



CHAPTER -06

REGULATORY SAFETY DOCUMENTS



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One of the core activities of AERB is to develop the safety regulation for different types of facilities and activities under its purview. Development and revision of Regulatory Safety Documents (Safety REGDOCs) is a continual process of AERB taking into account national requirements, international developments and good practices.

The process of Safety REGDOC development takes into account the following aspects:

- Inputs from Safety Reviews / Legal Views / Technical Discussions
- Requirements identified during consenting, regulatory inspection and enforcement process
- New regulatory and technological developments relevant to AERB
- International Practices
- Specific aspects of recommended/ accepted practices
- Experience/feedback from nuclear and radiation facilities

Safety REGDOCs issued by AERB are classified as follows in descending order of hierarchy:

- Safety Codes/ Safety Standards
- Safety Guides
- Safety Manuals

Pictorial representation of hierarchy of safety documents is given in Figure 6.1.

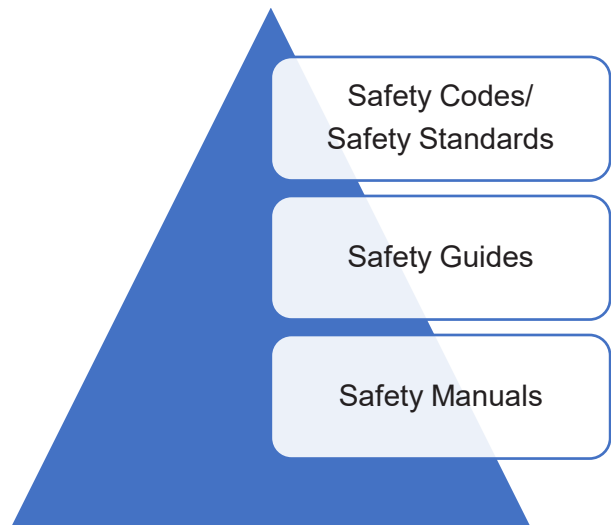


Fig.6.1 Hierarchy of Safety Documents

Safety codes and safety standards establish the objectives and set requirements that shall be fulfilled to provide adequate assurance for safety. Safety guides elaborate various requirements and furnish approaches for their implementation. Safety manuals deal with specific topics and contain detailed scientific / technical information on the subject.

AERB has issued safety documents, which provide adequate coverage commensurate with the radiation risks associated with the facilities and activities. Till date, AERB has published 153 Safety REGDOCs which include Safety Codes, Standards, Guidelines, Guides and Manuals.

6.0 Regulatory Safety Documents Development Process

AERB has an established process for development and revision of Safety REGDOCs. The process of development of new or revision of old Safety REGDOCs begins with Safety Document Development / Revision Proposal (SDDP / SDRP). It is prepared by technical staff of AERB based

on the requirements emanated from the review of inputs from various regulatory processes, operating experience, among others.

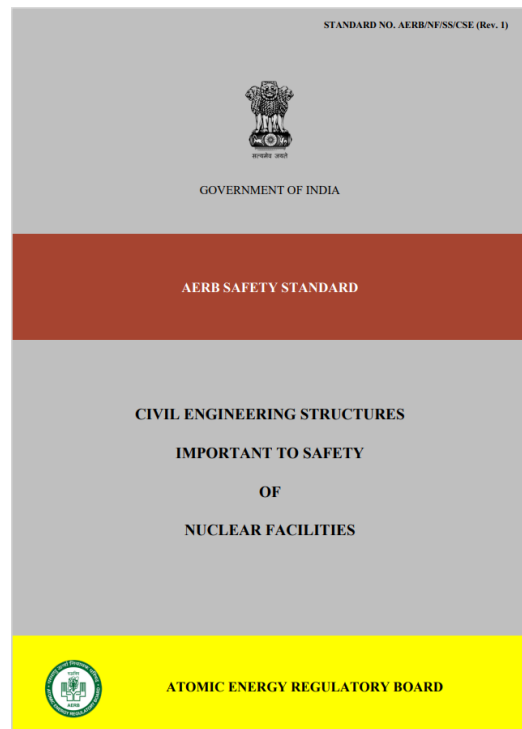
As per the approved SDDP, the initial draft of the REGDOC is prepared in-house in AERB and is reviewed by Task Force constituted for this purpose. Technological advances, R&D work, relevant operational lessons learned and institutional knowledge are considered as appropriate in development/revision of the Safety REGDOCs. The development and revision process also involves participation of experts and stakeholders by direct involvement as well as through comments and feedback. The draft is also reviewed by respective standing committees and apex committee based on graded approach.

