

CHAPTER
10

INTERNATIONAL CO-OPERATION



India has ratified several international conventions related to nuclear safety and nuclear security such as Convention on Nuclear Safety (CNS), Convention on Physical Protection of Nuclear Material and its 2005 Amendment, Convention on Assistance in the case of Nuclear Damage and Radiological Emergency, Convention on Early Notification of Nuclear Accident etc. India is also committed to implement the provisions of Code of Conduct on safety of research reactors and Code on Safety and Security of radioactive sources. AERB is obliged to fulfil the responsibilities assigned to it under these instruments. AERB actively participates and contributes in multi-lateral international activities organised by International Atomic Energy Agency (IAEA) and Nuclear Energy Agency (NEA).

AERB has bilateral cooperation arrangement with the regulatory bodies of several countries for information exchange and experience sharing related to regulation of nuclear and radiation safety. AERB has bilateral arrangements with the nuclear regulatory authorities of France, Russia, Romania, Ukraine, the United States of America, Finland, Canada, Bangladesh and the United Kingdom. AERB also has an agreement with IRSN, which is a Technical Support Organisation in France.

Some of the important activities undertaken under the multilateral and bilateral international cooperation activities during the year are described in the following paragraphs.

10.1 STRENGTHENING NUCLEAR SAFETY AND SECURITY

10.1.1 Preparatory Meeting for IRRS Extended Scope follow-up Mission

The IAEA has established 'Integrated Regulatory Review Service' (IRRS) to assist member states to strengthen and enhance the effectiveness of their national regulatory infrastructures for safety in civilian use of atomic energy. The IRRS helps host the States to strengthen and enhance the effectiveness of their regulatory infrastructure for nuclear, radiation, radioactive waste and transport safety. The IRRS regulatory review process provides a peer review of both regulatory, technical and policy issues against IAEA Safety Standards. It also provides an opportunity to exchange professional experience with experts in the IRRS team.

AERB hosted the IRRS mission in March 2015 for Nuclear Power Plants. The IRRS team had identified good practices along with areas of improvement in the form of recommendations and suggestions. The Government of India made the report of the IRRS Mission publicly available through website. The Government of India made a request to IAEA to undertake IRRS follow-up mission in India with extended scope by including radiation sources facilities and its activities. IAEA accepted India's invitation for extended scope follow-up IRRS mission.

A preparatory meeting was conducted during July 21-23, 2020 through video conference, due to the global COVID-19 pandemic situation. The terms of reference for the extended scope follow-up mission were finalized during the meeting. The meeting was attended by IRRS team leader from Canada, deputy team leader from USA, IAEA Coordinator, and senior management of AERB and senior representative of Department of Atomic Energy (DAE). The follow-up mission has been postponed by IAEA due to situation arising out of COVID19 pandemic.



IAEA IRRS Preparatory Meeting through Video Conferencing

10.1.2 CANDU Probabilistic Safety Assessment Working Group

The CANDU PSA Working Group (CPWG) of IAEA is formed with an objective to serve as an international forum to support regulatory authorities, utilities and designer in their respective area of Probabilistic Safety Assessment (PSA); to harmonize regulatory approaches on the use of PSA; to exchange information on national practices; PSA models and tools; regulatory review of CANDU member states and exchange of results of regulatory review; to produce technical reports on selected topics and for discussions on the progress achieved in implementation of the ongoing tasks and to identify follow-up actions and responsibilities related to CANDU PHWR NPPs.

Various tasks were assigned to member countries during a Technical Meeting held in October 2019 at IAEA HQs, Vienna, Austria. The task on 'Development of Fire Probabilistic Safety Assessment Questionnaire' was assigned to AERB. AERB officials developed the Fire PSA questionnaire based on experience of Fire PSA development, regulatory review of Fire PSA and relevant NUREG (USNRC) documents related to Fire PSA. Additionally, the responses of questionnaire provided by CPWG on 'Application of PSA' was prepared. Both the tasks are being reviewed for finalisation and it is being submitted to CPWG.

10.1.3 NEA/MDEP Activities

AERB continued to coordinate the activities related to India's participation in the Nuclear Energy Agency (NEA) of Organisation for Economic Cooperation and Development (OECD). During the period, AERB experts contributed in the following programmes:

(i) OECD/ NEA Committee on Nuclear Regulatory Activities

Shri D. K. Shukla, Executive Director, AERB participated in OECD/NEA Committee on Nuclear Regulatory Activities (CNRA) meeting held virtually on November 30 & December 1, 2020. During meeting, discussions were held on CNRA strategic review as well as status of progress of activities of CNRA Working Group. Shri Shukla, gave presentation covering recent flooding event near Kaiga NPP, as a part of issue of regulatory significance.

