

IAEA Programme on Research Reactor Safety

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**Research Reactor Safety Section
Division of Nuclear Installation Safety**

TWGRR Meeting (5-7 February 2008, Vienna)



IAEA

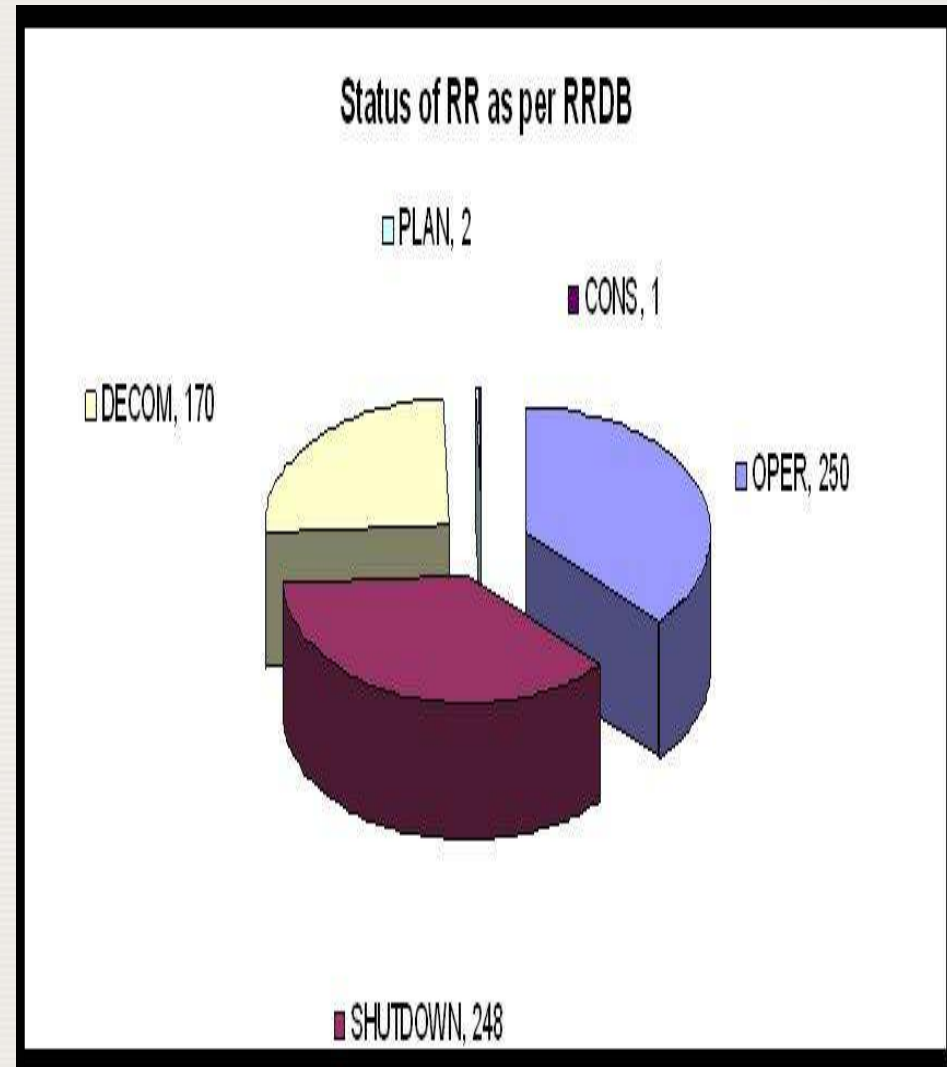
International Atomic Energy Agency

