Recognitions!

by Richard 'Dick' Erdrich – edited for web by LABenson

INTRODUCTION

Mr. Erdrich was a 47-year employee of UNIVAC/Sperry/Unisys/Lockheed Martin. At the Old Timers' Reunion in November 2024, he gave the VIP Club Legacy Committee a stack of papers and a CD with project experiences text. Dick's 17 project stories from the CD are detailed at https://vipclubmn.org/OurStories.html#2025 as 'Our Stories' for February, March, and April. Those covered his Legacy Anthology experiences with 30-bit, 16-bit, and advanced processor designs.

The several folders of papers were copies of the photos and files on the disc. Plus, eight 'documents' with his description of the project/activity behind the document. Most of these document/papers are recognition letters written to management personnel praising Dick and his team members significant contributions to the success of projects. The eight documents/papers were scanned and copied below, arranged them in chronological order, spanning 1971 to 1999.

A notebook with a copy of the project stories and papers are being donated to the Charles Babbage Institute and to the Lawshe Memorial Museum.

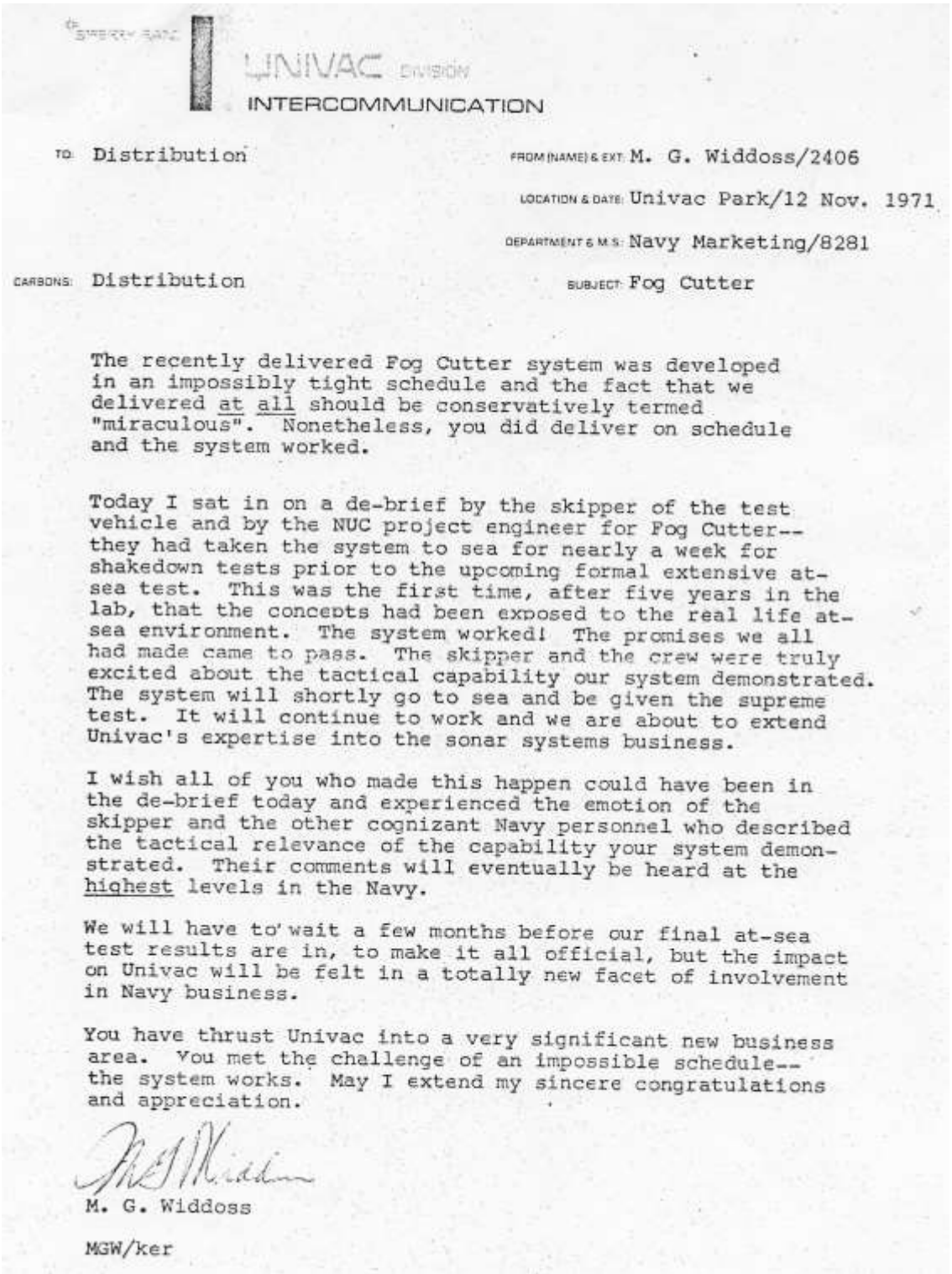
Contents

Paper created with Microsoft Word and an HP Envy 7640 copier/printer.

