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Chapter-10b Livermore Sandia Lab (1968-1970)

1968

Sandia had great benefits with five weeks paid vacation per year. You were required to take three weeks and could sell back two weeks. They were very structured and organized compared to the Lawrence Livermore Lab and was very well managed. There was very little attrition, so it was a difficult for an outsider to get hired. There were two job titles at Sandia. I was hired as a "Staff Member Technical" and the other title was "Staff Member Administrative".

I started to work as a systems programmer at Sandia on the unreliable CDC 3600. I joined Freddy who was a longtime employee and not too motivated. Due to the flood the computer had been in it was crashing often and nobody could find the problem. The hardware people blamed the software, and the software people blamed the hardware.

(The CDC 3600 had a unique space age looking operator console. The console and CDC magnetic tape drives were often seen in space and technology movies. It is a thrill to see an old movie with those props. I spent a lot of hours at one of those consoles diagnosing problems)

It was difficult to form a working relationship to find the problem. My goal was to find the problem and not blame the other side as had been the case. I needed something to study. When the system crashed I would capture a dump of the entire contents of memory on magnetic tape and print the contents. Then I would compare that to the printouts of the operating system.

The memory printout would be about a foot high and the operating system was about four feet high in several binders. I spent hours, days, and weeks tracing through listings and comparing. It was not an easy comparison as the dump listing was all numbers and the system listing was alpha characters for the instruction and numbers for addresses and registers. An "add" instruction would be three numbers like "124" on the dump and in the system listing it was "add" in alpha characters followed by numbers. I had to be familiar with the numerical and alpha representation of all the computer instructions.

I found that when the system crashed it would be out of bounds of the program that was being executed. There was no way to trace how it happened. The next thing was to get a listing of the program that was executing when the crash occurred. Then look at the output it had generated up to that point. By looking at the output I could zero in on what the program might have been doing when the crash occurred. It was cat and mouse.

I traced it to where the program jumped to a system routine in the operating system to perform a standard math operation which is common in solving an equation. One night I found where it jumped off into oblivion and crashed rather than take the correct path onward. I checked old memory dumps, and they showed the same thing. I had it down to an instruction where the crash situation initiated. It was a unique instruction that accomplished four tests to determine

where it was to branch to. It did not transfer to where it was supposed to and crashed

When I was sure I had it diagnosed I went to the hardware people and asked them to test the particular instruction when they ran preventive maintenance the next morning. They were dubious but ran the test. It failed. I removed the instruction from the operating system and patched in four separate instructions to perform the task. The system was stable after that.

I went through the whole operating system and that was the only place that weird instruction was used. The instruction was not even needed as the normal programming protocol was to perform four instructions in sequence to decide the branch. The hardware designers thought a single instruction to perform all four branch decisions would be neat and they designed it into the hardware. This was the only CDC computer with that hardware instruction. Some software guy thought it was a neat instruction and used it.

One of the engineers was transferred over to the Lawrence Lab to train on the newly arrived CDC 7600. *(Years later I was told the engineer told his fellow workers what a great job I did solving the problem at Sandia. One of those engineers was Larry Cook and in 1977 we both made the Control Data Shark Club, and were recognized at a big gala in Athens, Greece. He made the Shark Club as an engineer at Lawrence Livermore Lab and I made it as analyst for my work in Idaho Falls. Larry and I later worked together at CDC and ETA Systems, a CDC spin off. Larry and his wife Sharon stopped to visit us the summer of 2017. He related the story about his fellow engineer at the Livermore Lab heaping praise on me.)*

After a competitive procurement and selection process Sandia awarded a contract for a CDC 6600. Meanwhile the current computer was loaded to capacity and more computer time was needed to handle the workload and prepare for the new computer. UC Berkeley had a compatible computer and an agreement was worked out to use it from midnight to 8am. I would accompany two operators to Berkeley each evening. We would load a couple of boxes of magnetic tapes into an old government Plymouth station wagon and go to Berkeley.