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Status of Research Reactors

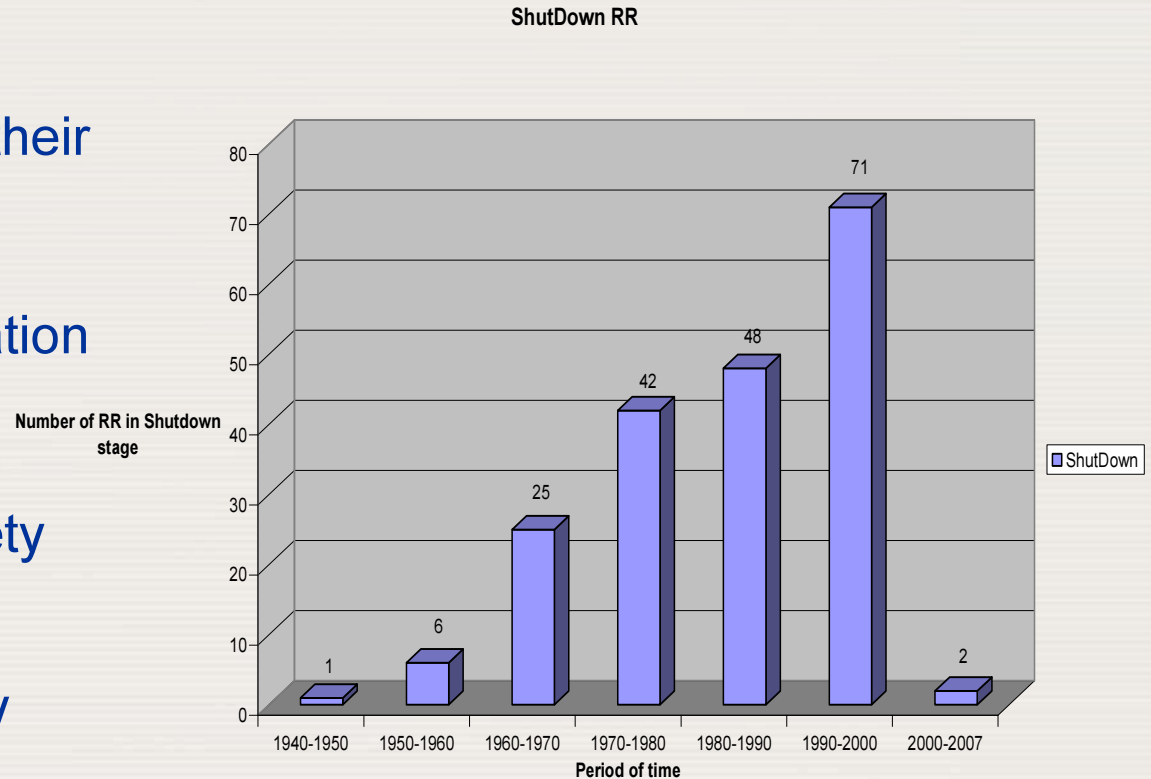
- 761 RRs were built to date of which 170 RRs were decommissioned.
- Two-thirds of the operating RRs (250) are more than 30 years old.
- Many reactors are in shutdown state.



Status of Research Reactors

Many of these research reactors:

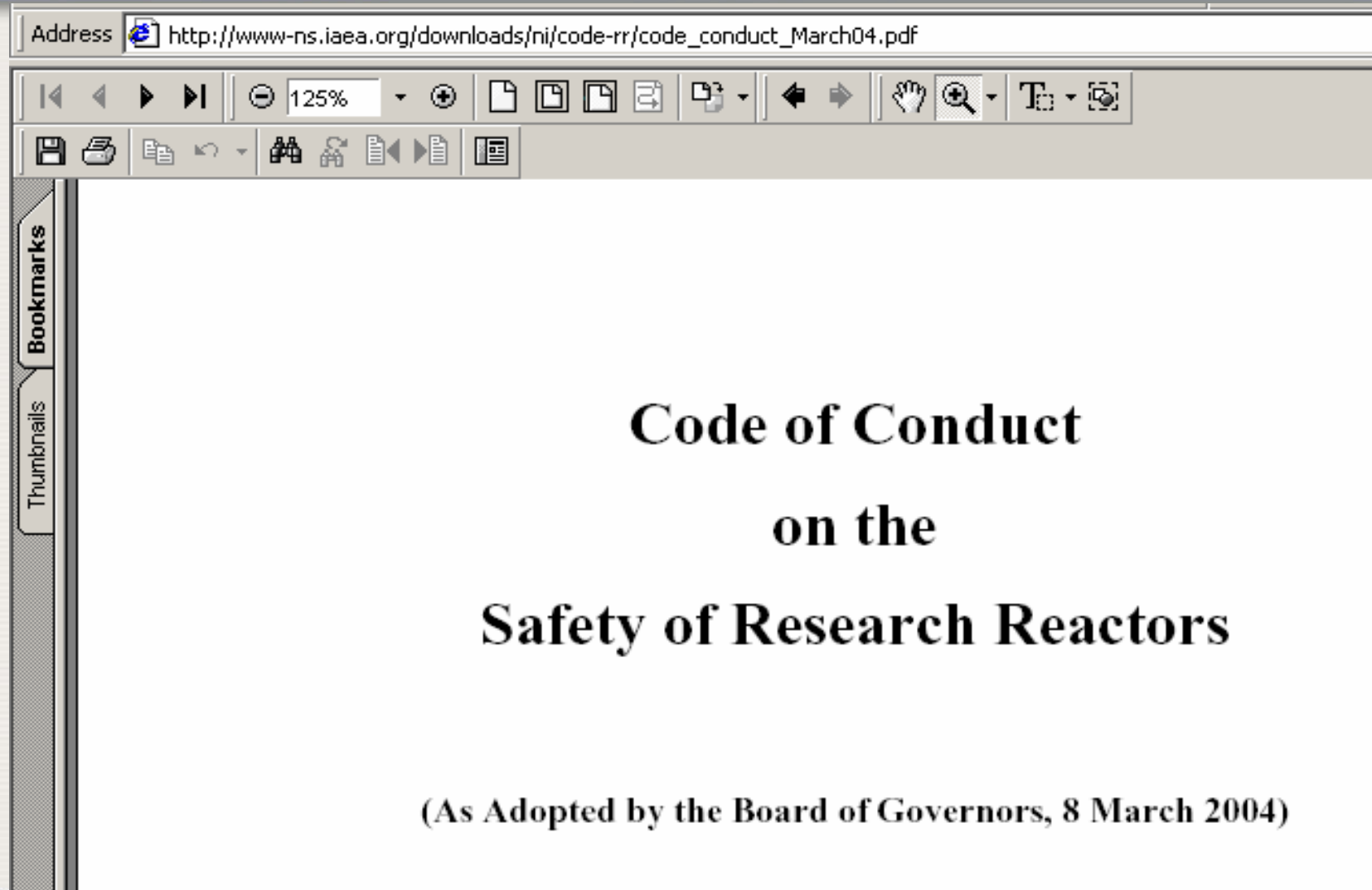
- Has no clear plans for their future.
- Very limited operation schedule.
- Both cases represent safety concerns relating to qualification of personnel, maintenance of the safety related systems and components, preparation of safety documentation, etc.



Code of Conduct on the Safety of Research Reactors

- RRs in extended shutdown, ageing of RRs, and lack of regulatory supervision of RRs in many MSs, were raised by the INSAG in 1990s and led to the development of the Code of Conduct.
- The Code was endorsed by the IAEA Board of Governors in March 2004.
- The Code provides guidance for the development and harmonization of national practices, laws, and regulations, and sets forth the desired attributes for the management of safety of RRs.

The Code is posted on the IAEA Safety Web Site



Application of the Code of Conduct

- **Four Regional meetings:**
 - Africa, November 2006;
 - Europe, December 2006;
 - Asia and Pacific, April 2007;
 - Latin America, December 2007.
- International Meeting is planned from 28 to 31 October 2008.

The Regional Meetings on Application of the Code

- The meetings follow a consistent format:
 - Tutorial part
 - Presentations by participants on self-assessment of application of the code
 - Discussions on needs of IAEA assistance and opportunities of regional cooperation.
- Self-assessment exercises were performed according to questionnaire prepared by the IAEA based on the code. The results of these assessments were presented and discussed in the meetings.
- The self-assessment aims at highlighting the status of infrastructure for safety, identifying areas of satisfactory application and areas needing improvements.



Feedback from Member States

- Many sources of information on safety status of RRs were used to identify main safety issues and trends and to update the IAEA programme on Safety of RRs:
 - Feedback from the regional meetings on application of the Code of Conduct;
 - Evaluation of the results of the INSARR missions and safety review missions;
 - Reports on incidents collected through the Incident Reporting System (IRSRR)

Feedback from the Regional Meetings on Application of the Code of Conduct (1/2)

- The results of the self-assessments showed the common need to:
 - Improve the capabilities of regulatory bodies in review of assessment of safety documentation;
 - Increase the attention to commissioning of modifications and experiments;
 - Establish criteria, and perform accordingly, site re-evaluation for existing RRs;

