

Feedback from the Regional Meetings on the Application of the Code of Conduct and Updating of the IAEA Programme on Research Reactor Safety

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International Atomic Energy Agency

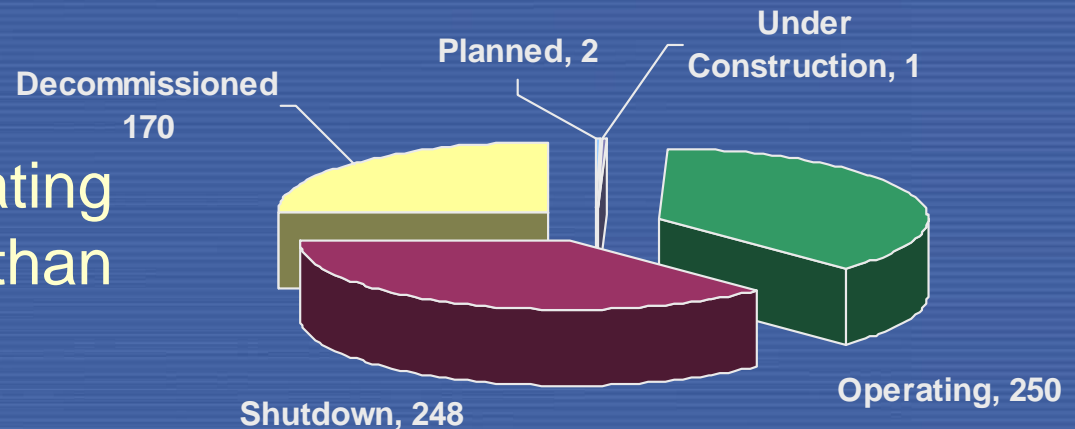
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Contents

- Status of Research Reactors
- The Code of Conduct on the Safety of RRs
- Application of the Code of Conduct (Regional Meetings)
- Feedback from the Regional Meetings
- Updating the IAEA Programme on RRs Safety
- Conclusion

Status of Research Reactors

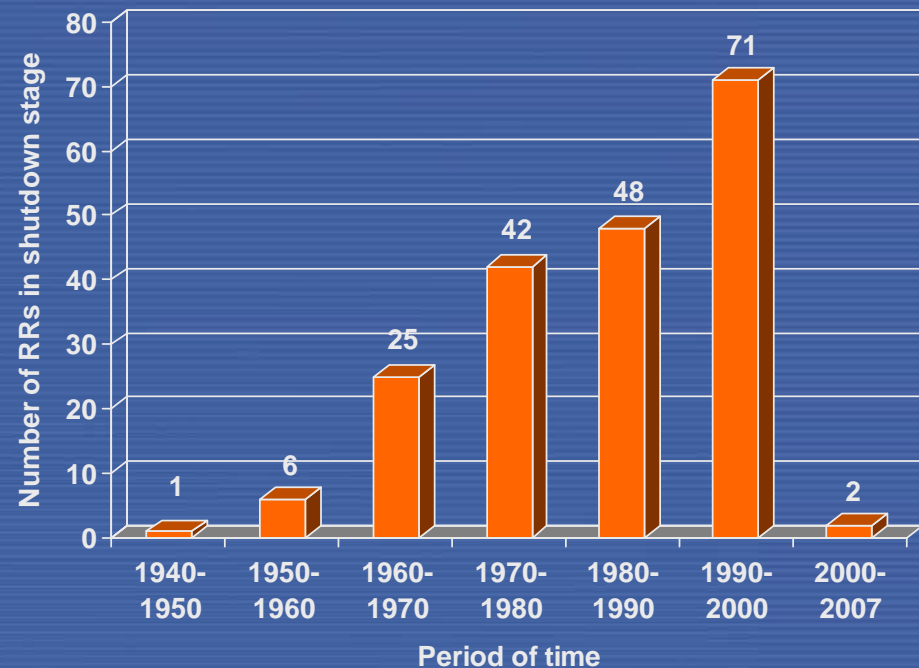
- 761 RRs were built to date of which 170 RRs were decommissioned.
- Two-thirds of the operating RRs (250) are more than 30 years old.
- 248 reactors are in shutdown state.



