC 580, an early variation of the Type 1218 18- bit computer. Surprisingly, a few of the people are recognizable as part of the Motley Crew (https://www.vipclubmn.org/Components.html#Motley). Chuck Beltz, Ralph Kerler, and John Schoeberl are in both photos; Lowell also recognizes Al Kazinski. If you recognize any of the other '580' people, please send a note to la.gj.benson@comcast.net. *Lowell Benson*

March/April
www.vipclubmn.org/Newsletters/Enews2403.pdf

ARTS II ATC Display Added to Lawshe Museum Computer Exhibit

As many of you are aware, the Dakota County Historical Society's Lawshe Museum is home for an exhibit of heritage UNIVAC/Unisys/Lockheed Martin computers and displays. This exhibit was established in 2012, when the Lockheed Martin Eagan facility was closed. The exhibit includes military computers and displays, as well as an Automated Radar Terminal System (ARTS) computer related to the heritage Air Traffic Control (ATC) business. The exhibit recently added an ARTS II display console used by air traffic controllers to monitor and manage incoming and departing airport traffic. This display was donated by the Eagan office of Leidos. Once part of Sperry UNIVAC, Unisys, LORAL, and then Lockheed Martin, the ATC group became part of Leidos in 2016 when Lockheed Martin sold the ATC business to Leidos.

The availability of this display was identified by Keith Myhre and Steve Koltes several years ago. Steve had worked at Leidos and arranged the Leidos donation. However, the challenge was moving the display console to the museum. The initial plan was to move the display ourselves using a trailer or pickup truck. COVID-19 caused a delay for over a year, followed by Lawshe's 2022 renovations closure. Once we learned that the display weighed 663 lbs. and had caster wheels, the "do it ourselves" plan was discarded. Too heavy to lift onto a pickup, too heavy for a snowmobile trailer, and too dangerous to try to wheel it up/down a ramp onto a truck caused us to rethink our transfer method. Conclusion: Hire a moving company.

Sadly, Steve Koltes passed away in November 2023, so Keith asked me (Les Flugum) to facilitate the move. We got the VIP Club Board to pay for the move, contacted Bailey Jari at Leidos to schedule the transfer, and then arranged for Bester Bros Transfer & Storage to handle the move on January 2. (*Bester Bros moved and stored the Lawshe Museum's artifacts during the museum renovation*.) Within two hours the display console was unloaded and moved into place next to the ATC Input Output Processor (IOP) computer.

The museum staff appreciated that the ARTS II display console was added to the exhibit prior to their annual meeting on January 20. The meeting included a panel discussion on the effects of 9/11 on air traffic. In addition to the ARTS II display, three 5-drawer file cabinets were donated by Leidos and delivered to the Lawshe Museum. We now have a total of nine file cabinets (five donated by Leidos) squeezed into our UNIVAC/ Unisys/LM dedicated room/workspace at the museum, along with 30+ archive boxes. The file cabinets will eventually contain most/all the documents, photos, and slides currently in the archive boxes. *Les Flugum*

Browser Letter Response: From Don Mager ~ "Although my memory is getting hazy, after reading the Browser Letter from Betsy Wilson regarding UNIVAC computers at Jet Propulsion Laboratory (JPL), I recalled my association with JPL. Circa 1964, JPL bought a 1218 and modified some priority logic in the I/O which resulted in infrequent faults in their operating system. The change they made looked okay and should not have caused any problems. Nevertheless, after a couple of weeks of remotely working with them, trying to solve the problem, I was sent to JPL, CA, to try to resolve the problem. Because the problem was very infrequent and unable to be captured, I came up with a theoretical possible cause and a logic change about which I consulted with Hy Osofsky and Glen Kregness in St. Paul, both of whom agreed it was worth a try. So, I installed the change, and the problem was gone. [Note: JPL and the 1218s were responsible for the telemetry reception and preprocessing for the Gemini space missions, etc.]