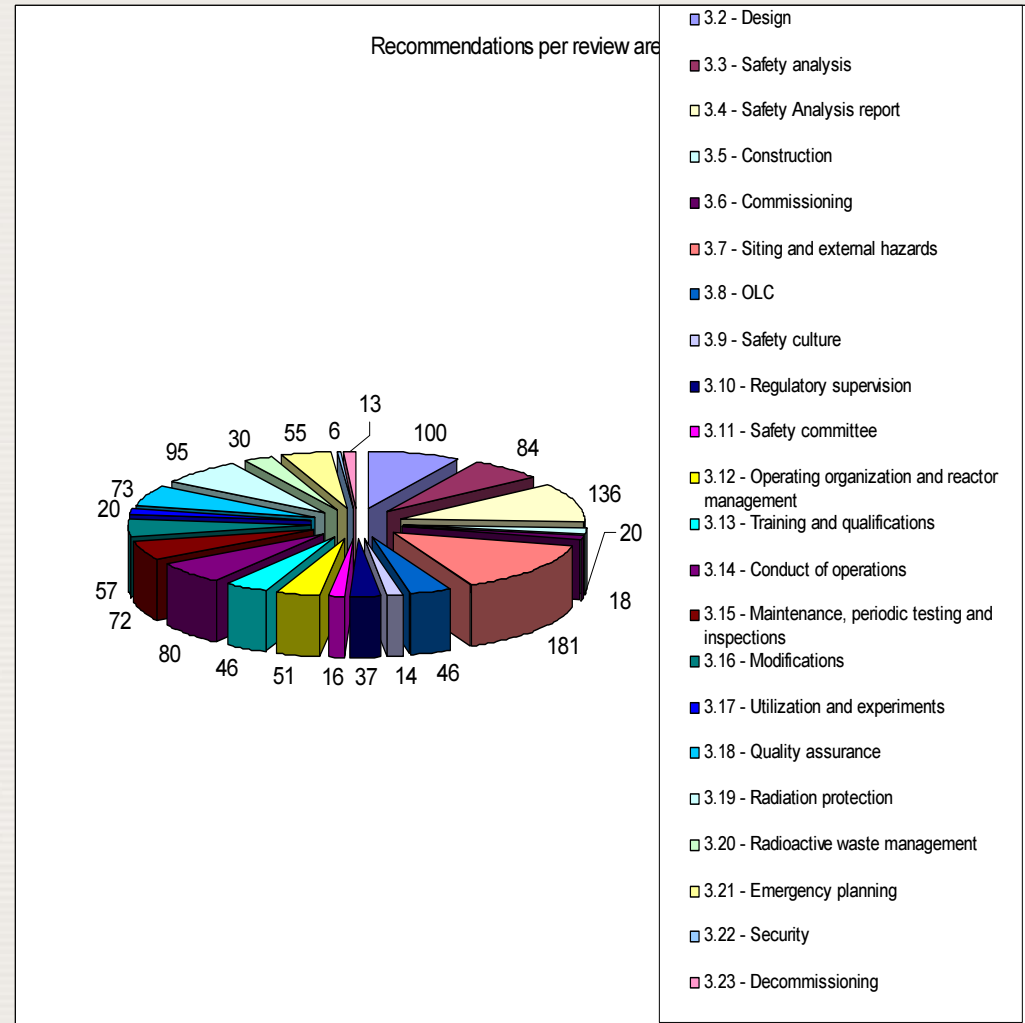
Feedback from the Regional Meetings on Application of the Code of Conduct (2/2)

- Develop comprehensive emergency plans and establish procedures and response capabilities at the national level;
- Address human factors in all the phases of RRs lifetime;
- Improve the capability to prepare the safety documentation for decommissioning and to establish criteria for release from regulatory control of decommissioned RRs.

Feedback from Safety Review Missions (1/2)

The analysis of the results of the IAEA Safety Review Missions, showed:

- Out-of-date or incomplete safety documentation (SAR, OLCs, emergency plans);
- Inadequate regulatory supervision of RRs in many countries.