Status of Research Reactors

Research Reactors in shutdown state:

- Many of these RRs has no clear plans for their future.
- Very limited operating schedule for many of the operating RRs.
- Both cases represent safety concerns relating to qualification of personnel, maintenance of the safety related systems, preparation and updating of safety documentation, etc.

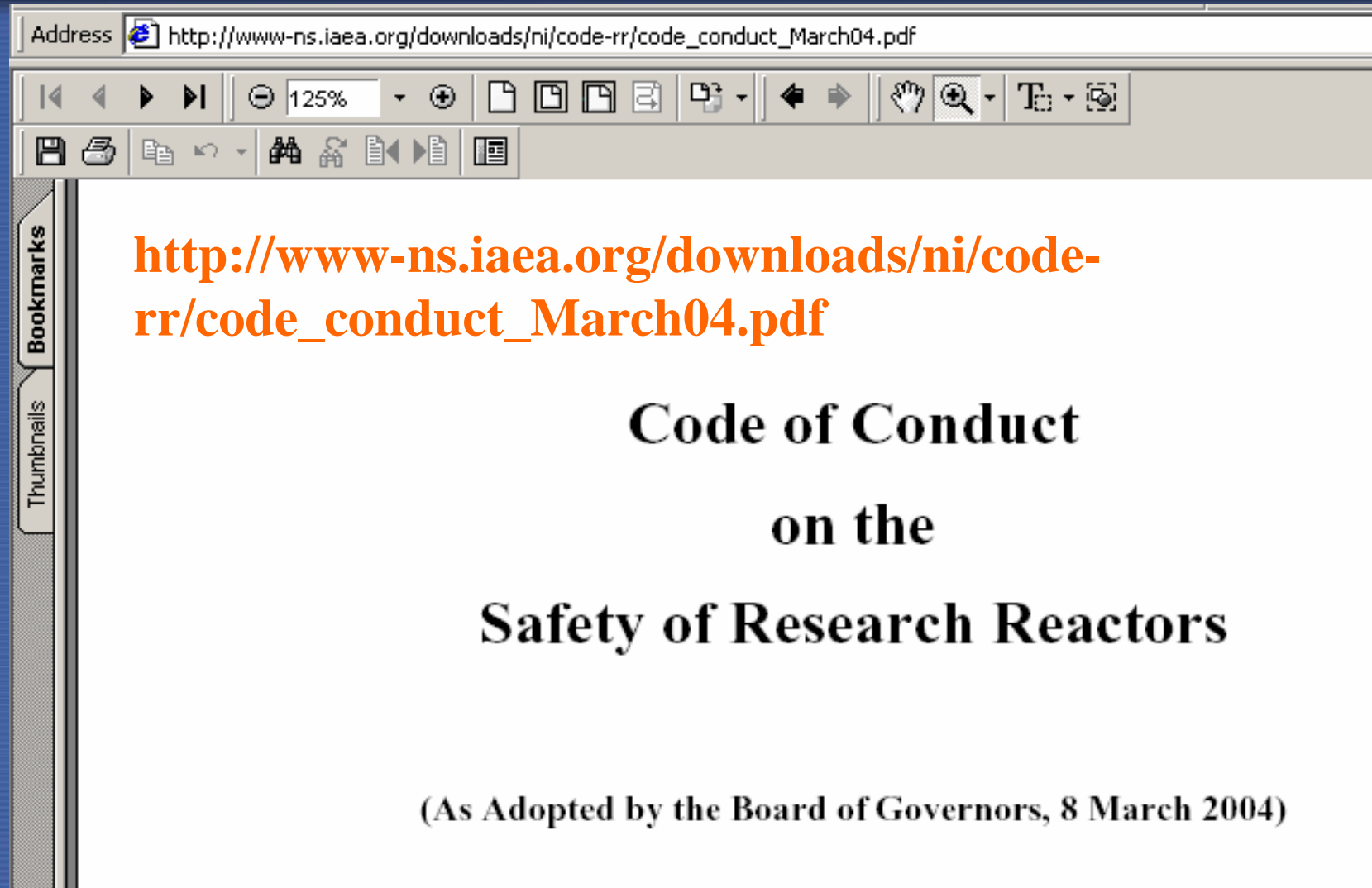


Code of Conduct on the Safety of Research Reactors

- 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 (previous presentation).



