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Friday, October 29, 2004

Scientist Says Nuke Warhead Isn't Reliable

By **John Fleck**
Journal Staff Writer

Los Alamos nuclear weapon designers, in a fierce competition in the 1970s with rivals at Lawrence Livermore in California, cut corners in the design of a key U.S. weapon, leaving it unreliable today, according to a retired weapons physicist.

The problem with the W76 submarine missile warhead has left the United States with a nuclear arsenal made up in significant part with weapons that could explode with far less force than intended, according to Richard Morse, who was a theoretical physicist at the lab at the time.

"We're vulnerable as hell," Morse said.

Officials at Los Alamos National Laboratory and the National Nuclear Security Administration, as well as independent nuclear weapons experts with access to classified nuclear test data, deny there is a problem with the W76.

They say testing of the final W76 design, in some cases conducted after Morse left Los Alamos to serve on the faculty of the University of Arizona, show the design is sound.

"It works," said retired Sandia National Laboratories vice president Bob Peurifoy, who served on a panel in the mid-'90s that reviewed test data on the W76 and other weapons in the U.S.

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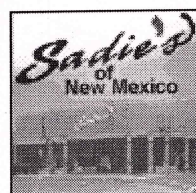
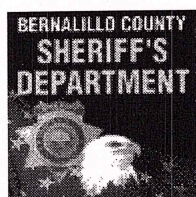
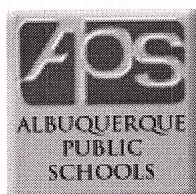
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nuclear stockpile. "The U.S. nuclear stockpile is healthy."

The 69-year-old Morse has raised the issue in classified discussions within the nuclear weapons community for more than a year.

He said in an interview this week that he decided to go public because he believes the government's unwillingness to address the issue threatens national security.

The number of W76s in the U.S. nuclear stockpile is classified, but estimates by members of the arms control community suggest it is more than 2,000, more than any other nuclear weapon in the arsenal.

If the problem Morse claims is real, it would appear to reduce the W76's ability to do the job for which it was designed—destroying fortified enemy missile silos.

Morse, who holds the prestigious title of fellow in the American Physical Society, said he believes the only way to fix the problem is to remove the W76 from the U.S. nuclear stockpile and replace it on submarine missiles with a smaller number of W88 warheads, a more recent design that he said does not exhibit the same problem.

Morse said the problem originated in a competition between Los Alamos and Lawrence Livermore National Laboratory nuclear design teams to win the contract to design a new warhead for the U.S. Navy.

Competition between the two labs in the past is legendary. Massachusetts Institute of Technology anthropologist Hugh Gusterson, who has studied lab culture, said a Livermore scientist once told him, "Remember the Russians are the competition, but Los Alamos is the enemy."

The Navy in the mid-1970s needed a new warhead that was to be extremely light, so more of them could be carried aboard a single missile. To meet the goal, according to Morse, Los Alamos designers beat the Livermore team by making the weapon's radiation case extremely thin.

Morse said the W76 was designed to have a yield equivalent to 100,000 tons of TNT, but actual performance is likely to be far less.

Morse said the problem first showed up in underground nuclear test blasts as early as 1969. There were "many developmental tests" done to

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see if the type of lightweight design could be made to work, and "many if not most of these were not successful," Morse said in a written account of the issue provided to the Journal.

Government officials defend the design. "The laboratory is very confident in the performance of the Los Alamos-designed W76," said lab spokesman Jim Danneskiold in a written statement.

Danneskiold called the test record of the W76 "one of the most extensive of the weapon systems now in the US inventory."

Anson Franklin, a spokesman for the National Nuclear Security Administration, noted that the weapon's reliability has also been certified by Lawrence Livermore scientists.

Morse contends that uncertainty about the W76 continued among weapons scientists well after the weapon was last tested in 1981. The scientists planned to conduct an additional underground test blast to resolve questions about thin case performance, but the test was canceled when the United States imposed a testing moratorium in 1992, according to Morse.

Everet Beckner, deputy chief of the National Nuclear Security Administration's nuclear weapons program, acknowledged in a letter to Morse last fall that, if the problem is real, it has "national security implications for the United States."

"When someone raises questions, we listen to them," Beckner said in an interview in July.

Beckner said a classified meeting with Morse and other concerned scientists conducted in Los Alamos in March did nothing to change his conclusion that the W76 is sound.