DOCUMENT STORIES

From Monte Widdoss re' the Fog Cutter project

The letter image



SPERRY RAND UNIVAC DIVISION
INTERCOMMUNICATION

TO: Distribution

FROM (NAME) & EXT: M. G. Widdoss/2406

LOCATION & DATE: Univac Park/12 Nov. 1971

DEPARTMENT & M.S: Navy Marketing/8281

CARBONS: Distribution

SUBJECT: Fog Cutter

The recently delivered Fog Cutter system was developed in an impossibly tight schedule and the fact that we delivered at all should be conservatively termed "miraculous". Nonetheless, you did deliver on schedule and the system worked.

Today I sat in on a de-brief by the skipper of the test vehicle and by the NUC project engineer for Fog Cutter-- they had taken the system to sea for nearly a week for shakedown tests prior to the upcoming formal extensive at-sea test. This was the first time, after five years in the lab, that the concepts had been exposed to the real life at-sea environment. The system worked! The promises we all had made came to pass. The skipper and the crew were truly excited about the tactical capability our system demonstrated. The system will shortly go to sea and be given the supreme test. It will continue to work and we are about to extend Univac's expertise into the sonar systems business.

I wish all of you who made this happen could have been in the de-brief today and experienced the emotion of the skipper and the other cognizant Navy personnel who described the tactical relevance of the capability your system demonstrated. Their comments will eventually be heard at the highest levels in the Navy.

We will have to wait a few months before our final at-sea test results are in, to make it all official, but the impact on Univac will be felt in a totally new facet of involvement in Navy business.

You have thrust Univac into a very significant new business area. You met the challenge of an impossible schedule-- the system works. May I extend my sincere congratulations and appreciation.

M. G. Widdoss

MGW/ker

Dick's Commentary

Document 1

This letter was written by Monte Widdoss in recognition of the work done on developing a 1616 ADM and some really clever software to perform the signal processing job for the Fog Cutter project. This was the forerunner of all of the passive sonar systems that exist today.

I was chartered with providing the computer for the system while the engineering group at NUSC at San Diego was responsible for creating the hydrophone array and converting the analog to digital data for connection to the 1616. The systems guys were responsible for designing the interface hardware and hooking everything together.

My recollection of the project is somewhat limited as I was only called upon to support it when the computer operation was called into question, but I think the responsibilities were limited to the folks in the TO list. The cc list appears to be mostly management types with the exception of Bruce Olson. Bruce had done some of the design work on the 1616 but was kind of an engineering marketing guy in those days (1971). He eventually succumbed to the lure of the good life and big bucks and joined marketing until his retirement.

Larry Debelak was working as a project manager in those days. This was in the era prior to program management involvement. Project Managers took care of budgets and management/customer interfaces while Project Engineers were responsible for the actual engineering.

Bob DuFault was one of the software developers on the project. I spent a lot of time with him debugging code. The ADM 1616 only had 8192 bytes of memory (4096 16-bit words) so the generation of tight code was crucial. I spent a lot of time working on keeping data in the General registers rather than pushing it out to memory. We ended up with most of memory being executable and a very small amount used as data storage. I believe we ended up with less than 10 unused memory locations. Unfortunately, the company was not able to provide him with any meaningful work when we finished the project and he found more challenging work elsewhere.

Charley Hare, Quent Heckert, and Jens Peterson were Systems Engineering folks.

I believe that R. K. Hill and Art Olive were software developers..

I believe that Phil Phipps was primarily a mathematician and had been involved with the creation of the system and probably contributed to the development of the signal processing algorithms. He might have taken over management of the Signal Processing Group by this time.

I installed the system aboard the USS Pargo at the Electric Boat wharf in Groton, Connecticut in the spring of 1971. We were housed in a rack on the center torpedo slide in the torpedo room. The hydrophones were mounted on swing-out arms on the bow of the boat. The installation went smoothly probably due to the pre-installation checkout that had been done in St. Paul. After a short sea trial the system, along with two engineers from NUSC, set out for Holy Loch, Scotland. We received word a few months later from the NUSC folks that the test had been extremely successful.

