Myhre, Keith
Narrator

Barland, Ryan
Interviewer

September 28th, 2021
St. Paul, MN

KM = Keith Myhre **RB** = Ryan Barland

RB: Would you just count to five for me, just to check the mic?

KM: One, two, three, four, five.

RB: Excellent. So, today is September 28th, 2021. My name is Ryan Barland and I am here in St. Paul Minnesota with Keith Myhre. Did I say that right?

KM: In America, yes. It's a Norwegian name and in Norwegian it would be Myhre.

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14 Childhood Pages Edited Out

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RB: Yeah, maybe talk a little bit about the social side of being at the U. I know you said that you went to some Gopher games, and it sounds like you worked while you were in school as well. What, outside of the classwork?

KM: For me, outside of classwork I didn't do much, I mean other than the Gopher sports. I mean, my family said, "How much fun did you have?" The answer is not very much. I knew that financially I had to get through in four years and I did. So, my time– I guess the social life, living in the dorms was kind of like… Well, I remember the time I think I was the only one in our wing on a weekend. It was House Four, that I lived in. You've got, what are the other– I think there's like forty guys per wing. Of course, this wasn't co-ed. We were in totally different dorms at the time. I was the only one with a TV, a 19-inch black and white TV. It sat on the counter. Our window faced to the east. Why does that matter? Buildings built out of steel and all the brick and using rabbit ears, basically I could only get channel 5, KSTP because that was the east direction. If you wanted to get the other stations, they were in the other directions. It would be pretty snowy. The reason I bring it up is because on Tuesday nights, I think it was seven o'clock, I'd have a room full of guys watching Laugh-In, at the time when Laugh-In was poking fun at a lot of politics and politicians that was, at the time, cutting edge of… "You can't do that", but it was a thing to do. If I have a TV, other than sitting and talking with others in the dorm… Of course, when you're a freshman you go home a lot on weekends. Most everybody did, less so in my sophomore year. Going back to Eitzen and go back to your high school friends and Caledonia high school football games on a Friday night. That kind of thing that you would do. But I just did a lot of studying. I can recall my junior year, when I was in the apartment, I studied with my class notes. It wasn't so much by reviewing notes, but I learned more by writing what I heard down at the time to just stick in my head. Going back later and reviewing it didn't make much difference. It was the act of writing them down that was important. I was averaging sixty hours a week studying my junior year.

Working wise, in the summers by the time that I got to college after my brother Kraig drowned in '67, my dad and my uncle sold the service station.

My dad went to work as an outboard motor mechanic in La Crosse, Wisconsin. At Christmas he got me a job there, for a couple of weeks making some money at like two dollars an hour, something like that. One of the things I remember doing, and kind of had fun with this, they sold Ski-Doo snowmobiles, and I would set them up, assemble them out of a crate. You'd have to start them up and take them out and when they were repaired, you had to take them out, and you had to adjust the carburetors to get them to idle properly and also at high speed so that they weren't sputtering. I knew enough about growing up in a garage what that was, so I oftentimes got the task of taking them out to the swamp in the back there where you had frozen water to be running 440cc and 640cc Ski-Doo snowmobiles flat out, to a very high speed. Then the summer time. For two summers I was able to get work in the summer there with pulling boats in and out of the water that needed to be repaired. Odds and ends around there. Then my junior year I got a job as a student engineer with Northern States Power Company. Today, Xcel Energy, you know 414 Nicollet Mall, Downtown, Minneapolis. That was a marvelous opportunity. The pay was good. I was actually doing some FORTRAN programming. I was actually writing programs that did something. The one I wrote with the most distinction was one to schedule their coal fired and natural gas fired generating plants for maintenance, scheduled maintenance. There was a requirement that you always had to have, I think, like ten percent spinning reserve. Whatever your anticipated peak use of electricity was, you had to have ten percent more in ready reserve in case something happened to one of them. So, you had to schedule several of these at a time. With the nuclear ones, that's pretty much a given. The coal-fired, you could adjust when you would do that. One thing I learned there were interesting tidbits. A large generator like that, if you say, "Alright, it's down for maintenance," and you have to start it back up, it can take three days to get up to full speed. Why? Because the power shaft from the turbines, you know, to the generator actually sagged because it was so long. You had to start it up very, very slowly and over a period of days until it would get to full rotation speed. At any rate, I had that student engineer job both during the week, a couple days a week– Afternoons is when it'd be, and then all summer my junior year. I remember thinking there the first time going to the bathroom and coming out thinking, "I just got paid for that". Strange memories you get when you're used to working for little or nothing by the hour, it was okay.

RB: That's awesome. So, at the time were you kind of thinking that maybe you might try to turn that student job into a career?

KM: Well, yeah that was kind of the dilemma for me in some ways. Having worked there for, like, a year and a half, another classmate at the university in electrical engineering was also there. A student engineer. That's how I got to know him. He got a job offer and stayed with NSP for his career, pretty much. I didn't get a job offer. I was thinking at the time, Do I really want one? I mean, it's kind of interesting. It's comforting to have a job offer but I think it would be kind of boring. Thank goodness I didn't stay, that's my own personal opinion. My classmate was focused and specialized on power engineering. I was focused on computers. Now, at that time, when I was at the Institute of Technology, there was no computer science program at the University of Minnesota. I graduated in '72 and I think it was the next year, '73, that the computer science department started. As an electrical engineer student, you had to choose what area you were going to focus on in your junior, senior level classes. Just a year or two before, they had started one called a computer science option, and I chose that. That's where I took all the classes that were digital or programming, things like that.

In fact, one of the things I learned as an undergrad was when you get to be a junior at the university you could petition out of classes for something else. What I started doing in my junior year, and did a lot my junior and senior year—you have to take your mandatory courses, but then you've got electives. I would petition out of the normal required class and do a graduate level class, for which I would get graduate credits which helped me later when I went on for a masters, I could use some of those extra credits to start my master of science in electrical engineering program. I petitioned out into graduate level classes and what I learned was, there the professors are more interested in learning than they are about grading on a curve. If you did your work in a timely manner, it was tough to get less than a B. I'm convinced I learned more because of that. You didn't have the pressure and the professors were more… well, at that point you're getting full professors rather than teaching assistants, which is also a big difference. I petitioned into a lot of higher-level classes. Now, interestingly at that time, my junior and senior year, some of these digital classes, computer classes… many of them were taught in a TV classroom. You had tables with chairs and each of you had a computer monitor in front of you and there was a camera in the back of the room, and then the professor up front was almost always using viewgraphs. The camera in the back would focus on the professor at the front of the room and then there's an overhead camera pointing down to the viewgraph projector. It was on a TV. That was part of the university's united network… I forget—

RB: Industry, Television, for Education?

KM: Yeah, UNITE. The purpose was they were being broadcast to companies in Minnesota so you could get off campus classes, usually for graduate level studies and such. I had a lot of exposure to that before I left.

RB: Maybe that's a good transition. My understanding is the U of M had, maybe at this time maybe not, a real pipeline into UNIVAC. Was that true for you in your era, or maybe not so much?

KM: No. In the early years of what later became UNIVAC, Engineering Research Associates, ERA in 1946, and then after they were bought by Remington and Remington Rand ran the ERA division, and then Remington Rand bought UNIVAC and merged the two companies together and it became Remington Rand UNIVAC. Back in the early days, the late forties, early fifties, a high percentage of the electrical engineering graduates from the University of Minnesota went to ERA or UNIVAC because it was such a new field. No, when I graduated, June of '72, about six months before graduation, or thereabouts, you start getting recruiters. They had job fairs on campus. There were many of them at the time in '71, '72, that there were good opportunities out there. Went to on-campus interviews. Many of the companies I had no interest in. You know they're into engineering but Black & Veatch was into heavy construction, things like that. There were very few other companies.

I think I got them through the job fairs; I had two interviews and eventually two job offers after graduation. One was out at Cornell University and they had, I can't remember the name of the lab. They did research. It was all into programming and analysis for Department of Defense projects. The other was UNIVAC. Those were the two job interviews I had. I got an offer from each of them, and I chose the one at UNIVAC. Why? When I was working at NSP through the student engineer program in FORTRAN. It was frustrating.

These were the days when you had a coding sheet. You would write it down, you would hand it in, the key-punch operator would punch your eighty-column cards, to be fed into… At NSP it was an IBM 360 and later a 370 computer and run the program, run the batch programs. Being part time, you wouldn't get results until the next day, so you come back the next day, and it didn't run. One of the cards, there was a comma there instead of a period or something silly like that, or where you did something wrong with the logic. It was very unsatisfying to me. I never even saw the computer; the entire time I was there I never saw the computer. It was downstairs somewhere, or upstairs. We weren't allowed to get into the computer room. The thing that intrigued me, and would have been the same way at Cornell, FORTRAN programming on IBM mainframes. The thing about UNIVAC was, I interviewed with the defense side of the business, that it would be hands on. Talking about UNIVAC, they built the computers, most of the units were for the Navy, US Navy, and you actually get hands on. The concept as an engineer, not just strictly a programmer, I liked the idea. I want to see how it works. The where, the why. That intrigued me a lot more, so I chose that one. Starting as a programmer, was what it amounted to. Starting salary of 10,800 dollars a year. One of the interesting things I remember; they asked, "Well, when did you want to start?" I had graduated June some time. I said, "I'd like to go home to Eitzen for the fourth of July." The fourth was during the middle of the week. They said, "How about the day after, the fifth of July?" Well, afterwards I realized, if I had said July 3rd, I would have gotten paid for the July 4th as my first holiday. In fact, my oldest son, he and his wife moved from Fairbanks, Alaska to Minnesota in June and has a job here in Forest Lake. Upgrading cellphone towers to 5G. I told him when they came back, if he had a choice of when to start. I said, "Well, fourth of July is coming up. Start the week before so you get paid for the fourth," and he did.

RB: Good to pass on that wisdom.

KM: Some of the wisdom you'll learn by doing.

RB: That's awesome. So, then what was your first impression of UNIVAC?

KM: Well, at the time when I interviewed the interview was at their engineering management area at what was called Plant 5. UNIVAC, within the various plants in the Twin Cities, numbered one, two, three, four, five, all the way up to eight. Plant 5 was on Prior Avenue in St. Paul, north of University Avenue. I remember going there to initially talk with somebody, and then I got sent out for the interview with who would be my supervisor in Eagan. 1968, earlier than that, the mid-1960s at the time, UNIVAC would become Sperry UNIVAC, with all of their facilities in the Twin Cities they started consolidating. They needed consolidation and they bought a number of acres in Eagan, at the northwest corner of Pilot Knob Road and Yankee Doodle Road. They bought something like, a hundred acres, a hundred and forty acres. I don't know the exact number, but it was considerable. They built a new building which opened in 1968 or '69 out there.