"No valid additional concerns were raised about the system to which there were not technical answers," Beckner said.



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Nuke Warheads Very Reliable

RE: "SCIENTIST SAYS Nuke Warhead Isn't Reliable" article

Two perennial lies are: The United States never got to the moon: and the W76 weapon is unreliable.

In each case, we consider what the competitor has to say about it. In the moon landing, the competition to the U.S. was the Soviet Union— only it had the independent resources to determine whether the U.S. got to the moon. The fact that the Soviets never denied that the U.S. got to the moon in 1969 should be proof enough that we did.

The Lawrence Livermore National Laboratory was the competitor to the Los Alamos National Laboratory for the W76 weaponization award. No one at Livermore, who was working at that time, has denied the reliability of the W76. Indeed, they claim that some of the concepts in the weapon were adopted from Livermore. A number of nuclear tests were fired and the data were carefully considered by both labs.

A two-stage nuclear device is often called a "peanut" because there are two kernels in a shell. If the primary stage works, then the secondary will, too.

A few names during the development: Los Alamos director Harold M. Agnew; associate director for weapons, C. Paul Robinson, who is now head of Sandia Labs; X (nuclear design) John W. Taylor; X-4 (primary stage design) group leader, yours truly; and principal investigator, Robert K. Osborne. nowhere to be seen was Richard Morse.

JOHN L. RICHTER

Albuquerque

T-2 nuclear theory
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Nuclear Talk Remembered

IN A LETTER to the editor from my old friend John Richter, he complains about an article, "Scientist Says Nuke Warhead Isn't Reliable" by Journal writer John Fleck, which cited concerns by me and others about the reliability of the Los Alamos-developed W76 nuclear warhead, a mainstay of our nuclear armament.

Richter recalls a number of people involved in this development in the early '70s, most of them from the weapons design division— then the Theoretical Design Division (TD), where Richter was— and says "nowhere to be seen was Richard Morse."

Richter has forgotten two involved group leaders in that weapons design division: the conscientious Charles Cremer, head of group TD-2, which was responsible for the troublesome part of the W76 (and) who killed himself in '74, and this writer, who was head of the advanced concepts group, TD-8, and, simultaneously, head of the laser fusion group, T-6, in the theory division (T).

This T-6 group started developing the mathematical basis for understanding the thin case problems of the W76. For scientific readers, the problem area is "ablative Raleigh-Taylor instability." From the very beginning of the too-thin-case W76 concept, I argued, often aggressively, with new director Harold Agnew, also cited by Richter, who was primarily responsible for this fiasco, and with his new design division head and one of my bosses, Robert Thorn.

When appointed, Agnew had promptly replaced the old weapons design leadership of Carson Mark and Conrad Longmire, who successfully took us through most of the Cold War, with the less careful Thorn.

This W76 work continued while some of us went back and forth to Livermore, Los Alamos and the Universities of Arizona and Rochester in the late '70s, '80s and early '90s.

Agnew's opposition forced this diaspora. I often saw Richter during this time. Our W76 work was still being used in one of the endless sequence of studies of the W76 problems when I came back in 1996. This included ablation work with Aki Takabe and Leland Montierth, which received the American Nuclear Society's Edward Teller Award.

In '96, I was hired back into Los Alamos by the Above Ground Experiments program (AGEX) to help them with the W76, because, they told me, they were not satisfied with the quality of work and cooperation they were getting from the design division, now X-Division. They were making preparations for yet another test related to W76 problems. This planned test, "Mattock," was not done when first planned because of the '92 test moratorium. Fleck made a reference to this in a July 8 article, "Flaws Seen in Sub-Launched Nuclear Warhead."

From 1997 to 2002, I was hired part-time by Paul Robinson, formerly of

Los Alamos but then head of Sandia and also cited by Richter, to poke around Sandia for him. Robinson and I clashed again about the W76. It seemed to me Robinson did not understand the problems of the W76 as late as 2002.

On March 16, 2004, we had an acrimonious meeting at Los Alamos about the W76 problems with DOE, Los Alamos and Livermore weapons program heads, which I organized for the dissident side, forced on DOE by our U.S. Senate Armed Services Committee. The agreed purpose of the meeting was to find out what Los Alamos and DOE had done to "fix" these problems. Los Alamos was not cooperative.

John Richter, I was there.

RICHARD L. MORSE

Los Alamos