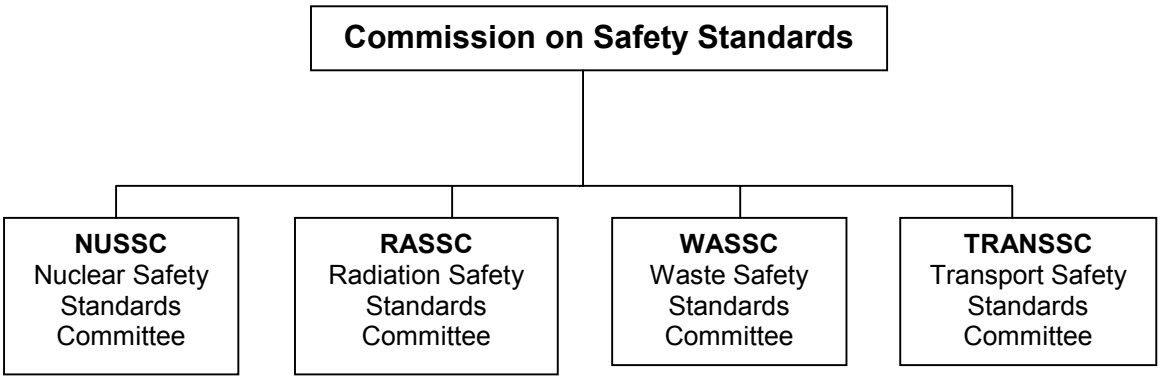
Commission on Safety Standards
Second Term Report
2000-2003

Laurence Williams

Introduction

1. In August 1995, the Agency introduced a new approach for the preparation and review of its Safety Standards. The new approach created a Commission on Safety Standards to oversee the four specialist committees (one each for nuclear safety, radiation safety, transport safety and radioactive waste safety). The objectives of the Commission on Safety Standards are to ensure coherence and consistency of the standards and to provide guidance on the approach and strategy for establishing the Agency's safety standards.



2. The Director General appoints the Commission's members, and the members of the Committees are appointed by the Deputy Director General, Head of Department of Nuclear Safety and Security. The Commission members are appointed for a four-year term. The first Commission sat from 1996 to 2000. In the second term the Commission held eight meetings. The members of the Commission are given in Annex 1.

3. This report provides a review of the work of the Commission on Safety Standards during the second four-year term covering the period January 2000 to December 2003. Its purpose is to:

- record the work of the Commission;
- report on progress of the Standards under development and identify areas for particular attention; and
- record the Commission's recommendations to the Secretariat and Committees for the future direction of the work on safety standards.

Strategy Development

4. In the early days the nuclear safety standards were aimed at countries setting out on nuclear power development and they tended to represent consensus at the 'lowest common denominator' level. However, in the late 1980's the situation was changing and the international community expected more from the IAEA standards. The requirement was for the Safety Standards to represent the good practices of the developed countries with established nuclear power programmes. The first Commission started the process of improving the standards to meet these expectations.

5. The Commission has continued the drive to produce high quality Safety Standards to reflect high levels of safety. As part of its mandate the Commission reviewed the Safety Standards programme and decided upon a new vision and strategy for the development and use of the Safety Standards. The Strategy was based upon the continued improvement of the scope and quality of the Standards and the enhancement of their global acceptance.

6. The Commission considered the global acceptance of the safety standards an integral part of its mandate and a challenge. The IAEA standards were recognized as having a degree of international acceptance, but the perception of the standards and their application varied significantly. It was also clear that the standards were not well recognized in the wider world as being essential and valuable contributions to protecting people and the environment.

7. The challenge the Commission recognized was to broaden the recognition by all governments, regulatory bodies, operators and users, as well as the public, that the application of the safety standards would ensure a globally consistent and high level of protection for people and the environment.