UNIVAC Park – Eagan, Minnesota

I remember having to go out there for an interview. I was still living in Dinkytown. Well, where's Eagan and Pilot Knob Road? How do you get there? Back then it was a two lane barely blacktopped road heading north-south. Going out there, literally in the middle of corn fields; today, I-35 E is running right through the area. Seeing that facility and walking in and seeing an already obsolete computer, an AN/USQ-17, the first Navy tactical data system computer. Kind of looked like a large desk with a bunch of buttons and stuff on the top, switches. In the entryway because it was already obsolete. In there, what I learned was you actually get hands-on, which I liked. That's where I started in July 5th, 1972.

RB: So, I have your first project programming were, let's see, Integrated Circuit Keyset Central Multiplexer, and the POFA; **P**rogrammed **O**perational **F**unctional **A**ppraisal. I don't know what any of those mean.

KM: Neither did I at the time. When I hired in, it was on a project called Junior Participating Tactical Data System (JPTDS). Junior because it was for a destroyer. Up till that point in time, the NTDS systems had been computers, physically larger, and now there was a new one called AN/UYK-7. It was called the UYK-7. Just nomenclature. Which, smaller in size so it could fit through hatches onboard ship and through submarine hatches. Strange shape, but all for military use. In the end, this project was to put that larger system, now downsized, into guided missile destroyers for the US Navy. Some background here. I was told, "Okay Keith, you're going to write an ICKCMX POFA." "What's that? What's an ICKCMX?" It was an integrated circuit keyset central multiplexer. Okay, that tells me nothing. What about POFA? "Well, it's a programmed operational functional appraisal." That tells me nothing either. That's easier to translate, that translates into a test program. A program that tests a piece of equipment. The ICKCMX, the background there is that at this point in time, the early '70s, the Naval Tactical Data System going onboard, putting computers onboard, computerizing things, these ships existed. The other equipment was still analog. Your guns, your missile launchers, your radars. These were all analog. So, if you're going to send a command to a missile launcher to be able to slew to 26 degrees and an angle of 57 degrees prior to shooting, those were analog signals, but the computer is digital. The same way with torpedo launchers. These were all analog. The ICKCMX was basically a new development of making the box smaller. Previously this was done by a large box, like a large refrigerator, onboard the big ships that would convert digital signals to analog going out to the equipment and coming back the box would convert analog to digital. This was an integrated circuit, so this box was about three feet long, two and a half feet wide, and probably two feet tall. What I was tasked with doing was writing a program to test this. Because when you're operating on a ship, you want to make sure your equipment is operating. All the systems have test programs, or test procedures, that you go through to make sure that everything works—When they need to operate properly that they will do so, that there aren't any failures. You're looking for failures. That's what I was told to do.

ICKCMX (Integrated Circuit Keyset Central Multiplexer)

I started out with a computer programming class on this computer, the UYK-7 for two weeks, how to program that. All the programming was in assembly language. It's not a high-level language. Assembly language, you're writing instruction like, LA, load accumulator. Then you'd shift right one bit. You're doing those level of instructions versus multiply X times Y and it would do it. You had to write the instructions to actually do the multiply and divides and the moving of this stuff. I learned later; I wrote the specifications for this program. I wrote the design document, I did all the programming, I wrote the test document… Easter 1973, there was only one unit, and that was out at Puget Sound Naval Shipyard in Bremerton, Washington, in the US Navy maintenance shop waiting to be installed aboard the first ship. I had to fly out there, so I spent my time out there. I spent Easter of 1973 out there because you'd go out—Typically you would go out for at least a week, sometimes two or three weeks. The testing, got certified, signed off on by the Navy. I learned later, people saying, "You did what?" That was probably very unusual, for a new hire to do all of these things. Nobody else I knew did that. Don't ask me why, I think it was the case of you've got lots to do and this is just a test program.

RB: Give the new kid…

KM: Give the new kid and see what he can do kind of a thing. But, to me, with my appetite of "Okay now you're actually doing something meaningful," you're out there because—When I'm talking about debugging a program, you're not doing it from a computer terminal, you've got a maintenance panel. A panel with neon bulbs, before the days of LEDs, a 32-bit computer, so you've got 32 of these neon bulbs. It would show you what's in the particular register—Like the accumulator register. You got to the point where you could look at that and say, "Nope, the value in that register is off," and I could go in there. I could punch in the correct value. This was all programed in octal, not hexadecimal like early mainframes were. But you could go up there and press it and hit run, and see how far you got now. You're actually doing hands-on. Eventually, you'd make enough changes you'd have to mark them in your big printout, your 11 by 17-inch computer printout with all the instructions. You'd annotate that, and then you'd either have to make changes on a teletypewriter basically, put them on a paper tape and load it into the computer. Or you'd say, "I've got too many. I've gotta go back to Eagan, St. Paul, and get this thing recompiled, reassembled." I did this with a magnetic tape. It's all on a magnetic tape, and you'd take it back out and run it again. You keep doing that until it works. Truly hands on, and a different world from what most people think of today of programming a computer.

RB: And so, for this first project, it sounded like you started in '72, you went out to Washington in '73. How long were you working on this hands-on first project?

KM: Well, I started in July '72.

RB: And you were there at least until the spring of the next year.

KM: Let's see, I was done in May. From July '72 to May '73. Then I had moved on to something else.

RB: Gotcha. We're just over an hour, do you want to take a quick break?

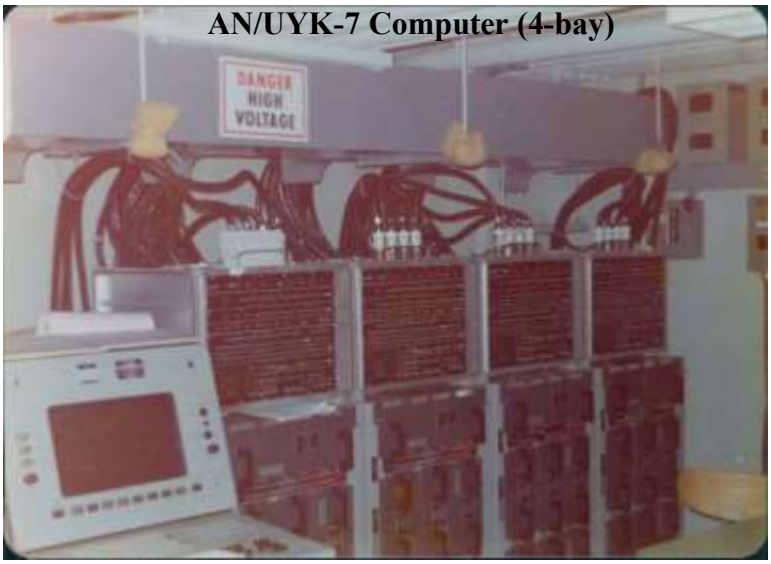
KM: Sure, we can break for a little bit.

[pause in recording]

RB: Okay, so you finished your first ICKCMX POFA project in '73. What was the next thing?

KM: Well, I got involved in a whole variety of things. Although my degree is in electrical engineering and my first actual task was programming—I mean that's fine, but I really got into more of the engineering side. Now the engineering side that most people think of is designing circuit boards and computers and stuff. I really got into tasks that filled out some of the experience needed to be considered a systems engineer. In the context here, what does a systems engineer do? You can say you engineer a system, but it comes down to… the simplest way I can put it is that in my work travels over the years with UNIVAC around the world, I would oftentimes get in front of an audience or customers, Navy officers or other companies and they would say, "Well, here's what we want," and they would say "We want this type of computer, this type of capability, we want this type of software," and even some of the things they would specify. Oftentimes, the individuals or groups doing this are operating from their own realm of knowledge. They don't realize there's a bigger world out there, or the ramifications of it. What I learned to do was say, "Okay, that's good. What's your problem? What's your issue, what problem needs to be solved?" A large percentage of the time, probably seventy, ninety percent of the time, a good system engineer can come up with a solution which is better, cheaper, faster, than what the customer thinks they want. I got involved in a whole variety of tasks that really… I mean my title was at the time an applications analyst, not an engineer. Within the Sperry UNIVAC world, if you were an engineer that generally meant you were a hardware design engineer. That title was pretty much kept for the people that were designing circuits, designing and building computers. Not the system aspect, not software related or not solving a problem, but building a product. Starting in May '73, I took that ICKCMX POFA and modified it for a similar application. Actually, it was for the Australian Navy. The Australian Navy was getting basically the same system on board their… I think they had three destroyers, DDG, guided missile destroyers. Built by the US. I modified it for them, and then I was an assistant project engineer on the Royal Australian Navy Combat Data System project. That was the project, you know, to put these junior participating tactical data system equipment and software onboard Australian Navy ships.

All of this was provided on a foreign military sales basis by the US government. Foreign military sales means, in contrast to UNIVAC, for example, wanting to sell something to the Australian Navy. We did that, could do that, but oftentimes it made more sense to do a foreign military sale. What that means is that the Australian government would buy it from the US government, such as the Royal Australian Navy buying it from the US Navy. Why? The software that we developed for the US Navy is owned by the US Navy, so we as a company couldn't sell that to somebody else. The computers we built for the US Navy; we could sell them to Australia, but oftentimes a government-to-government transaction through an FMS case makes more sense. In some cases, an FMS case is the only way to go if the US is actually buying and giving it to another country. I was an assistant project engineer for making these NCDS Naval Combat Data System changes for the Royal Australian Navy. In addition to that, I also helped with the writing and debugging of the test plan. After we, as a company, delivered this to their facility in Canberra, Australia, their capital… Strange, I guess with Navy equipment there, because its landlocked, not any ships there, but it was the capital. We installed the equipment and the software and wrote a test plan to test everything out after delivery so that, basically, we get paid by the US Government for doing all of this stuff. That lasted till about June 1974, and then I got back into… We needed some help. We had another project in our department. I was in a department called Navy Systems. There were system engineers, programmers. There were about, oh it must have been eighty of us, sixty-eighty. We had a project for the combat system for another class of destroyers. At the time it was a DLGN-38. 38 means number thirty-eight. The D means destroyer, L means large, G guided missile and N nuclear. The letters mean DLGN mean something if you know what they stand for. Later, that particular destroyer, because it was so big, was suddenly no longer a destroyer. It was called a cruiser. So, it became a CGN, cruiser guided missile nuclear, hull number thirty-eight. I did the coding and testing, debugging, of the identification module on that particular project. Again, that was with UYK-7 computers, multiprocessor and much bigger system. Why multiprocessor? Well, basically running with two processors simultaneously. If there's a failure in one, the other processor automatically would take over. Particularly important if someone is shooting at you and one gets damaged or there is an incoming missile and all of a sudden, the computer is down, you can't shoot down incoming missiles. I wrote the ID module.