Some months later, I get a panic call to go to Cape Kennedy; the JPL project which was now at Cape Kennedy was having problems. The JPL guys were surprised to see me and assured me they had no problems with the computer—some kind of gross miscommunication—and invited me to a backyard barbeque that evening and then later took me to Jai Alai games. Fun guys to be with! They also told me about how they were teased by fellow JPL lab guys for having bought the UNIVAC computer on reverse psychology. When they requested data from International Business Machines (IBM) Corporation, Digital Equipment Corporation (DEC), Control Data Corporation (CDC), etc., they received nice brochures. From UNIVAC they received two typed pages of data with a note: 'Contact us if you're interested.' They loved the computer."

Don's NASA Recollection:

"In 1965, NASA was procuring computers for the Apollo communications network. Congress had mandated that the computers were not to be of a new design but could be modifications of existing designs. We bid a 'modified' version of the USQ-642BB computer and won. This became the UNIVAC 1230, the predecessor of the UNIVAC 1530. Red Phillips, the new Plant 5 engineering director, assigned me to be project engineer. Glen Kregness designed the arithmetic section, Bob Oulicky the I/O, and I designed the control section. I was awarded my first patent for a novel method of communication with the optional external expanded 265K memory. With its two-microsecond overlapped memory banks it could approach four times the performance of the USQ642B—just a minor modification—LOL. On the front of the computer, we had UNIVAC 1230. Ed Willis, the NASA acceptance officer, was so adamant it be called Modified USQ-642B that he made us change the nameplate on the front! On the day of the acceptance, with Willis there, Bob Oulicky, using the overhead console indicator lights, made them flash '1230, 1230,' over and over.

Another funny moment during acceptance was when Ed Schwarz, future attorney who had written the acceptance procedure, turned to Willis and very seriously said, 'You can spare me the indignity of coming to a fault stop if you'll allow me to correct this trivial error in my procedure.' Everybody, including Willis, was laughing! Fond memories."

February Our Stories:

The ERA to Unisys webinar hosted by the U of MN's TwinSPIN organization. "The Twin Cities Software Process Improvement Network (https://cse.umn.edu/umsec/twinspin) is a regional organization serving as a forum for

the free and open exchange of software process improvement ideas and experiences. We fulfill our mission of skills enhancement and sustained commitment around software process improvement through an interactive program of knowledge sharing, networking, and mutual support.

TwinSPIN strives to serve as a community of practice for its members, other SPIN organizations, and the general community of software professionals. From 1996 through today, qualified practitioners in the field have shared their knowledge and expertise via interactive and engaging workshops and presentations." The slides are TwinSPIN1 and associated text,

The host has posted the presentation as a YouTube, Lowell Benson - TwinSPIN Meeting Feb. 1st meeting - YouTube. Longevity points to look for in the webinar: • Human Computer Interface (HCI) inventions in the 50s and 70s provided technologies that are in systems use yet today, including in cell phones! • Naval Tactical Data Systems (NTDS) contracts started in the mid-50s; fourth-generation hardware systems (AN/USQ-70) were aboard the 2013 launching of the USS Minneapolis submarine, a 55-year systems evolution. • The Navy's automated landing systems 1219Bs had a 50-year service life. • The Federal Aviation Administration (FAA) customer's Input/Output Processors (IOPs) had a 40-year service life. If you have flown since the 50s, ERA/UNIVAC/Sperry/Unisys/Lockheed Martin/Leidos systems have helped keep you safe. • The Lockheed Martin P-3C's CP-901 computers had a 45- year service life. • MAPPER software apps started in 1968 as an internal tool, then morphed into business information systems in 1986. It was still being used in 2013—a 45+-year service life. • The first customer use of MAPPER was Santa Fe railroad. By 1982, over 2,500 terminals were

online tracking over 68,000 cars in ~175 rail yards using two Sperry 1100/84 central multiprocessors. • First computer company, ERA to Unisys lineage, was direct. The Eckert–Mauchly Computer Corporation (EMCC) incorporated after ERA incorporation, although founders of both had roots in WWII military hardware electronics systems. Remington Rand, IBM, and Burroughs were office equipment companies that bought their way into the computer industry. *Lowell Benson*

May/June
https://vipclubmn.org/Newsletters/Enews2405.pdf

UNIVAC Memories by John Walker,

Walker was a Unisys 1100 series user and the creator of Autodesk, software and company. He created a website with that history (https://www.fourmilab.ch/), including many UNIVAC history bits. Our posting provides a summary of his site with links to items of interest. Either download our paper, https://vipclubmn.org/Articles/UNIVACmemories. pdf, or go directly to his UNIVAC memories, https://www.fourmilab.ch/documents/univac . The Fourmilab link was provided in an e-mail from Chuck Caldarale to Paul Dickson; more on John Walker later.

