

## **Zirconium related accident at Y-12**

On October 6, 2008 I received a note from a co-worker of my wife and a friend who appreciates the history of Oak Ridge. He wanted to tell me about his father's experience at Y-12. As you might imagine, I do get a lot of people who have stories they want to tell me, but none quite as specific as this one.

Interesting, I had only recently had opportunity to talk with Finis (Pat) Patton about the very same situation. He had told me the details of the Zirconium and Hafnium separation process used in Building 9211. He had also mentioned an explosion that killed two people and seriously injured another that was associated with that project.

The only details he gave were that he had personally sat on the drums in question and had eaten lunch there with others. Evidently it was a common gathering place for people to take a break and to talk. The area in question was located on the extreme west end of Y-12 near Building 9929-1. It was used as an open air storage area and this particular spot had several small drums of Zirconium left over from the Zirconium and Hafnium separation efforts.

The description of the accident provided by my friend relayed what his dad had told him. He wrote down the memories of his dad who was at the time nearing the end of his life. He recalled that one day in May of the early to mid 1950's at the beginning of the 8:00 AM shift, three men were standing near Building 9929-1 waiting for a crew of 15 others to show up when an explosion occurred.

Their task that morning was to move a large number of containers of zirconium powder to a disposal site elsewhere in the plant. Some of the powder had burst into flames a few days before, showing its instability. It was therefore decided that it should be moved to a disposal area. The powder was stored in small kegs, set inside larger buckets filled with water, and placed at about two-foot intervals covering an area approximately 20' by 50'.

It was known that the zirconium was explosive, could be set off by static electricity, and that if wetted down with water, it would be less dangerous. The containers had been in the open for some time and the bottoms of some were deteriorated. Pat speculated that the water might have leaked from some of the buckets.

However, that morning, as the three men stood near the storage area, at least one of the kegs exploded. It is not known what ignited the powder. The explosion must have been powerful as it was felt inside Building 9929-1.

After the explosion the three men were taken to Oak Ridge Hospital. One of the men had his arm blown off. The arm was found later, 85' from the explosion site. One of the men died in the night. Another died the next day. The third man, the one who lost his arm, survived.

My friend's dad was in his office in Building 9929-1 with a Health Physics technician when the explosion occurred. It blew both of them out of their chairs and onto the floor. They quickly ran to the door as material from the blast began raining down. They then went to another door, at the other end of the building and ran out to assist the three injured men.

This accident had a profound adverse effect on my friend's dad for some period of time after the experience. Although he was not present at the site when the accident occurred, he blamed himself for the event as the workers were not protected from the hazard.

Finis (Pat) Patton who now recalls the times when he was sent into situations where crisis was in the process of occurring, noted that there were other fatalities at Y-12 during the times of the Manhattan Project construction and operations as well as the times just after the war ended and the Cold War was beginning. He recalls the increased emphasis on safety after each of those fatal accidents.

Early on there were no specific individuals identified as being responsible for the "safety" of the workers or a safety program. Safety of the work was left up to the supervisors and the workers themselves. Pat

noted that when safety began to be emphasized, that changes were forthcoming in many of the operations. The hazardous chemicals were better controlled and safety took on a much higher priority.

With our current emphasis on safety, it is hard to imagine the above situation having existed. However, you may recall that much later we had an explosion in Building 9201-5 that resulted in serious injury. We at Y-12 have historically worked with unusual and unique materials, some of which have unusual characteristics. We still do so today. We **MUST** know the precise characteristics of each of the materials and manage the work safely as our first priority.