AN/UYK-7 Computer (4-bay)

Now what's that? Identification. It's the software running on the UYK-7 computer that would display on the Hughes Aircraft Company's AN/UYA-4 displays. Again, the UYA means something. But it was a particular type of a stroke display, not a digital display. It would display all the information on the screen. So, it would be your radar tracks that would come from the radar for aircraft or for ships.

The computer puts symbols on the screen to indicate, this is an aircraft, this is an… also the altitude and the speed, this is a ship and that information. I did that for a year and did a bit of traveling out to California, to Mare Island Naval shipyard, which is the San Francisco Bay area. It's actually in Vallejo, California. Napa Valley country, northern Napa Valley. There were times like that when traveling. Again, you typically would go for… two weeks was quite typical. Had so many people traveling on a project, the company would rent two- or three-bedroom apartments long term so they didn't have to rent hotel rooms and was cheaper, better to be in a three-bedroom with other guys. In your spare time you'd go to tennis courts. Being close to Napa Valley, more than once we'd go wine tasting.

RB: Nice, that's a good perk.

KM: The interesting tidbit there. There were three of us one time went to Christian Brothers winery, which was interesting looking back on it now—not that their wine was all that great, but at this point in time, we didn't know much about wine. But they had a large range of wine; from very dry into sherries. Those were the days when, particular, if it was off-season and during the week, hardly anybody was there. Days when you didn't pay for any of the wine tasting. It was nice to go there. You could literally take a sip; we might have twenty different samples. Okay, so twenty different samples, even half an ounce apiece, by the time you get to the end you knew you had tasted a lot of wine. We went to other wineries. It was really a great exposure to real wine and being able to… if you can literally taste all the different ones, you'll learn what you like and what you don't like, rather than just going to a restaurant and ordering one or two and deciding I don't like wine, period. I remember another weekend there were three of us. Jim Anderson, Dale Goergen, and myself. Over the weekend we drove up to Lake Tahoe and Stateline, Nevada and stayed there overnight. Went skiing on Heavenly Valley, that was my first time other than Buck Hill here in the Twin Cities or the local places here.

RB: Real skiing.

KM: Real skiing. Fantastic view up there at whatever it was, ten thousand feet or something. Top of the lift and looking down on Lake Tahoe. Powdered snow, it was a fantastic view. Interesting tidbit there. While we were there, the entertainment at Harris Casino—Don Rickles was performing. The opening act was Olivia Newton John. This would have been 1975, I think. Probably would've been early 1975 that I must have been there. Oliva Newton John was still kind of undiscovered, but she was the opening act for Don Rickles. She was better. We liked her better than we liked Don Rickles. Interesting, but one of the benefits when you're doing traveling. Some people really didn't care to travel. They would just stay home or stay in. I took advantage of doing things, going places, whenever I could.

RB: It seems like the quality of life for a systems engineer really worked well for you. To travel, you were talking about you being able to translate things to the public. I think we'll get into that, and the public not being the general public but non-engineers, I guess. Yeah, it seems like this must have been a good fit for you work-wise and then outside of work as well. It seems like you were probably pretty happy.

KM: Yeah, I never worked on a project for a long time. Like some, they can work years. Many projects, it could take anywhere from three to five, six years. Perhaps longer, because it just takes that long to develop the hardware, the software, do the testing, get it certified, get it installed onboard aircraft or ships.

With projects like that, I was there in the beginning to do the conceptual design, some of the initial design, and then I'm gone. Years later, other people are still working on it. I'm off to different things, which I enjoyed doing. I've always enjoyed new problems, new challenges, and once they're solved or in-hand, "What now?", rather than sticking around too long. In terms of travel, I got to do a lot more traveling than most. Many more different things than a typical engineer programmer because many people, they… I can remember my first trip to Bremerton, Washington, Puget Sound Naval Shipyard, talking to one of the guys in our group. He said, "Where're you going?" I said, "I'm going out to Bremerton, Washington." He said, "Oh my, that's great! All I've been doing is going out to Philadelphia Naval Shipyard for the last three years." Because they were working on a particular—some people had expertise in a certain area and that's all they ever did. When that particular ship or that project was done, they had challenges to find where you were going to be working now because they didn't know anything other than that particular task. That ship's now obsolete, so what are you going to do now? They have to start all over.

RB: Sure, sure. Well, and I know—Maybe this is jumping ahead, but in '76 you went for six months to Ulm, Germany. So, this seems like your first longer term travel.

Ulm, Germany on the Danube River

KM: Yes. I mean, intervening years I worked on different white papers and studies, doing some analyzing, configurations of computer systems, combat systems. In 1976 a project arose in international business. Up to this point in time, the international business that Sperry UNIVAC had done, it was primarily for the German Navy. Some with the Japanese Navy, some with the Australian Navy. Had been through foreign military sales. We basically sell things to the US government who would then sell it to the other country.

In 1976 there was Germany, the German Navy, was planning to build several new ships; Frigates which are a little bit smaller displacement wise than a destroyer. They had fast patrol boats, Schnell boats, up in the North Sea with our equipment onboard, our computers onboard for about ten years, but they had been delivered by FMS. They had some older US Navy destroyers. Older in the sense that the US Navy had… they weren't new when the US Navy gave them to the German Navy, basically. Some were obsolete. Those were getting old, so Sperry UNIVAC had had people in Germany at their main naval base in Wilhelmshaven, which is on the North Sea. We'd had, for years, programmers on-site at the support center at the German Navy base in Wilhelmshaven. But Germany decided to build some new frigates, and the class they called was an F-122. F for frigate, 122, whatever their numbering scheme was. We, Sperry UNIVAC team with a German company, AEG-Telefunken. AEG, you think of that as the same company at the time that also made Mercedes Benz. Very large electronics company. They were teamed with the shipyard, Bremer Vulkan in Bremen, Northern Germany. There was a concept definition phase, basically, to define the system, the system engineering. We, Sperry UNIVAC, were in charge of the combat system, you know the computers, the software, the displays for that ship. I was asked in the fall, August or so, of 1976—They, the company, Sperry UNIVAC, needed people on-site to provide technical support to the Germans that were writing the proposal. They called the concept definition a proposal. I mean, you're talking a proposal of thousands of pages and a hundred plus people working on it for a year type of effort. A lot of effort. They wanted the expertise on the computer and the software that would be used. It would be new software.

At any rate, I was one of four people that was asked to go to Ulm, Germany. I was there for a little over six months. I actually lived in Neu Ulm, or New Ulm. Ulm and New Ulm were divided by the Danube River. On one side's Bavaria, and the other side was Swabia, so two different provinces of Germany. The other people there… There was Al Bettis, B-E-T-T-I-S. Al was a retired Navy captain. In the early days of US naval tactical data systems, while he was in the US Navy, he was one of the instigators, the founders, the people that made it happen, back in the 1960s. He was there to lead the team, not technically. He was an engineer, technical, but he was there because of the connections. The head guy for AEG-Telefunken was Captain Buch B-U-C-H, and the two of them knew each other. You had the personal connection and upper management decided "we wanted to have a personal connection there". So, it was Al Bettis, myself, Morley Moe, M-O-R-L-E-Y and M-O-E, Moe, and Clyde Kettelson K-E-T-T-E-L-S-O-N. The four of us there ostensibly for six months. Why six months? We were given strict orders, "If you're there for a hundred and eighty days and you haven't come home yet, hop on a plane and come home."

Why, because a hundred and eighty days triggered tax consequences and suddenly the corporation would have to start paying German taxes. We as employees would start getting hit on the US side as well. I was there ostensibly for six months, but you leave and then take a trip back and do some more things. I was basically the technical lead on the combat system analysis and design. I attended contractor and government design reviews between AEG-Telefunken and the German Navy. You did review of specs and other documents. As one of the tasks there, I had an opportunity to go aboard a German Navy Schnell boat, fast patrol boat, for sea trials before it got turned over officially to the German Navy. They delivered multiple ones of these. So, we're talking about November in the North Sea. Interesting times. I can recall it was pretty much dark, not much light. Overcast. Heavy seas. You probably haven't had excitement like that on a ship. Now a fast patrol boat was not real big, eighty feet long or something like that. They tend to go fast. Had our computers on board; the 1830B and probably twenty-to-thirty-foot seas. We're heading into these, bouncing around. I recall the captain; he was former German Navy captain now working for the shipyard. Gruffy guy, beard, cap, he'd walk around always kneading something in his hand, looked like dough. Like dough that you model with, modeling clay. Didn't understand that. Well, we were asked when we got on, myself and our intermediary between ourselves and AEG-Telefunken was an individual. He worked for a subsidiary of another AEG company, stationed in Cologne, Germany. His name was Dieter Coldewey, D-I-E-T-E-R C-O-L-D-E-W-E-Y. He had a PhD, very bright. His English was good, so he was kind of our translator and stuff. The two of us were getting on board and the captain didn't speak any English. None of the crew did. Asked if we wanted lunch. Okay, so it cost five deutsche marks or something pretty cheap. It would be roast beef and soup and some vegetables. Well, time to eat, come sit down at the table, it seats four, flipped down off the wall. It had a curb around the edge of it and—actually they had a cook on board, believe it or not just for this, for the few people on board. The cook came over with a bowl of soup and some bread. These are wide, shallow bowls. Then you had a plate with your roast beef on it and some vegetables. Well, if you've ever had a bowl of soup and a plate on a slippery top while you're rolling in twenty-thirty-foot seas, guess what. Your hands are holding your plate and your bowl of soup before it spills. The captain was sitting across. He kind of smiled, took some of his modeling clay out, slapped it down in front of me, and pushed my bowl of soup down and my plate down. The modeling clay was there to hold the plates in the heavy seas.

RB: That's ingenious.