(ii) Preparatory Exercise for International Common-Cause Failure Data Exchange (ICDE)

AERB officers participated actively in OECD/NEA ICDE workshop on 'Safety Culture Lessons from Operating Experience' on October 8, 2020 through web-based conference. The International Common-Cause Failure Data Exchange (ICDE) project pursues with aim of collecting qualitative and quantitative information about common-cause failure (CCF) events in NPPs, and analyse the collected data and distribute the gained insights about CCFs and methods to prevent CCFs as reports to the concerned professional audience. The workshop was organised to review international CCF data for safety culture aspects and to develop a framework for identifying and classifying safety culture factors; and summarise the findings in a report. The ICDE event database reports were shared for review. AERB officers reviewed event narratives with a focus on safety culture issues. The workshop provided insights into how best to identify and classify safety culture failures. The event reports were reviewed with respect to deficiencies in the safety culture traits and attributes like time frame, dependency factor, failure mechanism, plant state, actual defences and improvement etc. The IAEA-Harmonized Safety Culture Model was utilized for categorizing the safety culture traits. The exercise report was submitted to ICDE workshop coordinator.

10.2 BILATERAL INTERNATIONAL COOPERATION

10.2.1 Bilateral MoU between AERB and VARANS

A Memorandum of Understanding (MoU) between AERB and the Vietnam Agency for Radiation and Nuclear Safety (VARANS), the nuclear regulatory body of Vietnam; for exchange of technical information and co-operation in the regulation of radiation protection and nuclear safety was signed on December 18, 2020. Chairman, AERB and Director General, VARANS signed MoU from AERB and VARANS side respectively. The MoU will enable, among other things, sharing of experiences related to licensing, safety assessments, regulatory inspections of facilities using ionizing radiation sources; cooperation in the fields of research and development in radiation protection and nuclear safety; co-operation in the review of legislation,

regulation relating to radiation protection and nuclear safety. This MoU shall remain in force for a period of five years.

10.2.2 Bilateral Meeting between AERB and USNRC

The 17th bilateral meeting between the AERB and the United States Nuclear Regulatory Commission (USNRC) was held during January 27-30, 2020 at USNRC's headquarters at Rockville, Maryland USA. A four member Indian delegation led by Shri S. B. Chafle, Head, NPSD, AERB participated in the meeting. The technical discussions and sharing of information took place in the areas of emergency preparedness and

response for nuclear power plants, licensing approaches for new nuclear reactors, latest development in materials and component integrity research, regulation of radiotherapy facilities for cancer treatment and management of disused sealed radioactive sources. USNRC also organized technical visits to their nuclear and radiation facilities, such as University of Maryland and to Medstar Georgetown University hospital. The technical discussions during the meeting were useful in understanding the regulatory process being followed for the regulation of nuclear & radiation facilities and challenges faced by both countries. AERB and USNRC jointly identified future collaborative activities for mutual benefits.



Visit of Indian Delegation to Medstar Georgetown University Hospital

10.2.3 Visit of USNRC Commissioner to AERB

Ms. Annie Caputo, Commissioner, USNRC, along with three delegates visited AERB on February 18, 2020. Chairman AERB, Shri G. Nageswara Rao and Executive Director AERB, Shri D. K. Shukla and senior AERB officers met the delegation. AERB apprised them on various topics such as the legislative & regulatory framework and current nuclear and radiation safety regulations in India, human resources, regulatory documents, safety review mechanism, regulatory oversight and international cooperation activities of AERB. Information on regulatory practices related to licensing and inspections of nuclear facilities was shared by USNRC and AERB. Areas of common interest like addressing lessons from accident at Fukushima Daiichi NPP in the regulatory requirements and guidance documents, regulatory acceptance of

commercially available digital I&C systems and cyber security related issues were also briefly discussed.

10.2.4 Visit of Commercial Nuclear Executives from USA to AERB

Senior representatives from leading nuclear companies from USA like Westinghouse Electric company, Terra Power, Bechtel, Urenco, Nuscale Power etc., along with Ms. Rita Baranwal, Assistant Secretary for the office of Nuclear Energy, USDOE, visited AERB on February 13, 2020. They were briefed about the nuclear regulatory framework in India and the safety requirements prescribed by AERB for NPPs especially for new reactors. The delegation informed AERB about various reactor designs under consideration in USA like AP1000, Advance Non-Light Water Reactors and small modular reactors etc.



Meeting of AERB Sr. Management with Senior representatives from leading Nuclear Companies from USA

10.2.5 Bilateral Meeting between AERB and CNSC

A bilateral meeting between AERB and Canadian Nuclear Safety Commission (CNSC) was held through video conferencing on November 23, 2020. The AERB delegation comprised of Shri G. Nageswara Rao, Chairman, AERB, Shri D. K. Shukla, Executive Director AERB, and Shri Deepak Ojha, Head, International Co-ordination and Communication Section (ICCS), DRA&C, AERB. The President of CNSC, Ms. Rumina Velshi and Executive Vice-President, Mr. Ramzi Jammal attended the meeting from Canada.



