

CONTENTS

TITLE	PAGE NO.
LIST OF TABLES	IX
MISSION AND VISION OF AERB	XI
ORGANISATIONAL STRATEGIES	XII
COMPOSITION OF THE BOARD	XIII
ORGANISATION CHART OF AERB	XIV
KEY INFORMATION AT A GLANCE FOR THE YEAR 2023	XV
EXECUTIVE SUMMARY	XVI
AERB FORMATION DAY RUBY JUBILEE ANNIVERSARY	XXIII
CHAPTER 1: SAFETY SURVEILLANCE OF NUCLEAR & DAE INDUSTRIAL FACILITIES	31
1.0 Safety Review Mechanism of Nuclear and Industrial Facilities	31
1.1 Review Status of Nuclear Power Projects & Fuel Cycle Facilities	32
1.2 Nuclear Power Projects: Review Status	34
1.3 Fuel Cycle Facility Projects	39
1.4 Fuel Cycle Facility Projects: Review Status	40
1.5 Reportable Industrial Incidents at Construction Sites	42
1.6 Operating Nuclear Power Plants, Research Reactors, Fuel Cycle Facilities and Industrial Facilities	42
1.7 Operating Nuclear Power Plants and Research Reactors	43
1.8 Status of Implementation of Safety Enhancements at Operating NPPs	46
1.9 Fast Breeder Test Reactor (FBTR), IGCAR	47
1.10 KAMINI Reactor, IGCAR	47
1.11 Licensing of Operating Staff at NPPs and RRs	47
1.12 Nuclear Fuel Cycle Facilities and Industrial Facilities	48
1.13 Significant Events	56
1.14 Occupational Injury Statistics of DAE Units	60
1.15 Safety Performance Indicators of Operating Nuclear Power Plants (NPPs)	63
CHAPTER 2: SAFETY SURVEILLANCE OF RADIATION FACILITIES	
2.0 Safety Review Mechanism of Radiation Facilities	67
2.1 Applications of Radiation Sources and Regulatory Activities	70
2.2 Medical Applications of Radiation Sources	70

TITLE		PAGE NO.
2.3	Industrial Applications of Radiation Sources	73
2.4	Consumer Products, Scanning and Research Applications	74
2.5	Approval of Radiological Safety Officers	78
2.6	R&D Units and other Facilities in Construction and Operation	79
2.7	Unusual Occurrences/ Enforcement Actions	81
2.8	Management of Disused Radioactive Sources	81
2.9	Safety Committees for Radiation Facilities	82
CHAPTER 3: REGULATORY INSPECTIONS		
3.0	Regulatory Inspection Programme	85
3.1	Graded Approach in Determining Safety Significance of Deviations	85
3.2	Regulatory Inspections of Nuclear, Industrial & Radiation Facilities	87
3.3	Regulatory Oversight of QA Activities during Manufacturing of Safety Related Reactor Equipment/Component	91
3.4	Regulatory Inspection of Radiation Facilities	91
CHAPTER 4: ENVIRONMENTAL SAFETY AND OCCUPATIONAL EXPOSURES		
4.0	Observance of Dose Limits	97
4.1	Authorised Limits of Environmental Releases/Discharge	97
4.2	Environmental Safety	98
4.3	Occupational Exposures	100
4.4	Initiatives Taken by AERB for Dose Reduction	103
CHAPTER 5: EMERGENCY PREPAREDNESS		
5.0	Role of AERB in Emergency Preparedness and Response	107
5.1	Review of Emergency Preparedness and Response Plans	107
5.2	Framework for Conduct of Off-Site Emergency Exercises	108
5.3	Emergency Exercises at NPPs	109
5.4	Nuclear and Radiological Emergency Monitoring Centre at AERB	110
CHAPTER 6 : REGULATORY SAFETY DOCUMENTS		
6.0	Regulatory Safety Documents Development Process	113
6.1	Regulatory Safety Documents Developed/Revised	114
6.2	Safety Documents under Development/ Revision	115
6.3	Review of Draft IAEA Safety Documents	116

TITLE		PAGE NO.
CHAPTER 7: SAFETY ANALYSIS AND RESEARCH		
7.1	Reactor Thermal Hydraulics Safety Studies	119
7.2	Severe Accident Studies	120
7.3	Safety Analysis Code Development & Benchmarking	122
7.4	Radiological Impact Assessment Studies	129
7.5	Experimental Studies	130
7.6	Reactor Physics Studies	132
7.7	Structural Analysis and Material Studies	133
7.8	Safety Studies to Support Review and Assessment	138
7.9	AERB Funded Safety Research Programme	139
CHAPTER 8: ENGAGEMENT WITH STAKEHOLDERS AND PUBLIC OUTREACH		
8.0	AERB and Media	143
8.1	Communication and Consultation with Stakeholders	143
8.2	Strengthening of Regulatory Interfaces	143
8.3	National Conference on Regulatory Interface -2023	144
8.4	Public Awareness Activities	144
8.5	Development of Short Awareness Film	146
8.6	Awareness Programmes for Stakeholders for Radiation Facilities	146
8.7	DAE Safety & Occupational Health Professional Meet	147
8.8	Theme Meeting for Stakeholders	149
8.9	Webinars for Stakeholders	151
CHAPTER 9: ACCOUNTABILITY		
9.0	Grievance Redressal	155
9.1	Right to Information Act	155
9.2	Parliamentary Questions	156
CHAPTER 10: INTERNATIONAL CO-OPERATION		
10.0	Strengthening Nuclear Safety and Security	159
10.1	Bilateral Co-operation	160
CHAPTER 11: HUMAN RESOURCES DEVELOPMENT AND INFRASTRUCTURE		
11.0	Enhancing Organisation Excellence	165
11.1	Human Resource	166

