

10th NIAS-CISAC WORKSHOP ON

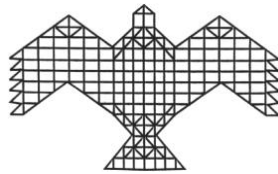
INDIA-U.S. COOPERATION ON GLOBAL SECURITY:
TECHNICAL ASPECTS OF CIVILIAN NUCLEAR SECURITY

Organized by

International Strategic and Security Studies Programme

J.R.D. Tata Auditorium

29-31 October 2012



National Institute of Advanced Studies

Indian Institute of Science Campus

Bangalore 560 012

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Executive summary

The annual dialogue between the National Institute of Advanced Studies (NIAS) and the Committee on International Security and Arms Control (CISAC) of the US National Academy of Sciences evolved out a need to establish Track II linkages with the United States in the aftermath of the 1998 Indian nuclear tests. Post the 1998 tests, the Non-proliferation lobby in the US led the international condemnation of the Indian decision to conduct nuclear tests and depicted the tests as a major threat to global stability and security.

It was against this background that the International Strategic and Security Studies Programme at NIAS along with the CISAC of the US National Academy of Sciences brought together key

decision and policy makers in India and the US on to a common shared platform where they could exchange views, share information, bridge differences and build an atmosphere of trust.

The first NIAS – CISAC dialogue towards this end was conducted under Chatham House Rules took place in 1999 at Bangalore and dealt largely with nuclear weapon issues. Later meetings also included ballistic missiles, the weaponisation of space, the prospects of a nuclear weapons free world, biological weapons, technology transfer & export controls and a number of other topics of mutual interest to India and the US. In tandem with other initiatives taken at more formal and official levels this series of Track 2 dialogues had a major impact on relations between the two countries that finally culminated in the Indo-US Nuclear Deal in 2008.

India and the Nuclear Security Summit

India participated in the Nuclear Security Summit (NSS) at Seoul between March 26 – 27, 2012 which focussed on the dangers posed by terrorists getting access to nuclear weapons and related materials or technology. The Indian Prime Minister Manmohan Singh attended both the 1st and the 2nd Nuclear Security Summits. In addition India has hosted the Sherpa NSS meeting in New Delhi January 16-17, 2012.

At the Seoul NSS, the Indian Prime Minister endorsed the global concerns on nuclear terrorism and clandestine proliferation and described them as continuing to pose serious threats to international security. However, Prime Minister Singh reiterated that, given India's growing energy demands, India views nuclear energy as an essential component of our energy mix. India, PM Singh said, therefore supports strengthening nuclear security, which assists India's objective of promoting a safe and secure expansion of civil nuclear energy.

India since the inception of its nuclear programme, has attached great importance to physical protection of nuclear facilities and materials. Over the years, a multi-layer security system has evolved alongside the complex security threats facing the country. In addition, India has comprehensive reviews of nuclear safety measures at our nuclear facilities. India has invited the Operational Safety Review Teams of the IAEA to assist in its own safety reviews and audit.

Also, an integrated system of physical system of protection for nuclear facilities and materials – during use, storage and transport has been established. Other steps taken by India include developing physical protection measures such as access control (for personnel and nuclear materials); surveillance and detection; and, continuous technical review of physical protection systems.

Current NIAS-CISAC Dialogue

The upcoming NIAS-CISAC workshop (October 29-31, 2012) titled “Technical Aspects of Civilian Nuclear Security” should therefore be seen in the context of the India’s engagement at the Nuclear Security Summits. The workshop will bring together leading scientists both serving and retired from the Department of Atomic Energy (DAE) as well as the national laboratories of the United States like Lawrence Livermore, Sandia National Laboratory amongst others. The topics which will be discussed include Civilian Nuclear Security, Securing Nuclear Materials, Technologies and Physical Security of Nuclear Materials, Nuclear Forensics, Security and Human Factor at Civilian Nuclear Facilities, Cyber Security for Civilian Nuclear Materials Security and Systems Approach to Civilian Nuclear Security.

Background, concept and purpose

The National Institute of Advanced Studies (NIAS) since 1988 has been engaged in multi-disciplinary research and is unique in its integrated approach to the study of the intersections between science and technology, social issues, humanities and leadership. The objective is to nurture a broad base of scholars, managers and leaders who would respond to the complex challenges that face contemporary India and global society, with insight, sensitivity, confidence and dedication.