Feedback from Safety Review Missions (2/2)

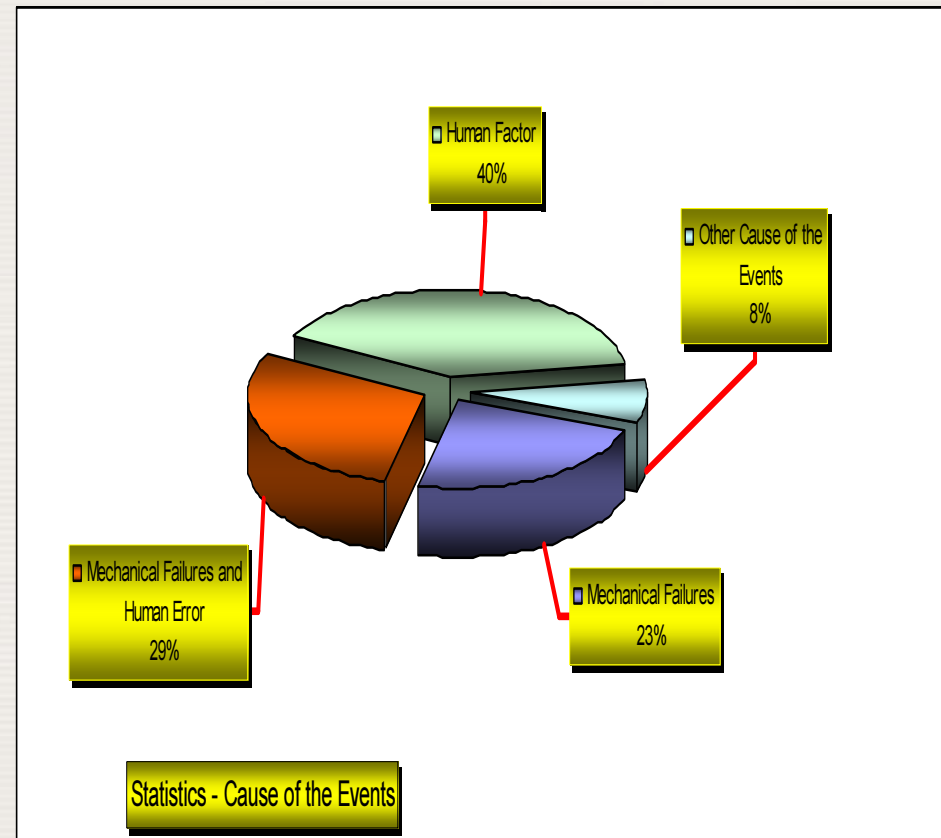
These missions showed also that there is a need to:

- Enhance the role and responsibilities of the safety committees in many operating organizations;
- Develop and implement systematic ageing management programmes;
- Develop and implement clear strategy for management of radioactive waste generated from RRs;
- Establish decommissioning plans for many RRs.

Feedback from the IRSRR

- Ageing of components is one of the most important root causes of the incidents reported to the IRSRR.
- Human factors are another important root cause of incidents reported to the IRSRR.