KM: My experience there. I attended a number of meetings with the German Navy, on behalf of AEG-Telefunken along with Dieter Coldewey and sometimes there would be an AEG-Telefunken engineer as well. The supplier of the ships' radars and some of the weapons was a Dutch company called Hollandse Signaal Apparaten (HSA). They wanted their computer onboard, and the Navy decided they were going to have UNIVAC computers onboard. They weren't exactly happy to work with us. I didn't know much German, but I knew enough of the technical words—Schnittstelle, that's interface. I knew that much. At any rate, I didn't participate much because I didn't understand the language. But I did understand the HSA engineers talking about a computer and they couldn't do this because our computer was 30 bits, theirs was 15 bits, and you can't do this and you can't do that, and therefore you guys have to change this. I whispered to Dieter and said, "They're wrong." At any rate, he called their bluff and said, "That's wrong, here's what the interface really is. Here's the sheet of paper that proves it." Interesting times like there where you learn by doing, and you'll learn sometimes that it's better to keep your mouth shut and work behind the scenes than it is to make a big deal. The goal was to get the job done.


Keith Myhre in Liechtenstein, fall 1976

I was over there for six months. Coming back, I got a three-week Eurail pass, first class. Single at the time, all my household stuff got shipped back. Traveling with a suitcase and a traveling bag. Days before any bags had rollers. They just didn't exist at that point. So I was lugging a grey Sears plastic suitcase, lugging it around Europe for three weeks. I went through southern Germany to Salzburg and Vienna. Then down south through Venice, Pisa, Rome, all the way down to Naples. I was in Florence, of course. Then the French Riviera, went into Spain, a train to Madrid. Long hauls at times there. Train to Lisbon as I recall, then up to Paris. I was getting as much milage as I could in three weeks. Because there's no seat reservations, you just find a compartment, find a spot. I learned you need to make sure you're in the correct car. I learned this the hard way. You look at the name on the outside of the car. Because what happened to me once is that it had the right name where I wanted to go, but it wasn't the last name on the list because there were two or three other destinations on the placard. I was sleeping in the compartment. Didn't have beds, so you're just sleeping in the compartment. So, it was maybe two AM, something like that. It stopped. I thought, "We shouldn't be stopped right now." I could hear clinking and clanking; I get up and start checking and looking and finally find a conductor.


German Navy F-122 Frigate

Well, turns out I'd gotten on the wrong car. While I was sleeping, they had split the train going to two different places. So, I had to backtrack on that one. I got to Paris, and then I flew to London. I was in London. Stayed in a Y, a YMCA dorm, there for a few days before coming back to the US. A great opportunity to get thrown into German culture. I didn't know any German when I went there. I couldn't count to four, three in German. But it was a great way to learn the culture because I'd had no preconceived ideas about anything. Learned to appreciate good beer. Without any preconceived ideas of whether I liked food or beer, I'd just point to it and say it. "I'd like the rauch beer, or the weiss beer." Decided if I liked it or not and if I'd order it again. The same with meals. I didn't know whether it was pork or beef or whatever. You'd just try it. People, when we're traveling over there in later years with other UNIVAC employees, they'd say, "What's this?" and I'd say, "Well, I know the name. I can describe it, but I can't tell you what it translates to," because I never had to learn that. I just knew what the food was. A fantastic experience for someone who was 26 years old. To be in another country, thrown into… It was also my first experience of flying first class. I was asked to get over there quickly. From the time I said, "Yes," to the time I was there was like two weeks, so that was fast. Had to put my 1975 Bricklin in storage for six months and get it back out when I returned. Hassles like that just went with the territory. I had to fly into Stuttgart, and the only flight, when they wanted to get me there as soon as possible, the only flight was a Swiss Air flight out of Chicago to Zurich, and then a flight from Zurich to Stuttgart. Turns out the only seats available on a Swiss Air flight from Chicago to Zurich were first class. Business class didn't exist yet, so it was coach or first class. My first experience flying internationally was first class on Swiss Air and thought, wow, one can get to appreciate this. That was the first and last time I ever flew first class -- with the company at least. Then it turns out I learned about how European airports worked. Landed in Zurich, tired. I'd had enough—First class - you had good champagne, a lounge in Chicago before leaving, I was tired. Probably too much alcohol, and I took a nap in the Zurich airport. "I have plenty of time," I thought, "So I'll start wandering down to the gate." Well, it was a lot longer wander than I expected. I still got to the gate half an hour before the flight departure. Gate was closed. Well, that's where I learned that a lot of European airports, busses take you out to the planes. They don't have the jetways like we have pretty much everywhere in the US. The last bus had left for the airplane. Days before cellphones, what do I do now? I missed my flight. Al Bettis and Morley Moe were going to meet me in Stuttgart. So, I had to find somebody at Swiss Air, somebody at the airport, to try to call them in their office and let them know when my flight's coming in. It can be fun times, but the challenges before email, before synchronized communications, before your own cell phone, by itself has its own set of interesting times.

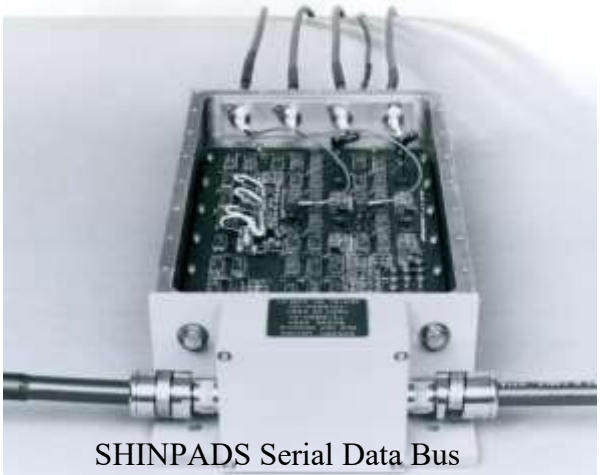
RB: Yeah, no, and this is all incredible. So, kind of after this German experience, I see you made a lot of presentations to naval customers for different countries; Germany, Italy, Spain, Turkey, Greece, the Netherlands, Great Britain, Japan, South Korea, Australia… Was that kind of just the natural progression of your career, then? Did you become the guy that then went and talked to these different potential naval customers?

KM: It's not a typical career progression because I don't know of anybody else in the company that did it. After I came back from Germany, I came back to the same command and control systems group. The company had gotten a contract from the Royal Canadian Navy to do a report, basically a system design I guess you would call it, of their plans for a new shipboard combat system. All combat systems up to this point in history had a central computer, basically one central computer. In the commercial vernacular you called it a mainframe, but it was militarized for onboard ship. A lieutenant commander, Jim Carruthers, had written his master's thesis on an approach for a distributed processing system where you could have multiple computers connected by a data bus. Up to this point, all the connections onboard ships had been parallel cables. In other words, if you had a computer with 32 bits, you'd have to have two wires to each bit, positive and negative, because you have to complete a circuit. So, if you've got a 32-bit computer, you'd have to have 64 plus wires. Well, a serial data bus is basically saying you've got one wire and you're transmitting it out on the bus. Everyone connected on the bus has their own connections, and they listen for their address. You send a message out with an address for computer number 17 and when the computer sees number 17, it says, "This is for me, and I do something." That's the concept. Why is that better than a central computer? Well, a big part of it has to do with, if you're going to have damage, if you're in battle and you've got a torpedo hitting you and it takes out part of your hull, part of the ship—if it hits the computer room everything's dead, literally electrically dead in the water.

SHINPADS Serial Data Bus Controller

RB: Yeah.

KM: You can't do anything. So, the concept is you have multiple data buses, physical data buses running port side, starboard side, and maybe down the center line. Then you've got dozens of computers throughout the ship, so if they knock out a compartment or several compartments, you may lose fire control for your torpedoes or you might lose some of your radar information but you're not dead in the water. At any rate, the concept was how to implement that and, can you do it? I was the project engineer; I did that lead starting in April of '77 to define the data bus for that. This was something called a Shipboard Integrated Processing and Display System, SHINPADS.



SHINPADS Serial Data Bus

Bus Access Module

That got implemented a few years later in the Canadian Patrol Frigate; first in the world to ever have that. Now, the reason I'm bringing that up, the importance of that was, this was the first data bus, the first distributed system anywhere in the world. Being I was the head of that project to define the hardware and the software and the operation—Because we looked at things like ethernet. Ethernet was still new. We designed our own protocol because with ethernet you cannot predict with a hundred percent certainty the time delay. If I want to send a command from computer A to computer B, which is synced to launch a missile to shoot another incoming missile, I've only got fractions of a second perhaps to do that. With ethernet, it's dependent upon how much other traffic is on the bus. You might have a 98 percent probability of getting a message to that other computer in half a second, but it's not 100 hundred percent and that's unacceptable because that half a second.

RB: It's a life-or-death half a second kind of thing.

KM: Yeah, it's life or death, and then they sink you. It was a concept revolutionary at the time. After that study got delivered and the Royal Canadian Navy moved forward with implementing that in their patrol frigate, I went on to take that concept further. For the next year or so we, Sperry UNIVAC, got a contract with US Navy from the Naval Ocean Systems Center (NOSC) in San Diego to—How could the US Navy implement this distributed processing architecture? So, I had a six-month study to design that and present the results and travel to San Diego to present it to those people. Then, internally we moved forward with actually developing a data bus for SHINPADS, which we did on our own money. It was helpful to me to do that study for NOSC because, while at Sperry UNIVAC, I began my master's program in electrical engineering. I and another employee, hired at the same time I was in 1972, Carl Rock, were the first two employees of Sperry UNIVAC to participate in this live UNITE TV system at the University of Minnesota. I talked about UNITE earlier where I had been in class with this. Over the period of several years, I took one class a quarter, basically. Take an hour a week, go down to the education department in the basement of the facility in Eagan and you'd have a TV there and you'd have a microphone, and you'd watch the lecture. If you had questions, you could use the microphone. For my master of science in electrical engineering degree, which I received in 1979, I didn't have to go on campus for anything other than buying books, basically. Sperry UNIVAC paid for all the cost of doing that. I was able to use some of my excess undergraduate credits because those were graduate level courses that I'd petitioned into as an undergrad. It took me until 1979, took me four years of classes to get a degree. I took, on the master's program, the Plan B, which is not a thesis but you have to write a very detailed paper on something original. I wrote my paper on shipboard distributed processing system architectures and then defended it. My advisor was professor Larry Kinney. He was okay with that, so I defended it. By using this study I did for the Naval Ocean Systems Center, I was able to parlay that into part of the work being done for my master's paper. With all of that, with the SHINPADS stuff, I got a lot of exposure that later proved valuable in briefing—once SHINPADS came to fruition, with the Canadian Patrol Frigate, there's a lot of interest internationally in doing this. My first real involvement internationally was in August of 1978. At the time I was working for my supervisor, my manager, was Dick Kuhns. K-U-H-N-S in the command and control systems group. His boss was Dale Klette, K-L-E-T-T-E. Dale was twenty years older than me, electrical engineer, hired into Sperry UNIVAC back in the early fifties. Excellent guy to work for.