One morning we were loading our boxes into the Plymouth that was parked on the street in front of the computer building. The car was conspicuous since it was gray with government plates and had Atomic Energy Commission painted on the front doors. We heard a commotion up the street, and it was a large group of Vietnam war protesters running our way yelling something like, "there's the war mongers". We jumped into the old Plymouth hoping it would start quickly as it had a habit of being balky on cold wet mornings. I hit the key and we were fortunate it started. We put distance between us and the protestors. They broke the windows and front door of the computer center. They were kept out of the computer room by the police. We went back the next night and the front door and windows were covered with plywood. We had been told to park in the back and use a back entrance. No more problems after that but we were always on the lookout for trouble. UC Berkeley was a crazy place in those days.

Some time later the protestors massed in Livermore and marched out East Avenue a couple of miles to where Lawrence Livermore Lab and Sandia Lab are located. Nobody knew what

would take place when they got to the labs. We were told to stay within the fenced compound and not leave. The police blocked them about a quarter of a mile away and they finally dispersed.

In preparation for the new computer a new underground computer room was constructed with copper lined walls. This was to prevent electronic emissions being transmitted and picked up outside. Sandia was working on highly secret weapons systems and Vietnam was going full blast. My security clearance was upgraded from the highest AEC Q (Top Secret) to an even higher level AEC Q Sensitive.

We got a briefing once on Sandia developed detection devices that were dropped on the Ho Chi Mien Trail. That is about all we were ever told on what was happening at Sandia. Sandia also operated a test range near Tonopah, Nevada. Monday morning scientists would board a plane at the Livermore airport and come back Friday evening. We never knew what went on at the test range at Tonopah.

The new CDC 6600 was delivered. I was the lead systems programmer and responsible for the acceptance tests. The tests were to wring out the system and ensure that it would perform at a certain system availability for thirty consecutive days. It passed and the system was accepted.

I made a few trips to Sandia in Albuquerque to run work and tests on their CDC 6600 system to make sure it produced the same results as ours. It required carrying a few magnetic tapes that would fit in my satchel brief case. The tapes contained top secret bomb codes. I would sign for them as I departed Sandia and headed for the San Francisco Airport. I was instructed that my brief case had to be with me at all times, and nobody was to open it or take it away from me (*just think about that in today's world*). I was also briefed that there could be listening devices in the hotel room. There was precedent for this. It was the same hotel in the White Winrock Center that was involved in the famous WW2 spy case and the Los Alamos Lab. The husband and wife team were eventually caught and executed.

I enjoyed the trips to Albuquerque because of the good New Mexico style Mexican food and I came to love chile rellenos. I would even have one at the airport before I boarded my plane back to San Francisco. My brief case would be empty for my return trip so I would pick up a couple bottles of booze as it was a fraction of the price in New Mexico compared to California. On one trip I came down with the flu and stayed in bed for several days before I could fly back home. I thought I was going to die. Someone from Sandia came by a couple of times to see if I was going to make it.

Landings in San Francisco always made me nervous because of the wind coming off the bay, and the rain, fog, and the final approach from the South over water. I would tell myself that nobody has ever landed in the water before reaching the runway. Then a Japan Air DC-8 landed short and in the bay.

My brother Garry was in the army stationed in Georgia and his unit was ordered to Vietnam.

He phoned and said they would be flying into San Francisco on a Delta charter and would then go to Vietnam by troop ship. We went to the airport and saw the plane park on the tarmac. The soldiers came down the stairs onto the tarmac carrying rifles and combat gear, which was a sobering sight for us. We met for a few minutes in the baggage area before he was off to eventually catch a troop ship. He spent a year in Vietnam and was fortunate to be in a Headquarters unit in the rear. He said only a few bullets whizzed by his jeep. When he came back and stayed with us for a while.

One night I was working at Sandia on the problem we were having with the computer crashing and LaRue called. She said Garry was in jail and needed bailed out. I went to the jail and found he had been out on the town and decided he shouldn't drive. He got in the back seat of his car to sleep. An officer came by and arrested him for "being drunk in public" and hauled him in. I didn't have any money on me to post bail, and he needed more sleep anyway. I told them to keep him. I went to the hearing that morning and the judge let him go. I don't remember any fine.

