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#### Chapter-9b Livermore - Livermore Lab (1966-1967)

The lab is a super secret National Weapons Laboratory and for a change I didn't have to wait for a security clearance. My clearance came with me from Las Vegas. My office was in a single wide trailer between the Director's Office and the computer building. It was convenient for running back and forth, which I did secveral times a day.

The Livermore Lab was operated by the University of California and had a very loose management style. People sort of worked and wandered around without a lot of supervision. Most of the technical staff had Masters and Doctorate degrees ,but you would never know it.

You never knew who might be eating lunch by you in the cafeteria. One day I was slurping my soup and across the table was Dr Edward Teller, the father of the H bomb, slurping his soup. I would see him often. He never talked to anybody. I guess he was thinking of atoms and designing nuclear devices.

In my new job I would be using the Fortran language, the programming language used by engineers and scientists. Fortran is the acronym for "formula translator". It scans math equations and translates them into computer instructions that the computer executes. Livermore developed their own version of Fortran with many extensions for handling bits and bytes. Using their version of Fortran they developed their own operating system for any new supercomputer they acquired. It worked very well for them. It also worked for me in what I was about to undertake.

### 1966 - 1967

My first assignment was to plot project cost versus budget and predict the year end result. It was to be shown on a monthly 35mm color slide for each project at the lab. The slides would be shown at the monthly Director's meeting for the project managers.

The input data would be the monthly General Ledger magnetic tape produced with Cobol (Common Business Oriented Language) on the Burroughs business computer at the Berkeley Lab. The scientific computers couldn't read the Burroughs tape and recognize the data, which was binary coded decimal used in the business world. They expected scientific data in scientific notation. Also, there was no color graphics capability on the computers in those days. This was going to be a monumental challenge.

I enjoyed going to the Berkeley Lab to pick up the magnetic tape. That is where I worked in 1961-1962 and got started in computing.

After some experimentation I determined that I would have to read the magnetic tape in binary

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mode. This is the most basic mode of data representation for a computer. It is all zero's and one's, each called a bit. It took a lot of effort to transform the bits into useable form with the Fortran programming language and word oriented scientific computer. I read the data in raw form from magnetic tape into the scientific computer. This gave me 60 or 64 bits of binary data per computer word, depending upon the computer. I then extracted 8 bits (a byte} at a time and determined if it was an alpha character or numbe. Then combine it into an alpha string (project name) or a number string (dollar amount). This was done until a computer word was formed that was compatible with the scientific computer and Fortran. It was a slow process requiring an hour per full magnetic tape on the worlds fastest computer.

Due to the way the lab allocated computing budgets and computer time the scientists got the newest and best computer. I had to start programming and testing on the old Univac LARC (Livermore Advanced Research Computer) and found it too slow. I got permission to move to the IBM 7090 computer and soon found it was too slow. Then I got permission to use the IBM 7030 Stretch and it wasn't much better. With the clout of the Director's Office I ended up on the new CDC 6600 and things started humming along the way I liked. It was gratifying to pull that one off. I loved the CDC 6600.

When the magnetic tape was processed the data had to be sorted by project. There was no sort program on the scientific computers. I had to write my own sort program which I had done as a student at Utah State.

Then it was scan for project identifiers, total the cost data, compare it to budget data, and generate plot data. You were either over (red) or under (green) for the month and year to date. Once I had the month by month data I needed a trend analysis to show the end of the year projection. This was plain old statistics that I had a degree in. I programmed a least-squares fit subroutine. This gave me a trend line that was red for over budget or green for under budget.

The 35mm slides had to be in color and there was no computer color graphics capability at the time. Each line on the graph had to be red or green depending on whether it was under or over budget. I sorted the data by project and stored it in the applicable color column with the number of the project in the upper corner. Then I sent each color column in sequence to the black and white film processor.

I would pick up the 35mm black and white film which was one strip for each color. I then had the graphics lab add the proper color to the frames on that strip. Then I had them overlay the different color frames by matching the numbers in the upper corner. When it was done there was one color slide for each project.

The Director's Office loved it. All the project managers would convene in the conference room. On one slide they could see their performance month by month and where they would end up at the end of the year if they continued performing in the same manner. They could take corrective action and next month see how they were doing. Before that they were flying by the seat of their pants. They usually ended up way over budget.

## Life in Livermore

We liked Livermore. It was a small town with a cow town western atmosphere. The quaint little town of Pleasanton was about four miles east of us. I went through Air Force basic training near Pleasanton. The weather was hot in the summer but cooled down in the evenings when the wind came over the Hayward hills from the bay. Winters were moderate with rain and fog.

