A brief history of the UT-AEC Agricultural Research Laboratory - Part four

(As published in The Oak Ridger's Historically Speaking column on November 17, 2009)

As we return to the history of the UT-AEC Agricultural Research Laboratory that came to be known the Comparative Animal Research Laboratory, let's look closely at the transitions that took place during the last few years of its existence. This unique laboratory went from a full blown agricultural research facility to one that was deliberately limited in scope and eventually reduced out of existence.

Joe Lenhard arranged a most interesting conversation for me with Pete Walburg. Pete was the director of the laboratory during the transitions we will explore in this installment of the history of this Oak Ridge experiment. He recalls vividly the struggle to survive when the Atomic Energy Commission's successor agencies decided they no longer wanted to support agricultural research.

What had begun as an experiment to learn as much as possible from the unfortunate - or fortunate, depending on your perspective - exposure of a herd of cattle to a nuclear explosion (Trinity test of first atomic explosion) eventually became perceived as a burden on the taxpayers that the Atomic Energy Commission's successor agency, the Energy Research and Development Administration, formed in 1975, was unwilling to continue and became even more of a problem under the Department of Energy formed in 1977.

Pete Walburg was the manager who had to wrestle with the diminishing funds and the loss of desire from Washington to support these experiments. Pete came to the UT-AEC Agricultural Research Laboratory from the Oak Ridge National Laboratory's Biology Division located at the Y-12 site in 1973. He had been at the Biology Division since 1961. He stayed with the effort through its ultimate transition until 1982.

Pete came to manage the agricultural research operations just as the support for what had been done there was beginning to wane. Unfortunately, Pete was blamed for much of what was well beyond his control. The experiments in agricultural research such as irradiation of seeds and large animal experiments had provided a tremendous amount of new information about radiation exposure from the late 1940's for 30 years until the 1970's.

However, this information was no longer as appreciated as when it was producing new and very helpful information about exposure to radiation in the late 1940's and early 1950's. It continued to do cutting edge research well into the 1960's but the 1970's and early 1980's saw a decreased level of support for what the local folks felt was still valuable research.

However, the funding problem drove Pete to seek funding from the Environmental Protection Agency and the United Stated Department of Agriculture. This met with limited success and only extended the work for a short time.

An example of the frustrating experiences Pete had to endure is typified by the following actual series of events as described to me by Pete personally. He was told by a member of the headquarters staff in Washington that he should develop a proposal to study coal as an energy source. He enlisted the help of many of his staff to do the necessary research and to write a full blown proposal to do energy research on coal.

Pete proudly took the final proposal to Washington and personally presented it to the individual who had asked for it. Pete said that the headquarters staff individual proceeded to push the proposal off his desk and into the trash can and looking directly at Pete said, "That is not something we want to pursue."

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Well, you can imagine the let down on Pete's part. How could he tell his staff that it really did not matter what they came up with, it would not receive support in headquarters and no funds would be forthcoming. The idea was to kill the Comparative Animal Research Laboratory, period.

Joe Lenhard was the government's agent who had to convey the decisions being made at headquarters to the local workforce at the laboratory. He vividly recalls the instructions he was given to stop supporting those "farmers" and their agricultural experiments.

The headquarters instructions were to refocus the laboratory strictly on scientific research, not radiating seeds and other agriculturally focused activities. Joe said the instruction was explicit and left no room for misunderstanding what he was to do.

An added concern to the headquarters folks had to be the radiation accident that occurred on February 4, 1971. A University of Tennessee technician was exposed to a radioactive source that was being used to irradiate seeds in the Variable Dose Rate Irradiation Facility when he entered the room while the source was exposed.

An investigation revealed that the door interlocks had been intentionally defeated by taping them in a position whereby the doors could operate without alerting the operator that the source was still in an exposed position. Evidently this employee just forgot that the interlocks were effectively bypassed and entered the room without first shielding the source.

The employee demonstrated symptoms of radiation exposure shortly after being exposed near noon on Thursday. He was hospitalized in the Medical Division Hospital of the Oak Ridge Associated Universities. By Friday, he was described by physicians as being in "good" condition, having already recovered from the first wave of radiation sickness.

The exact amount of exposure to the University of Tennessee employee was not known until the thermal luminescence dosimeter he was wearing was sent to Eberline Instrument Company in Santa Fe, New Mexico, a commercial firm contracted by the UT-AEC Agricultural Research Laboratory to provide and process detection badges. It was soon determined that he had been exposed to a Cobalt 60 source and had received 260 rem of radiation. An exposure of 100 – 200 rem will rarely be fatal but 200 -1,000 rem will cause severe radiation sickness and toward the upper end of that range will likely prove fatal.

This 260 rem exposure was significant enough to cause substantial radiation sickness and to cause four distinct stages of illness. First was the nausea and vomiting during the first 48 hours. Next, the latent period in which there were no symptoms and the injured individual felt normal. After about three to five weeks the injured individual went into a stage in which hemorrhaging and infection may occur. Finally there is the recovery period.

In this case the individual exposed to the radiation recovered completely. Dr. Gould A. Andrews, who was the head of the Oak Ridge Associated University's Medical Division said, "We have a better understanding of radiation injury than we do of almost any other kind of environmental injury…"

It is significant to note that a contributor to this increased knowledge of the effects of radiation exposure came directly from the experiments on animals, including those cattle from Trinity as well as many more

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head that were brought to the UT-AEC Agricultural Research Laboratory and use for radiation related experiments.

Joe Lenhard, Bob Reynolds and I sought out the actual facilities where the large animals were exposed to radiation as well as the exact location of the Variable Dose Rate Irradiation Facility where the radiation accident occurred. These facilities remain intact to a large degree, but are not readily accessible and are not being maintained. Like many other outlying facilities, they will likely be demolished. Some of the barns and silos have already been demolished.

Next we will complete this series on this most unusual experimental facility that forms a part of the wide ranging history of Oak Ridge. Much of what is known about radiation exposure came to be understood by research facilities in Oak Ridge over the years. This was but one of many such experimental facilities. However, it truly was one of the most unusual.

The semi-circular concrete block wall intended to contain the radiation being used on the cattle or other large animals while preventing inadvertent exposure in the direction of the lake that Joe Lenhard required be installed when the lake was created

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Joe Lenhard points out the location of the sources and the spacing rods that assured the cattle did not come too close to the radiation sources but would be exposed equally regardless of where they wandered inside the fenced in area of several raised sources

Bob Reynolds explains the operation of the Variable Dose Rate Irradiation Facility where the radiation accident occurred on February 4, 1971

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