8. In November 2001, the Chairman briefed the Director General on the Commission's proposals for a new vision and strategy for the continued improvement of the scope and quality of the Standards and for enhancing their global acceptance. Director General welcomed the initiative and asked the Commission, in conjunction with the secretariat to develop an action plan to deliver the new strategy.

9. A detailed strategy was prepared after consultation with the Committees and was presented to the Senior Regulators' meeting held during the 2002 General Conference. The senior regulators from Member States gave their support to the Commission's vision and strategy. The Commission approved the detailed strategy at its November 2002 meeting and agreed to submit it to the Director General. The Director General decided to submit the strategy to the March 2003 Session of the Board of Governors (Note by the Secretariat, 2003/Note 4, Annex II)

10. The strategy submitted to the Board of Governors outlined a vision for the Safety Standards and a plan for development three separate reports for submission to the Director General. The proposed vision was for the IAEA Safety Standards to be seen as high quality, up to date, user friendly, fit for purpose and the global reference for protecting people and the environment. The three reports suggested by the Commission were:

- an overview of safety standards (A new publication in the form of a brochure explaining the philosophy, structure, scope and intended application of the standards);
- an overall structure of the IAEA safety standards (To identify and fill existing gaps and to ensure that all necessary activities and issues are appropriately addressed and to provide an appropriate combination of 'thematic' standards that apply to a particular activity or practice and 'facility specific' standards that are specific to a particular type of facility); and
- an action plan for safety standards (to fulfil the vision, to meet the objectives of the safety standards programme with the aim of achieving and maintaining a set of harmonized safety standards of high technical quality, taking into account trends and developments and for

strengthening the application of the safety standards as the basis for assistance provided to the Member States; and the use of the standards by Member States in particular in connection with safety related conventions).

11. The Overall structure and text of the brochure were submitted to the September 2003 Session of the Board of Governors and the General Conference (GOV/INF/2003/15-GC (47)/INF/4, Annex 5, Attachments 1 and 2). Glossy versions of both reports were distributed at the 2003 General Conference and were posted on the IAEA website.

12. The commission approved the action plan for submission to the Director General in November 2003.

Safety Standards Quality

13. The quality of the Safety Standards is delivered by the rigor of the preparation and review process. This process involves the IAEA Secretariat, the four safety standards committees and the Commission that oversees the whole Safety Standards programme. The Committees are made up of experts from the IAEA Member States and the Commission members are senior government officials having responsibility for setting national standards.

14. The need for a standard can be proposed in a variety of ways but their production is tightly controlled. The Commission first requires the Secretariat to produce a Document Preparation Profile to describe the need for the standard, brief details on the scope and nature of the standard, where it fits into the overall Safety Standards programme and the intended timescale for production. Only when the Commission is satisfied with the need and scope of the standard is the Secretariat given the authority to commence production. The Commission can call for draft standards to be submitted to it for consideration during the preparation process. However, it is more usual for the Commission to review the draft standard after it has been reviewed by the appropriate Committee. The Commission will only endorse a standard when it is satisfied that it will contribute to the delivery of a high level of safety, it is up to date, user friendly and fit for purpose.

15. For Safety Fundamentals and Safety Requirements the document endorsed by the Commission is submitted to the IAEA Board of Governors for approval for publication. Safety Guides, the Commission will, when satisfied, submit the document to the Director General for his approval for publication. The Commission agreed a new procedure to ensure that the Safety Standards are kept up to date by requiring then to be reviewed every five years.

Standards Structure

<u>Safety Fundamentals</u>

16. The IAEA Safety Standards have three categories, Safety Fundamentals, Safety Requirements and Safety Guides. There are currently three Safety Fundamentals documents covering nuclear safety, radiation protection and radioactive waste management. Safety Fundamentals present the objectives, concepts and principles of protection and safety. These Fundamentals provide the basis for the safety

requirements. The Board of Governors has for some years requested the three Fundamentals documents to be replaced by a single Standard to cover nuclear safety, radiation protection, radioactive waste and transport.