- Statistics on root causes of incidents reported to IRSRR



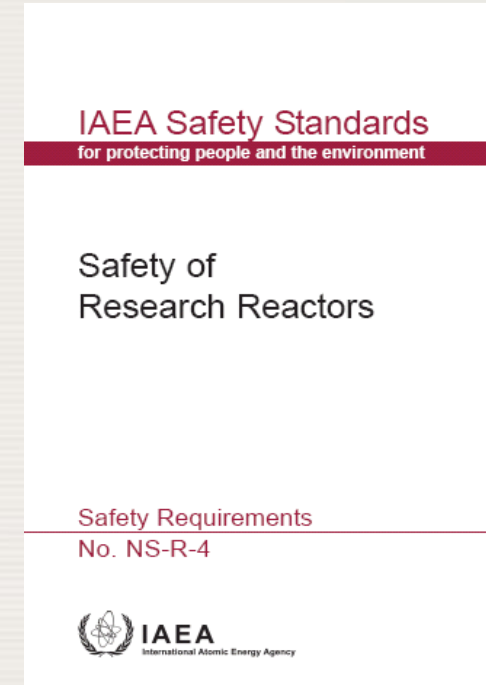
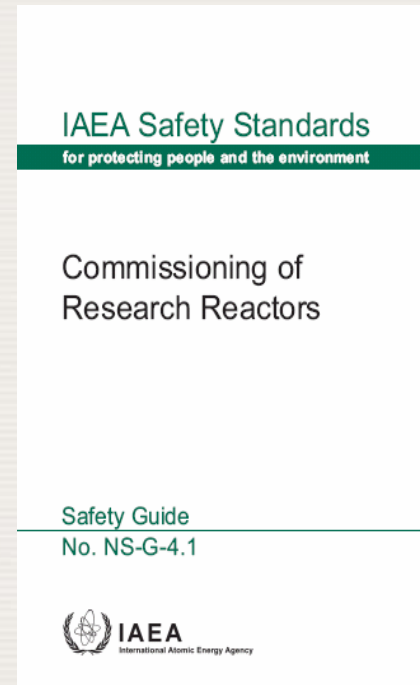
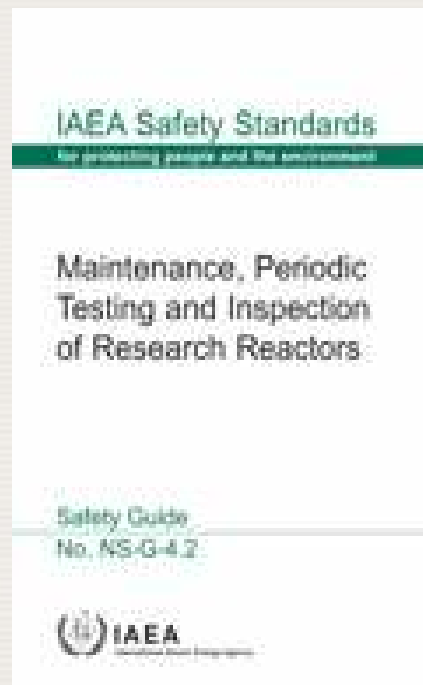
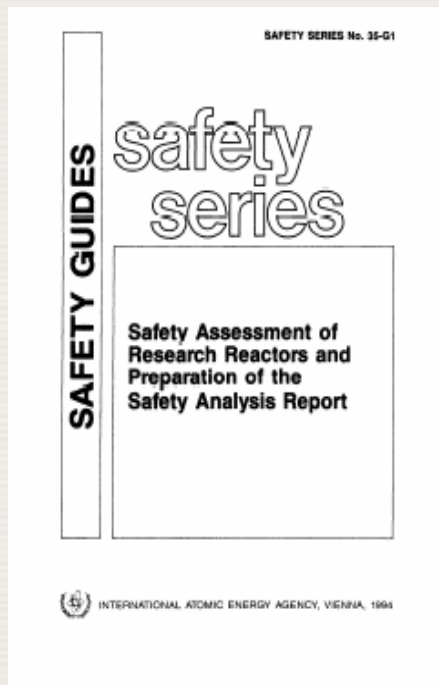
RR Safety Programme and Activities

The IAEA programme on RRs Safety entails the following projects:

- Enhancing the safety of research reactors.
- Monitoring and safety enhancement of RRs under agreement.
- Fostering international exchange of information on safety aspects of RRs.

RR Safety Programme and Activities

- Providing assistance on application of the Code of Conduct and the IAEA SS.

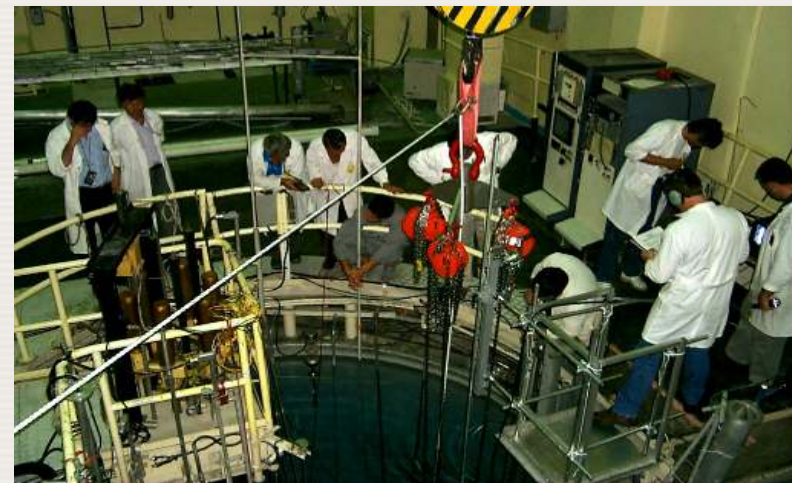


RR Safety Programme and Activities

- Enhancing regulatory supervision of research reactors;
- Providing assistance to develop and enhance self-assessment capabilities for safety review of RRs;
- Collection and analysis of data on safety performance indicators and dissemination of operating experience;

