

**European Nuclear Safety Regulators Group
ENSREG**

2nd Topical Peer Review – ‘Fire Protection’

Country Review Report

Austria

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1. Brief overview of the candidate installations

The following installation was finally selected and included in the national assessment report (NAR).

Installation category	Number of installations	Name of candidate installation
Nuclear power plant		
Research reactor	1	TRIGA Mark II Vienna
Fuel reprocessing facility		
Fuel fabrication facility		
Fuel enrichment facility		
Dedicated spent fuel storage		
Installations under decommissioning		
On-site radioactive waste storage		
Total	1	

2. Regulatory framework

The NAR mentions that *“fire protection is regulated in a wide variety of legal provisions in Austria. The building codes of the respective federal provinces form the core of the fire protection regulations. For the research reactor operated in Vienna, the Viennese Building Code is the relevant provincial legislation”*.

The NAR indicates that *“the General Radiation Protection Ordinance 2020 stipulates fire protection in the following respects: as part of the operating rules; specific record-keeping and notification obligations of the licensee; as part of the safety report; as part of the training for personnel in the field of nuclear safety”* and does not provide more information of the requirements related to nuclear safety. The NAR does not specify if the WENRA SRLs are transposed in the regulatory framework. In response to a question from the TPR Team¹, Austria’s answer was that *“The WENRA SRLs are not legally binding in Austria. They are used as guidance documents on a voluntary basis.”*

The NAR mentions that *“The IAEA safety standard regarding the Safety of Research Reactors (SSR-3²) has been taken into account.”*

¹ ‘The NAR in §1.2 presents the regulatory framework. If not yet clearly mentioned in the NAR, could you indicate whether the WENRA SRLs for NPPs, and RRs (if relevant for your country), which are used as reference for this topical peer review on ‘fire protection’ (as per the technical specification) are binding or not in your country? If they are not binding, what is the status of the SRLs (non-binding, guidance, advisory..)?’

² IAEA Safety of Research Reactors, Specific Safety Requirements, IAEA Safety Standard Series No. SSR-3, September 2016

3. Findings and significant improvements of approaches on the installations from the national self-assessment

Research Reactor

TRIGA Mark II Vienna

The following **strengths** related to fire protection were reported in the NAR for **TRIGA Mark II Vienna** research reactor:

- In the course of the prescribed annual emergency drills at the TRIGA Center, Vienna's Professional Fire Brigade is frequently involved in the exercise operations. As a result, the personnel of the responsible fire stations have acquired good knowledge of the installation. The Vienna Professional Fire Brigade is well equipped to handle fires at the institute due to their special training in radiation protection.
- The ventilation in the reactor hall is equipped with temperature sensors, which means that the fire dampers are closed only when the temperature in the ventilation duct is very high, which always gives maximum priority to the protection of persons. In particular, in both the reactor control room and the safety service areas, the ventilation of the reactor hall can be switched to "emergency mode". This always guarantees that there is negative pressure in the reactor hall and that the deposition of possible radioactive isotopes on the activated carbon filters in the exhaust air is reduced.

The following **weakness** related to fire protection was reported in the NAR for **TRIGA Mark II Vienna** research reactor:

- With regard to fire suppression provisions, fire extinguishing blankets could be provided and distributed throughout the building in addition to the hand-held fire extinguishers as further improvement. Even though fire blankets are not required by law, it could help the institute's personnel to extinguish developing fires with as little damage to the infrastructure as possible.

The following **lessons learned** related to fire protection were reported in the NAR for **TRIGA Mark II Vienna** research reactor:

- In 2021, during the course of an inspection wooden transport boxes were placed in the first floor corridor in front of the reactor hall, so increasing fire loads present in the area and interfering with the prescribed escape route. An order was addressed by the Regulator to the licensee to remove them in a prescribed time period.
- The number of false alarms of the fire alarm system as a result of work carried out by external companies has been significantly reduced by the introduction of release certificates for fire hazardous activities. In this context, the external companies must register such work with the safety service or, if necessary, with the fire safety officer and comply with the specified fire prevention precautions of the TU Wien. Due to the fire prevention precautions taken during necessary shutdowns of fire detectors, appropriate fire protection can still be provided.

The following **improvements** related to fire protection were reported in the NAR for **TRIGA Mark II Vienna** research reactor:

- Structural measures were carried out in 2008, when the entire building was renovated based on the newest fire protection standards. The staircases of the institute building can be mentioned as an example here: All wooden materials used were replaced by flame retardant aluminium components. In addition, the ventilation of the staircases was changed from manual operation to automatic operation. The opening of the ventilation for the stairwell is done automatically by the fire alarm system now.
- The fire protection concept has been continuously improved and adapted in the past, so that it corresponds to the current state of the art even if the Viennese Building Code does not require

an adaptation to the current state of the art, since the reactor was constructed in the 1960s and all requirements have been met at the time.

- A fire protection evaluation including a risk assessment was conducted for the institute building with a focus on the protection of building occupants in 2021. Minor improvements will be made in a timeframe that is acceptable to the risk associated.

4. Peer-review conclusions

4.1 Attributes of the NAR and the information provided

The candidate installation is the one which was the subject of the Board's review prior to the national self-assessment. The recommendation of the Board (consideration of on-site waste storage) was addressed.

In general, the national report responds to the technical specifications, however specific descriptions provided therein are sometimes unclear or lacking in detail or context to allow to draw conclusions about their safety significance. Consequently, the identification of peer review findings based on the information in the NAR was not straightforward.

There are no comments on the structure of the NAR.

In general, the outcomes of the self-assessment were clearly mentioned.

However, replies to the written questions did not allow to clarify all the identified issues.

Additional information and updates provided in reply to written questions and in the national presentations in the country review workshop were taken into account in the definition of the findings below in section 4.2.

4.2 Peer review findings

The self-assessment revealed one weakness in the fire protection of the nuclear installations. The finding in the table below was acknowledged as an area of improvement by the TPR Team:

Areas For Improvement mentioned in the NAR as weaknesses and acknowledged as such by the TPR Team	
Nuclear installation: TRIGA Mark II Vienna RR	
AFI (1)	Absence of fire extinguishing blankets that could prevent fires from developing and causing damage to the infrastructure

The TPR team recommends that Austria addresses this area for improvement in the National Action Plan.

Definition of the types of findings

According to the TPR II Terms of Reference, the country group workshop discussions should lead to conclude on the findings categorised as an 'area of good performance' or 'area for improvement'. These are defined therein as follows:

A National area of good performance which should be understood as an arrangement, practice, policy or programme related to fire protection that is recognized by the TPR Review Team as a significant accomplishment for the country and has been undertaken and implemented effectively in the country and is worthwhile to commend.

A National area for improvement which should be understood as an aspect of fire protection identified by the TPR Peer Review Team where improvement is expected, considering the arrangement, practice, policy or programme generally observed in other participating countries. It may also be self-identified by the country itself (i.e. self-assessment) where improvement is appropriate.