I had a chance to get some first hand answers a few months later when I was called about a problem with the system. It seems that when the Pargo had returned it was tied up at the wharf with the torpedo loading hatch open and had taken a wave down the loading tube. With the Fog Cutter system sitting on the center torpedo slide it was thoroughly bathed with salt water. The NOSC folks were going to immerse their equipment in fresh water and wanted to know if the same could be done to the computer. Seeing as though this was a non-deliverable item I figured that it couldn't hurt it any more and told them to go ahead. They requested, and I agreed, that I come out and power up the system after it had dried out. The equipment soaked for 3 days and dried out for a week and when I arrived I disconnected the power supplies and checked for shorts in the load but found none. I then powered up just the power supplies and they were okay. After hooking everything back up and powering it up everything worked except one I/O module. I replaced that module and we were back in business.

It's interesting to note that NOSC had planned on using a commercial DEC PDP-something but had serious doubts about the reliability of that kind of box in the submarine environment. Somehow, Monte Widdoss had convinced them that the new 1616 was the way to go. In light of what eventually happened he did them a big favor. It probably had a material affect on the competition for the Navy Standard Minicomputer with the result that the UYK-20 was used in following sonar programs.

Monte had some really nice plaques made for the project people. They were probably about 20" long and 10" wide and had a copy of a painting showing the Greek sea god Poseidon grasping a Trident in an angry seascape environment. It was framed with wood and was suitable for wall mounting. I hung it in my cube where I enjoyed it for many months until it was stolen by somebody and never seen again.

Richard A. (Dick) Erdrich

From John Powell re' E-Systems and NADC support

UNIVAC DIVISION

INTERCOMMUNICATION

TO K. J. Oehlers

FROM (NAME) & EXT. J. C. Powell - 3169

LOCATION & DATE St. Paul - 20 July 1973

DEPARTMENT & M.S. Program Management - 8861

SUBJECT Letter of Recognition

CARBONS R. J. Beljeski
R. A. Erdrich
J. B. Smith

This memo is to serve as a testimonial for the outstanding contributions given by Bob Beljeski and Dick Erdrich in the support of programs with NADC and E-Systems, Inc. These programs are critical to future DSD business. The NADC programs are in a research and development phase and as accomplishments are realized DSD comes closer to larger follow-on business. The program with E-Systems, Inc. is, of course, important to DSD because of it's penetration into the USAF. Two AN/UYK-15's and a 1562 Activity Monitor Display are now included in the Air Force inventory as on board avionics equipment.

In addition to the beyond-the-norm efforts, the individuals mentioned above have been named by the customer as having extended themselves on many occasions by working long and inconvenient hours in the solution of systems problems. Customer gratitude and that of the Univac DSD Program Management Office is hereby passed on so that such dedication will be appropriately recognized.

J. C. Powell
Program Management

JCP:ln

Bob Beljeski and I received this letter because of our work with NADC and their contractor #-Systems in Greenville and Garland, Texas. Bob had been our project technician on the 1616 and UYK-15 projects and traveled with me many times in case any modules needed repair. He had built the modules used in the ADM units and could repair virtually anything in the box. Jack Smith was our supervisor at the time. Ken Oehlers was the department manager.

From Tom Knops re' TAOC/MCE CU proposal

SPERRY

INTERCOMMUNICATION

TO: R.A. Erdrich
G.W. Erickson
R.C. Hanson
R.J. Martin
M.W. Mirsch
B.E. Olson

CC: M.J. Meyer

FROM (NAME & EXT): T.H. Knops/1703

LOCATION & DATE: SEC Bldg/09 Jan 87

DEPARTMENT & M.S.: Products Mktg/A3C13

SUBJECT: Letter of Appreciation

I would like to express my sincere appreciation for your participation in the Red Team review of the TAOC/MCE CU program. I believe your competence, hard work, and diligence were extremely important in providing the proposal team with the appropriate direction to submit a winning proposal. The TAOC/MCE CU program is strategically important to the division and provides us with a new product to penetrate other similar programs (not to mention that we sell a considerable number of MRPs as well).

Again, I appreciated working with each of you and hope that we contributed to a successful bid.

Thanks.

