Working at the K-25 Gaseous Diffusion Plant part 2

(As published in The Oak Ridger's Historically Speaking column during the week of July 24, 2023)

Clyde Kelly worked for me at the Y-12 National Security Complex for several years. He was a dedicated individual who could be counted on to perform his job to the best of his ability and was well liked by all who worked with him or for him. He recently contacted me asking to contribute to the history of the K-25 Gaseous Diffusion Plant which is where he worked before coming to Y-12 and working for me. I agreed as I knew he would share insights that had not been well documented. This is the second part of Clyde's story.

Continue to enjoy Clyde's perspective on his time working at the K-25 Gaseous Diffusion Plant.

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My next chapter came along with another shift change this time to a seven-day rotation in an actual maintenance crew repairing and replacing any type of control system anywhere within the K-25 plant. Now it gets really interesting for me.

A new chapter in my very young career. Why would I volunteer to go on a seven-day rotation shift with all the pitfalls working it. Well, I no longer wanted to face endless time working in the K-31 and K-33 environment. Day in day out in these conditions could not be very healthy and this work environment offered no chance to learn anything new.

Now I was paired with another very new to the job Instrument Mechanic. We are about the same age and have about the same background, he was from rural Greene County, and I was from rural Morgan County.

So why does that matter, it means both of us have the attitude we can get it done at all costs. Maybe not the best attitude to have for the jobs we would be facing.

How did we function in a job that would give us a truck and the responsibility for all the K-25 plant?

On a normal shift we would meet with our crew and supervisor to discuss the upcoming shift. Here is where it gets interesting. Our job instructions and safety information came to us to a three by five index card. This card would have anywhere from one up to about four jobs listed on it with the building location and a person to contact in Operations to further define the job.

These jobs may all be in one building or could be at completely opposite ends of the plant. For two country boys we set off with the intend to fix whatever was broken at any cost. Our safety was in our hands. If the job meant to enter a dirty or contaminated environment, we depended mostly on each other to decide our best way to work a job.

This was way before any job planning or safety reviews were ever held. If the job was to work on some type of controller on one of the massive cooling towers, we had to decide how to get to the controller, ladder, scaffold, or even a forklift. Then would we need any special type of personal protected equipment (PPE). Most the time we would choose the easiest and fastest way to do the task, which means most times not the safest.

Okay, enough about work in general, let's talk about some specific jobs. Since the total mission of K-25 was to enrich uranium, let's talk about K-31 and K-33 cell specific jobs and those hazards.

As I said before, the K-31 and K-33 process building where the heart and soul of K-25. Any problem concerning the operation of these cells were a number one priority. Some maintenance issues an Instrument Mechanic was faced with were a control valve not operating, a leak in the instrument air system or just as bad a plug in the instrument air system.

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Any of these three conditions could cause one complete cell system to come down severely reducing the enrichment capability for the plant. Let's go over each of the maintenance problems and how they affected me as an Instrument Mechanic.

A problem with a control valve. This is a control valve about 24 inches in diameter. It was controlled by a mechanical operated large pneumatic apparatus consisting of a bellows to isolate the process gas from the outside air. It also had a large rubber diaphragm to operate the valve. My job was to go inside the cell housing to check out a control valve, determine the problem with the valve and repair it.

My partner and I would enter the cell housing (remember it was about 125 degrees in this environment with the noise at about 140 decibels). Our work instructions simply say which valve in the cell housing had a problem. We would go to that valve and with a portable air apparatus determine why the valve was not operating. Most times it was the large rubber diaphragm had a hole in it, so it needed to be replaced.

Once this was determined we would let operations know the problem and if operations wanted us to repair the diaphragm, then we would do it under the following guidelines. Operations would put the cell on standby so as the valve that was being repaired would not cause a problem. To change the diaphragm, we would wear a full-face respirator and just our work coveralls. The diaphragm replacements would take about an hour if everything went as planned.
We were in 120-degree environment with about 140 decibels noise making it almost impossible to communicate with each other but relying on each other for our safety. After about an hour of this work we are soaking wet with sweat which also causes a real danger.

This danger caught me one night. As I was crawling over the process piping my arm (wet coverall) hit on one of the pipes instantly blistering my forearm. Did I turn it in, no back then we did not fill comfortable reporting any type of injury. I put ice on it and went on.

The other two problems I mentioned, a leak or a plug in the instrument lines were troubleshot about the same way. To find either a leak or a plug meant we entered the cell housing to find a leak or a plug in yards and yards of quarter inch copper tubing. This was a crapshoot! It could take from a few minutes up to a whole shift to find these problems. This was again done in the cell housing with all the heat and noise.

These are just a few of the jobs and hazards we faced as Instrument Mechanics. Do I regret any of this, no I do not. This work was very important for America to maintain our supremacy in nuclear weapons and power. But just as importantly to me was this was a very good paying job that allowed me to take care of my family. Yes, on hindsight, I wish we could have worked in a safer environment, but it was what it was, and it was what was needed at that time.

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Thanks again Clyde, for sharing your experience working at K-25. I know you well from your work at Y-12. So, I understand the determination you had at K-25 to do the job and do it to the best of your ability. You are correct to perceive the importance of what was done there at that time during the Cold War and to be proud of your contribution to keeping the world safe from nuclear attack and expanding nuclear power.

As I am sure you realize, Oak Ridge continues to serve the nation and the world today. Examples are the new modular nuclear reactors that are planned to be built, even one of them to be located at the K-33 site where you worked!

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Clyde Kelly

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