



## Pokharan'98 and Government Nuclear Diplomacy

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On May, 11 & 13, 1998, India conducted three serial underground nuclear blasts at Pokharan, namely (i) Atom Bomb, (ii) Hydrogen Bomb & (iii) Low Yield Devices. In all of the three, today our chief concern is about the hydrogen bomb explosion, which is a thermo nuclear device. This is because, we had already tested Atom Bomb explosion, which is a fission device, at the same place, 24 yrs ago in May 1974 which is yielded about 5.1 on Richer Scale equivalent to about 12 kilo tone and only a marginal improvement has been reported in the **Shakti 98** (pseudonym for Pokharan II explosion given by Vajpayee govt.) And as far as low yield device is concerned, it can not be placed in the list of astonishing scientific advancement that could cause flurry of hot debates.

The success of nuclear explosion is measured from the yield, which results from the nuclear explosion. The yield or total energy of a thermonuclear device is generally expressed in mega tonnes ("one megaton is 1000 kilo tones and one kilo tonne is 1000 tonnes of equivalent of chemical explosives).

In seventies, china conducted thermonuclear device and the yield was found to be about 6 megaton's. The first thermo-nuclear test was conducted by US in 1951 followed by USSR in 1993. It is said that yield found by USSR was about 500-mega tone which is about 84 times more than that of china. But we found, is no more secret now, you will see later, is definitely confusive.

"The new Scientist" (May 23, 1998) reported an assessment by Dr. Frode Ringdal, scientific director of the Norwegian Seismic array near Oslo, which is also a part of global network, 'that blast (May 11) registered clearly in Pakistan, Canada, Russia, Australia and here (Oslo). All the traces show, it was almost 15 tonnes.

"Seismological Research Letters" (sept,98) carried an article" the May 1998-India and Pakistan Nuclear test" containing an analysis of data of 22 monitoring station around the world with conclusion that May11,explosion had a combined force of no more than 15 kilotonne, so small that they involved a less sophisticated fission bomb than the thermonuclear bomb.

According to Mr. Gregory Evan Vink, Director of Planning at Incorporated Research Institute of Seismology, the seismic signal about explosion, was found to be .4 which is he thought ,10 to 25 kilotons.

More or less, the Japanese scientists and the British Scientist estimated the same yield.

Mr. Gregory E.Van Vink is also the expert advertising US Congress and Clinton Administration, he reported the congress that either Indian thermo nuclear device failed completely or what ever yield that had been recorded, was entirely from the boosted fission device.

Experts at the Los Alamos National Laboratory, Princeton University and the Incorporated Research Institute of Seismology at consortium of 90-research University that operates a global network of 100 seismic monitoring stations, endorsed the upper data. At Princeton, Mr. Frank Von.Hippal, a physicist and Ex- Assistant Director for the national security in the white house office of science and technology policy, said, "it seems pretty convincing to me".

But the data's collected by Indian seismological centers and the claim of prominent Indian scientists (like Chidambaram, Kalam, Dr. Sikka and Anil kakodkar) was rather different.

While delivering a press conference, Dr. Chidambaram reported that serial blast occurred in India at Pokharan in May 98 had a following device wise yield:

### On May 11, 98

- (i) Fission device (atom bomb)-15 kilotons
  - (ii) Low yields device-0.2 kilotons.
  - (iii) Thermonuclear device comprises-
    - a. Fission device: 12 kilotons.
    - b. Fusions device:45 kilotons
- Total: 57 kilotons

### On MAY 13, 98

Two sub kilotons device exploded, gave 0.5 kilotons and 0.3 kilotons yield respectively. That means, the yield found by Indian seismological center was about 57 kiloton but magnitude just 5.2 on Richter scale. This is also astonishing. Only a margin of 0.1 (5.2 in 1998 & 5.1 in 1974) on Richter scale, there is a difference of 45 kilotons (57-12 =45 kilotons). Is it believable? When asked about the reason behind this, he replied the reason for low values recorded by international seismic sensors was the simultaneous triggering of the three devices-(i) fission device (ii) low yield device & (iii) the thermo nuclear device on May 11, 1998.



According to him, the simultaneous explosion caused interference of shock waves traveling through the earth and resulted in a low value seismic data at the international seismological centers. If it is true, one can ask, how the shock waves had no interference at Indian seismic centers.

Clarifying this, Dr. Sikka (who was monitoring his team to assess the yield) said that the final result of the yield gives by us is after cross checking of different data's. This type of claims and counter claims is certainly not convincing but looks very elusive.

Dr. B. K. Subha Rao, an eminent Nuclear scientist at IIT, Mumbai has also written an open letter to the Prime Minister on dated 22 Sept. 98 (published in the HINDU on 27 Oct.,98) urging him to order a judicial inquiry into Pokharan 98. According to him, Dr. Kalam and Chidambaram have made a great fool to the nation.

### **GROUND YIELD REALITY**

Now two points are very clear:

- (i). Yield reported in many different seismological centers of India and abroad varied from 5.1 to 92 on Richter Scale and therefore, controversial equivalent energy gained also varied from 25 kiloton to 57 kilotone. We could not achieve the standard yield level of one megaton .we were far behind.
- (ii). Therefore claiming that the data's collected by our scientists are satisfactory and exhilarious, is certainly a farce. This is unresistingly true at least in comparison to four other nuclear states like America, UK, Russia and China.

Now, this is not question whether India conducted thermonuclear device test explosion, but this is very necessary to see how much extent test succeeded achieving the yield. In the context, our results were not up to the mark. This is the ground reality.

I am not anyway going to belittle the scientific efforts and the advancement they made but attempts should necessarily be made to do further nuclear test in order to find standard yield of the order of mega tones as also Russian defense analyst claims. According to

the Russian analysts, India must have to test at least 4 more nuclear explosions for the minimum credibility.

### **NUCLEAR DIPLOMACY**

Our govt. became overjoyed for this splendid endeavor of the scientists at Pokharan. Just after explosion, India clarified her nuclear diplomacy based on the three declared intensions of a minimum credible deterrent, of no first use and willingness to go beyond the moratorium on test towards CTBT and FMCT.

What is meant for maintaining minimum credible nuclear deterrent, we do not know and has not been defined properly? This is abstruse.

No first use is welcome event for the sake of universal brotherhood. But this is very unlogistic and unfavorable efforts to generate favorable public opinion for allowing the govt. to sign CTBT. Now, there will be very possibility of the American govt. supporting India to get permanent seat in the UN Security council. Perhaps, this is the clear result drawn by India after recent Clinton visits. Thanks to Clinton sahib for dispelling the doubts that he is the super boss, controlling the world in very astute manner.

But we must not forget that at the cost of only a marginal scientific advancement, selling of national interest is dangerous and the nuclear diplomacy based on the false claims can be dangerous to the national security.

This is the cause of serious concern.  
The govt. must pay attention to that.

*(Note: This article was written by Mr. Bibhuti Bikramaditya when he was postgraduate student of Physics department of Patna University in 1998. The facts and figures of this article were collected from Times of India, The Hindu, The Hindustantimes, The Hindustan Dainik. But no newspapers accepted to publish this article that time. Thanks to Some top scientists of India who dared to raised this question again about the yield of the Pokharan II.)*