T.H. Knops

This letter was sent to all of us who had worked on the red team review for Tom Knops. It's of interest to note that one of my earlier picture descriptions was that of the Modem Simulator I designed for the TAOC project. The red team review must have been successful. {Editor's note 1: See section 2.6 of https://vipclubmn.org/Articles/Erdrich2nd.pdf.}

{Editor's note 2: Most internal memos just indicate the individual's initials versus first name. The addressees here were Richard 'Dick' Erdrich, Gordon 'Gordy' Erickson, Robert 'Bob' Hanson, Rick Martin, Marv Mirsch, and Bruce Olson with the cc to Mike Meyer. LAB}

From Al Zettlemoyer re' service anniversaries celebrations.

This memo illustrates one of the reasons that Al Zettlemoyer was universally unloved. After being the subject of a semi-hostile buyout by Burroughs, layoffs seemed to be occurring on a weekly basis – I really should have expected this 1989 memo.

{Editor's note: The Company usual recognition for 30+ years of service had been a banquet, for 25, 20, years of service a department manager would buy a lunch. For 15- and 10-year anniversaries, the department manager or supervisor would take the employee out to lunch.}

Unisys Corporation
PO Box 64525
St Paul MN 55164-0525

Telephone
612 456 2222

UNISYS

December 1989

Dear Richard Erdrich:

As you know, we were planning to honor employees celebrating service anniversaries this year with a gala banquet, as we have in the past. Unfortunately, business conditions affecting our industry have created a difficult financial period for Unisys, and we found it necessary to cancel the 1989 banquet as a cost-saving measure.

Although I won't have the opportunity to thank you with a banquet in your honor, I hope you understand that these steps were studied closely before any decision was made. Unisys is grateful to you for your 30 years of dedicated service and the many contributions you have made to the success of our company. Your continuing efforts to make this a company we are proud of will help us get through the tough times and help us reach our goals.

Congratulations on your anniversary year, and thank you for your commitment to Unisys. You should be proud of all that you have achieved.

Sincerely,

A. F. Zettlemoyer
President
Electronic and Information Systems Group

From Mike Wold re' a B-2 cache memory update presentation

I want to commend you on your presentation of the Cache Memory review at the B-2 ACU(512K) CDR on 4-6 December 1990. The integration of your previous cache design experience with this design enhanced the effectiveness of your presentation. Your presentation contributed to the achievement of a billing milestone of $994,500 for the B-2 Program.

Thank you for a job well done.

UNISYS

Interoffice Memorandum

To	R. A. Erdrich	Date	20 Dec. 1990
Department	Engineering	Location	U2S25
From	M. W. Wold	Telephone	456-3430
Department	B-2 Program Mgmt.	Location	U0L21
Subject	CDR Commendation	cc	D. Anderson

Document 5

This memo occurred as the result of a long series of events regarding the updating of the B-2 ACU. I was approached by Don Anderson sometime in the late 80s to study the possibility of upgrading the cache memory in the computer known internally as the CP-183. I had not been involved directly with the original project as it had been classified as a SAR program and started up while I was in checkout on the UYK-43. I was familiar with the cache memory, however, and the MPC. The cache memory was a direct copy of that done for the Memory Processor in the early 80s and the MPC was a half sized version of the MPC4 we had also done for the Memory Processor. It seems that studies had already been done by Katherine Splett, who had done the original adaptation from the Memory Processor, and the group that had designed the cache memory for the HPCPU. Both had concluded that to meet the performance requirements would require the control logic to be done in an ASIC (Application Specific Integrated Circuit). Our management was dead set against doing another ASIC design due to the recent experience suffered on the HPCPU project so nixed any idea of doing it that way. At the same time as I was studying this problem a study was being done to see if the core memories could be replaced by larger IC memories. I studied for about 3 months before concluding that I could do it by using Programmable Array Logic (PAL) IC's. Don thought the customer might have upgraded the box with new memories even if we couldn't improve the performance but that question never needed answering.

The cache memory was only one part of the design I needed to change to really improve performance. The new box, now called the ACC, had four times the array capacity, an independent image cache, a synchronous memory data bus, microcode modifications, and an improved I/O portal. The measured performance improvement at the system integration lab was 63%.

Richard A. (Dick) Erdrich

From Bill Poblete re' design of cache memory and QDM for the B-2

Document 6

Following my completion of the design work for the B-2 performance improvement project I became concerned about the slipping design schedule of the new semiconductor/EEPROM memory. I was concerned that the new cache memory and resource controller designs would be ready to go and the memory could keep us from starting checkout.

Meanwhile, having previously supported the AYK-14 build to print program, I was invited to a conference at the Naval Avionics Center in Indianapolis for a presentation by CDC of the Advanced AYK-14. The presentation was so boring I decided to design a strictly semiconductor memory for the ACC rather than waste my time listening. I had done the memory bus interface design for the memory group because it was a new architecture of my design and who better to design it? With this ammunition available I finished the design during the three days of the conference.

