



Prevention as the main objective for regulatory practices related to Research Reactors

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DATA FROM RESEARCH REACTORS AND CRITICAL ASSEMBLIES IN ARGENTINA

Reactor	Licence Holder	Type	Power	FE Type	Enrich.	Shut down systems	Excess reactivity
RA 0	Cordoba University	CA *	1 W	Cylindrical rods	< 20%	Absorbing rods Empty Moderator	0.4 \$
RA 1	CNEA	RR**	40 kW	Cylindrical rods	< 20%	Absorbing rods	1.2 \$
RA 3	CNEA	RR	10 MW	MTR plates	< 20%	Absorbing rods	~ 8 \$
RA 4	Rosario University	CA	1 W	Homogeneous disks	< 20%	Absorbing rods Separation	0.4 \$
RA 6	CNEA	RR	500 kW	MTR plates	90%	Absorbing rods	~ 2.5 \$
RA 8	CNEA	CA	10 W	Cylindrical rods	< 3.4%	Absorbing rods Empty Moderator	

* Critical Assembly

** Research Reactor

PREVENTION, the most important regulatory strategy

- **PREVENTION is achieved with the help of:**
 - *An adequate Regulatory Frame*
 - *Appropriate regulatory tools*
 - *A pro-active attitude towards safety*
 - *Qualified staff for the correct fulfilment of tasks assigned*
 - *An adequate organisation*

1.- Regulatory Frame

the Regulatory Body has the following responsibilities:

- Issue Standards and Guides
- License installations
- License personnel
- Apply the sanctions and fines regime

Regulatory Frame.

Issue Standards and Guides

- **In Argentina there are specific Regulatory Standards and Guides on application for research reactors and critical assemblies.**
- **International recommendations are taken into account together with operation experience.**
- **A consultation mechanism has been implemented. Opinion of the addressees and the public is requested.**

Regulatory Frame. Issue Standards and Guides

Argentine regulations establish responsibilities for:

- **Licence Holder Institutions**
- **Primary Responsible (Reactor Head).**

Two Committees to analyse radiological and nuclear safety aspects are required:

- **TECHNICAL REVIEW COMMITTEE, to assess the Licence Holder**
- **INTERNAL SAFETY COMMITTEE, to assess the Primary Responsible**

Regulatory Frame.

License installations

- **The regulatory process considers Construction, Start up, Operation and Decommissioning Licenses.**
- **Research reactors Operation Licenses have a maximum validity of five years.**
- **License renewal process requires an integral assessment of the installation safety.**
- **Licensing installations: the Regulatory Body is considering the application of a mechanism of non-binding public consultation.**

Regulatory Frame.

License personnel

The Regulatory Body issues two different types of documents to license personnel:

- *Individual License*: Permanent certificate. Recognises the technical-scientific qualification to exercise a particular function for a given type of installation. To obtain it:
 - basic and specific qualification
 - working experience.
- *Specific Authorisation*: Renewable certificate. Maximum validity of two years, enables a person to exercise a certain function at a particular installation. To obtain it:
 - Individual License for the position,
 - on the job training and re-training,
 - psycho- physical aptitude.

Regulatory Frame.

Apply sanctions and fines

Sanctions Regime considers warnings, fines, a License or a Specific Authorisation suspension, or even its revocation.

- Sanctions Regime acts as the last step in the safety chain.**
- A sanction application should only occur exceptionally. Otherwise, it should indicate a poor regulatory behaviour.**

Regulatory control tools used

- Inspections,
- Audits,
- Safety assessments.

A strict control of:

- Dose to workers,
- Radioactive material discharge (dose to the public),
- Environment surveillance.

Regulatory control tools used

- **Routine inspections:**
 - radiological protection,
 - Maintenance, and
 - operation.
- **Non routinely inspections:**
 - when certain events occur;
 - to observe start up tests associated to modifications or new experiments, etc.
- **Special inspections**
 - at the beginning of the annual operation period after a programmed maintenance outage to verify the maintenance tasks carried out, safety system functioning and "operable core" conditions.

Regulatory control tools used

Environmental surveillance regulatory actions:

- **monitoring of nuclear installation surroundings,**
- **To take representative samples from different regions of the radionuclide transfer environmental matrix, and**
- **To evaluate the environmental impact of liquid and gaseous discharge.**



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Radiological and nuclear emergencies

- **Nuclear Emergency Intervention System (SIEN),**
- **Radiological Emergency Intervention System (SIER) to cope with radiological emergencies in minor installations and practices, or emergencies that could involve the public.**
- **SIEN and SIEN are linked to a Federal Emergency System and they also advise public authorities as well as users.**

Pro-active attitude

- Continuous review of international recommendations and standards in force.
- Frequent presence of inspectors at installations.
- Active participation in examination boards for personnel licensing and re-training.
- Application of quality and continuous improvement aspects in regulatory tasks.
- Performance of periodic meetings with License Holders, with open discussions about existing problems as the adequate means for achieving improvements.
- Support for the application of the Behaviour Code for Research Reactors.

Competent Staff

The main activities related to training are:

- Post-grade course attendance on radiological and nuclear safety.
- Attendance to specific training courses.
- Participation in international and national meetings and workshops.
- International and national training activities.
- Collaboration with other regulatory bodies in specific subjects.
- Participation in technical documents elaboration, on radiological and nuclear safety issues.

Adequate Organisation

- Transparency and traceability in the regulatory task,
- Individual and collective responsibilities clearly established in order to carry out the necessary control,
- Mechanisms to find and correct deficiencies,
- To plan, perform and control activities related to the regulatory action in nuclear reactors,
- To plan the required economic and human resources,
- Tasks should be carried out according to specific procedures.

Improving areas

- **Actuation of Technical Review Committees**
- **Integral Emergency Plans at Atomic Centres**
- **Specific Decommissioning Standards**



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