We lived in a new development and everyone was young families. The first year we were all busy putting in lawns, planting trees and shrubs, building backyard privacy fences, and pouring concrete patios. I planted a lemon tree, a miniature orange tree, and artichoke plants that had a hard time in the hot climate. Everybody worked like crazy all weekend. We were in our new house three or four months and discovered we were expecting and that was exciting.

Gary and Sue Robinson next to us were also expecting. Gary worked at the United Airlines maintenance base at San Francisco Airport. When United Airlines received the first 747 delivered by Boeing, Gary took me over and we went through it. (*They stopped in Twin Falls a few years back and we had a good visit*).

Mel and Vicki Hambrick lived across the street and Mel worked for Pacific Gas and Electric in Livermore. (*We ran into Mel and Vicki in 2015 on our 48 day South Pacific cruise. They boarded in San Francisco and debarked in Sydney, Australia and we continued on. Were they ever shocked when LaRue asked them if they lived in Livermore on Coleen Street!*)

Dick and Marion Stolcis lived on the other side of us and were probably fifteen years older than us, and had a pre-teenage son. Dick was an instrument technician at the Lab and she was a nurse at the hospital. He was quiet and mysterious and she was nice and friendly. Our houses were close together. We were really surprised when Dick put up his TV antenna and ran a guy wire across and anchored it to our roof without saying a word!

(After we left Livermore we learned that their son was run over and killed by a freight train as he was jogging home along the railroad track. It was strange as there was a nice smooth highway running parallel with the train track).

We would work in our yards all day on Saturday and Sunday. About 3pm Mel would be in his garage having a beer and wave me over. I tried to make it to 4pm. Mike and Gloria lived on the other side of the Robinson's. Mike was overweight, lazy, and didn't do much work. Mike would sit around and talk while I was trying to work and was a big distraction. I was laying brick for a planter in the front on a Saturday afternoon and I had to quit because of Mike as I couldn't concentrate.

Behind our house was a street and across was "boot hill" where the kids loved to play. Next to boot hill was the new Granada High School with tennis courts and olympic size pool. It was a very convenient location for us. The kids took swimming lessons there. They made the

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Livermore Aqua Cowboy Swim Team. The team was AAU sanctioned and a very respected swim team in the East Bay. We spent a lot of time at swim meets in the bay area.

While driving by the Rambler dealer before Christmas I saw a new white 1967 Rambler Ambassador station wagon with a red bow on top of it in the showroom window. It was a beauty and I had to stop for a look. It had a 290 V8, automatic transmission, and a 3rd row seat. The 1964 Rambler was getting a little small for us and mom and dad and Bev were coming for Christmas. The larger vehicle would be nice, so I worked a trade on December 16, 1966. The purchase price on the 1967 Rambler Ambassador was \$4,399 and the trade in on the 1964 Rambler Classic was \$1,600.

We continued our tradition of pizza on Christmas Eve at Potters Pizza which we really liked. It was owned by a guy I worked with at the lab, Bob Bowers, and wife Laura. The original owner started it in an old house downtown and featured New Mexico style pizza. Bob and Laura bought it and named it Potters that was a family name. They would make a pizza any way we wanted. It was our favorite place to go. It was there that we started getting green chiles on our pizza. We went often and the kids thought they owned the place. Potters became so popular they built a much larger place and moved.

Big Ben Davidson, the defensive end for the Oakland Raiders, and family lived in Pleasanton and their two daughters were on the team. We had a team BBQ one evening and I was serving one steak per person as they came through the line. I plopped a steak on a plate without looking up and heard a gruff voice, "I'll have another one of those." I wasn't about to turn down Ben. He spent a lot of time waiting for his daughters after swim practice also.

LaRue joined the Junior Women's Club, was very involved, and held an office. She also took tennis lessons, played often, and even played in a tournament. I became active in the Golden Gate Chapter for Utah State alumni in the bay area. We had a large membership that took in the San Francisco area and the East Bay and I was elected Vice President.

After Julie was born I took LaRue's mom and dad back to Logan and went to the Utah State homecoming football game as an invited guest. I was introduced at half time and attended the alumni banquet as a guest of Swede Larson, the Alumni Director.

# **Changes in my Organization**

The Director's Office by now had decided to get into the information business on a larger scale and advertised for more people. A fast talker, Chuck, showed up with the answer for everything. He had been an information specialist for the Air Force, on a system called the Formated File System (FFS). Chuck said it would do everything the Director's Office needed at the wave of a hand. No programming was needed. Chuck would bring a copy of FFS with him. The Director's Office bought it hook, line, and sinker. Chuck arrived wth his personal secretary. From what I observed, she was more than that. He also brought along a couple of female assistants. They were a close knit secretive bunch in the other end of the office trailer. Page 5 of 6

Chuck and friends traveled widely and spent money freely.

