Inside Glimpse into Livermore Lab Watchdog

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The News Editor at Physics Today recently profiled Tri-Valley CAREs for the magazine's online edition. Physics Today is the flagship publication of the American Institute of Physics.

The Q&A format with Tri-Valley CAREs' longstanding Executive Director highlights several of our organization's key nuclear weapons "watchdog" programs. The profile features our current programs and past successes as well as responses from Livermore Lab. It offers a cogent glimpse into our organization - and into the site we monitor.

PHYSICS TODAY

Q&A: Marylia Kelley, Lawrence Livermore watchdog

The longtime nuclear disarmament activist says that even those who don't share her agenda believe the organization she cofounded, Tri-Valley CAREs, plays a vital role.

David Kramer

On 6 August, Marylia Kelley stood in front of the gates of Lawrence Livermore National Laboratory in California and spoke at an event commemorating the 1945 atomic bombing of Hiroshima. Organizing the annual demonstration is one of many tasks for the executive director of Tri-Valley Communities Against a Radioactive Environment (Tri-Valley CAREs, or TVC for short).Kelley cofounded TVC in 1983 to advocate for the elimination of nuclear weapons and to serve as a watchdog for the Livermore lab, which is one of two facilities where all US nuclear weapons have been designed (Los Alamos National Laboratory is the other). Since then TVC has scrutinized, and in many cases opposed, activities at Livermore, including construction of the world's largest and most energetic laser, the National Ignition Facility (NIF).

PT: How did you become an activist?

KELLEY: I moved to Livermore in 1976 to attend the University of California, Berkeley, Graduate School of Journalism. I thought of it as an adorable, relatively small community near Berkeley with lots of parks and soccer for my son. I only slowly came to understand that I was living in a community where US nuclear weapons are designed. Back then there wasn't much talk in the community about Livermore lab and what it did.

After a couple years of reflection, reading, analysis, and research, I concluded that nuclear weapons were immoral and their use would be immoral by anyone under any circumstance. After a while, there came an opportunity to cofound an organization in Livermore that would become a watchdog of the lab and, over the years, of the weapons complex more broadly. The initial group included a computer scientist from Sandia National Laboratories [which designs all the nonnuclear components of US nuclear warheads], a human resources specialist, and a retiree from Livermore lab. This was in 1983. We've always represented a broad cross section of the community.

PT: What were your original goals, and how have they changed over the years?

KELLEY: Our goal was always to educate ourselves and the community about the nuclear weapons and related programs at the lab. And to be a watchdog. The lab in the 1980s was planning a huge incinerator for radioactive and toxic waste, and lab officials credited Tri-Valley CAREs with stopping it. One of the biggest successes is more amorphous: changing the culture in Livermore and making it okay to talk about the laboratory. We pierced the veil of secrecy and made the science and operations of the lab more democratic and open for discussion. We inserted the idea that workers and the public have a right to participate in the decisions that affect their lives.

PT: You mentioned you've broadened your focus to cover the rest of the nuclear weapons complex over the years.

KELLEY: We've taken the results of our research on Livermore lab and the weapons they are designing to Congress, the United Nations, and other venues, where that information was used in making decisions. TVC played a key role in the debate in 2002–3 over whether the US should develop a robust nuclear earth-penetrator bomb. That was going to be an adaptation of the Livermore-designed B-83 bomb [the last megaton-class warhead remaining in the stockpile]. We were a huge part of why that weapon was never developed.

PT: Do you think things would have been quite a bit different without your activism?

KELLEY: Yes, both for the community and nationally. TVC has also joined national and international networks, including the Alliance for Nuclear Accountability, which is made up of other watchdog groups around all the major NNSA facilities. [The National Nuclear Security Administration is the Department of Energy division that runs the nuclear weapons complex.] Internationally we are members of the campaign to abolish nuclear weapons, ICAN, which won the 2017 Nobel Peace Prize.

PT: After all these years, do you still think nuclear weapons are immoral?

KELLEY: Yes, my views haven't changed. But on a personal note, my respect for science has increased enormously through this job. I came at this with a journalist's background.

PT: When they hear "Livermore," many people think of NIF. Can you discuss your concerns with it?

KELLEY: Part of my critique of the lab is when politics and the desire for money trump good science. TVC is not opposed to lasers. But from a scientific perspective, the lab was not ready to build NIF. The planners pursued a design build, which means trying to solve problems during construction. NIF's scientific and technical problems are still not worked out, even though we have invested well over $10 billion in it. [Lab spokesperson Lynda Seaver says that NIF, which was completed in 2009, cost $3.5 billion to build and has an annual operating budget of $344 million.]