Returning home I contacted the local IDT rep who owed me because of the fact that I was using their PALs in the cache design. I needed enough 65K X 1 static ram samples to populate two boards which I was now calling the Quick and Dirty Memory (QDM). He also provided the PALs necessary to do all of the control logic.

I talked to Don Anderson, the project manager, about finding some money for laying out the board. Because of a drafting personnel shortage during the time this effort was being done I had learned enough of Mentor Board Station to layout most of the board myself. If I needed any help I could always go to Liz Lamberty. I also discovered that the PC Fab shop in Plant 1 had an experimental process which cut the normal fab time of 6 weeks to about 2 weeks. It was also significantly cheaper than the normal process. Don agreed to find the money for board fab and assembly.

We had two fully functional QDM's in less than a month. We were able to start checkout about 3 months early and, when the deliverable memory was plugged in, knew that the rest of the processor was good. That forced the memory guys to look at their own hardware first when things weren't working right rather than claim that the processor was at fault.

The QDM's were used for all of the ACC's that were checked out by engineering and were given to manufacturing to use as they saw fit during production checkout. This was probably one of the most cost effective tasks ever done here; the design was free, the parts were free, the board fab was cheap, and the only things that were retail were the connectors and assembly!

Richard A. (Dick) Erdrich

UNISYS

Jan 1991

Mr. Richard A. Erdrich
Staff Engineer
Airborne Computer Engineering
Eagan, MN

Dear Richard,

It is my pleasure to inform you that you have been granted an Achievement Award.

This award is in recognition of your dedicated efforts in the design of the Cache Memory and QDM on an accelerated schedule that permitted early checkout of critical assemblies of the B2 ACU. Your diligence, resourcefulness, and willingness to accept responsibility beyond your basic assignment while still being a resource to other design personnel is much appreciated; and this enabled us to achieve an early start to mitigate our accelerated program schedule risk. Your performance in completing your designs was outstanding.

Engineering Management and I extend our congratulations and appreciation.

Sincerely,

William R. Poblete

William R. Poblete
Manager, Airborne Computer Engineering

From Dick Sunderman re' transfer from SLC back to Defense Systems/Eagan

Erdrich, Richard A @EAG

From: Sunderman, Richard @ SLG
To: Hedin, James V @EAG; Forslund, Charles W @EAG; Kaminski, David G @EAG; Dargontina, Don P @EAG; Hammitt, Gregory F @EAG; Halseth, James R @EAG; Haseman, Leonard W @EAG; Macrorie, Neil N @EAG; Erdrich, Richard A @EAG
Cc: Osiecki, Gerald B @EAG
Subject: Thank you
Date: Thursday, March 20, 1997 11:59AM

I believe that all the paper work has been completed for all you to transfer to Defense Systems/Eagan. I'm glad that Eagan has been able to provide opportunities for you and that we have been able to work the dates out so that you will remain Lockheed Martin employees, not getting caught between companies as the sale completes. I want to express my appreciation and the appreciation of Wideband Systems for your efforts over the past 3 years that the group has been a cost center of Salt Lake City. Your expertise has helped us a lot on a number of programs, your availability fit well with our needs. I wish that our business situation were such that we able to continue the efforts in Eagan, but that is not the case.

I sincerely thank you all for your contributions and your patience during this transfer, and wish you the very best in your new opportunities. I also thank Jerry for his excellent work in making all the arrangements happen.

Dick Sunderman

Document 7

This small letter does not indicate the importance of the work done for our Salt Lake City communications division by the people addressed and others. A much longer story goes behind it. I will elaborate.

At one time the military group at our Salt Lake City operations was a part of Sperry Defense Systems. The whole Salt Lake City Operation was, according to tribal lore that I picked up on the way, created by Gerry Probst, a Mormon, and a corporate level executive that had allegiance to the state and church. Be that as it may, I was first introduced to this operation in the early 70's when they selected the UYK-15 for use in the Combat Angel project, an airborne drone control program house in C-130's. I made a number of trips there and had a good working relationship with their engineering folks.

By the winter of 1992-1993 both the Eagan and Salt Lake City (SLC) organizations had been sold by UNISYS to the Loral Corporation. One of the Eagan engineering managers had been talking to them about various things for some months when they asked if anybody was available to perform a study for them. My name came up as a result of my communications experience and was nailed down when their engineering manager, Larry Miller, remembered me from the UYK-15 days. The job was to investigate the possibility of designing an ASIC that would perform the Interleaving/Deinterleaving job for a proposed airborne communication system.