(A highlight visiting the old town jail is that I saw a famous light bulb that has been turned on and glowing since the very early 1900's. I recently saw on "Mysteries of the Museum" that the light bulb is still glowing)

A summer activity we enjoyed very much was to camp at Pinecrest Lake 120 miles east of Livermore in the Sierra's. For years Loa and Max and friends would spend a couple of weeks a year vacationing there. We would join them and stay in our tent and Max and Loa had a new 18-foot trailer. Ross and Marion would come with a tear drop trailer and he would build a canvas city around it. Family friends, Gordon and Lois, would be there with their big trailer and two couples that were family friends living in San Francisco would come with tents. It was quite a gathering. I would spend the weekend and drive back on Monday morning to work and go back up Friday evening. It was nice to leave the 100 degree valley heat and climb up into the cool Sierra Mountains and smell the pine trees and campfires. We noticed how nice it was in Max and Loa's trailer and began thinking about owning a small trailer.

On January 13, 1968 we found a new 17-foot Nomad Golden Falcon single axle trailer at Jones Trailer Sales in Concord and bought it for \$2,475. The dealer installed a load leveler hitch, brake controller, and wiring on our new Rambler Ambassador and we were trailer owners. Loa and Max gave us a set of short Texasware drink glasses for martinis and suggested we keep a log of our trailer trips. I have maintained a record across two log books. It is now in parallel on an Excel spreadsheet "our-rvtravel" on the computer. The computer version totals miles towed and nights spent by year in each rig we have owned. The drink glasses are still in use.

The first excursion was in January 1968 on a shakedown trip to Sunset Dunes beach south of San Jose. Ross and family were there when we arrived. He had their tear drop trailer and canvas city all set up and he was sitting in the rain in his rain gear drinking a beer. Quite a sight that was. They brought a couple of neighbor kids. Along with their five it was a chore that had him ready for a beer or two. We pulled off the road onto the sand by Ross and set up. Max and

Loa and family arrived later as well as family friends Dee and Therese from South San Francisco. Dee didn't put up their tent until evening after he had a lot to drink and the tent collapsed during the night and it was raining. Regardless, everyone had a lot of fun.

Our trailer had a pressurized water tank that I filled before we left home. I ran the pump to a pressure of 80 pounds and turned on the water. It ran a little and stopped. I put more pressure in the tank and still no water. I decided to crawl under the trailer and turn the drain valve to see if any water would come out. I turned the valve and with about 120 pound's pressure in the tank the water blasted the sand. I got covered with wet sand from head to foot. LaRue and the kids had a good laugh. We had water in the tank alright. We made do that weekend with no water coming through the faucets.

The trailer had a new toilet that had just come on the market. It was a Monomatic brand and the salesman said it was just like those in the airliners. You start with two gallons of water and add a package of dark blue powder. When you flush the toilet it circulates blue water and it "grinds up whatever you put in the toilet" according to the salesman.

The weekend was over and I thought I would pull the drain on the back and empty the Monomatic toilet since it was supposed to be harmless blue water. I pulled the valve and out came the real stuff just as it went in and blue water. I was horrified and quickly closed the valve, but a lot had been dumped on the sand. The people that had pulled in behind us waiting for our spot were not in a good mood either. I got my shovel and covered it over and we got out of there. The salesman had oversold the Monomatic. It didn't grind anything. It only circulated blue water. The weekend was a real indoctrination into trailering.

I took the trailer back to the dealer in Concord which was about 35 miles from Livermore and left it. It turned out that the tank installer had pushed the plastic plug into the tank instead of removing it. Pressure in the tank caused the plug to seal off the water outlet.

I got the trailer home and found the pig tail from the trailer to the car was fried and had to take it back to the dealer again for a new pig tail. Later it happened again. I got under the car and found a bare spot on a wire that was shorting out and fixed it myself. The dealer gave me another pig tail.

