My Sumitomo Bank Experiences

Part 1 of 4

By Jim Taylor

I did quite a bit of work on systems that were used by Sumitomo Bank in Japan. The first of these systems that I was involved with was the 615-350. It seemed like every year at about Christmas time there would be new systems or upgrades that we needed to ship to Japan. This always presented the potential of someone having to travel around the holiday period to provide support. The Christmas of 1974 was no exception. The need to send someone to Japan was identified during the Christmas week. I got my passport and acquired my Visa on December 24th. However, that was too late to make the trip so January 1975 is when the trip began. The purpose of the trip was to support the ECU (the 618-940 Error Correcting Unit) in the 615-350 systems. Larry Allman (Customer Services) and I were there a total of 15 days. We started by meeting with Masaya Ito and Ikuo Akiyama. From there we started at the Tokyo site, then went to Osaka and finally returned back to Tokyo. Larry and I had worked hard enough that we got sick at the end of the trip. On our last night we were invited to a Kobe steak dinner, but unfortunately were unable to attend due to our illnesses.

The reasons for the trip were to verify unit operation of the ECU and to provide training classes. We proceeded to the Sumitomo Bank installation in Tokyo after our meetings with NCR-Japan management. My first experience on site was observing the units while they were operating on-line. The ECU was designed with an adjustable delay line to minimize the added memory access time. This delay line was adjusted to the point that some false single errors could occur. Each ECU bank had the logic to support 4 memory modules, and there were two banks in one 618-940, therefore supporting two 618-930 MSU's (Main Storage Units). The ECU control panel had a switch to look at each of the 4 memory module single error counters. The display consisted of 4 yellow or green lights (I have forgotten which) and one red light. The red represented a total error count of 16 or more. I

decided to flip the switch around and look at the status of each module. The on-line system crashed as soon as I rotated the switch. There was no reason this should have happened as the display was totally passive. I found out later that the unit had fallen off the fork lift at the dock in Japan and it suffered significant mechanical damage. NCR-Japan repaired it and put it into service. However, pieces of the unit were still bent enough that the back of the rotary switch was able to make contact with the sheet metal of the power supply. Consequently when I rotated the switch it shorted the logic voltage to frame ground, causing the on-line system to go down. That's the last time I ever touched a system that was running in a customer's environment! Several days later we attended a meeting with NCR-Japan in a meeting room next to the computer room. This was on a Friday, and all of a sudden all of the lights went out. The Japanese could see the panic on my face and they said "Not to worry, it is just a normal power backup test". Then instead of focusing on the lack of room illumination, I could now see the flashing lights on all of the computers. What a relief! After that I wanted to make sure I had a chance to see their power backup implementation. It was quite impressive. The Sumitomo site was a 7/24 site, so system availability was critical. There are times when there are glitches on the power lines that can cause failures in the computing system, and natural disasters can also interrupt the input power. As I came to find out while writing this story, Masaya Ito was responsible for this implementation on very early Sumitomo Bank systems to assure their continuous operation. To have stable power Ito-San implemented a CVCF (Constant Voltage and Constant Frequency) power source in the 1958 time frame. With his approval I will send along the note I received from him through Katsuhiko Hirai as a separate document. The fail safe implementation was done by first driving a set of AC motors, which turned a shaft that went into DC motors and a large flywheel, and then drove AC motors to power the computer systems. At the DC conversion level there was a room full of batteries that were bussed into the system to power the motors directly in the event of a power failure. These only had to work for about 15 minutes until the diesel engines could

be started, warmed up and then provide regulated voltage output. It was the most impressive backup implementation I have ever seen. Back to the product, it was unfortunate that the ECU's did not provide the value we had hoped for, so they eventually were disconnected to save the extra memory access time that they consumed. I can't remember exactly how many units we made, but it was at least 14 of them.

A brief post mortem on the 618-940 - Although the unit functioned fine, the real purpose for it was not fulfilled. The idea was that the memory would be more reliable if it had single bit error correction and double bit error detection. Plus the opportunity for undetectable (multiple) memory errors was reduced significantly. There was one major downside to the unit, and that was that it lengthened every memory access to intercept data, analyze it and correct it. This was a pretty high price to pay, but if it eliminated most of the memory errors it would have been worth it. The problem was that at the time the memories were still implemented with the core technology, and the typical failures of a core memory are not limited to single bit errors.

B/T/W, it is important to note that we took the Bullet Train from Tokyo to Osaka. It was an extremely clear day so we had a great view of Mount Fuji. Unfortunately I only had a little box camera, but I did get some pictures with it. This will be an important detail in the next installment.