Then information I received for study was mostly based on legacy systems but there were some requirements that had never been implemented before. After asking more questions and being more exposed to their market interest it became clearer. Being a military communications house they had a high percentage of classified programs with the NSA and CIA being their biggest customers. What I was looking at was the opportunity to tap into a pretty large well of CRAD money. After about 3 months of work I concluded my study and presented the results at SLC. The customer gave us the go ahead and the program was now known as Airborne Imagery Transmission (ABIT).

I worked with Andy Gibson from SLC who was given the responsibility for the High Rate Interleaver/Deinterleaver interface. I would be doing the Low Rate Interleaver/Deinterleaver design which would also be used in the High Rate design by Andy. The difference in the two designs was that the High rate side would be used for handling 8-bit sensor data while the low rate side would be used for 1-bit command data. There were significant differences between the high and low rate sections in the encoding/decoding schemes used in the Interleaver/Deinterleaver ASIC (IDA). Most of the high rate encoding/decoding would be done in an additional ASIC which would implement the Extended Nordstrom-Robinson algorithm while the low rate side had every encoding/decoding scheme know to man built in to support backfit.

Once we got under way it became apparent that SLC didn't have the manpower to support the ABIT effort. Additional people from Eagan were brought on board to design the above mentioned Nordstrom-Robinson Encoder/Decoder ASIC, High Speed and Low Speed multiplexers and demultiplexers, Red/Black (Purple) interfaces, modulators, and demodulators. Jim Halseth, now deceased, was an engineering technician with expertise in backplane design. He was brought on board to help with the design, layout, and build of the backpanel which was now going into a new box called The Airborne Modem Assembly. SLC had never done anything this extensive before so the drafting group at Eagan was called upon to do the layout. At the height of the effort we probably had 10 people working on the project.

SLC was so impressed with the VHDL design coming out of the Eagan group that they started to seriously consider moving people to their facility. Many of us working on ABIT and afterward received designs done by SLC people that needed major fixing. I probably redid 4 or 5 designs. Most of them were almost complete redoes because their VHDL experience was considerably less than ours. To put in place the anticipated move they proposed that we all transfer cost centers to SLC. A big layoff was about to take place at Eagan so it wasn't too hard to convince most of us that the move was in our best interest. It made Rick Martin happy also as it meant 8 or 10 guys he didn't have to lay off.

I continued working on ABIT, TIGDEL, and Fixed Wireless Loop until the sale in 1997. At that time Loral sold Eagan to Lockheed Martin and SLC to L-3 Communications. SLC had hired a bunch of new grads in 1996 in anticipation of a big contract award but the project was canceled when the funding was sucked up by the war in Bosnia. With a surplus of people and short term employment commitments to the new hires they did about the only thing they could and that was to lay off the Eagan people. We all received our layoff packages and were about to hit the street when Keith Behnke convinced upper management to hire us back into Eagan. He had a tough time doing it because most of upper management, being Lockheed Martin replacements, didn't know us or what we were capable of. I would have thought that Rick Martin would have recognized the experience base that was available and backed this effort but he was on a youth kick at the time and saw nothing but a bunch of old timers. Keith Behnke and Jerry Osiecki were the prime movers in getting us back and for that I will be forever grateful.

There were other people that had left the group and changed companies prior to the layoff and are not mentioned in the letter. They included Bill Gustafson, John Nystuen, and Rick Smith.

The letter is Signed by Dick Sunderman who, ironically enough had transferred to SLC from Eagan a year earlier.

From Doug Hare re' Dick's 1999 promotion to Level 2

This is the Justification letter written by Doug Hair for my last promotion. I had been promoted many times since starting as a non-degreed Field Service Technician in 1959 but this is one of the most comprehensive write-ups I had been given. Doug probably owed me though because I did come on to the RAAF and BMUP programs, both being run by him at the time, when things were tough and helped bail them out. I have included it here as it performs kind of a Staff Data Sheet (remember them?) function and illustrates the diversity of the things we had the opportunity to work on.

