'Tests in Pokhran made India self-reliant, responsible nuclear weapon state'

Anil Kakodkar played key roles in both nuclear tests, which were carried out in underground shafts at Pokhran in Rajasthan

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Eminent nuclear scientist Anil Kakodkar. Credit: Twitter/@icssr

India carried out its first nuclear test in May 1974 and the second in May 1998. **Anil Kakodkar** played key roles in both tests, which were carried out in underground shafts at Pokhran in Rajasthan. The eminent nuclear scientist headed the Bhabha Atomic Research Centre and the Atomic Energy Commission. He played an important role in the development of India's nuclear power programme.

He tells *DH*'s **Mrityunjay Bose** that the tests helped India attain self-reliance in nuclear power, but the nation has maintained its responsible behaviour.

Excerpts:

Looking back, how do you view the Pokhran-I and Pokhran-II tests?

Dr Homi Jehangir Bhabha laid the foundation of India's nuclear programme. We have done the two tests that contributed to the development of the nuclear programme and to building a self-reliant India, which we now refer to as Atmanirbhar Bharat. And, in all these five decades since the first test, we have stuck to our responsible behaviour in the international arena. We have always adhered to our international commitments. This is the hallmark of our programme. After both the 1974 PNE (Peaceful Nuclear Explosion) and the 1998 strategic tests, we faced sanctions from the international community, but we did overcome that.

How do you personally feel about your involvement in both tests?

Surely, it gives a sense of satisfaction and pride. What added to our sense of pride was the way the people of the country reacted to the tests with an overwhelming sense and spirit of nationalism. Both the tests were conducted under difficult circumstances and we could do it. We had closely-knit dedicated teams, with strict adherence to need-to-know protocol. This ensured the absolute secrecy that was needed for such missions. The development of nuclear weapons requires expertise in a range of disciplines including explosive ballistics, shock wave physics, condensed matter physics, materials science, nuclear

and neutron physics, radiation hydrodynamics, radiation–matter interaction, advanced electronics engineering backed by production, fabrication and processing technologies over a wide range. It requires complex computer simulation software development to enable accurate prediction of weapon yields.

What were the outcomes of the tests? Do we need more tests?

The outcomes of the tests were fabulous. We have enough data and we do not require to do more tests in future. After the Pokhran-II tests, computer simulation capability to predict the yields of nuclear weapons – fission, boosted fission and two-stage thermonuclear – has been established. We have proved our capabilities. Before we conducted the tests, we factored in almost each and everything. The Pokhran-II has given us the capability to build deterrence based on both fission and thermonuclear weapon systems. We are a responsible nuclear weapons state now.

Can you please share your thoughts on India's nuclear power programme?

This is something very important. India has decided to be net zero by 2070. This is only possible if we scale up nuclear power production. We cannot achieve net zero without scaling up nuclear power production to a level of 50% by 2070. There are challenges ahead. What is more important is that we have to tackle the issue of climate change, which is already being felt. The clean energy supply needs to increase manifold. This has to be met primarily through solar, wind, and nuclear energy. And, nuclear power has to play a major role.

Can you please share any of your experiences during your days in Pokhran for the tests?

In the case of Pokhran-II, we tested our thermonuclear device at a controlled yield of 45 kt, as the Khetolai village was just about five kilometres away and we had to ensure that the houses in the village, which had a population of about 5000 people, would suffer negligible

damages. The army was informed that the villagers need to be told to step out of their houses during the tests. This was a difficult task as we had to maintain secrecy. But none of the villagers questioned or complained. They rather said: “Sahab, whatever you are doing, you must be doing it for the good of the country.” This reflected the nationalistic spirit and the faith of the people in us. I will never forget this.