We talked to an old couple that were out walking behind our place. They were the O'malleys and lived behind Granada High School on about two acres. We became friends and they let us park our trailer behind their house. We wouldn't have it in our driveway all the time. He was a pilot in WW1. He retired from a hardware store in Oakland and he had lots of tools and stuff that I could use. He passed away while we were in Livermore, but we continued to visit her.

We saw a notice in the local paper that a new camping club was being organized. We went to the charter meeting and joined the new chapter of the National Campers and Hikers Association (NCHA). We named ourselves "The Camperooos". We had around twenty families and would have a monthly campout from March through October. Each month we would designate a

wagon master that would choose the location and make the arrangements.

Once a year we conducted a litter pickup on a highway. The camping trips were a lot of fun and we went to places we didn't know about, and with people from all walks of life and ages. People our age were not quite into trailering yet. I agreed to publish a monthly newsletter and purchased a portable typewriter and a used mimeograph machine. Each month I tried to print something amusing or eye catching and was even reprinted in the national NCHA newsletter a couple of times.

The summer of 1968 we started our vacation by pulling our trailer to Red Fish Lake near Stanley for a rendezvous with mom and dad and Bev as they also had a new travel trailer. On our way over Donner summit I looked in the backseat to see what the commotion was back there. The kids were on the floor. Wilson had the backseat and wouldn't let them have any of it.

We spent a night in Donner State Park and again in Jackpot, Nevada. Arriving at Red Fish Lake we found a campsite in the Mt Heyburn campground. The folks pulled in a short time later and got a campsite across from us. We enjoyed Redfish and camping among the small lodge pole pine trees was sure different than we were used to in the tall forests in California. The folks had to return to Kellogg, so we all went to Patterson to camp a night for old times sake.

On the way we stopped in Clayton for a break. When we got to Challis we were missing Wilson. We had to backtrack thirty miles to Clayton and found him sitting in front of the store waiting. The store owners said Wilson would have nothing to do with them. After a night camped on Patterson Creek the folks left for home. Bev continued on with us and would fly home later in the summer.

We went back through Stanley and then rough gravel road to Lowman Boise, and then Uncle Donald and Mary's place out of Ontario. From Ontario we went across central Oregon to the coast and headed south along the coast camping along the way. We especially remember Bandon, Oregon where we had fresh fish and chips in a small cafe. The owner had just picked up the fish at the Bandon pier. We liked it so much we returned the next year. When we got back to Livermore we had been on the road fourteen days and traveled 2,627 miles.

Our dog, Wilson was a man about town. He would open the garage door, take off, and do whatever he wanted to do. One evening a man came to the door and wanted to know if we were Wilson's parents. He said Wilson had gotten into his backyard and molested his German Shepard. It started LaRue laughing since Wilson was a small dog. Anyway, he was not happy. A short time later Wilson got away and was never seen again. There was no trace of Wilson anywhere and we suspect that guy or someone else did him in.

While Wilson was around he caused all kinds of trouble. After Julie was born we would put the basinette in the back seat when we were going somewhere. We would go out to get in the car and Wilson would be in the basinette that was all nice and clean for the baby.

We had another pet. LaRue's niece Maxine and husband Dick were getting a divorce and had a Siamese cat named Mitsu. Maxine needed to find a home for Mitsu so we took her. We had her until we were transferred to Switzerland in 1977. Maxine and Dick by then had remarried so we shipped Mitsu back to them.

We got a lead on some early American furniture that people in Walnut Creek were selling. We bought a nice wooden rocking chair and a couple other items. There was not room for the rocker in the station wagon, so I tied it on the roof rack of the station wagon. We got home, and I got out to open the garage door and left the car door open. Wilson came roaring out of the garage and jumped into the car and was all over everybody. I was mad at Wilson and jumped in the car and drove into the garage. The wooden rocking chair did not survive. We just sat there as wooden pieces fell on the garage floor. I gathered it up for the garbage truck to pick up the next day. However, in the morning I went out and gathered up the pieces and glued it back together, and it lasted a lot of years.