(From L to R): Shri D. K. Shukla, Executive Director, AERB, Shri G. Nageswara Rao, Chairman, AERB, and Shri Deepak Ojha, Head, ICCS interacting with CNSC through video conferencing

AERB and CNSC discussed the current regulatory challenges specific to PHWR based NPPs, regulatory oversight of nuclear facilities during the COVID-19 pandemic, public confidence in the safety of nuclear power and the challenges associated with sites for new nuclear power plants and the future thrust areas. AERB and CNSC agreed to continue discussion on the areas of mutual interest.

10.3 PARTICIPATION IN INTERNATIONAL COMMITTEES

AERB has been actively involved with various international bodies for exchange of information and in co-operation in the field of regulation of nuclear activities for peaceful purposes. AERB experts have been actively participating in various activities of IAEA and have been contributing at various other international fora. AERB is the national coordinator for IAEA- International Nuclear and Radiological Event Scale (INES) based reporting of events and IAEA/NEA - Incident Reporting System (IRS) and Fuel Incident Notification and Analysis System (FINAS).

AERB participates in various Technical and Consultants' meetings organised by IAEA on a range of topics for NPPs, Fuel Cycle Facilities, Radiation Facilities, Transportation of Radioactive Materials and Illicit Trafficking of Radioactive Materials. AERB has been participating in IAEA Coordinated Research Programme (IAEA-CRP) and NEA joint projects and information exchange programmes.

10.3.1 Sharing Regulatory Experience Feedback on Covid-19 Impact

AERB monitors the impact of COVID-19 on nuclear installations around the world. Information on communication strategy of AERB during COVID-19 pandemic covering impact of COVID-19 on internal and external communication, tools used for communication and feedback from stakeholders/public was shared with Working Group on Public Communication (WGPC) of Committee of Nuclear Regulatory Activities (CNRA) of Nuclear Energy Agency (NEA). AERB representative participated in the plenary meeting of the WGPC held remotely on May 27, 2020.

10.3.2 IAEA's Commission on Safety Standards (CSS)

Shri G. Nageswara Rao, Chairman, AERB, participated in the 48th meeting of the IAEA's Commission on Safety Standards (CSS), which was held virtually on November 17 and 19, 2020. A dedicated session on COVID-19 outbreak and the measures by the Government and regulator for ensuring continued safe operation of the facilities was part of the agenda for the meeting. Chairman, AERB shared a status and actions by AERB for providing Continuity of Safety / Regulatory Monitoring of Nuclear and Radiation Facilities in India during the COVID-19 pandemic.

10.3.3 Participation in Technical Meetings / Conferences

During the year 2020, AERB officers participated in Technical/Consultancy Meetings, Conferences/Seminar organised by IAEA and other agencies on the range of topics as detailed below. After March 2020 due to global COVID-19 pandemic situation, all the meetings were held in virtual mode. AERB officers also participated in following International Webinars:

- IAEA International Conference on Nuclear Security : Sustaining and Strengthening Efforts
- Seminar on Development of Nuclear Power Infrastructure arranged by JAIF International Cooperation Centre (JICC)

Conferences/Seminar



- (i) Celebrating 20 Years of the International Project on Innovative Nuclear Reactors and Fuel Cycles, IAEA GC 2020 Secretariat virtual side event.
- (ii) NEA CESC webinar on Multi-sector workshop on Innovative Regulation: Challenges and benefits of Harmonizing the licensing process for emerging technologies.
- (iii) Hazard Assessment-A Basis for a Graded Approach in Preparedness and Response for a Nuclear or Radiological Emergency irrespective of the Cause by IAEA.
- (iv) Expanding NPP Risk Assessment to Multi-Unit Context: Achievements and Challenges.
- (v) Application of a Graded Approach in regulating Nuclear Facilities.
- (vi) The link between Emergency Preparedness and Protection Strategy for Nuclear Emergencies.

- Committee on Safety Standards (CSS)
- Nuclear Security Recommendation on Radioactive Material and Associated Facilities (NSS-14)
- Safety Aspects of Using Smart Digital Devices in Nuclear Systems
- International project on Decommissioning of Small Medical, Industrial and Research facilities
- Use of Periodic Safety Assessments
- PSA working group of WWER Regulatory Forum

Technical Meets (Physical)



- 49th Radiation Safety Standards Committee (RASSC)
- 41th Transport Safety Standards Committee (TRANSSC)
- CANDU Senior Regulators' Meeting
- Technical Meeting on Regulatory Supervision of Nuclear Fuel Cycle Facilities
- 24th Meeting of Atomic Energy Research (AER) Scientific Council
- 27th Meeting of the Committee on Nuclear Regulatory Activities Working Group on Operating Experience (CNRA-WGOE)
- International Generic Ageing Lessons Learned (IGALL)/Working Group-3
- History, Experience, and Lessons for the future on IEC.
- External Events Safety Section Extra Budgetary Project on Liquefaction Task
- Technical meeting of the International Reporting System for Operating Experience National Coordinators - Recent Events in Nuclear Power Plants

Technical Meetings (Virtual)

