MEETING REPORT

# Sethna – a man of courage*

The Third Dr H. N. Sethna Memorial Lecture was delivered by Anil Kakodkar (DAE-Homi Bhabha Chair Professor and Member, Atomic Energy Commission). He described Sethna as a powerful figure with several 'firsts' to his credit in terms of setting up engineering plants. He was the driving force behind the critical fuel cycle activities such as uranium and thorium mining, milling, refining and reprocessing of spent nuclear fuel for production of plutonium and production of heavy water. A person with tremendous self-confidence and courage, Sethna was deeply involved in the formative stages of Nehru Centre at Mumbai. Kakodkar firmly believes that knowledge-based conviction and the courage to carry it forward, is the key to building national technological strength in areas where others would not be able to do so.

It remained a great inspiration to observe both Bhabha and Sethna working as a team in the development of nuclear power programme in the country. Sethna laid the foundation for translating the grand nuclear vision that Bhabha had created. According to Kakodkar, Sethna used his ability and interest in getting into the finer technology details and made bold decisions on the basis of well-considered judgements to drive the programme implementation in areas that had no parallel experiences to draw upon. Sethna was the key architect of the plutonium plant. Commissioning of the plutonium plant, a complex technology, was a major event signifying the first big step in both the strategic dimension as well as the three-stage nuclear power programme that would lead to the growth of nuclear power generation in India. The civil nuclear co-operation along with the three-stage technological capability today can help resolve the long-term energy needs of India without having to depend on imported energy fuel.

Kakodkar mentioned about an interesting case study regarding the establishment of Jaduguda uranium mine. The grade of uranium ore from Jaduguda mine was known to be very low. Also, importing uranium was not as restricted in those days as it became post-1974. Sethna's decision to develop a mine in India regardless of the question on economic viability, mastering the full technology chain and sustaining its commercial operation defying commercial logic, was indeed a bold one. When the Tarapur units were significantly larger than any other power units in the grid and the total capacity in the grid was limited, there were heated debates on developing 500 MWe Pressurized Heavy Water Reactors (PHWRs). Sethna firmly opposed taking up such large units until the problems of 200 MWe units were fully solved. Today, India is in the process of setting up several 700 MWe units.

According to Kakodkar, the peaceful nuclear explosion experiment of 1974 was a major turning point in the history of the Department of Atomic Energy. Until that time the use of nuclear explosive devices for peaceful purposes like digging canals, cracking up ore body in mines, creating large reservoirs, etc. was regularly being discussed at meetings organized by the International Atomic Energy Agency. Also, there was a tight embargo clamped by the international community led by USA on nuclear transfers and transfer of items with a remote link to nuclear programmes/institutions. The implications were that USA reneged on its commitment to supply fuel for Tarapur reactors and Canadians walked out of the Rajasthan Atomic Power Project leaving the two PHWRs under construction unfinished. Sethna as the leader of the organization was very firm on insisting on the legal obligation of Americans to fulfil their commitment to continue supplying fuel for Tarapur and that there was no valid ground for them to renege on that commitment. Independently, he launched the MOX fuel development programme that would allow reprocessing and recycling of spent fuel from Tarapur reactors.

In addition to the Power Reactor Fuel Reprocessing Plant, an Advanced Fuel Fabrication Facility was also built, which accelerated the development of plutonium-based fuels for power-generating reactors. Resolving to reprocess the US origin spent nuclear fuel in case USA did not honour its commitment to supply fuel, Sethna boldly held them accountable for breach of agreement. He stood his ground in a steadfast manner and the matter was resolved with the French agreeing to fulfil residual American fuel supply commitment.

When the Canadian walked out of the Rajasthan Atomic Power Project leaving midway, it created a major disruption in the country's nuclear power programme. The two nuclear power units at Rajasthan and the subsequent pair of nuclear power units of Madras Atomic Power Project at Kalpakkam had to be completed. Sethna took several steps to give thrust for these first, fully indigenous nuclear power projects.

Being the beneficiary of Sethna's love and affection, Kakodkar paid homage to this legend whose insights, experience and assessment were always available to those who sought them. Sethna with his spirit, dedication and courage has paved the way to move forward and carryout the missions on uncharted territories and conduct oneself on the basis of self-conviction and capability.

*A report on the Third Dr H. N. Sethna Memorial Lecture 'Dr Sethna – A Profile in Courage' organized by Nehru Centre, Mumbai on 24 August 2013.

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