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West's submarine nuclear warheads flawed, say scientists

By Francis Harris in Washington
(Filed: 04/04/2005)

British and American nuclear warheads carried by submarines are so poorly designed that they may fail to detonate if fired, scientists have said.

The news emerged after interviews with a group of American scientists with ties to the Los Alamos nuclear research facility, where the first atomic weapon was manufactured.

One of them, Richard Morse, of the University of Arizona and a former Los Alamos weapons designer, said the casing of the W76 nuclear warhead was so thin that it would probably fail if used. The British Trident warhead, the country's sole nuclear weapon, is based on the W76.

Mr Morse said: "What is out there on those boats is at best unreliable and probably much worse."



HMS Vanguard carries Britain's nuclear deterrent, Trident

The claims have been vigorously denied by US officials, who say that the warhead "looks like a pretty good weapon". They say the warheads have not been tested for 13 years because of the global moratorium on the testing of nuclear weapons but were successfully detonated before then.

Everet Beckner, the head of the nuclear arsenal at Los Alamos, said there were no plans to redesign the W76 but admitted to the New York Times that that could change.

The story emerged after what was described as "acrimonious" exchanges between worried scientists and the leadership of America's nuclear weapons programme.

That led four scientists, three of them former Los Alamos employees and one still working there, to seek a secret meeting with weapons officials to discuss their fears.

They met in March last year. Dr Morse said: "It was a verbal mud-wrestling match. Officials from Los Alamos and the government would not be candid with us. We told them things they did not know."

The issue is of central importance despite the end of the Cold War. Countries such as North Korea and Iran are pursuing nuclear programmes that Washington believes have a military goal. Both have active and ambitious long-range missile programmes.

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Britain's nuclear weaponry, thought to number about 190 warheads, is carried exclusively aboard the four Trident submarines, Vanguard, Vigilant, Vengeance and Victorious.

While America still has air-launched nuclear weaponry, it too has become more dependent on its submarine missiles. Dr Morse said the growing reliance on submarine weaponry had revived his long-standing worries about the casings of the W76.

During the 1970s there was pressure to make warheads as light as possible to allow more to be fitted on top of a relatively thin missile. Although the radiation casing was made of uranium, which is double the weight of lead, it was to be super-thin - in places only as thick as a beer tin.

The casing is critical because it has to hold together for nanoseconds as the nuclear chain reaction begins, releasing temperatures hotter than the surface of the Sun. If the case fails, the bomb can fail too or explode with less than its intended force.

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