17. During its second Commission initiated the process to produce a single standard. Because the Fundamentals provide the top-level principles, which define the objectives of the whole standards programme, the Commission decided it would depart from the normal standards production procedure. Instead of appointing consultants to prepare the first draft of the document for the Committees to consider, the Commission asked the Chairman and three other members to draft the document. This was done and the draft is now with the Committees for review.

Safety Requirements

18. The Safety Requirements establish the requirements that must be met to ensure the protection of people and the environment, both now and in the future. The requirements, which are expressed as “shall” statements, are governed by the objectives, concepts and principles of the Safety Fundamentals. If they are not met, measures must be taken reach or restore the required safety level. The Safety Requirements are the key documents in the Safety Standards programme because they use regulatory language that enables them to be incorporated into national laws and regulations. The Commission has reviewed the areas where Safety Requirements are because of their importance it anticipates that additional standards will be need in the future. The Commission has asked the Committee on Radiation Safety to advise it on the need for a new ‘Requirements’ for radiation protection.

Safety Guides

19. Safety Guides provide recommendations and guidance on how to comply with the Safety Requirements. Recommendations are expressed as ‘should’ statements, which express the desirability for the recommendation to be followed, but accepts that alternative means of delivering the objective. The Commission has focused its attention on ensuring that the Safety Guides increasingly represent the best practices to help users strive towards the achievement of high levels of safety.

Scope of the Standards Programme

20. The Commission set out to review the scope of the Safety Standards to ensure it comprehensive and adequately met the needs of the users. This work is not completed as the range of standards required in the fuel cycle, isotope production, radiotherapy and medical facilities radioactive waste management facilities and research reactor areas still needs to be finalized. However, to provide a better understanding of the whole Safety Standards programme, the Commission agreed to a new programme structure for all standards (Annex 2).

21. The standards cover five basic areas:

- General safety (cross cutting themes)
- Safety of nuclear facilities;
- Radiation protection and the safety of radiation sources;
- Safe management of radioactive waste; and
- Safe transport of radioactive materials.

22. The new structure shows a single 'Fundamentals' standard at the top, supported by standards in two main groups i.e. 'thematic' standards and 'facility specific' standards. In the thematic area there are currently ten Safety Requirements with supporting Safety Guides:

- Legal and governmental infrastructure;
- Emergency preparedness and response;
- Management systems;
- Assessment and verification;
- Site evaluation;
- Radiation protection;
- Radioactive waste management;
- Decommissioning;
- Rehabilitation of contaminated areas; and
- Transport of radioactive material.

In the facility specific area, there are currently six Safety Requirements again with supporting Safety Guides:

- Nuclear power plants: Design
- Nuclear power plants: Operation;
- Research reactors;
- Fuel cycle facilities;
- Radiation related facilities; and
- Waste treatment and disposal facilities.

23. The Commission believes that new structure of the Safety Standards Programme, which clearly shows what standards are available, the relationship between 'Requirements' and 'Guides' and the areas they cover, is a major improvement for the visibility of the Standards to the international community. The structure should make it easier for Member States or international organizations to identify gaps in the programme and recommend the production of new standards.

Safety Standards Visibility

24. The Commission has contributed to a number of initiatives to increase the visibility and promote the use of the Safety Standards. The new vision and strategy was presented to the IAEA Senior Regulators meeting and received their support. The strategy was also presented to the 2003 IAEA Scientific forum and again received general support. The European Commission, which had advocated the creation of European nuclear safety standards, has also accepted the IAEA Safety Standards as being the only viable international standards. The new strategy is seen as the basis for safety within the European Union. Also the Western European Nuclear Regulators Association (WENRA) is now using the Safety Standards as the basis for their harmonization work. The Director General agreed to the Commission's request to shorten the publication times for Safety Standards and the documents are now becoming available much sooner than before. The Director General also agreed to putting all Safety Standards on the IAEA website to enable them to reach a much wider audience. This is now happening and the Agency has noticed and increased demand for 'hard copy' standards, which is increasing revenues. The commission has asked for the additional income to be used to fund additional translation work to

speed up publication times. The Commission believes its initiatives have contributed to the grater recognition of the value of the IAEA Safety Standards.