Happened to be that August at my supervisor's, not my manager, Norris Nielsen at his home in Burnsville, for a Vikings pre-game show with Norris and Dale. Grew up together in the same organization when they hired in. There were a couple other guys there and Dale asked me—Dale had been drafted by his boss, a director, to work on this project and was wondering if I was interested. He told me a little bit about it. I said, "Sure, sounds interesting." So I got involved in a proposal for an Iranian frigate. It was for the Imperial Iranian Navy. All the work that Sperry UNIVAC had done in the Twin Cities over the years had been for shipboard command and control systems -- in being the prime contractor for that. For this one, again, it was working with Bremer Vulkan, who I had worked with on the German Navy F-122 proposal, and that project was done and implemented. A lot of people were in Bremen for several years developing the software, et al. I had already moved on. But we as a company had a good working relationship with that shipyard, so the Iranian Navy wanted some new frigates similar to the German F-122 frigate. The deal was, again with AEG-Telefunken that we would be working with. With me having been over there working on F-122, I knew some of the people and everything, so I became part of the proposal team. It was for the entire combat system, not just computers. We were also going to be procuring the guns, the guided missile systems, the torpedo systems. Contractors would be locked in for the Mark-86 gun or for the guided missile systems. Other suppliers that normally would be prime would be subcontractors. It was a big deal, a big step forward. We were working long hours, seven days a week was quite typical because we didn't know what we didn't know and had to do a lot of work. Had to develop numerous requests for proposals, RFPs, for subcontractors. Focusing on putting together a statement of work; what are the tasks to be done, who's going to do what. We had to put together equipment lists and equipment configuration… System engineering, system design is what it comes down to. I say we worked hard, played hard. It was not uncommon to, on a Friday afternoon, to go to lunch the four of us and not come back. We're still getting stuff done but we were just…

RB: Doing it somewhere else?

KM: Doing it somewhere else, at Leanne's in Eagan. It was interesting, we were there one time with Dale's boss, a director, Joe Stoutenburgh. He was a retired US Navy captain involved in development of the early Naval Tactical Data System, one of the NTDS originators whose father, I guess stepfather, was an admiral, which prompts another sidelight. A story Joe had told us once over lunch. His father was once captain of a US Navy aircraft carrier and went water skiing behind his carrier. The joke was, well, what'd he do? Tell them "Hit it"?

RB: That's quite the mental picture.

KM: So, one day Joe came over to join us for the lunch at Leanne's and he sits down. The waitress comes over and said, "Dale, what're you gonna have?" Dale, "The usual," PBR, Pabst Blue Ribbon. Joe said "You guys come here often?" And then she asks Dale, "Okay, and what's your dad going to have," meaning Joe. At any rate, it was an atmosphere of work hard play hard. Yeah, you're getting paid for forty hours. But yeah, there were some weeks we didn't actually work forty hours. But there were a heck of a lot more weeks working fifty, sixty, seventy-hour weeks to get the job done. So, on this Iranian frigate, all things were going well until January 1979 when the Shah got overthrown. That kind of ended that project.

RB: I'm just curious about that from an international diplomacy perspective; obviously you guys got it shut down quickly, but was there… I don't know, were there consequences for having worked with Iran with the US? I don't know, it just seems odd to me that—

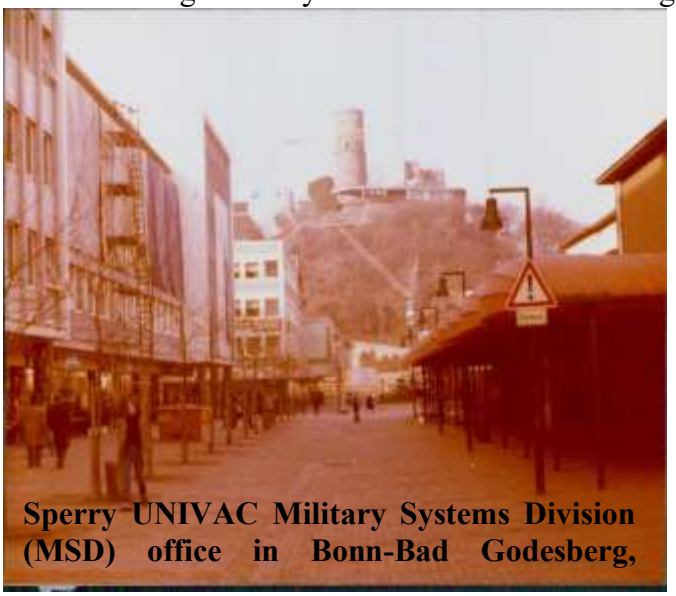
KM: Well, we had as a company—I didn't work on it, but my late wife had, Tricia Bailey at the time, officially Patricia Bailey Myhre… Several years before there had been another project for the Imperial Iranian Navy for, it was called a DD-993. 993 was the number of the first ship of the class. DD was destroyer, not nuclear, just conventional propulsion, and that was… I think was four ships. Again, we were doing all the command and control system stuff, the computers, displays, running all of the software. That was a foreign military sale, FMS, from the US Navy to the Iranian Navy because with the Shah in power, the countries were friends, buddies.

RB: Allies, yeah.

KM: Pretty close. That was ongoing at the point when the Shah got overthrown. There were quite a number of Iranian Navy personnel in the Twin Cities and Eagan and their families, you know, long term for a year or two, for training, to get on the job training, to see what we're doing, the development detail, to be able to operate it once the ships got turned over to them. So, the ships weren't completed or delivered then, but had been close to completion. When the Shah got overthrown, that work of course got terminated. Those four ships ended up being part of the US Navy's ships. They were similar to the DD-963, USS Spruance class but better armed. Those four ships that the US Navy got were better equipped than the DD-963 ones they were supposed to copy, so that all turned out fine. I do recall when things were getting dicey… This would have been a little bit earlier, probably would have been late in '78. We, Sperry UNIVAC, had a representative, an employee, in Tehran for liaison, political liaison and such… On this Iranian frigate, the marketeer on the program was named Gene Schultz. He was a former Navy lieutenant commander, a P-2 pilot. I was working at Corporate Square Building D, the second floor, northwest window… some things you remember, some things you don't. Cubicles, movable cubicles that were about four and a half feet high. I overheard Gene talking on the phone, trying to get through to the guy in Tehran, could never get through phone-wise. Well, the cubical next to him was another marketeer named Hugh Edwards. Hugh had connections. He did a lot of work with Israel, selling things or working with them in Israel. I remember once being told that he put on his expense report a carburetor for a VW beetle that went to the travel group. They had to review all this stuff. The manager asked, "What is this for, Hugh?" "Well, the general has a VW bug and told me he needed it. I said I would help him out. So, I brought him the carburetor." If you're doing business with the US government, you had to follow the government procurement rules. This being a direct sale, you could get away with that rather than limiting it to meals and hotel costs. Anyway, Hugh was there and he poked his head up and said, "You having problems getting ahold of Joe Howard?" Gene said, "Yeah." Hugh said, "Let me make a call."

Within about forty-five minutes Gene got a call from Joe Howard in Tehran. He was at a party at the US embassy and said, "I hear you want to talk to me." You figure out how that happened. I think I know how. At any rate, there were a lot of interesting stories and aspects that a typical engineer at the time, a programmer, never got exposed to. I just happened to be at the right places at the right time. I had a lot of flexibility during most of my career.

After the Iranian frigate, for several years I was working basically for International Marketing as their technical guy. Primarily for Europe; Germany, but other nations as well. I was working on what we called B&P, bid and proposal, funding. This was money not on a project you're doing but money to try to get new business, new products. Part of your overhead operating costs. So I was working for several years like that. Basically, working for Gene Schultz or doing other people's bidding, but reporting to somebody else in a different organization. They just let me do it. I mean, you had the person that reviewed my appraisal reviews, performance reviews. I knew him but I… Little to no interactions. He didn't know what I was doing, and it didn't matter as long as marketing was happy. That's all in the background. I think my time in Germany, with SHINPADS, I think just my nature of… enough people there, including Gene, saw that I was comfortable in front of customers. I was able to speak slowly enough with customers, audiences, when English wasn't their first language, could put technical aspects into an understandable format for the context of that particular audience, you know, rather than… a typical engineer in a moment of stress blurts out the truth, you know, that's the saying. Not so much the truth, but sometimes you don't want to provide too much technical information because people aren't going to understand it. So, I essentially became a technical marketeer, if you want to say that, because once I started doing the traveling and making presentations to ministry of defenses, navies, air forces in a variety of countries, primarily Europe, I would be accompanied by… Usually within Europe be accompanied by someone out of our office. But, if I was going to Japan, we had an office there in our company with a person in Japan. Along the way, when I wasn't traveling, doing that all the time, I did things like writing technical proposals for a tactical data system for Taiwan on a corvette, a much smaller ship. There was some definition design for a frigate for Saudi Arabia, working with General Dynamics. If I went out and made presentations, which I did—I think this must have been late 1979. I was in Europe for six weeks, including Thanksgiving, based out of our office in Bad Godesberg, Germany near Bonn. I made a whole series of presentations. SHINPADS I could talk about, serial data bus, bubble memory, MNOS memory - metal nitride oxide silicon, fiber optics, different computers, a variety of topics and interests that were trying to educate the customer on what's possible, here's what we can do so they would do future business with us. That would have been late '79.



Sperry UNIVAC Military Systems Division (MSD) office in Bonn-Bad Godesberg,

Now, as I mentioned before the work hard play hard… The play hard could be stopping after work with guys in the department. Friday afternoons, you could go down to La Fonda de Acebo, this Mexican restaurant in Eagan on Highway 13, and you go downstairs to the bar. There would be, from our department, twenty to thirty people down there. It's just what you did. In early days there weren't many alternatives if you wanted to stop after work. When I started in '72 up until La Fonda's was built in, must have been about '76, for the first several years I think there were only three or four liquor licenses in all of Eagan. There was Stark's Halfway House on Highway 3 on the far eastern side, and there was another club that was somewhere on Highway 13. The only one that was close by was one at the intersection of Highway 13 and Yankee Doodle Road in Eagan. Today you would recognize it, it's kitty-corner across from the Blue Cross building because in the late sixties, Blue Cross Blue Shield moved out of the metro area and built a new building in Eagan. They're still there. There was a building there, it would have been a bar for many years. The owners lived above it. It was popular with people, and they would open it up early in the morning because these were the days of Northwest Airlines mechanics who would work the midnight shift and would get off work at seven am. There would be some of them that would want to stop and have a pop or two before they went home. It ran all day, but Blue Cross opened up their facility and UNIVAC opened up their facility, there was now more business, so they did a little bit of expansion and remodeling. We'd say, "Well, where do you want to go?" "Let's go down to the Open." For those that were around during that era, we still call it the Open. Why? It's actually called the Valley Lounge, but it was several years before they got a sign up that said Valley Lounge. Before that, there was just a big white sign, six feet by four feet that said O-P-E-N, open. So, let's go to the Open. That's what we would do for lunch or for a beer or two after work.

