U.S. starts designing sturdy nuclear arms

Goal is reliability, but critics see risks

By William J. Broad

NEW YORK: Worried that America's aging nuclear arsenal is increasingly fragile, U.S. bomb makers have begun designing a new generation of nuclear arms meant to be sturdier and more reliable and to have longer lives, federal officials and private experts say.

The officials say the program could help shrink the arsenal and the high cost of its maintenance. But critics say it could needlessly resurrect the complex of factories and laboratories that make nuclear weapons and could possibly engender a new arms race.

So far, the quiet effort involves only $9 million for warhead designers at the three U.S. nuclear-weapon laboratories: Los Alamos, Los Neen and Sandia.

Federal experts at these heavily guarded facilities are now scrutinizing secret arms data gathered over a half-century for clues about how to achieve the new reliability goals.

The relatively small initial program, involving fewer than 100 people, is expected to grow and produce finished designs in the next 5 to 10 years, culminating, if approval is sought and won, in prototype warheads. Most important, officials say, the effort marks a fundamental shift in the design of nuclear weapons for the first time in decades.

For decades, the bomb makers sought to use the highest technologies and most innovative methods. The resulting warheads are lightweight, very powerful and in some cases so small that a dozen could fit atop a slender missile. The American style was distinctly non-porous. Most of the other nuclear powers, years behind the atomic curve and often lacking top skills and materials, settled for less. Their nuclear arms tended to be ponderous if dependable, more like Chewies than race cars.

Now, U.S. designers are studying how to reverse course and make arms that are more robust, in some ways emulating their rivals in an effort to avoid the uncertainties and deteriorations of nuclear old age.

Originally, the approximately 10,000 warheads in the U.S. arsenal had an expected lifetime of about 15 years, officials say. The average age is now about 20 years, and some are much older. Experts say a costly federal program to assess and maintain their health cannot ultimately confirm their reliability because a global test ban forbids underground test detonations.

In late November, Congress approved a small, largely unnoticed budget line that started the design effort, known as the Reliable Replacement Warhead program. Federal officials say the designs could eventually help extend the nuclear arsenal with warheads that are more rugged and have much longer lifetimes.

"It's important," said John Harvey, director of the policy and strategy division of the National Security Administration, which oversees the arsenal. In an interview, he said the goal of the new program was to create arms that were not only "inherently reliable" but also easier to make and certify as potent.

"The goal," Harvey said, "is to see if we can make smarter, cheaper but no less sophisticated design. If we can certify as safe and reliable for the indefinite future — and do so without nuclear testing.

"But the question is whether the existing stockpile is sufficient to address the threat. The answer is yes," he said, "because there are extremely few remaining missions for nuclear weapons anywhere."