The Code is posted on the IAEA Safety Web Site



The image shows a screenshot of a web browser window. The address bar at the top displays the URL: http://www-ns.iaea.org/downloads/ni/code-rr/code_conduct_March04.pdf. The browser's toolbar includes navigation buttons (back, forward, home, stop, refresh), a zoom level of 125%, and various utility icons. On the left side of the browser window, there are vertical tabs for 'Bookmarks' and 'Thumbnails'. The main content area of the browser displays the following text:

http://www-ns.iaea.org/downloads/ni/code-rr/code_conduct_March04.pdf

**Code of Conduct
on the
Safety of Research Reactors**

(As Adopted by the Board of Governors, 8 March 2004)

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

- **Open-Ended Meeting, December 2005:** Mainly recommended the IAEA to organize meetings to exchange experience and lessons learned, identify good practices in application of the Code.
- **Four Regional Meetings:**
 - Africa, November 2006 (17 participants from 8 countries);
 - Europe, December 2006 (14 participants from 12 countries);
 - Asia and Pacific, April 2007 (11 participants from 7 countries);
 - Latin America, planned for December 2007 (8 countries invited).
- International Meeting is planned for mid-2008.

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

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

The results of the self-assessment showed a common need to:

- Improve the capabilities of regulatory bodies in assessment of safety submittals;
- 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;

Near-Term Actions (1/2)

- Modification of the programme of safety review missions to include the application of the Code of Conduct as one of the review area;
- Revision of the IAEA Safety Guide 35-GS to include practical guidance on safety of modifications and experiment;
- Organization of a Technical Meeting on safety management and verification for the Safety Committees (3-7 December 2007, IAEA Headquarter).

Near-Term Actions (2/2)

- Regional Meetings will be organized to improve the capability of Regulatory Bodies in performing review and assessment of safety documents;
- Workshops and training activities on Ageing Management and Safety Culture.

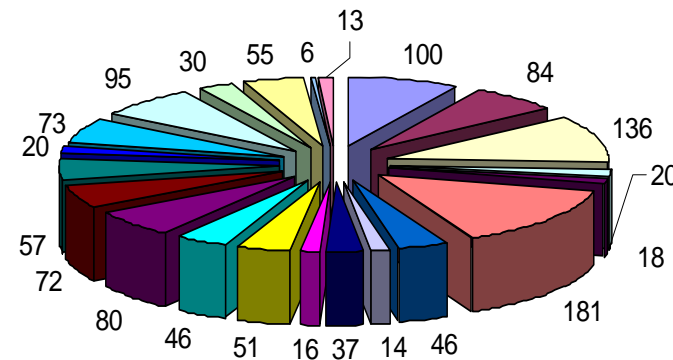
Feedback from Safety Review Missions (1/3)

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 (2/3)

Recommendations per review area



- 3.2 - Design
- 3.3 - Safety analysis
- 3.4 - Safety Analysis report
- 3.5 - Construction
- 3.6 - Commissioning
- 3.7 - Siting and external hazards
- 3.8 - OLC
- 3.9 - Safety culture
- 3.10 - Regulatory supervision
- 3.11 - Safety committee
- 3.12 - Operating organization and reactor management
- 3.13 - Training and qualifications
- 3.14 - Conduct of operations
- 3.15 - Maintenance, periodic testing and inspections
- 3.16 - Modifications
- 3.17 - Utilization and experiments
- 3.18 - Quality assurance
- 3.19 - Radiation protection
- 3.20 - Radioactive waste management
- 3.21 - Emergency planning
- 3.22 - Security
- 3.23 - Decommissioning

Feedback from Safety Review Missions (3/3)