Endorsement of Safety Standards by the Commission

25. During its second term the Commission endorsed 5 Safety Requirements for submission to the Board of Governors, and 40 Safety Guides for submission to the Director General. In addition the Commission approved 30 document preparation profiles for development or revision of safety standards. Annex 3 provides a listing of the safety standards endorsed during the current term. Annex 4 shows the standards under production.

Future work

26. The Commission's work in coming years will be focused on the improving the global acceptance of the safety standards. This would include efforts:

- to promote the use of the safety standards in connection with the Nuclear Safety Convention and the Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management;
- to improve the participation of user/stakeholder in the review and development process;
- to improve co-ordination with and among the Committees;
- to monitor development of other safety related documents (safety reports and TECDOCs);
- to monitor and review the outreach of the safety standards;
- to formalize the process of feedback from the user;
- to review the use/application of standards at national level; and
- to keep the Director General informed of the activities of the Commission.

Conclusion

27. The Second four-year term of the Commission on safety Standards has continued the good work of the first Commission and delivered some significant achievements. There is now a clear and visible structure to the Safety Standards programme; the scope has been increased to cover nuclear fuel cycle facilities, production and review is more rigorous with tighter control over the need justify new standards work; standards are now available on the IAEA website; standards are published quicker; the standards are now recognised as delivering high levels of safety; Safety Guides are increasingly reflecting best practice; a new vision and strategy has been produced and there is now a growing acceptance that the IAEA Safety Standards are truly the global reference for the protection of people and the environment. The Commission recognises that more needs to be done to not only embed the use of the Safety Standards in national programmes, but also to widen their use.

28. As Chairman of the Commission I want to thank my fellow commissioners for their dedication to the work of the Commission, their enthusiasm, their candid

contributions to the numerous discussions on strategic development and on the quality of the standards submitted to the Commission and for their wise counsel. I would also like to thank the Director General for his commitment to the Safety Standards programme in general and the work of the Commission in particular. He always made time to listen to the views of the Commission and acted when we asked for help, for that we are all grateful. I must also thank the IAEA Secretariat, especially Mr Taniguchi the Deputy Director General, Mr Domaratzki his predecessor, Mr Gonzalez, Mrs Canino and Mr Brockman and last but not least Ahmad Karbassioun our scientific secretary whose support and commitment to the Safety Standards programme has been immense.

ANNEX 1

Commission Members for the period 2000-2003

Members of Commission:

A. Oliveira, Argentina
A. Caubit da Silva, Brazil
J.K. Pereira, Canada
A.-C. Lacoste, France
W. Renneberg, Germany
S. Sukhatme, India
T. Tobioka, Japan
Y-S. Eun, Korea, Republic of
Y. Vishnevskiy, Russian Federation
G.A. Azuara Spain
L-E. Holm, Sweden
U. Schmocker, Switzerland
V. Gryschenko, Ukraine
L.G. Williams (Chairman), United Kingdom
W.D. Travers, United States of America

International Organizations (observers):

