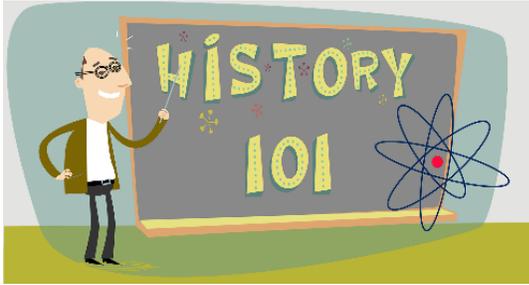


## REFRESH — Putting the Axe to the ‘Scram’ Myth



The NRC glossary defines a “scram” as “the sudden shutting down of a nuclear reactor usually by rapid insertion of control rods.” But where did the word come from? One deeply engrained legend about the origin of the word dates to the first sustained chain reaction on December 2, 1942, at the Chicago Pile (CP-1), the first atomic reactor developed for the Manhattan Project. According to the legend, Enrico Fermi created the acronym, Safety Control Rod Axe Man, for Norman

Hilberry. It was Hilberry’s assignment that day to kill a possible runaway reaction by using an axe to cut a rope to allow the backup safety control rod to drop into the pile.

The axe-man story now has a life of its own. A search on Google for “scram” and “axe” yields 124,000 hits. Even the NRC’s glossary attributed scram’s etymology to the axe man story. Oak Ridge National Laboratories reported a fanciful variation of this story where Fermi, presumably unimpressed with the physical prowess of his fellow physicists, recruited a lumberjack from the Pacific Northwest to do the job. That version has now spread on the internet, and the acronym itself has mutated into Super-Critical Reactor Axe Man and Start Cutting Right Away, Man.

Hilberry, as it turns out, only learned the story second-hand years later, which lends some doubt to the axe-man version. Other members of the CP-1 team recalled a different origin for the term. Leona Marshall Libby, the only female physicist present that day, wrote in her memoir that it was Volney “Bill” Wilson who called the safety rods “scram rods.” She didn’t explain why he used the term, but her credit to Wilson was supported by others involved in CP-1, including Warren Nyer.

I contacted Nyer recently, and he was eager to tell the “scram” story, one that squares well with Wilson’s reported version of events. Nyer’s job that day was to be Hilberry’s backup. If all safety systems failed, he and the other members of the “suicide squad” were to dump a liquid cadmium solution on CP-1 to poison the reaction. The axe-man story is, he recalls, “a bunch of baloney.”

But he did offer another explanation for the word. His recollection was that Wilson was assembling an electrical panel that included a big red button. According to Nyer, someone asked Wilson the reason for the red knob. Wilson replied you’d push it if there was a problem. “Well, then what do you do?” he was asked. Wilson reportedly replied, “You scram out of here.” The word appears to have stuck.

Further indication that “scram” was associated with Wilson’s shutdown circuitry and not Hilberry’s axe wielding comes from Enrico Fermi. The AEC declassified information on the Chicago Pile in late 1950, and Fermi authored a 1951 technical report on the reactor detailing the circuitry of the “SCRAM line” designed by Wilson’s team. (See <http://www.osti.gov/scitech/servlets/purl/4414200>).

And so it seems likely that scram switches all over the world owe their names not to the nuclear industry’s later penchant for acronyms, but to the slang of 20th century America.

By Thomas Wellock, NRC Historian