Logo Updated

The First Computer Company (https://vipclubmn.org/Articles/TheFirstComputerCompany.pdf), is based on an unpublished Chapter 3 of a 1979 Blue Bell book. We have updated our Legacy Logo to indicate that Engineering Research Associates (ERA) was first! ERA was incorporated in 1946 and the Eckert-Mauchly Computer Corporation (EMCC) in 1947. Office equipment companies bought their way into the computer industry (i.e., International Business Machines (IBM), Remington Rand, Burroughs, et al).

Other changes to the logo identify Leidos, with the Air Traffic Control (ATC) systems that go back to ERA's file computer, and Product Development Associates Inc (PDA), as legacy companies. Also noted the merger with Burroughs in 1986, as well as other company dates. Lowell Benson

Help Preserve our Twin Cities History

VIP Club volunteers have scanned over 50,000 photos, 35 mm slides, and documents related to our companies' products. Those files have been cataloged (who/what/when/where) in a Microsoft Access database. The scanned images are now at the point where they could be put online on the Lawshe Memorial Museum website which is hosted by the Dakota County Historical Society (Lawshe Memorial Museum (dakotahistory.org)). Uploading the items is straightforward; the challenge is the scripting/programming necessary to perform searches using the data in the Access database and then displaying the image. The material breaks down like this: • Photographs (35,000+) • 35 mm slides (11,000+) • Documents 4,000+ And is estimated to be in these category breakdowns:

• 1946-1961: ERA/UNIVAC/Sperry Rand UNIVAC (1101-1107) – 25% of the material • 1961-Current: Sperry UNIVAC/Unisys (1108, 1110, 418, 494, 9000 series, 1100 series) – 25% of the material • 1961-Current: UNIVAC Defense Systems/ Paramax/Loral/Lockheed Martin – 50% of the material

A volunteer is needed to take on this task and work with Dakota County IT to implement it. If you are interested in leading or helping with this important project, please contact Keith Myhre or Paul Dickson at kmyhre@lightblast.net or Paul.dickson@comcast.net

April Our Stories:

The ERA/RRU Early Machines paper extracts information from previously classified NSA documents, found by Keith Myhre searching for ATLAS I information, for the ERA comparators, analyzers, and computers. The paper reduces over 500 pages to 20 containing information about the use of cryptanalysis equipment.

An IEEE presentation:

Now posted in the https://vipclubmn.org/OurStories.html#slides section: From Code Breakers to Standard Military Computers by David Bondurant, retired PE and former principal computer development engineer. David's presentation is to an IEEE chapter via a Zoom meeting; link provided by Les Flugum. Although this 'video' is an hour-long plus questions, David's presentation of the companies' early history and defense computers is much better than a few presentations I have made. Stay tuned; he has a second presentation which we will review this summer and then make available to our readers. Lowell Benson

More on John Walker

The e-mail mentioned in the March Our Stories from Chuck Caldarale to Paul Dickson also noted the passing of John Walker. Regrettably, Mr. Walker passed away on February 2 from complications of head injuries he suffered in a fall at home in Neuchâtel, Switzerland. Caldarale noted, "although John never worked for Sperry/UNIVAC/Unisys, he played an important part in 1107/1108/1110 goings on in the 1970s before founding Marinchip Systems and Autodesk, Inc." Several sites announced John Walker's passing and provided insight into the technology entrepreneur who brought AutoCAD software to the design and architecture masses:

- Owen wengerd stated on the Scanalyst website (https://scanalyst.fourmilab.ch/) that "this announcement has been posted on behalf of John's family. The Scanalyst website, created by John, seems the most fitting place to celebrate John's life and legacy" (https://scanalyst.fourmi lab.ch/t/john-walker-1949-2024/4305).
- The Register posted RIP John Walker, software and hardware hacker extraordinaire by author Liam-Proven (https://www.theregister.com/2024/02/13/john_walker_obit/). •
- There is a New York Times article by Alex Williams speaking of the man who "was well known in tech circles, not just for his triumphs in business but also for his outsize skills as a programmer" (https://www.nytimes.com/2024/03/06/technology/john-walker-dead.html). *Mary Beth Ruhland*