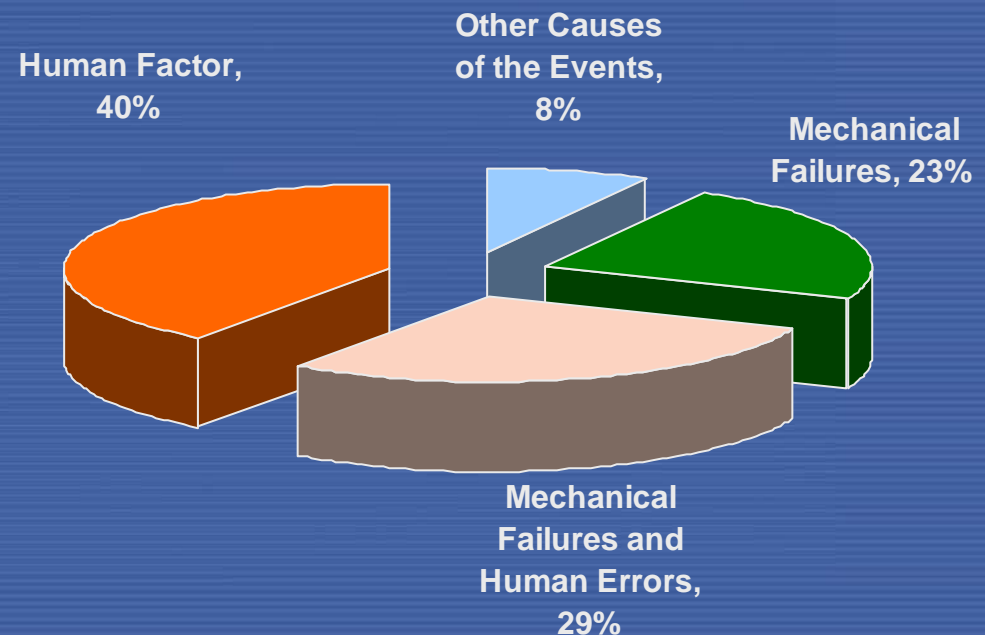
These missions showed also that there is a need to:

- 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:



Updating the IAEA Programme on RRs Safety

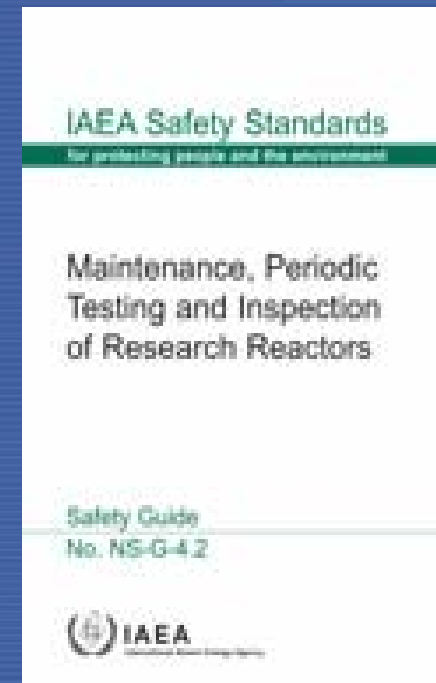
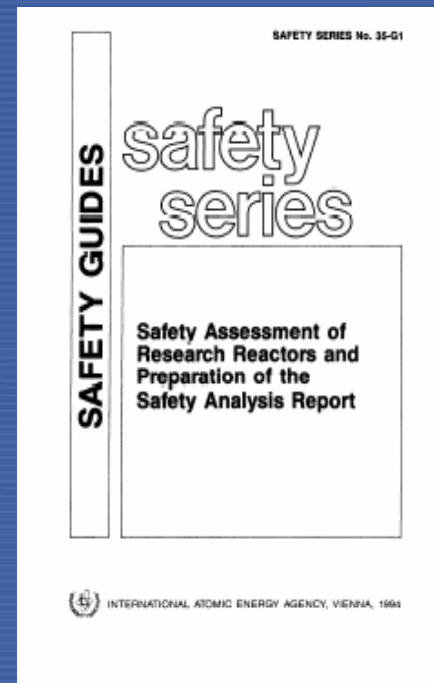
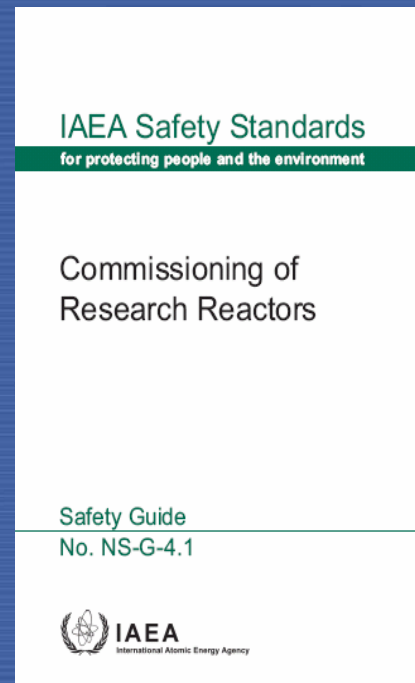
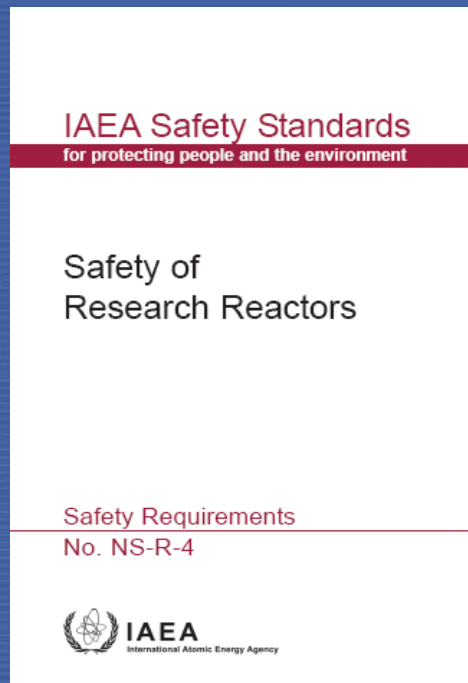
The IAEA programme on RRs Safety was updated to cover the identified safety issues and trends. This programme includes the following projects:

- Enhancing the safety of research reactors and monitoring the safety of RRs under agreement.
- Fostering international exchange of information on safety aspects.
- Assisting on safety aspects relating to protection against sabotage.

Enhancing the Safety of Research Reactors (1/4)

This project includes the following activities:

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



Enhancing the Safety of Research Reactors (2/4)

- Improving regulatory supervision of research reactors;
- Improving safety management and promoting safety culture in the operating organizations;
- Providing assistance to develop and enhance self-assessment capabilities for safety review of RRs;
- Operating a follow-up system for monitoring the safety of RRs under agreement with the IAEA;

Enhancing the Safety of Research Reactors (3/4)

- Providing assistance for improvement of ageing management programmes, development of decommissioning plans, and emergency plans;
- Organizing workshops and training activities on relevant safety issues;
- Promoting the use of research results in safety assessments and harmonization of data and approaches used in the safety analysis through conduct of Coordinated Research Projects (CRPs);

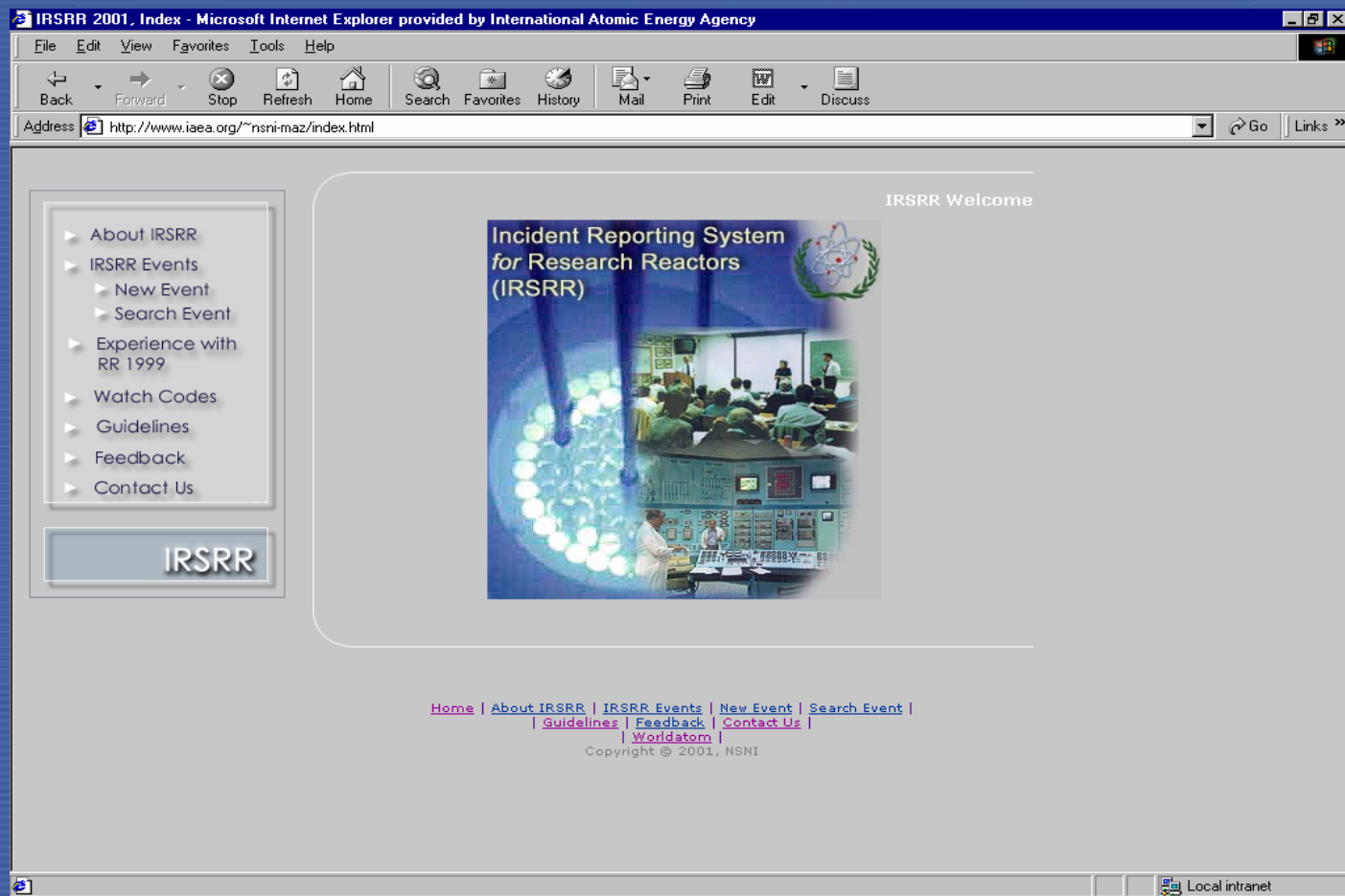
Enhancing the Safety of Research Reactors (4/4)