Richard (Dick) Erdrich

Recommended Promotion for Dick Erdrich to Level 2 (6/28/99 D. E. Hair)
L. No. 10856, Level 3 since 1992 (7 years)

Background
Dick has been one of our key designers for many major developments. In addition to hardware design of processors, memory functions, device designs, and peripheral interfaces he has been instrumental in the overall systems aspects of programs and has performed related tasks involving test, integration, and system installation. In all of his assignments he has assumed lead roles to ensure meeting program goals. Dick is presently assigned to the re-design of the CP-2044 Enhanced General Purpose Controller (EGPC) funded to provide an updated design and replace obsolete parts. Dick was selected for this as one of few who could meet the requirements and the aggressive six month design schedule. Previously, Dick was brought in on the BMUP program to rescue the NAVMUX interface design following re-assignment of personnel after the illness of a key lead person. Dick was up to speed on the tools and requirements of the design in only three weeks and he used his superior design simulating skills to simulate and complete the design while also evaluating and critiquing the design of the whole computer and writing its performance functional spec. In addition, he identified and solved some significant problems relating to differences between the CP-2044 implementation and the BMUP requirements. Prior to BMUP, Dick was key in the success of the integration testing and delivery of the RAAF Maintenance software (ref. attached letter and performance description). He quickly assumed a lead role in this area (new for him) and delivered impressive results exceeding the objectives.

Dick is one of our premier designers with a strong background in all aspects of hardware design, control and test software design, and systems structures. In addition he has proven abilities to lead teams and all aspects of developments. He can be counted on to achieve success in a broad range of developments. He has been performing level 2 assignments in recent years and is now recommended for promotion to level 2 based on the results of his performance at this level as well as his broad experience and capabilities in these and related areas. Below are listed examples of his activities in key areas:

Technical Strength

- Extensive background in complex hardware design of processors, multi-processor systems, peripheral interfaces, parallel and serial I/O interfaces, memory interfaces and controls, testers, design and simulation/emulation tools
- Incorporation and integration of COTS devices and modules in designs
- Generation of diagnostics and FAT software
- Generation of procedures for system and unit integration and testing and conducting the testing
- Generation of control firmware
- Design of gate array and devices
- Coordination of maintenance software development
- Good working understand of TDS Engineering tools and systems from design to the Data Management system
- Excellent ability to analyze and solve system problems

Communication

- Generates and presents thorough, well-structured presentations to customers at all levels
- Extensive technical writing proficiency, meeting level 2 expectations, and includes proposal technical descriptions and explanations, interface documents, and product functional specifications
- Frequently conducts design instruction sessions for other team members

Team Leader, Leadership, and Team Work

- Historically has taken the initiative to assume responsibilities for tasks related to his assignments. On RAAF, where he was assigned to support the Maintenance Software integration, he took the initiative to assume the leadership for generation of the integration test plans and procedures of the Maintenance software segment and for coordinating the activities of the entire Maintenance software segment team exceeding objectives while meeting a very challenging schedule
- On BMUP, recommended tying in simulation of design areas outside of his area, did the simulation, and uncovered a complex problem that was then solved early
- Devotes additional time to ensure that project schedules are met
- Takes the initiative to understand the system interactions with other related team members to support overall system operation and performance
- Volunteers to provide guidance for resolving system issues and educating other team members on his and the system's design structure

New Business Pursuits

- Frequently called upon to support Marketing in the preparation of presentations to customers
- Extensive customer contacts presenting design approaches in project discussions and reviews for potential add-on business

PROMOTION: Dick Erdrich RAAF 97 INPUT

Dick joined the RAAF project in early 1997 with an extremely strong and varied background in hardware system design and development, including electrical design and methods, interconnects and I/O, fault tolerant systems, computer architecures, integrated circuit technology, storage technology, and special purpose processors. In addition, from his many previous assignments, Dick has a derived a very broad understanding of many related disciplines including business development, configuration management, EMI/EMC/TEMPEST, human factors, manufacturing, quality assurance, reliability/maintainability/availability, and system safety. In numerous previous assignments Dick has held positions of significant responsibility and has demonstrated his excellent leadership abilities. Below is a summary of his leadership experience.