(We ran into our former neighbors, Mel and Vicki on our South Pacific cruise in 2014. The first thing that Mel said after he recognized us was, "I remember the time you drove in the garage with the chair on top of the car".)

1969

The summer of 1969 we took a three week vacation towing the trailer. We went to LaRue's parents in Providence, Utah then up to Salmon where we parked at our friends, Grant and Carol Haveman's place. From there we met my folks at a campground near St. Regis, Montana and then went to Kellogg and Couer d'Alene then across the border to Canada.

At Grand Forks, Canada we went East and stopped for lunch at a roadside stop. We had lunch in the trailer and when I went out I looked up in the tree by the door and there was a bear up there. I slammed the door closed and the bear came down the tree and went over to a couple eating at a table and took their lunch.

We continued to Vancouver and a side trip to Victoria then down through Seattle to the Oregon coast where we were last year. We stopped at the small cafe in Bandon, Oregon and had fish and chips again that we liked so well the year before.

We spent a night at Lake Shasta and it was so hot we couldn't sleep. I filled the car at a small gas station at the lake and apparently got some bad gas. Near Red Bluff, California it was not running well. A garage couldn't find anything to fix, so we continued on. After filling the tank again all was well. We were gone three weeks, pulled the trailer 3,267 miles and drove a total of 3,892 miles. Campgrounds on the trip ran no more than \$2.50 per night.

I had no trouble backing the trailer into tight spaces the whole trip. We got home on a Sunday and it was a struggle getting the trailer backed in. The neighbor watching from across the street

was a truck driver and that added to my anxiety. I finally got it parked.

That night we sat on the patio with the TV in the door and watched Neil Armstrong walk on the moon. Monday was declared a holiday, and we had an extra day of vacation.

I was a big fan of the Oakland Raiders and the Oakland A's when they moved to Oakland from Philadelphia. The Raider's coach John Madden and family lived in Pleasanton. His wife owned a small bar on the main street of Pleasanton and would sponsor bus trips to games. Uncle Fred and I did a game trip from her bar, and one sponsored by a bar in Livermore. In those days you could roam all over the stadium and at a New York Jets game I was behind the Jets bench tormenting Joe Namath. He would just smile at me and go in and throw another touchdown. He was the coolest guy I ever saw. I also saw great games against Kansas City, Pittsburgh, and a Monday night game against the Redskins.

I attended my first major league baseball game one evening with some of my Sandia co workers. We had great seats behind home plate and the opposition was the Minnesota Twins. Harmon Killebrew, an Idaho boy, was playing first base. Jim "Catfish" Hunter was pitching for the A's. I thought the game was rather boring as the Twin's could do nothing, and the fans were cheering like crazy. I didn't realize until late in the game that "Catfish" was pitching a perfect game. It was the 8th perfect game in baseball. It doesn't get much better than that.

By mid 1969 the new CDC 6600 computer was performing well, and I was not faced with any challenge or learning anything new. I began to worry about getting the same one year of experience over and over. I interfaced almost daily with my CDC counterpart, Roger Martin, that worked out of the local CDC sales office about a half mile down the road. We hit it off and he was also a graduate of Utah State, so we had a lot in common. He liked the challenge of working in a sales support environment with both labs as well as other installations in the bay area. He started working on me to come to work for CDC and it was beginning to get very tempting.

One day over coffee Roger passed on that CDC was opening two new positions in the local sales office for analysts. The job would be to learn and support the newest supercomputer, the CDC 7600 serial #1 that had just been installed at the Lawrence Livermore Lab. He thought I would be a good fit and he wanted to recommend me to his management. I figured it would not hurt to find out.

CDC had a regional sales office in San Jose and I was called over for an interview. It went well but there was reluctance about hiring people away from one of their customers. Therefore, I didn't think anything would happen. A couple of months went by and Roger told me an offer was on its way. Wow, decision time coming up. I loved the benefits at Sandia, especially five weeks vacation per year. However, the job was no longer challenging, and there was no advancement opportunity. I decided to give notice and accept the CDC offer in December 1969. I didn't burn any bridges and was told that I could come back anytime.

end chapter 10b