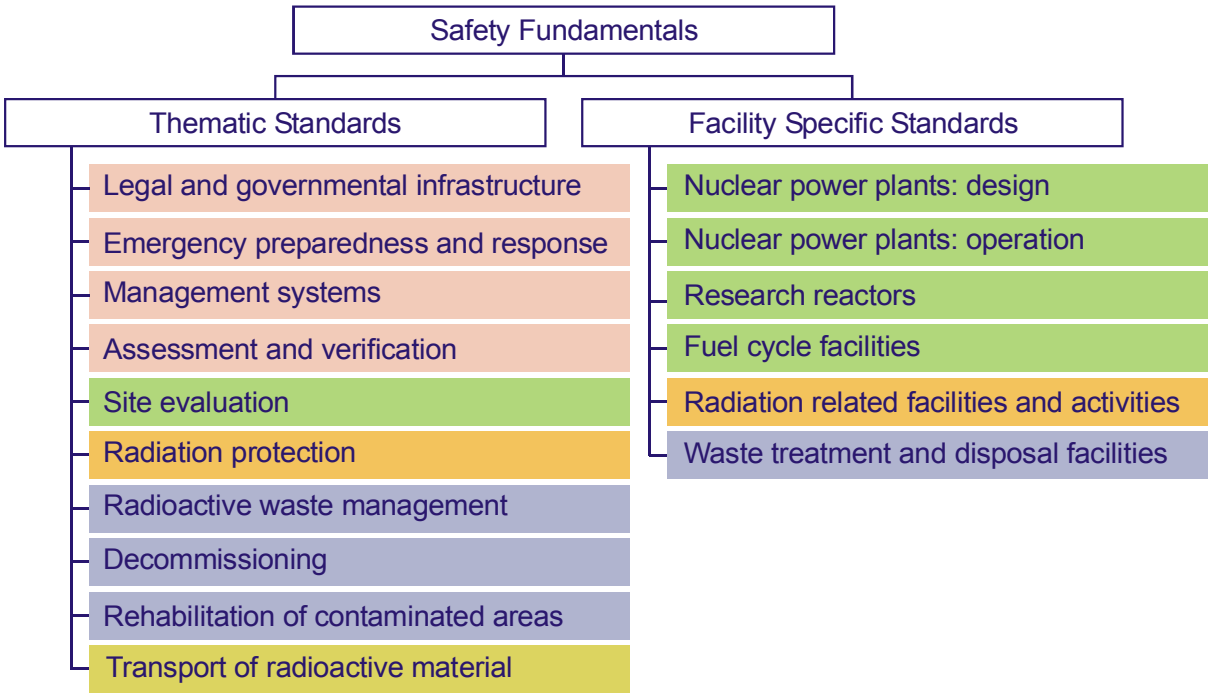
C. Waeterloos, European Commission
K. Shimoura, OECD Nuclear Energy Agency

Scientific Secretary:

A. Karbassioun, Department of Nuclear Safety IAEA

ANNEX 2

Safety Standards Programme Structure



ANNEX 3
Endorsed Safety Standards
2000-2003

The Commission approved the following safety standards during the period of 2000-2003.

Safety Requirements

1. Preparedness and Response for a Nuclear or Radiological Emergency (DS43, endorsed November 2001, approved by the Board of Governors March 2002, published 2002 as GS-R-2)
2. Regulations for the Safe Transport of Radioactive Material (as amended 2003), (endorsed June 2002, in publication)
3. Site Evaluation for Nuclear Installations (DS305, endorsed June 2003, approved by the Board of Governors September 2003, published as NG-R-3)
4. Remediation of Areas Contaminated by Past Activities and Accidents (DS162, endorsed June 2003, approved by the Board of Governors September 2003, published as WS-R-3)
5. Safety of Research Reactors (DS272, endorsed November 2003, to be submitted to the Board of Governors June 2004, to be published as NS-R-4)

Safety Guides

1. Building Competence in Radiation Protection and the safe Use of Radiation Sources (DS73, endorsed November 2000, published 2001, as RS-G-1.4)
2. Decommissioning of Nuclear Fuel Cycle Facilities (DS171, endorsed November 2000, published 2001, as WS-G-2.4)
3. Instrumentation and Control for Systems Important to Safety in Nuclear Power Plants (DS 252, endorsed November 2000, published 2002, as NS-G-1.3)
4. External Human Induced Events in Site Evaluation for Nuclear Power Plants (DS258, endorsed November 2000, published 2002, as NS-G-3.1)
5. Radiological Protection for Medical Exposure to Ionising Radiation (DS22, endorsed November 2000, published 2002, as RS-G-1.5)
6. Safety Assessment and Verification for Nuclear Power Plants (DS253, endorsed November 2000, published 2001, as NS-G-1.2)
7. The Operating Organization for Nuclear Power Plants (DS 250, endorsed November 2000, published 2001, as NS-G-2.4)
8. Modifications to Nuclear Power Plants (DS251, endorsed November 2000, published 2001, as NS-G-2.3)
9. Planning and Preparing for Emergency Response to Transport Accidents Involving Radioactive Material (DS246, endorsed May 2001, published 2002, as TS-G-1.2)
10. Core Management and Fuel Handling for Nuclear Power Plants (DS297, endorsed May 2001, published 2002, as NS-G-2.5)