A panorama of Lawrence Livermore National Laboratory in California. Credit: LLNL

From a peace and security perspective, NIF comes with a vertical proliferation risk. Currently it is doing experiments using plutonium. You may recall public pronouncements early on that researchers would not use plutonium in NIF. Then, in a 2005 environmental impact study [EIS], it was stated they would create an internal containment vessel for the plutonium experiments. They worked on one for years but couldn't get it to work. So there is no containment vessel. They decided to make it compliant with the EIS by using smaller samples of plutonium and using the plutonium-242 isotope instead of plutonium-239. They also use beryllium and other toxic materials that get vaporized. They have to send workers in there to clean it. They're being exposed to this stuff. [Seaver says NIF was designed to conduct shots using radioactive materials, with the debris contained within built-in shielding.]

I asked weapons designers if they would change something in a weapon based on the results of a NIF experiment with a small sample of plutonium-242. One of them told me he would never use anything they came up with on what he's doing in weapons design. But less conservative weapons designers might.

There is a tremendous danger that with the data from NIF they can walk a weapon away from what was fully tested in Nevada. They're in double danger because they are using experiments on NIF to change weapons codes that are at the heart of weapons development. It's pushing designs in a way that is incredibly dangerous. If the US wants nuclear weapons far away from the designs that were tested, it will increase pressure to resume testing. Then we are completely back into a Cold War–style arms race. [Seaver declined to respond to statements about weapons design.]

PT: Over the past few decades, the issue of whether the US really needs two laboratories that design nuclear weapons has been debated several times. And Livermore has always been discussed as the one that could go.

KELLEY: NIF was part of a deliberate push by former lab directors to keep Livermore a full-service nuclear design lab, at a time when the lab could have transitioned in a way similar to what Lawrence Berkeley National Laboratory had done earlier. Berkeley was part of the Manhattan Project, yet for decades it has done no classified research. Now they do world-class science. That's the fate Livermore saved itself from. It hung on for dear life to its glory days as a nuclear weapons lab.

It was Livermore that came up with the interoperable warhead [proposed for both land-based and submarine-launched missiles]. They've changed the name of that program to W87-1. It's a fully new design that will walk the US away from the pedigree of weapons that were tested. It is what is keeping Livermore a nuclear design lab for the foreseeable future. That's the real motivation. It's the tail that's wagging the dog of US nuclear weapons policy.

PT: Do you think a new warhead would be placed into the arsenal without being tested?

KELLEY: They say they can make a new warhead without testing. But when it gets to the certification process, they are going to face an unacceptable choice: You either certify something for the arsenal that is less reliable than the warhead it's replacing, or you resume testing in Nevada at some yield to proof test it.

PT: What role do physicists play in your organization?

KELLEY: We have always had scientists, including physicists, as part of our membership, and others from the lab who are informal advisers. Before we conclude whether our group will support, oppose, or pass on something, we try to investigate the science and technology questions. Scientists will often explain things in an unclassified manner, which promotes democracy by helping all our group members understand the underlying science better. They will also at times share questions that can and should be asked.

Marylia Kelley (center) meets with Senator Dianne Feinstein (D-CA; left) to discuss the 2018 Nuclear Posture Review. Credit: Tri-Valley CAREs

It's also true that whether they agree with our mission or not, lab scientists agree there needs to be an outside body looking in at the lab. I had a lab guy come to a meeting with unclassified pictures of nuclear testing. The individual wasn't convinced that we should be working toward a world free of nuclear weapons, but he was absolutely convinced that our organization plays a unique and important role in shining a light of truth and openness into the lab.

PT: To what extent do the scientists talk to you on the record, versus remaining anonymous?

KELLEY: It depends on the individual and whether that person is working at the lab. I know a scientist whose wife was part of Tri-Valley CAREs. When the lab found out, he was taken into the hall by his boss and told he would never advance. He left and went to the University of Michigan. We've lost some of our best members when scientists have left the lab for reasons of conscience, or as in this case. The amount of social control at the lab is extreme. Which is antithetical to good science. [Seaver says the lab is unaware of such incidents and that lab employees are free to express their personal views.]

PT: How has your relationship with the lab and NNSA changed over the years?

KELLEY: My relationship with the lab and with NNSA and Lawrence Livermore management has never been a monolith. The contract to manage the lab used to be held solely by the University of California. Now it's a for-profit LLC. That change didn't solve the problems it was supposed to solve, and it has brought its own set of problems. Information that used to be public and available through the California Public Records Act is no longer gettable, so we only have the federal Freedom of Information Act.

PT: How would you assess the current NNSA management?

KELLEY: I'm not certain if the terms *dysfunctional* and *bureaucracy* belong together in the same sentence, but in this instance they do. I have no particular animosity, but NNSA seems to be internally dysfunctional, and different parts of it appear to be working at almost cross-purposes. It's an extremely political organization, where power and politics play a huge role in decision making. That's always been true, but it's truer in the current administration. NNSA has become opaquer under the Trump administration. I can't get meetings with NNSA officials as regularly, and when I do, they aren't always with high-level officials.

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