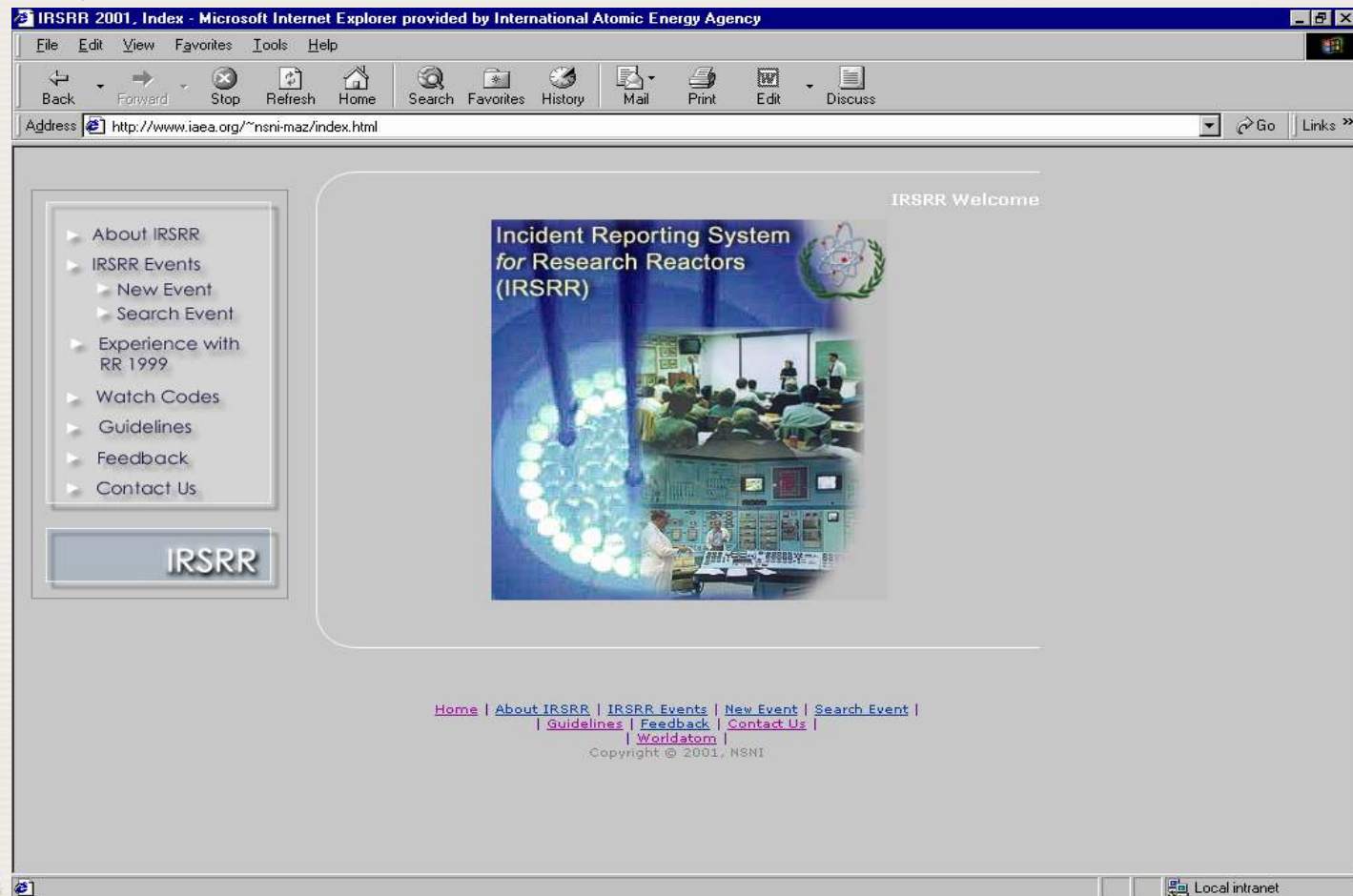
RR Safety Programme and Activities

- Conducting INSARR and other safety review missions, and assisting in the implementation of recommendations provided;



RR Safety Programme and Activities

- Operating the IRSRR and organizing meetings for exchange of operating experience and lessons learned from events;