TITLE		PAGE NO.
11.2	Employment of Persons with Disabilities	166
11.3	Integrated Management System	166
11.4	Training	166
11.5	Training on Communication at IIMC, Delhi	167
11.6	Knowledge Management	167
11.7	Seminar on "Role of Nuclear Energy in the Decarbonising World"	168
11.8	Infrastructure Development	169
11.9	Appointments and Retirements	170
CHAPTER 12: EVENTS AND ACTIVITIES IN AERB		
12.0	Celebration of Republic Day	175
12.1	Swachhata Pakhwada	175
12.2	National Safety Day	177
12.3	International Women's Day Celebration	178
12.4	World Yoga Day Celebration	179
12.5	Celebration of 77 th Independence Day	179
CHAPTER 13: PROMOTION OF OFFICIAL LANGUAGE		
13.0	Implementation of Official Language	183
13.1	Publications in Hindi	183
13.2	Hindi Day Celebrations	183
13.3	Programmes for Promotion of Official Language	183
13.4	Joint Hindi Workshop	184
13.5	Hindi Scientific Seminar	184
13.6	Hindi Teaching Scheme	184
CHAPTER 14: FINANCE		
14.0	Annual Budget and Its Utilisation	187
PUBLICATIONS		189
ABBREVIATIONS		191
INES EVENT SCALE		196

LIST OF TABLES

TABLE	TITLE	PAGE NO.
Table 1.1	Status of Nuclear Power Projects	33
Table 1.2	Status of Fuel Cycle Facilities under Siting, Construction and Commissioning	40
Table 1.3	Safety Review Committee Meetings of the Nuclear Power Projects and Fuel Cycle Facilities under Construction	41
Table 1.4	List of Operating NPPs	43
Table 1.5	Meetings of Safety Committees / Standing Committees / Expert Groups	44
Table 1.6	Licensing of Operating Staffs	48
Table 1.7	Status of Nuclear Fuel Cycle Facilities and other Industrial Facilities	49
Table 1.8	Meeting of Safety Review Committee of Fuel Cycle Facilities	52
Table 1.9	Licensed Operating Staff of HWP	54
Table 1.10	Number of Significant Events in Operating NPPs Reported in Year- 2023	57
Table 1.11	Unit wise Comparison of Reportable Occupational Injuries in DAE Units for the Year-2022	60
Table 2.1	Details of Radiation Facilities and Equipment/Sources as on 31 st December 2023	67
Table 2.2	Details of Consents/Renewals issued for Medical Radiation Facilities in the Year- 2023	72
Table 2.3	Details of Consents issued for Industrial Radiation Facilities during the Year- 2023	77
Table 2.4	Details of Consents/Renewals issued for Consumer Products and Scanning Facilities for the Year- 2023	78
Table 2.5	Approval of Radiological Safety Officers in Radiation Facilities for the Year- 2023	78
Table 2.6	Status of R&D Units and other DAE Facilities	79

TABLE	TITLE	PAGE NO.
Table 2.7	Meetings of Safety Review Committees of Radiation Facilities for the Year- 2023	82
Table 3.1	Details of Special and Reactive Inspections Conducted for the Year- 2023	88
Table 3.2	RIs of NFs (Under Construction and Commissioning)	89
Table 3.3	RIs of Operating Nuclear Facilities & NPCIL HQ	90
Table 3.4	Regulatory Inspections of Industrial and Fuel Cycle Facilities and HWB HQ	90
Table 3.5	Regulatory Inspections of Radiation Facilities	92
Table 4.1	Radiation Doses Received by Workers in Nuclear Power Plants for the Year- 2022	100
Table 4.2	Radiation Doses Received by Workers in Front End Fuel Cycle Facilities for the Year- 2022	101
Table 4.3	Radiation Doses Received by Workers in Medical, Industrial and Research Institutions for the Year- 2022	103
Table 5.1	Framework for Conduct of Off-Site Emergency Exercises at NPP Sites	108
Table 5.2	Site and Off-Site Emergency Exercises at NPP Sites for the Year- 2023	109
Table 7.1	Research Projects Renewed/Extended	139
Table 8.1	List of Winners for Industrial Safety Award for the Year- 2022	148
Table 8.2	List of Winners for Fire Safety Award for the Year- 2022	149
Table 11.1	Employees Joined AERB	170
Table 11.2	Employees Retired /Transferred / Resigned from AERB	171
Table 14.1	Annual Budget for the Year 2022-23 (Actual in crores)	187