Advisory Committee on Nuclear and Radiation Safety (ACNRS), an apex committee, supports AERB in the review of draft regulatory documents and safety issues. ACNRS consists of senior experts in the areas relevant to nuclear & radiation safety and its regulation.

After technical and copy editing, the draft is approved by Chairman, AERB for publication. In case of Safety Codes and Safety Standards, legal vetting is done and public comments are also sought on the draft before its finalization. Subsequently the draft is reviewed and approved by the Board of AERB.

6.1 Regulatory Safety Documents Developed/Revised

In 2023, AERB published a Safety Standard on “Civil Engineering Structures Important to Safety of Nuclear Facilities AERB/NF/SS/CSE (Rev. 1) ” The Safety Standard specifies the analysis and design requirements of civil engineering structures important to safety in order to achieve safe operation of NFs. It also sets out requirements to be fulfilled during construction, commissioning, operation, decommissioning as well as margin assessment of civil engineering structures.



6.2 Safety Documents under Development / Revision

Safety documents on various topics are being developed/ revised. The documents under development/revision are as follows:

Safety Codes

1. Safety Code on 'Radiation Sources, Equipment & Installations' (AERB/SC/RF)
2. Safety Code on 'Regulation of Nuclear and Radiation Facilities' (AERB/SC/G)
3. Safety Code on 'Design of Sodium Cooled Fast Reactor based NPPs' (AERB/NPP-SFR/SC/D)
4. Safety Code on 'Design of Pressurised Heavy Water Reactor based Nuclear Power Plants (AERB/NPP-PHWR/SC/D (Rev. 1))
5. Safety Code on 'Quality Assurance in Nuclear Power Plants' (AERB/NPP/SC/QA (Rev.1))

Safety Standards

6. Safety Standard on 'Fire Protection Systems for Nuclear Facilities' (AERB/NF/SS/FPS (Rev. 1))

Safety Guides

7. Safety Guide on 'In Service Inspection of NPPs' (AERB/NPP/SG/O-2)
8. Safety Guide on 'Consenting Process For Nuclear Power Plants And Research Reactors' (AERB/NPP&RR/SG/G-1)
9. Safety Guide on 'Consenting Process For Nuclear Fuel Cycle Facilities And Related Industrial Facilities Other Than Nuclear Power Plants And Research Reactors' (AERB/NF/SG/G-2)
10. Safety Guide on 'Design Basis Flood for Nuclear Power Plants on inland sites' (AERB/SG/S-6A (Rev.1))
11. Safety Guide on 'Safety Classification and

Seismic Categorisation for Structures, Systems and Components of Pressurised Heavy Water Reactors' (AERB/NPP-PHWR/SG/D-1)

12. Safety Guide on 'Fuel Design for Pressurised Heavy Water Reactors' (AERB/SG/NPP-PHWR/D-6)
13. Safety Guide on 'Primary Heat Transport System for Pressurised Heavy Water Reactors (AERB/NPP-PHWR/SG/D-8)
14. Safety Guide on 'Radiation Protection Aspects in Design for Pressurised Heavy Water Reactor Based Nuclear Power Plants' (AERB/NPP-PHWR/SG/D-12)
15. Safety Guide on 'Deterministic Safety Analysis for Pressurized Heavy Water Reactors' (AERB/NPP-PHWR/SG/D-19)
16. Safety Guide on 'Deterministic Safety Analysis for Sodium Cooled Fast Reactor based NPPs' (AERB/NPP-SFR/SG/D-19)
17. Safety Guide on 'Containment System Design for PHWRs' (AERB/NPP-PHWR/SG/D-21)
18. Safety Guide on 'Design of Fuel Handling and Storage Systems for Pressurised Heavy Water Reactors (AERB/SG/D-24)
19. Safety Guide on 'Computer Based Systems of Pressurised Heavy Water Reactors' (AERB/NPP-PHWR/SG/D-25)
20. Safety Guide on 'Level 1 Probabilistic Safety Assessment (PSA) for NPPs' (AERB/NPP/SG/D-28)
21. Safety Guide on 'Level 2 Probabilistic Safety Assessment (PSA) for NPPs' (AERB/NPP/SG/D-29)
22. Safety Guide on 'Staffing, Recruitment, Training, Qualification and Certification of Operating Personnel of Nuclear Power Plants' (AERB/SG/O-1)
23. Safety Guide on 'Operational Limits and Conditions for Nuclear Power Plants' (AERB/SG/O-3)
24. Safety Guide on 'Commissioning Procedures for Pressurised Heavy Water Reactor based Nuclear Power Plants' (AERB/SG/O-4)