RB: There you go.

KM: That was at the era when there were a lot of, back in college we'd call them intermural sports. I mean there was slow pitch softball, there's bowling, flag football. I mean I did all of those. There was a soccer league but for soccer I played, it was at Blue Cross Blue Shield right across the street from the Open, the Valley Lounge. Others, volleyball, which I didn't participate in, basketball, photo club, flying club, skiing club, they were all UNIVAC sponsored activities. Those of us that worked there, especially when you were still single, you would participate in some or many of these activities. There was something for everybody if you wanted to do it. So, you got to know people that was part of your social life, more than a lot of other places. That doesn't exist anymore. So the relationships that were built then, I still stay involved with those people. You know them, you know their families, you go to weddings, you go to funerals, all that kind of stuff. A different era.

RB: You had mentioned your wife working on some of the Iranian stuff. Were you married at the time? In '78, '79, that era?

KM: No, I got married May 8th, 1981 to my first wife, her name was Judith Ann Drahos, D-R-A-H-O-S. Her maiden name was Lilienthal. She grew up on a farm, just outside of Glencoe, west of the Twin Cities. Jude was a secretary, legal secretary and later an administrator at Blue Cross Blue Shield. I met her at La Fonda de Acebo, at the bar on a Friday night. One of my friends had known her, and she went over and talked to him, said hi to him at the bar. You know, Gary wasn't interested. Gary Steckman was his name, and said, "Here, talk to Keith."

So, that's how I met my future wife. I met her, that would have had to have been in early 1980s, something like that. We eventually got married May 8th 1981. I have two stepsons, Christopher, born in 1972, and Mark, born in 1973. Last name is Drahos, D-R-A-H-O-S. They both now live in Minnesota. My oldest son Chris was living in Fairbanks. He moved back from Fairbanks in June of this year, 2021. Mark and their kids live in Apple Valley. Jude worked her career there. When I started doing a lot of my travels. You know, to Germany and stuff, doing those presentations, I was married, so it was challenging at the time. When I was there in '79 for six weeks, I wasn't about to do that anymore, but two week trips were the most typical. If you're going to spend that kind of money for the airfare, you want to get your money's worth, so two weeks would be typical. One to three. Jude died August 6th, 2000. Jude had a rare genetic disorder called erythropoietic protoporphyria. One of the side effects of that is excess production of porphyrins, which are a by-product in creating heme in your blood. She had a shortage of an enzyme, meaning that there was an excess production of these porphyrins. The side effect you would see is being very sun sensitive. She was sixteen when she got diagnosed with porphyria. Many people think that porphyria is the genesis of stories about not being out in the sun, like with Dracula, stay out of the sun. In her case, being out in the sun too long could have been fatal. When she was diagnosed, there had only been a handful of people diagnosed around the world. In December of 1986, just before Christmas, she got very, very sick, very jaundiced, and in January 1987 she had a liver transplant at the University of Minnesota Hospital. Only the second person in the world with porphyria to survive a liver transplant. She was the first liver transplant that got approved by Blue Cross Blue Shield on their medical policy. I suspect part of it was that she had worked on Mahogany Row, so the president and all the VPs knew her personally. She knew the medical director personally. At the time of her transplant, she was working for the legal department. So I think when it came down to the committee that was reviewing it, it's like, how do you say no? In some ways you could say she paved the way for treatment, or the coverage, of liver transplants because it was experimental at that time. She did well, lived thirteen years. What happened basically is the porphyrins, your liver is a filter. It'd filter them out until the filter got clogged, like a coffee filter. It got removed. Turned out the surgeon who did it was Dr. Nancy Ascher, who ran the liver transplant program at the University of Minnesota. A few years later she left and went to the University of San Francisco to start the liver transplant program there. Got to know her fairly well and got to know a lot of liver transplant patients because of the uniqueness of all this at the time. But, learned that her case was followed by researchers, doctors, because of the porphyria and the liver transplant and all that, how unusual that was. Trying to remember his name now, the porphyria expert at the University, who later went to the University of Alabama Birmingham (Dr. Joe Bloomer), said that there was another porphyria patient that was not nearly as sick as Jude was that had a transplant at the U about a couple weeks later and he died on the operating table. The autopsy showed he'd basically died of sunburn. The UV from the operating room lights—The UV light can be fatal. So, what they learned after that was that anyone with porphyria undergoing surgery thereafter, you had to put filters on the lights, so there was some benefit from that. So, she survived for thirteen years until her liver basically clogged again. She had another liver transplant in July of 2000, 2001 I guess it was. She died August 6th, again at the University of Minnesota Hospital. At that point -- the first transplant she had gone from being diagnosed to being top of the list within a couple of weeks. This time she'd been on the list for over a year because the filter became clogged more slowly, so by the time she reached top of the list she had to undergo an annual physical to make sure you're okay


Jude Myhre with son Mark Drahos at Fairview Ridges Hospital in Burnsville, MN – May 2001

for the transplant. Had it, turns out they found breast cancer. She had a double mastectomy, so until she recovered from that she wouldn't get back on the list. That was about three months earlier, so had she had the transplant when a liver became available a few months earlier -- but she couldn't go. By the time she got to the top of the list at the U, she was just too weak to survive. The actual cause of death, per the autopsy, was aspergillosis. Which is a fungus that invades the lungs. Pretty strange, but that's what happened. That was my first marriage.

Then my second wife, Patricia Bailey Myhre, Tricia as we called her. People would call her Pat because when they saw her name Patricia, they'd just shorten it to Pat. She was just too shy to tell them, "Call me Tricia," so it was Pat. We had met years before because she started at Sperry UNIVAC in 1976 and had worked on other projects. I think the first time I met her was at a softball game, a project softball game with a keg of beer afterwards. I knew who she was over the years, so when Jude died, it was months later. Ran across her at the bowling alley in Eagan, Cedarvale Lanes in Eagan. I was there with a couple of work friends for a beer just before Christmas. Saw her and said, "Hi." Didn't think about it until a year later, same thing happened. Same friends, just before Christmas, and we all sat down. They all left, we just sat there chatting for quite a while. I think I said, "Would you like to go out sometime?" "Sure," Didn't do anything until January. This would have been 2003. Had to come back to bowling one night to find her and I said, "You know how many Baileys are in the Minneapolis phone book?" She didn't give me her phone number. "A lot," so at any rate that turned out—that worked out well. We got married on December 13th, 2003. Married for fifteen years and one month. She died on January 13th, 2019. We were flying to Hawaii for a vacation to escape winter and landed on Kauai. An hour after landing she was in the ER, died in the ER from a

pulmonary embolism. Had to go through the trials and tribulations, I guess, of doing that. Of, getting her cremated and carrying her ashes home, that kind of thing. Those were the two marriages that I'd had. Tricia was well respected. When she left, when the facility shut down in 2012, she'd been there for 35 years.

RB: Was she an engineer as well?

KM: She was a math major from Creighton University. She graduated from St. Margaret's high school in Hopkins. Benilde-St. Margaret's today, had a name change, and she graduated in '76. The job market was even worse than when I graduated. 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 twenty 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 there.

Tricia Myhre exiting US Navy P-3C Orion AIP (Anti-Surface Warfare Improvement Program) Aircraft - 1997

Tricia Myhre onboard US Navy P-3C Orion AIP (Anti-Surface Warfare Improvement Program) Aircraft - 1997

RB: Were there a lot of women that worked at UNIVAC? Or was she somewhat unusual in that respect?

KM: Well, on the technical side, quite uncommon. You had a lot of people working there, as you remember, but we were a P&L center, profit and loss, basically operating as an independent company. You had to run your own balance sheets.

You had your own full set of accounting, payroll, all of that was done in Eagan. Many of those, more administrative jobs I mean, a lot of women in that. On the technical side in terms of actual engineers, I'm not sure I can name one when I was working there. Programmers started being some women, so Tricia was on the cutting edge on that type of thing. In fact, this was about five, six years ago, Tom Misa, who at the time was heading up the Charles Babbage Institute at the University of Minnesota, CBI, he'd gotten funding to do a study of why aren't there more women in computing. He had gotten a grant and one of the people he interviewed was Tricia. Her audio interview and transcription are online at CBI's website, if for any reason you would be interested in that. It was a different time, a different world back then.

RB: So, to kind of just jump through the eighties and the nineties, kind of how had your career progressed through then… I'm not actually sure.

KM: The biggest thing—I mean I did a lot of the international travel and technical marketing, and then I eventually got into a marketing group and nothing exciting there other than I was in charge of a ground support system proposal for the P-3C aircraft. It was called an ASWOC, Anti-Submarine Warfare Operations Center. A-S-W-O-C. It's basically a ground-based computer system, displays, equipment, to brief the flight crews. When they come back, take the mag tapes, and do data reduction. Reduce it into statistics and stuff and debrief the crew. Brief, debrief type system. I got into that. That went by the wayside when Sperry UNIVAC and Burroughs merged to form Unisys in 1987. It was a merger of equals, but Burroughs was more equal than Sperry UNIVAC, is what it came down to. At that point when Unisys started, the culture changed. It was a different world. At that point in time -- over the years, you know, from Engineering Research Associates to UNIVAC; there was a divergence moving defense militarized equipment one way and commercial the other way. Commercial didn't need all the testing and heavy-duty components -- cheaper in other words. Burroughs was a commercial company that built computers. They had a very, very small defense presence, called System Development Corporation, SDC, to the point they were one tenth, one twentieth the size of what our defense business was in Sperry UNIVAC. They, SDC, took over being the bosses out east for all of the defense operations here in the Twin Cities. The work hard play hard mentality disappeared, I think partially due to time but society moves on. We got into a situation where, now and later when Lockheed bought that part of the company as well… The facility here was a stepping stone to bigger things, let's put it that way. For most of the time under Sperry UNIVAC, under Sperry Rand, and before Unisys started, the corporate talent was out east, New York and then Pennsylvania, Blue Bell, Pennsylvania, which was where headquarters was, the upper talent came from the Twin Cities; St. Paul, from Eagan. The chairman of the board came from here at one point. The president of the corporation came from here. We had people out east that understood the work hard play hard. They understood what could be done here. I mean we could do the impossible in some ways, thinking you can't do it in that amount of time, but they understood it. As Unisys formed, now it's a case of, who are you? Prove yourself. It came back to a very different attitude, different culture, and when Lockheed bought the operation a number of years later it was even more so. I was gone by then, I left in '91. Patricia was still working there. The culture really changed because now it was a stepping stone. Lockheed was using this as a training ground. They moved people through a career path. You move them here to run the operation here because you've got a nice tidy operation. So you earn your wings for twelve, eighteen months, twenty-four months, and then you're off somewhere bigger and better. They had no interest in getting to know the people.