Innovative Contracting

In the 70s, USN Captain Svendsen promised German Navy Captain 'Willie' Kraus that he could get a newer technology small-scale computer for their Wilhelmshaven systems development center. In addition to the two CP-642Bs and one 1830B computer, the Germans had an IBM computer in their development center. St. Paul Engineering defined an intercomputer control unit to be rack mounted. A proposal for a system integration demonstration between Sperry equipment and IBM equipment was written and accepted. The first step was to mount a repackaged 3760 processor from Salt Lake City with its byte-serial IBM daisy chain input/output capability and a DS-4772 intercomputer channel. The second machine was a S/N 32 AN/UYK-20 plucked off of the Clearwater assembly with input/output cards to be installed in St. Paul. We installed two intercomputer channel groups, Mil-Std 1397 type A for the 642B connecting and type B for the 1830Bs. Note: UNIVAC Design Specification was the basis for the government's Mil-Std-1397 interface control specification.

In St. Paul, we painted it a blue German Navy color, changed the nameplate to S/N 1 Intercomputer Control Unit, then shipped the demo system to Wilhelmshaven, Germany. Lowell Benson was the project engineer with technical help from Dick Erdrich, Bob Jablonski, and Howard Morrel. Bob and Howard had been the 3760 IBM interface development engineers and Dick was the 16-bit computer interface engineering guru. Bob Oulicky was the department manager of this Plant 5 mezzanine group and interfaced with management at both Salt Lake City and Clearwater to make it happen. Howard and Lowell were the installation team. The USN AN/UYK-20 S/N 32 was subsequently delivered the following year between the US Navy's S/N 130 and 131.

The AN/UYK-20 production line techniques are documented in a YouTube video thanks to Mark Greenia; watch it at: https://www.youtube.com/watch?v=i2Et8oIo-f8&list=PLsMFdolQPga49bN2aZlOu6SbZj57uZpZ l&index=32.

Per Lowell: "I think that this 'goodwill' gesture of giving the customer what they wanted (they paid many Deutsch Marks) was instrumental in their contracting for AN/UYK-7-based systems for their Frigate ships." Lowell Benson

EPILOGUE

After a 2008 meeting with Dr. Tom Misa at Plant 8, Dick Lundgren asked, "When will we be done?" We had no answer then, however we now have accomplished most of the goals of *Telling the Story* via our 60-chapter Legacy Anthology for the world to read. In addition, we've posted 215 '*Our Stories'* to date, the top five in my opinion are:

➢ 4th runner up: from before the legacy committee started; a reprint of a Minnesota Monthly, July 2005 newspaper article. It was first published as "The Original Geek Squad" by James P. Lenfestey, http://vipclubmn.org/Articles/AGaggleOfGeeks.pdf.

➢ 3rd runner up: Dr. George Champine's historical article found by Keith Myhre in the Hagley Museum archives, www.vipclubmn.org/Articles/TheFirstComputerCompany.pdf.

➢ 2nd runner up: listing YouTube links to videos from Mark Greenia, Director of the Computer History Archives Project (CHAP), http://vipclubmn.org/Articles/CHAP_Summary.pdf.

➢ 1st runner up: establishment of a permanent artifact display at the Lawshe Memorial Museum, http://vipclubmn.org/Articles/DreamRealization.pdf. Thanks to Chad Roberts and Matt Carter.

➢ The best is a public television documentary. http://vipclubmn.org/Articles/TPTclips.pdf links the primary hour-long video as well as several out-takes. Seven VIP Club members, former employees, were interviewed by producer Kevin Dragseth for inclusion in the video. Dr. Tom Misa is the featured narrator. Special thanks to Dale Weeks who spearheaded the documentary fundraising. Thanks to Keith Myhre who provided documentary theme outlining and to Unisys' VP Chuck Lefebvre for cohosting the October 2019 premiere event.

Sorry, because of my summer hiatus, I have not copied the many photos that were part of the articles. Newsletter links are provided if a reader wants to look at some of those.

As usual, reader feedback is always welcome.