The FFS system did a great job for the Air Force in tracking parts, and what the Air Force does, but did not produce anything at the lab. Chuck's explanation was FFS just needed more time and money. Our group was in turmoil. I could see there was no future for me in my current job.

I kept away from Chuck's FFS crew and picked up another interesting task. The manager for equipment maintenance needed a system to manage preventive maintenance for every piece of equipment at the lab. He was trying to do it with index cards and it was impossible. We hit it off and he proceeded to indoctrinate me in what he needed. I was given access to research projects within fenced compounds that was forbidden to everyone except those that worked there. I saw plutonium being machined and stuff for making the nuclear part of bombs. He said we needed to go to Los Alamos and see how they were doing the job. So, we flew to Albuquerque and caught a puddle jumper to Los Alamos on a high plateau about 50 miles out of Santa Fe.

The guy touring us around Los Alamos was in the first cadre of people that arrived for the Manhattan Project during the war. We had dinner at his house, and he mesmerized us with tales of the old days. They worked nonstop during the war and for recreation they would drive to Santa Fe for drinks and dinner. Oppenheimer, the brains of it all, would go also. He liked his drink and liked to talk shop. There would be an FBI agent on each side of him for protection, and to make sure he didn't engage in "loose talk".

After Los Alamos we went to the Y-12 Plant in Oak Ridge, Tennessee to see how they do things. Y-12 is the production facility for nuclear weapons. We stayed in an interesting Holiday Inn near the plant. Across the street was a fully visible drive-in movie screen. The sound track of the movie was piped to the radio in the room. If you wanted to watch the movie you opened your drapes and turned on the radio.

We went through some really sensitive places at Y-12 and saw machinists in space suits milling plutonium in a zero oxygen environment. When we departed we were told to never mention the size or shape of the things we had seen. All I can say is "we saw some big stuff" that took up an entire railroad car. We were told later that we never saw it. After our trips and evaluating the requirements I determined there was a system on the market that would do everything that was required. We bought a turn key system and was in business.

My friend (I can't remember his name) was then approached by the Port of San Francisco to come over and manage all port maintenance, which included Fisherman's Warf. It was a lucrative job and he took it and started recruiting me. I went over and we toured the piers and had lunch at Alioto's, which was comped. I could see it was a monumental job with a lot of perks. I would have open license to buy the computer I wanted and set up shop. It was tempting but the commute from Livermore was brutal, and we did not want to live in the City. I was also afraid I might fail. That was the end of that.

I began to watch the ads and saw that Union Oil Company needed programmers. I sent my resume and was asked to fly to Los Angeles for an interview. They responded with an offer and assignment in Tripoli, Libya in North Africa. LaRue was very pregnant at the time and there was a lot of turmoil in Libya. I decided it was no place to be and declined. Moamar Khadafi overthrew the government shortly afterwards, and some Americans were killed.

The evening of October 25, 1966 we were attending a PTA meeting at the school and sat in the back of the room in case we had to leave. Sure enough LaRue said it's time to head for the hospital. LaRue's mom and dad had come down from Utah to help when the baby came so they were home with Kathleen and Brian. There was a hospital in Livermore about a half mile from us but we belonged to Kaiser Permanente. The nearest Kaiser hospital was in Walnut Creek. It was about 25 miles away and we made it without much time to spare. We had a baby girl a short time later, and named her Julie.

Sandia Livermore Lab was located across the street from the Lawrence Livermore Lab and looking for a systems programmer for their CDC 3600 scientific system. Sandia was operated by Bell Labs for the AEC with headquarters at Sandia Laboratory in New Mexico. Their mission was to take the basic nuclear weapon design that Lawrence Livermore or Los Alamos designed and package it into a deliverable weapons system. From there the Y-12 Plant in Oak Ridge, Tennessee produced the weapon in quantity for the military.

### On the Move Again

I decided to talk to Sandia across the street They were interested because of my systems programming experience at EG&G Las Vegas. They had gotten a government surplus CDC 3600 from Stanford Research Institute that had been in a flood. Therefore, it had problems and would crash several times a day. They needed someone to help with diagnosing, fixing problems, and keep it running until they got a new computer in a few months. They offered me a job. I decided to accept in August 1967 and get out of the turmoil in our organization. Shortly after I departed the Directors Office put the boots to Chuck and his FFS crew.

With my termination money from the lab we splurged for our first color TV set. We belonged to a buyer's service with an outlet just south of the San Francisco airport and went over and picked up a 23-inch Zenith. It was really a treat to watch the Christmas shows and the New Year's Rose Bowl parade in color. No remote control in those days.

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