Dr. Raja Ramanna, as the Founder Director, immensely contributed to the growth and development of this Institute . Over a period of time, NIAS initiated several research programmes and other activities that brought recognition and fame. In subsequent years, Dr. Roddam Narasimha and Dr. K. Kasturirangan became the Directors of NIAS. Presently Dr.V.S. Ramamurthy is the Director.

NIAS has an active programme of public lectures, regional, national and international conferences, symposia and seminars organized independently or jointly with other institutions that focus on topical areas of research and public concern.

The International Strategic and Security Studies Programme (ISSSP) was started in NIAS in the year 1996 with the broad objective of conducting academic and policy research related to strategic and security issues. Besides carrying out research and capacity building in areas related to national security, the programme has made significant contributions to understanding in bilateral strategic issues through the track-two dialogue with the Committee on International Security and Arms Control (CISAC) of the US National Academy of Sciences.

The Pokhran nuclear tests of 1998 fundamentally changed India's foreign policy. India came under sanctions and the immediate tasks before the government was to end its diplomatic isolation, rebuild its relations with key countries such as the U.S. NIAS felt it national obligation at that time and was involved in the rebuilding of key relations through track two dialogues, academic exchanges and collaborative international conferences. NIAS also contributes and shapes many aspects of India's national policies. NIAS, ISSSP and its affiliated members were active and instrumental in promoting U.S- India Strategic Partnership which culminated in the Indo-US nuclear deal.

Post Pokhran – II, a need was felt to initiate track two diplomacy with the United States to facilitate exchange of views and information, bridge differences and create an atmosphere of trust. Towards this, NIAS linked with the Committee on International Security and Arms Control (CISAC) of the US National Academy of Sciences (NAS). The first meeting held in 1999 at NIAS, Bangalore mainly dealt with nuclear weapon issues. Discussion on topics of ballistic missiles, space security, nuclear weapons free world, science and technology to counter terrorism, biological threats and biological security and science cooperation were conducted in subsequent meetings. The next meeting—10th in the series—is planned to be held at NIAS during 29-31 October 2012 and will focus on the *Technical Aspects of Civilian Nuclear Security*.

The workshop agenda will be spread over 7 sessions as shown below:

- Session I: Overview of Civilian Nuclear Security—A Systems Approach

- Session II: Securing Nuclear Materials
- Session III: Nuclear Forensics
- Session IV: Security at Civilian Nuclear Facilities
- Session V: The Human Factor in Nuclear Materials Security
- Session VI: Cyber Security for Civilian Nuclear Materials Security
- Session VII: A Systems Approach to Civilian Nuclear Security—A Summary

We have purposely kept this year's programme in a workshop format. This would enable us to understand the complex issues related to civilian nuclear security in a better way and we have identified each session accordingly. The general format followed in each session will involve a presentation by an Indian and US specialist, followed by discussion. Each session will be of 90 minutes duration allowing for 20 minutes each for the presentations and about 45 minutes for discussion.

The US team led by Prof Raymond Jeanloz and Dr Stephen Cohen has members drawn from the Sandia, Los Alamos, Lawrence Livermore, Brookhaven and Pacific Northwest National Laboratories and academia. The Indian speakers for the workshop will be drawn from serving and retired senior scientists of the Department of Atomic Energy and academia.

Specific need for a bilateral event

The visit of the advance team from the Committee on International Security and Arms Control (CISAC), Washington DC to the National Institute of Advanced Studies (NIAS) in June this year helped in firming up the agenda for 2012 track-2 meeting between the two institutions. The earlier dialogue meetings have covered important subjects of mutual and topical interests. In continuation of the earlier dialogues and the post Fukushima developments against the civilian nuclear facilities and its concurrent effects in India as we see massive protests against the installations in Koodankulam and Jaitapur, the committee members representing both organizations felt there is a clear lack public discourse in India about the nuclear safety issues particularly among the scientists and technologists. As a result the members selected this particular decided to hold a workshop on to consider issues relating to civilian nuclear security as the theme of the 2012 dialogue.