11. Dispersion of Radioactive Material in Air and Water and Consideration of Population Distribution in Site Evaluation for Nuclear Power Plants (DS182, endorsed May 2001, published 2002, as NS-G-3.2)
12. Predisposal Management of Low and Intermediate Level Radioactive Waste (DS159, endorsed November 2001, published 2003, as WS-G-2.5)
13. Predisposal Management of High Level Radioactive Waste (DS163, endorsed November 2001, published 2003, as WS-G-2.6)
14. Management of Radioactive Waste from the Mining and Milling of Ores (DS277, endorsed November 2001, published 2002, as WS-G-1.2)
15. Organization and Staffing of the Regulatory Body for Nuclear Facilities (DS247, endorsed November 2001, published 2002, as GS-G-1.1)
16. Review and Assessment of Nuclear Facilities by the Regulatory Body (DS248, endorsed November 2001, published 2002, as GS-G-1.2)
17. Regulatory Inspection of Nuclear Facilities and Enforcement by the Regulatory Body (DS289, endorsed November 2001, published 2002, as GS-G-1.3)
18. Documentation for Use in Regulating Nuclear Facilities (DS290, endorsed November 2001, published 2002, as GS-G-1.4)
19. Maintenance, Surveillance and In-Service Inspection in Nuclear Power Plants (DS273, endorsed November 2001, published 2002, as GS-G-2.6)
20. Radiation Protection and Radioactive Waste Management in the Operation of Nuclear Power Plants (DS187, endorsed November 2001, published 2002, as NS-G-2.7)
21. Recruitment, Qualification and Training of Personnel for Nuclear Power Plants (DS287, endorsed June 2002, published 2002, as NS-G-2.8)
22. Commissioning for Nuclear Power Plants (DS291, endorsed June 2002, published 2003, as NS-G-2.9)
23. Design of Fuel Handling and Storage Systems in Nuclear Power Plants (DS276, endorsed June 2002, published 2003, as NS-G-1.4)
24. Evaluation of Seismic Hazard for Nuclear Power Plants (DS302 endorsed June 2002, published 2002, as NS-G-3.3)
25. Meteorological Events in Site Evaluation for Nuclear Power Plants (DS184, endorsed June 2002, published 2003, as NS-G-3.4)
26. Periodic Safety Review of Nuclear Power Plants (DS307 endorsed June 2002, published 2003, as NS-G-2.10)
27. Flood Hazard for Nuclear Power Plants on Coastal and River Sites (DS280, endorsed November 2002, published 2003, as NS-G-3.5)
28. External Events Excluding Earthquakes in Design of Nuclear Power Plants (DS301, endorsed November 2002, published 2003, as NS-G-1.5)
29. Seismic Design and Qualification for Nuclear Power Plants (DS304, endorsed November 2002, published 2003, as NS-G-1.6)
30. Occupational Radiation Protection in the Mining and Processing of Raw Materials (DS17, endorsed June 2003, to be published as RS-G-1.6)