It was just a numbers game. When Unisys came into play and SDC, Fred Jenny was the one running it. Everybody here reported to him out in Virginia. I got into international operations working for… I remember his name, Chuck Hammond. Got in there and basically did technical support back here. Chuck, when I was traveling to Germany a lot, he was head of our office there. Chuck was a retired US Air Force colonel. He had been the air attaché to the Spanish Air Force and worked in the Pentagon for a number of years. Very capable, took good care of his people type of attitude. While I was working there, we got some changes on going, and they started a program of having executive assistants up on mahogany row. So in June of 1988, for the next year I was executive assistant to the Vice President of Plans and Controls. He had been, prior to that he was Vice President General Manager of the entire division, prior to the merger when they brought somebody else in. He, basically, got demoted. At that time, we were Electronic and Information Systems Group (EISG) in Unisys Defense Systems. His name was Bill Geiger. Bill would also be a suggested person to interview.

RB: Right on.

KM: He's in his late eighties. I haven't talked to him in about a year. But Bill, he made it all the way to the top. He was the last person you got here that you could interview that was head of the entire division, head of the operations. The top guy. With him you have a different perspective because he started in the mid-fifties I think with the company, worked his way up. Engineer, the whole thing. I was his executive assistant. And then when Bill Geiger retired, for the next few months, I was the executive assistant to then Vice President General Manager Al Zettlemoyer who was brought in by Fred Jenny to run the operation. Al had been working for IBM prior to that, running a factory out east. Following that, we were in an era where the defense budget was declining. There were cut backs, attitudes on, "oh, we shouldn't spend so much money on defense", so there were starting to be layoffs and a lot of automation. A lot of the production, the actual manufacturing, was disappearing; going away or being moved. The whole operation on Shepard Road in St. Paul, the manufacturing facility, disappeared. That work all went to Clearwater, Florida. In essence, the short of it is, people may not quite view it this way, but in my opinion it's basically the union. The union wanted better wages and benefits and the company finally—they go on strike and programmers would have to start soldering and building computers on Shepard Road and what the company did was built new plants in Clearwater, Florida and made them a non-union shop and then moved all the work there and some to Colorado. Just shut it all down. We were at a time when… what are we going to do? There was a new position created, a new group called New Venture Business. So, from August 1989 to May in 1991 when I left Unisys, I headed up that New Venture Business group. My role was to find what we call, "new" new business. Oftentimes, with new business you look for what we call "next nearest neighbor". If you're already building a computer that does this, you'll look for, "well, how can we use this technology to build that computer for something else?" It may not have to be defense, it could be—and part of the area, you just start looking for, how about for farming? Automated farming. You've got ruggedization and dirt and rain and shock, vibrations, similar to military. I was tasked with looking at well beyond that -- new, new business. It was partially employee PR and partially actually looking for the business. I instituted an electronic bulletin board on the UNIVAC, Unisys MAPPER system, which is a mainframe system. The days before there were such a thing as the internet and any message boards, but computers—it was a suggestion board to give me their ideas. What should we be doing next? Over that, what, year and a half, I think evaluated over 250 ideas.

Almost none were of significance I suppose in that way. Often, they were just too simplistic or not understanding of who we are, but also to promote all this I put together a slide presentation. Over six months I traveled to Minnesota, Pennsylvania, Florida, Virginia, California, and Colorado facilities. I made 66 presentations to 5,000 people.

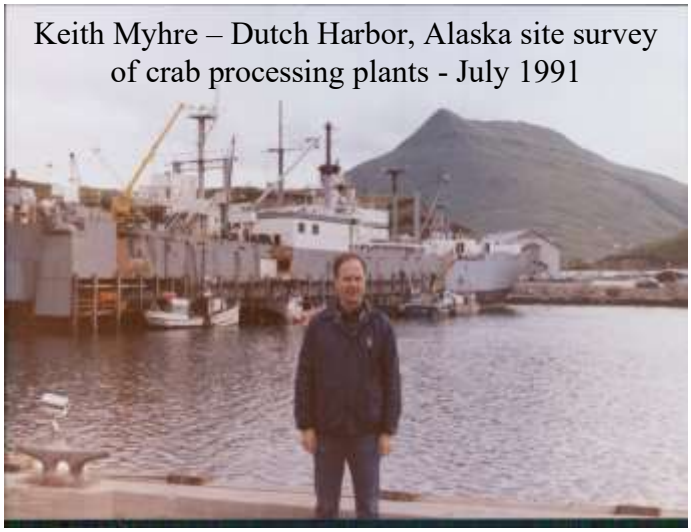
RB: Wow.

KM: The same thing about "Here's what's happening in the budget". Yes, there're going to be cutbacks. No, we can do some things. It was kind of a tell them all the stories and be a cheerleader in another way so that the sky was not totally falling. That was at the time when I decided it was time to leave. The fun was gone, the new challenges in that were gone, so I left at that point to a different world of radio frequency identification with a company called InfoPet Identification Systems. In essence, what we're talking about is pet microchipping. InfoPet was the first company in the world to offer pet microchipping, scanning, and a pet registry to return lost pets. In 1991 a former employee, someone I had worked with, Wayne Culberth, C-U-L-B-E-R-T-H, had left the company. I think he'd gotten laid off, found some other things, but he came across a business opportunity of microchipping pets and it looked intriguing. His son actually found it and asked for his dad's advice because his son was not an engineer, just a marketing type person. Jay Culberth. His dad looked at it and said, "There's good technology, there's some technological challenges there," but the short of it is Wayne bought the US assets. The company was a Canadian company owned by an attorney in Toronto with US operations. Wayne bought the US assets and the right to the name. I joined as Vice President of Business Development, so my job was there, again, new business. What do we do with this? We're talking about a microchip the size of a grain of rice. You read it with a handheld scanner. The early scanners operated at 400 kilohertz, very short read distances, like less than an inch, making them pretty much impractical for most pets, especially with heavy fur. New technology came along, a new company called Trovan, T-R-O-V-A-N, and we got very involved with them. A European company. Interestingly, their transponders were manufactured by AEG-Telefunken based in Ulm, Germany where I had been, had worked; different building, but I had some background there with where it was and who they were. That was at 128 kilohertz with their RFID technology. A big part of the effort as a small company was you quickly run out of money, and you spend all your time trying to get more money. That became at times all-encompassing and Wayne was spending his time doing that rather than productive stuff. That's that world. My advice to others, entrepreneurs that I've talked to or startups, I said, "Figure out how much money you want and at least double it. Quadrupling it would be better. What you think you're going to need, and whatever time you think it's going to take double that. Then you might be closer to what the reality is going to be," because everyone's too optimistic on things like that.

Keith Myhre's office at
Unisys Park in Eagan - 1991

Keith Myhre with Schatzie about to be microchipped at InfoPet office in Burnsville, MN - 1992

The first real project we had happened to be with Alaska Department of Fish and Game out of Kodiak, Alaska, working with king crab. We said, "What in the world does that have to do with pets?" The answer is nothing. But there's a challenge that they had, maybe still do have, is that the way the crab season works in the Bering Sea is that… There's red king crab season, there's brown king crab, and then there's others; bairdi, opilio, smaller crab, different seasons, snow crab they are typically called. But the king crab, whether brown or red; red king crab is the largest haul.



Keith Myhre – Dutch Harbor, Alaska site survey of crab processing plants - July 1991

The Department of Fish and Game sets the limit on how many pounds, based upon their studies and their netting, and they tag crab. When the crabbers are out there catching them, they're supposed to report those tags to the Department of Fish and Game, once they get back into port. Most of them operate out of Dutch Harbor, Alaska, which is in the Aleutian Chain. Some are floating processing ships. They set the quota, and then they set the start date.

Keith Myhre – Dutch Harbor, Alaska
Freshly caught red king crab being offloaded from boat to be processed in plant - October 1991

They, Department of Fish and Game personnel, monitor the catch when they come in or they've got people onboard these floating factories to monitor how much they're catching. When they get within like two days of when they think they're going to reach the limit, they call it. It's at the open that they don't know when they're going to close it, and they say, "it's closing in 36 hours," or something. You have to be, you have to be back unloading within that 36-hour period. If not, you're going to get fined, you're going to get in trouble. Well, the challenge they've got is they didn't know, don't know, how many of the tags that crabbers catch and throw back because they don't want to deal with the hassle, or they just keep the crab and throw the tag overboard. They don't know how accurate the population is, so they wanted a way to validate, to figure out what the discrepancy is between the two of them. That's where they—they called them PIT tags, passive integrated transponder, so in that world they call them PIT tags. What they did was they bought from us; I think it was 5,000 PIT tags. They went out. This would have been the summer of '82.

Arctic Seafoods - Dutch Harbor, Alaska
Testing of InfoPet's PIT tag Crab Identification System
by Alaska Dept. of Fish & Game - October 1991

RB: '92, maybe?

KM: Yeah, '92, excuse me. Summer of '92. *[KHM Note: Actually, it was 1991]* They went out, they hired a ship. They caught the crabs, injected the PIT tags into them through the back. They distributed them in not just one area but a variety of areas. The biggest challenge we had was, "Okay, so how are you going to read them?" I mean, you've got tens of thousands are coming in off ships in Dutch Harbor. I don't know if you've ever seen the butchering. They've got an aluminum blade, kind of like a blunt axe blade. They just push the crab over that to crack the carapace, pull the legs off, and they've got a brush there; they brush off the detritus and toss it on a conveyer belt, which goes down to a grinder. They actually cook them right away. If you ever go somewhere and they say, "You wanna buy fresh crab?" Don't, because crab, if they're not butchered within half an hour or so, are deadly toxic. They are boiled and flash frozen immediately, so that the time they come off the ship to the time they're in the freezer could be half an hour. I mean it's fast in the big processing plants. Well, the challenge is how do you read the tags? This has to happen quickly. What we came up with was a design where all of this detritus goes down the conveyer belt.