The screenshot shows a Microsoft Internet Explorer browser window displaying the IRSRR 2001 website. The browser's address bar shows the URL <http://www.iaea.org/~nsni-maz/index.html>. The website's main content area features a large graphic with the text "Incident Reporting System for Research Reactors (IRSRR)" and the IAEA logo. To the left of the main content is a navigation menu with the following items: "About IRSRR", "IRSRR Events" (with sub-items "New Event" and "Search Event"), "Experience with RR 1999", "Watch Codes", "Guidelines", "Feedback", and "Contact Us". Below the menu is a button labeled "IRSRR". At the bottom of the page, there is a footer with a navigation bar containing links: [Home](#) | [About IRSRR](#) | [IRSRR Events](#) | [New Event](#) | [Search Event](#) | [Guidelines](#) | [Feedback](#) | [Contact Us](#) | [Worldatom](#). Below the navigation bar, the copyright notice reads ".Copyright © 2001, NSNI". The IAEA logo is visible in the bottom left corner of the browser window, and the text "Local intranet" is visible in the bottom right corner.

RR Safety Programme and Activities

- Establishing a web-based forum as a tool for continuous exchange of information on safety aspects, reducing the isolation of small organizations with limited resources;
- Providing assistance for improvement of ageing management programmes, development of decommissioning plans, and emergency plans;
- Organizing training activities on various safety issues;
- Improving safety management and promoting safety culture in the operating organizations;

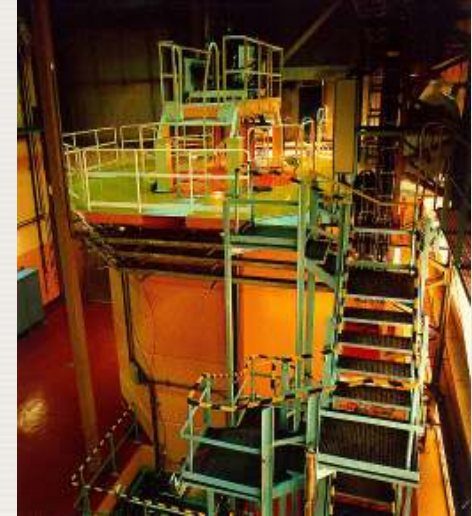
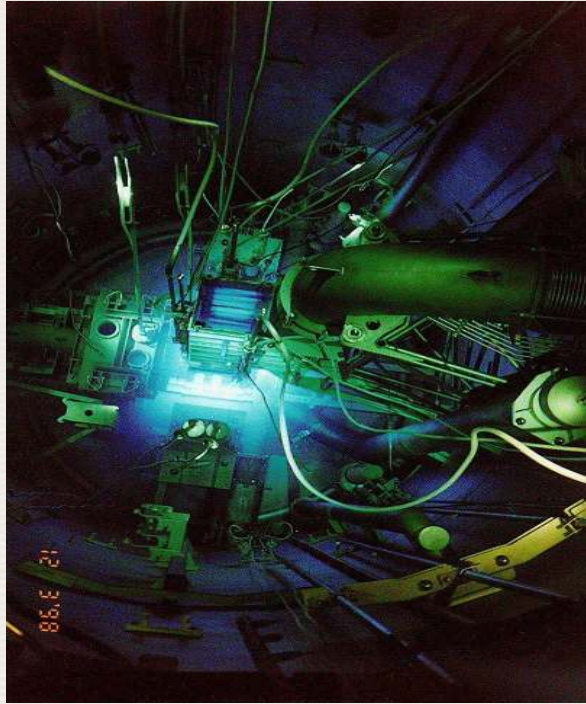
RR Safety Programme and Activities

- Promoting the use of research results in safety assessments and harmonization of data and approaches used in the safety analysis through conduct of CRPs;
- Providing assistance to enhance awareness and understanding of the synergy between safety and security for RRs;
- Conducting TC and EBP activities related to the safety of RRs.
- Cooperating with other international organizations on RRs safety matters.

Conclusion

- Analysis of the data and information derived from various IAEA activities has resulted in identification of safety issues and trends common to RRs worldwide.
- These issues were taken into account in the IAEA programme on RRs safety. This programme is currently focusing on the effective application of the Code of Conduct and completing the corpus of comprehensive safety standards that support its application.
- Priorities are given to improve the networking, regulatory supervision, safety culture, self-assessment capabilities, and dissemination of operating experience.

Research Reactor Safety Section-NSNI-IAEA



To enhance the safety of
research reactors worldwide.