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



Fostering International Exchange of Information on Safety Aspects (1/2)

- Operating the IRSRR and organizing periodic 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 content includes a navigation menu on the left 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. A large button labeled "IRSRR" is positioned below the menu. The main content area features a central image of a reactor control room with the text "Incident Reporting System for Research Reactors (IRSRR)" and the IAEA logo. To the right of the image, it says "IRSRR Welcome". At the bottom of the page, there is a footer with navigation links: [Home](#) | [About IRSRR](#) | [IRSRR Events](#) | [New Event](#) | [Search Event](#) | [Guidelines](#) | [Feedback](#) | [Contact Us](#) | [Worldatom](#). Below the links, it states "Copyright © 2001, NSNI". The browser's status bar at the bottom right shows "Local intranet".

Fostering International Exchange of Information on Safety Aspects (2/2)

- Developing and implementing a web-based forum as a tool for continuous exchange of information on safety aspects, reducing the isolation of small organizations with limited resources;
- Cooperating with other international organizations on RRs safety matters.

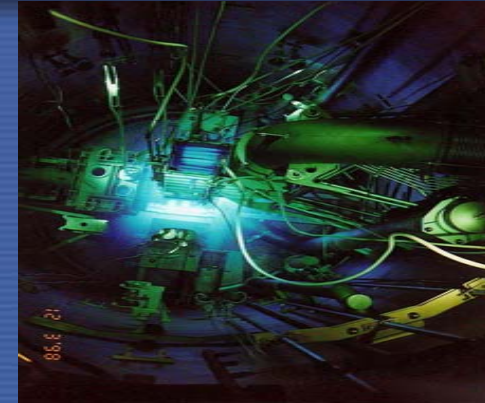
Assisting on Safety Aspects relating to Protection against Sabotage

- Providing assistance to enhance awareness and understanding of the synergy between safety and security;
- Contribution to IAEA activities for improving protection against sabotage.

Conclusion

- Feedback from regional meetings on application of Code of Conduct and safety issues identified from various IAEA activities were taken into account for updating the IAEA programme on RRs safety.
- This programme is currently focusing on the effective promotion of application of the Code of Conduct and completion of the corpus of comprehensive safety standards that support its application.
- Priorities are given to improve the regulatory supervision and safety culture; self-assessment capabilities and dissemination of operating experience.

Research Reactor Safety Section-NSNI-IAEA



To enhance the safety of
research reactors worldwide.