Arctic Seafoods - Dutch Harbor, Alaska - October 1991
Butchered crab carapaces going through InfoPet PIT tag Crab Identification System

It goes down to floor level and a conveyer, all the plants are pretty much the same, takes it up to the top of a grinder; back then, they're not doing it this way anymore, but they would take it up top, they grind it, and then they have a pipe dumping it into the bay. They can't do that anymore as I understand. So, what we did was on the belt taking them up to as high as six feet, we installed scanners, readers. We had to have multiple ones to cover the area, and it was a challenging task because of all the metal around there. We did that and then recorded that. Each reader recorded it and had it transmitted to a central processor, a microprocessor, and then we just did data analysis on how many tags were detected because they have a unique ID.

With that, then, at the end the Department of Fish and Game statistician said, "Okay, I've got enough tags collected, compared to how many we injected, so I can statistically analyze and project how many of the tags are getting thrown overboard." In other words, they were trying to calibrate their current techniques for the future. At the time we did this, great, 5,000 crab this year, 55,000 next year, 500,000 the following year. No.

RB: It was shorter lived.

KM: They actually did it twice. I was in Dutch Harbor for three weeks installing and operating it along with one other engineer and then two years later I went back up there with the same equipment, and I reinstalled it on the same conveyor—they did it again. I think they did brown crab that time or something. Strange, you come from a world of computers and ships and stuff to crab in Alaska.

RB: But when you were… I was just thinking, when you were a little kid, you were talking about, you know, you wanted something that kept you interested. You were bored in high school. This doesn't sound like a boring career.

KM: No, for that aspect, no. I think my aspect of that has been far more varied than a typical person that's going into the engineering world.

Royal Norwegian Air Force Captain Hans Joakimsen – Guest speaker at 1988 Syttende Mai Luncheon

RB: Sure, sure. I want to just finish up quickly talking about volunteering with the Dakota County Historical Society. That being kind of a unique collection of computing history, and then also with the VIP Club because that seems… I understand it, now, now that you've talked about the social life at Sperry UNIVAC, it makes some sense why you guys would have a collection of retired people that would continue on socializing. Maybe just talk about those two things quickly.

KM: Okay. When I was gone from Lockheed Martin. Well, I never worked for Lockheed Martin, I was gone. Tricia was still working there. So, for the hundredth anniversary of Lockheed Martin, they asked all their operations around the world to collect historical things so they could commemorate it in a book and video and things like that. I think that was 2006, I'm not sure. Something like that. That began within the Lockheed Martin facility in Eagan. Someone named Ole Olson, Richard D. Olson, but everyone called him Ole. Interesting, by the way, when I was doing the SHINPADS study, Ole was my software expert working on that one. Ole is also a good Norwegian. About forty years ago, for Syttende Mai, which is the 17th of May, that's the Norwegian constitution day, Ole said he knew I was Norwegian, a hundred percent. He said, "Let's get together," at the Hot Fish Shop in Mendota. Six of us did, and of that three of them I didn't know before, but all Norwegian. I'm bringing it up because that's forty years ago and has continued every year to today except for last year and this year because of the COVID. It went from the six of us at one time at the Hot Fish Shop, to we'd have 120, 130 people. Had to move across the hall. I don't know if you were ever at the Hot Fish Shop—Across the hall they had the Emporium of Jazz, jazz music and stuff, so a bigger room. Twice, the speaker was Hans Joakimsen, whom I still stay in touch with. He started out as a mechanic when he was eighteen in the Norwegian Air Force, left the Norwegian Air Force when he was commander of their P-3C squadron, living north of the arctic circle, became good friends. Visited him several times. He was here. When we go to Hawaii, he oftentimes flies from Norway to stay with us for a couple weeks and meet with… At any rate, that event grew and moved to Casper's in Eagan, Highway 77 and Cliff Road. Nowadays we're probably getting around 40 to 50 people still getting together. Here's a real interesting tidbit. Two years ago, it would have been 2019. We always have a speaker lined up, could be genealogy, Hans spoke sometimes as I mentioned, things about Norway. Well, we had former Hennepin County sheriff Stanek, actually his wife is Norwegian if you say, "What's he got to do with it," but his wife was partly Norwegian. At any rate, he was the speaker, but he got preempted because we got a request. It wasn't to me directly, but the committee got a request from the Norwegian Embassy in Washington, DC that the Norwegian Ambassador to the US wanted to come to our luncheon. He did. His name was Aas, A-A-S. Now think, how did he know about us? We didn't invite him, he asked to come. Anyway, he came on Syttende Mai and talked to us. Again, another aspect of how things continue on and hold together. In collecting these items, the facility in Eagan physically shut down December 2012. Tricia, she got laid off early 2012, late 2011, because her job was actually moved elsewhere. We could have moved to Pennsylvania but we didn't want to—or New York (Owego), I guess it was, but we didn't want to go to New York. We were asked by some other former employees that, "oh, there's this cataloging going on". Collecting these items, and to get them catalogued before the facility shuts down. So, when we first showed up, Tricia and I, showed up there in the facility there were about 15 people doing this.

Most of them were looking at negatives and cataloging negatives because all the photo negatives went to the Charles Babbage Institute. Two dimensional objects, i.e., paper went there. Tom Misa didn't want any three-dimensional items which is why all of the computers and displays and things are at the Dakota County Historical Society in South St. Paul and not at CBI at the University of Minnesota.

We got involved. We'd go to the Plant 8 cafeteria at lunch. I didn't know all of these people but knew many of them, so we did that. The items to the DCHS came about because two of the members of the board of directors of the Dakota County Historical Society, Bernie Jansen and Millie Gignac had previously worked for UNIVAC. They knew about these activities and Millie was the one that started the VIP Club, when she was Director of Human Resources. The first woman director in the Sperry Corporation, country wide. She started it at the Shepard Road facility in 1986. No, '81, must have been '81. '80, because it was the forty-first anniversary this year. At any rate, Chad Roberts, who is now Ramsey County Historical Society Director, and the Board had agreed to accept to take the three-dimensional items. That was the genesis of… We had to get all of this stuff organized. I did most of the document sorting and tossing. I was the one that went through file drawers and said, "Nope, nope," There was—three/fourths got tossed in the recycling bins versus what got kept. All of the eight by ten photo negatives, other documents, duplicate documents, all of the sixteen-millimeter film went to CBI, duplicates to the Lawshe Museum. The Lawshe Museum has got video tapes, VHS, and Beta tapes. Early this year all the VHS tapes I digitized to MP4. Nothing with the Beta tapes because I didn't have any equipment to do it with. That's how all of these things, items, came to DCHS. When we first moved there, it was December of 2012, so early 2013, there would be five or six of us working on it because there were five laptops, five workstations so we could… it's all on a Microsoft Windows network, peer-to-peer network. It's an air-gapped system with laptops donated by Lockheed.

UNIVAC Legacy cataloging crew at the Lawshe
Memorial Museum - January 9, 2018
Les, Tricia, Jon, and Keith

So, we're down there now. Trish died two and a half years ago, so we're now down to myself, Les Nelson, also an electrical engineer, Bob Pagac, also an electrical engineer, and another one, Jon Simon, who was a programmer. There's really only four of us that are still doing the cataloging. We keep getting more items as people move into smaller quarters, more spouses die, surviving spouse brings things. We tell people, "Don't toss it. If in doubt get it to us. We'll figure it out." So, we actually keep getting more. I've scanned 10,000 thirty-five-millimeter slides so far. Probably have another 5,000 to go. We've scanned probably around 15,000 photos, mostly eight by tens, digitized a hundred plus video tapes, a hundred to two hundred video tapes. But we still got lots of stuff to go, years more to go at the rate we're going.

RB: No, I wanted you to talk about it because I do think it's a unique collection that deserves to be highlighted. Obviously, you guys have put in so much work on it but—Yeah, I think that's all the questions I had. Is there anything really important that we haven't chatted about that you should mention?

KM: No. With importance, I agree with your comment about talking to Tom Misa and now Jeff Yost, current head of CBI, they're not aware of anything. You know, resources like what we've done here. We've had multiple comments over the year from other people that we point to, collectively those of us in this legacy activity. Other museums and stuff to point to, and it's like, "Wow," is what we get back. The other thing that I mentioned to you when you were at the Lawshe Museum last week was the hardware that's in the Lawshe Museum that to my belief is the largest collection of UNIVAC computers and equipment anywhere in the world aside from maybe a US Navy warehouse in Virginia.

Lawshe Memorial Museum – January 9, 2018
AN/UYK-43 Computer, AN/USQ-69 Display, AN/UYK-44 Computer, CP-2044 Japanese P-3C Computer, AN/UYQ-70 Display Workstation

I've looked at the records from the Computer History Museum in Mountain View, California, and the Smithsonian, and they don't have—I mean they have some unique stuff, and one of a kind, like serial one, prototypes, that kind of thing, and you've got a few things here but in terms of quantity, there is more at DCHS. I think it's extremely unusual to have a county museum to have that much of that kind of stuff. Too many people think it's pioneer museum. My belief is that, moving forward, county historical societies need to look at newer stuff for the younger group. Every generation doesn't want to go in and look at plows and blacksmiths and things like that. They want interactive things, and even more so online.

My goal is, if I live long enough, is with all the stuff we're cataloguing, I want to get it all digitized and online so people can go online to search for photos. "Hey, I think my grandfather worked there, can I search for him and see he's in any photos?" That kind of thing that can be used as a resource, but it just takes an extremely tedious, laborious amount of effort to do all of that. There's no shortcut to it.

RB: No, like you said earlier it's brute force kind of thing. Well, that's so great. This has been so interesting. Thank you so much.

KM: You're very welcome.

This paper was formatted for web posting November 29, 2022, by *LABenson*.

More of Keith's story is on-line as part of the VIP Club's Legacy Anthology, http://vipclubmn.org/People5.html#Myhre. Tricia (nee Bailey) Myhre's is also there, http://vipclubmn.org/People5.html#PatMyhre.

Syttende Mai history is on-line at http://vipclubmn.org/activities.html#Mai. Our Lawshe Memorial Museum exhibit details are a nice part of our Legacy, http://vipclubmn.org/Exhibits.html#Lawshe – thanks to Keith et al', Exhibits of Legacy (vipclubmn.org).