

An Inspector Falls*

The cask pit is connected to the spent fuel pond by a canal gate that is about 2 feet in width. The spent fuel pond held about 487 irradiated fuel assemblies underwater that have already been discharged from the reactor core after use and have cooled between 6 months and 10 years. The gate allows the operator to move these irradiated nuclear fuel assemblies into a spent fuel cask which is put into this pit....all operations being done under water to provide shielding from the radiation of the spent fuel.

In the Czech Republic and in a lot of other countries, there are no barriers around the spent fuel pond or the cask pit or other areas as they interfere with reactor operations. The spent fuel in the pond gives off a characteristic glow which, when viewed with specialized equipment (sort of like a camera with a telephoto lens on it), can provide evidence that it really is uranium and plutonium and not some other material that has just been activated by irradiation. This effect is called "Cherenkov radiation" (you can google it if you want) and it is one of the few observable examples in the world of particles actually exceeding the speed of light. The glow comes from the release of braking energy as the beta particles slow down so as not to violate Einstein's limit.

In order to see the glow better sometimes the lights are turned off in the reactor hall to cut down on glare. One of my colleagues was doing this observation of the fuel while I was walking on the reactor deck to get to the other side of the spent fuel pond. Somewhere in the dark I tripped or stumbled or had a footfall on something that was not flat and the next moment I knew I had the sensation of falling. I am not really sure what happened. I just know at some moment all was okay and at the next I was going down.

Generally, I knew the location I was in and I knew I was falling into the cask reloading pit, but I did not know if there was water in the pit or if it was completely drained. In addition, it was completely dark so I could see nothing and had no reference for things. I fell for what counted to be 2 seconds and during that time I had lots of thoughts...it really is true what they say about those last seconds and seeing your life over again. I saw lots of images about things that are really important in life. Needless to say, I would call it a significant emotional experience....or maybe an epiphany.

At the moment I knew I was really in free-fall I had enough presence of mind to start counting. I also understood that there were basically two options that might present themselves in a relatively short time. The first was that the pit was drained and not filled with water at all. In which case I would not survive the fall and in a moment things were going to get really painful and then they would be over.

The second option was that in fact there was water in the pit. Of course, this water would contain radioactive contamination from the spent reactor fuel. So even though it might help with the immediate falling problem, when I hit the water I needed to make sure I held my nose, closed my eyes tightly and held my breath as swallowing such water would not be a good thing. I knew that the contamination would be removed from outside my skin but if I swallowed some there is really nothing that can be done.

I also figured (in some warped way) that if I hit concrete it might be a little less painful for that split second if I held my breath and closed my eyes. Silly I know, but it is funny the things that you rationalize at these moments. So instinctively I took a deep breath and closed my eyes and held my nose. I hit the water back and shoulders first, after falling what was determined to be about 7 meters (about 21 feet), and went all the way to the bottom of the pit and hit concrete and stainless steel positioning legs for the cask. There was about 2 meters (6 feet) of water in the pit and I went all the way under. Being disoriented I did not know which way was up, so I waited for the

* Apologies to J. B. Priestly

sensation of floating and then swam in that direction. When I breached the surface I was next to the canal gate which I climbed up on. At this moment my back was towards the spent fuel in the cooling pond and I could just about reach out and touch it. I waited for a moment for my eyes to adjust and to figure out the situation and I saw the personnel ladder on the far side of the pit. I jumped back in and swam to the ladder and climbed up and called for help.

The ladder was capped at the top with a 800 pound concrete plug so even though plant operations personnel knew where I was, I couldn't just climb out. I wrapped my legs around the ladder and arms over the rungs and waited for about 20 minutes or so while they set up a chain fall and crane and could remove the plug and allow me to exit.

Then starts the fun of decontamination. Generally, I was decon'd pretty fast with the exception of one particle that could not be removed from my right forearm for about 2 hours. Countless showers and finally 2 chemical peels later I cleared external contamination checks (who has ever seen the movie "Silkwood"). Unfortunately I have one spot of radiation burn on my forearm that is about the size of a dime from this one particle that was stubborn. It is sort of like a bad sunburn, but only in this one spot and it is already fading.

I think the most interesting part is that there are not many people who can say they stood on top of an operating reactor core completely naked and were photographed! (there are IAEA surveillance cameras in this area of the reactor so the decon was performed on tape).

Internally, I was given nasal smears and eye ball smears and eye and throat smears to check for internal contamination. I had a chest count, stomach count, kidney count, throat count, nasal and face count, two whole body counts, gave blood and urine samples and of course a breath test. At the end of the day I also got some potassium iodine tablets for the thyroid just in case.

I believe there are no lasting effects from the radioactive portion and I am thankful that I have nothing more than lots of bruises and a swollen ankle.

Hope all is well with all of you and please remember what is really important!