25. Safety Guide on 'Commissioning of Sodium Cooled Fast Reactor Based Nuclear Power Plants' (AERB/SG/O-4D)
26. Safety Guide on 'Surveillance of Items Important to Safety in Nuclear Power Plants' (AERB/SG/O-8)
27. Safety Guide on 'Management of NPPs for Safe Operation' (AERB/SG/O-9)
28. Safety Guide on 'Quality Assurance In Nuclear Facilities' (AERB/SG/MS)
29. Safety Guide on 'Management of Nuclear and Radiological Emergencies in Nuclear Facilities' (AERB/NF/SG/NRE-1)
30. Safety Guide on 'Management of Emergency Arising From Radiation Sources, Equipment And Installation' (AERB/RF/SG/NRE-2)
31. Safety Guide on 'Management of Nuclear And Radiological Emergencies during Transport of Radioactive Material' (AERB/NF/SG/NRE-3)
32. Safety Guide on 'Industrial Radiography' (AERB/RF/SG/IR)
33. Safety Guide on 'Industrial Accelerator Radiation Processing Facility' (AERB/RF/SG/IARPF)
34. Safety Guide on 'Container Scanner' (AERB/RF/SG/CS)
35. Safety Guide on 'Diagnostic Radiology' (AERB/RF/SG/DR)
36. Safety Guide on 'Nucleonic Gauges' (AERB/RF/SG/NG)
37. Safety Guide on 'Well logging Applications' (AERB/RF/SG/WL)
38. Safety Guide on 'Medical Cyclotron Facilities' (AERB/RF/SG/MCF (Rev.1))
39. Safety Guide on 'Gamma and X-ray Irradiation Chamber' (AERB/RF/SG/GXIC)
40. Safety Guide on 'Gamma Radiation Processing Facility' (AERB/RF/SG/GRAPF)
41. Safety Guide on 'Particle Accelerator Research Facility' (AERB/RF/SG/PARF)
42. Safety Guide on 'Manufacture and Supply of Consumer Products' (AERB/RF/SG/CP)
43. Safety Guide on 'Use Of X-ray Generating Equipment In Research, Education, Inspection And Analysis' (AERB/RF/SG/XGE)
44. Safety Guide on 'Radiation Therapy' (AERB/RF/SG/RT)
45. Safety Guide on 'Nuclear Medicine' (AERB/RF/SG/NM)
46. Safety Guide on 'Radioactive Sources used Research, Education, Inspection and Analysis' (AERB/RF/SG/RS)
47. Safety Guide on 'Medical Management of Persons Exposed In Radiation Accidents' (AERB/NRF/SG/MED-1(Rev.1))

Safety Manuals

48. Safety Manual on 'Radiation Protection for Nuclear Facilities', (AERB/NF/SM/O-2, (Rev.4))
49. Safety Manual on 'Management of Radioactive Wastes Arising From Nuclear Medicine Facilities' (AERB/RF/SM/RW-1)
50. Safety Manual on 'Methodology For Radiological Impact Assessment For Public Dose Computation and Dose Apportionment Due To Operational States of Nuclear Facility'(AERB/SM/RIA-2)
51. Safety Manual on 'Radiation Protection For Radiation Facilities' (AERB/RF/SM/O-2)
52. Safety Manual on 'Hydrogen Release and Mitigation Measures under Accident Conditions in Pressurised Heavy Water Reactors (With Amendment)' (AERB/NPP-PHWR/SM/D-2)

6.3 Review of Draft IAEA Safety Documents

AERB reviews draft IAEA safety documents and provides its perspective to IAEA. In 2023, AERB experts reviewed 19 IAEA Draft Standards (DS) and 11 IAEA Document Preparation Profile Draft Standards (DPP DS).