31. Format and Content of the Safety Analysis Report for Nuclear Power Plants (DS309, endorsed November 2003, publication in 2004)
32. Protection of Nuclear Power Plants against Internal Hazards Other than Fires and Explosions (DS299, endorsed November 2003, publication in 2004)
33. Geotechnical Aspects of Nuclear Power Plants Site Evaluation and Foundations (DS300, endorsed November 2003, publication in 2004)
34. Protection against Internal Fires and Explosions in the Design of NPPs (DS306, endorsed November 2003, publication in 2004)
35. Management of Waste from the Use of Radioactive Materials in Medicine, Industry Agriculture, Research and Education (DS160, endorsed November 2003, publication in 2004)
36. Design of Emergency Power Systems for NPPs (DS303, endorsed November 2003, publication 2004)
37. Design of the Reactor Core in Nuclear Power Plants (DS283, endorsed November 2003, publication in 2004)
38. Design of Reactor Containment Systems for Nuclear Power Plants (DS296, endorsed November 2003, publication in 2004)
39. Design of the Reactor Coolant System and Associated Systems in Nuclear Power Plants (DS282, endorsed November 2003, publication in 2004)
40. Regulatory Control of Radiation Sources (DS67, endorsed November 2003, publication in 2004).

ANNEX 4

Safety Standards under Production

Safety Fundamentals

DS298 Fundamentals of Nuclear, Radiation, Radioactive Waste and Transport Safety (to combine and supersede the three published safety fundamentals Nos.110, 111-F and 120)

Safety Requirements

1. Management Systems for the Safety of Nuclear Facilities and Activities Involving the use of Ionizing Radiation (DS338)
2. Decommissioning of Nuclear Facilities (DS333)
3. Fuel Cycle Facilities (DS316)
4. Geological Disposal of Radioactive Waste (DS154)

Safety Guides

1. Preparedness for Nuclear and Radiological Emergencies (DS105)
2. Criteria for use in Planning Response to Nuclear and Radiological Emergencies (DS44)
3. Management Systems Implementation (DS339)
4. Management Systems for Regulatory Bodies (DS113)
5. Management Systems for Technical Services in Radiation Safety (DS315)
6. Management Systems in Radiation Safety for Users (DS319)
7. Management Systems for the Safe Transport of Radioactive Material (DS326)
8. Management Systems for the Treatment, Handling and Storage of Radioactive Waste (DS336)
9. Management Systems for the Safety of Radioactive Waste Disposal Facilities and Activities (DS337)
10. Management Systems for Development of Safety Culture (DS341)
11. Safety Assessment for Nuclear and Radiation Facilities other than Reactors and Waste Repositories (DS284)
12. Application of the Concepts of Exclusion, Exemption and Clearance (DS161)
13. Safety of Radiation Sources (DS114)
14. Strategy for Environmental and Source Monitoring for Public Protection Purposes (DS62)
15. Categorization of Radiation Sources (DS343)
16. Management of Radioactive Waste from the use of Radioactive Materials in medicine, industry and research (DS160)
17. Storage of Radioactive Waste (DS292)

18. The Removal of Sites and Buildings from Regulatory Control upon the Termination of Practices (DS332)
19. Implementation of Remediation Process (DS172)
20. Radiation Protection Aspects of Design of Nuclear Power Plants (DS313)
21. A System for the Feedback of Experience from Events in Nuclear Power Plants (DS288)
22. Conduct of Operations at Nuclear Power Plants (DS347)
23. Commissioning of Research Reactors (DS259)
24. Maintenance, Periodic Testing and Inspections of Research Reactors (DS260)
25. Operational Limits and Conditions for Research Reactors (DS261)
26. The Operating Organization and the Recruitment, Training and Qualification of Personnel for Research Reactors (DS325)
27. Operational Radiation Protection at Research Reactors (DS340)
28. Uranium Fuel Fabrication Facilities (DS317)
29. MOX Fuel Fabrication Facilities (DS318)
30. Safety of Conversion and Enrichment Facilities (DS344)
31. Design and Operation of Facilities for Geological Disposal of Radioactive Waste (DS334)
32. Boreholes Disposal of Radioactive Waste (DS335).