- He was responible for the technical supervision of 3 engineers and 2 technicians for the initial checkout, corrective design, qualification, and delivery of the CP-890 Computer which required him to interface with Manufacturing, Quality, DCAS, SP-24, and Sperry Systems Management.
- He was Technical Lead for the architectural design and customer interface for the MTAG project (Deliverable test equipment for Navy Depot use) and supervised 2 engineers and 3 technicians during the design, build, and checkout phases.
- Dick was responsible for the design completion and militarization of the UYK-15 and UYK-15(M) computers (1616 followon) and supervised 4 engineers and 4 technicians during the design, build, and checkout efforts.
- He was the Technical Lead for the architectural design and customer interface for the ATD project (Basic CP-890 Emulator) and supervised 4 engineers and 4 technicians during the design, build, and checkout efforts.
- He was the Technical Lead for the architectural design and customer interface for the ETV-1 and ETV-2 projects (Enhanced and full-up CP-890 Emulators) and supervised 8 engineers and 8 technicians during the design, build, and checkout efforts.
- Dick was responsible for the architectural design and customer interface for the Memory Processor processor which was a specialized processor of his design for the Trident Submarine Improved Accuracy Program. In this capacity, he supervised 20 engineers and 8 technicians during the design, build, checkout, qualification, and delivery phases.
- He was responsible for the initial Fan-out testing of the UYK-43 computer and supervised 2 engineers and 6 test technicians during the initial checkout and phase 1 delivery efforts.
- Dick served as the Technical Lead for the Third Level Interconnect CRAD project which involved 10 engineers and 3 technicians and designed a ceramic PC based multiprocessor using Fairchild CLIPPER processors and supporting memory which interfaced directly into an AYK-14.
- Dick provided technical direction to 8 engineers and 3 technicians in redesigning the B-2 ACU to improve performance. He performed the initial study for the customer to determine if any practical (ie non ASIC) design was possible to solve performance problems; and his design resulted in an observed 63% improvement.

Throughout his career, Dick has been assigned to many significant and diverse projects (as noted above) and has demonstrated extreme versatility in very rapidly adjusting to new environments and becoming an integral contributor to each and every project. Dick has proven this again during the past year on the RAAF project where he was assigned to support the software system integration activity. Immediately Dick took it upon himself to learn the RAAF Data Management System including both the hardware and software aspects. Instead of simply supporting the software integration effort, Dick assumed the responsibility for the integration testing of the entire Maintenance Software segment and provided outstanding leadership during the integration effort. He planned and managed the development of the integration test plans/procedures and the actual laboratory conduct of the tests while directing and coordinating the integration among the software developers. This piece of the integration was critical to the success of the RAAF program since it represented

a major portion of initial software release to the customer which was of utmost importance to satisfaction of the Lockheed Martin contractual requirements and to the company image in the face of an extremely difficult prime contractor relationship. Without Dick's commitment and leadership, this initial software incremental delivery could not been accomplished on schedule. Dick has continued to exhibit leadership and tireless dedication by assuming integration responsibilities of the radar function within the Tactical Mission Software segment which is, at this time, the largest remaining function to be integrated and the number one priority of the prime contractor.

In addition to assuming these leadership responsibilities, Dick has constantly volunteered to provide guidance and support to the software engineers with respect to the resolution of system or hardware related issues. This assistance is invaluable because it represents increased efficiency and team productivity as a result of Dick's extensive hardware experience and knowledge. Dick is a very talented, innovative, results oriented problem solver and has applied this ability to produce creative solutions to many RAAF system integration problems.

EPILOGUE

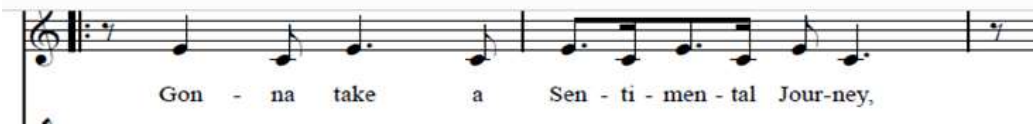
A side note here on job security at UNIVAC and the following companies. Sometime in the 70's we experienced a layoff and out of curiosity I went back and counted all of the layoffs I had survived. The first one I survived was in the summer of 1962. When I returned from 6 months at Johnston Island I found the Field Service organization about half of the size as when I left. It seems that the installation planning for NTDS Service test had completed and with no work for that group they were all shown the door. After getting the count up to date in the mid 70's I have kept track of all succeeding layoffs and as of this writing date, June 5, 2006, over my career span of 47+ years, I have lived through 46 layoffs. Job security indeed!

Richard (Dick) Erdrich

Now that I have finished publishing Mr. Erdrich's papers as part of our Legacy Anthology, I keep thinking about his 47 years with the company. He started fixing space-age radar tracking communications and finished designing a computer (Quad Processor) for the F-35 Joint Strike Fighter to support defense of our country.

Dick: Thanks for your career summary embodied herein and the three previous 'Our Stories' this year. The epilogue of Dick's third Our Stories had: "After 47 years, 4 months, and 13 days I didn't feel as though I needed to hang around just to watch another processor run. It has been a heck of a journey!"

Now Dick spends days restoring old vehicles with family and friends; then spends evenings in his rocker while strumming a guitar and singing:



Gonna Set My Heart at Ease.
Gonna Take a Sentimental Journey,
To Renew Old Memories!

Lawrence A. Benson