Number of US & Indian participants with affiliation

List of US Participants

1. Michael BROWNE - Los Alamos National Laboratory
2. Heather CHIARELLO - National Academy of Sciences
3. Stephen P. COHEN - Brookings Institution
4. Phil CRAIG – Pacific Northwest National Laboratory
5. Phil GIBBS – Brookhaven National Laboratory
6. Rita S. GUENTHER - National Academy of Sciences
7. Ian HUTCHEON – Lawrence Livermore National Laboratory
8. Raymond JEANLOZ – University of California, Berkeley
9. Robert KUCKUCK – Private Consultant
10. Micah D. LOWENTHAL - National Academy of Sciences
11. Paul NELSON – Texas A&M University
12. Mike O’BRIEN – Lawrence Livermore National Laboratory
13. Jordan PARKS – Sandia National Laboratory
14. D. V. RAO - Los Alamos National Laboratory
15. Peter SANTI – Los Alamos National Laboratory
16. Surinder P. SINGH – Oak Ridge National Laboratory

Plus two organizing committee staff

Lists of Indian participants

1. Dr. Anil Kakodkar, Department of Atomic Energy
2. Dr. Baldev Raj, Former Director, IGCAR, Kalpakkam
3. Prof. V S Ramamurthy, Director, National Institute of Advanced Studies
4. Prof. B V Sreekantan, National Institute of Advanced Studies
5. Dr. P.S Dekne, Electronics and Instrumentation Group, Bhabha Atomic Research Centre (BARC)
6. Prof. R Rajaraman, Emeritus Professor of Theoretical Physics, Jawaharlal Nehru University
7. Dr. Ravi Bhushan Grover, Director, Strategic Planning Group, Bhabha Atomic Research Centre
8. Dr. M R Srinivasan, Former Chairman, Atomic energy Commission
9. Dr. G P Srivastava, Director Electronic and Instrumentation Group, BARC
10. Shri A.R. Sundararajan, Former Director, Radiological Safety Division, IGCAR
11. Shri H Tharakan, Former Director, R&AW
12. Dr. V Venugopal, Radio Chemistry and Isotope Group, BARC
13. Dr. Anuradha Reddy, Defence Research Development Organisation
14. Dr. D. Akhtar, , Defence Research & Development Organisation
15. Dr. Arvind Kumar, Manipal University
16. Shri Avinash Chander, DRDO
17. Mr. S C Chetal, Director, Indira Gandhi Centre for Atomic Research
18. Brig Gurmeet Kanwal, Director, Centre for Land Warfare Studies
19. Air Marshal K.J. Mathews, Strategic Forces Command (C-in-C, SFC),
20. Dr. Manjit Singh, Terminal Ballistics Research Laboratory, Chandigarh
21. Amb. Meera Shankar, Former Ambassador to U.S
22. Prof. R. Narasimha, Jawaharlal Nehru Centre For Advanced Scientific Research
23. Dr. K D Nayak, DRDO
24. Prof Y S Rajan, Indian Space Research Organization

25. Amb C V Ranganathan
26. Dr. K. Santhanam
27. Prof. V Siddhartha, Centre for Air Power Studies
28. Dr. Sonika Gupta, Indian Institute of Technology, Chennai
29. Lt. Gen. Dr. V.J. Sundaram (Retd), National Design & Research Forum
30. Dr.G Vaidyanathan, Former Director, Fast Reactor Technology Group, IGCAR
31. Dr.SAV Satyamurty, Director, Radiological Safety Group, IGCAR
32. Dr. B. Bhattacharjee, Member NDMA
33. Dr. A N Prasad, Former Director, Bhabha Atomic Research Centre (BARC)
34. Dr. L.V.Krishnan, International Strategic and Security Studies programme (ISSSP) NIAS
35. Ambassador Arundhati Ghose IFS (Retd) International Strategic & Security Studies programme
36. Prof. K.P. Vijayalakshmi, Jawaharlal Nehru University
37. Vice Admiral R N Ganesh, International Strategic and Security Studies programme
38. Dr P Soma, International Strategic & Security Studies Programme
39. Mr. Pratap Heblkar, International Strategic & Security Studies Programme
40. Prof. C R Raghunath, M S Ramaiah Institute of Technology
41. Prof. S. Chandrashekar, International Strategic and Security Studies Programme
42. Mr. S. Gopal, International Strategic & Security Studies Programme
43. Dr. Lalitha Sundaresan, International Strategic & Security Studies Programme
44. Dr. N. Ramani, International Strategic & Security Studies Programme
45. Ambassador Saurabh Kumar (Retd), International Strategic & Security Studies Programme
46. Dr. Nabeel Ajmal Mancheri, International Strategic & Security Studies Programme
47. Dr. Mayilvaganan, International Strategic & Security Studies Programme
48. Dr Arun Vishwanathan, International Strategic & Security Studies Programme