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International Atomic Energy Agency
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Working Group for the Workshop on Managing Interface between Safety and Security for Research Reactors

Workshop on Managing the Interface between Safety and Security of Research Reactors

Vienna

6-10 June 2022

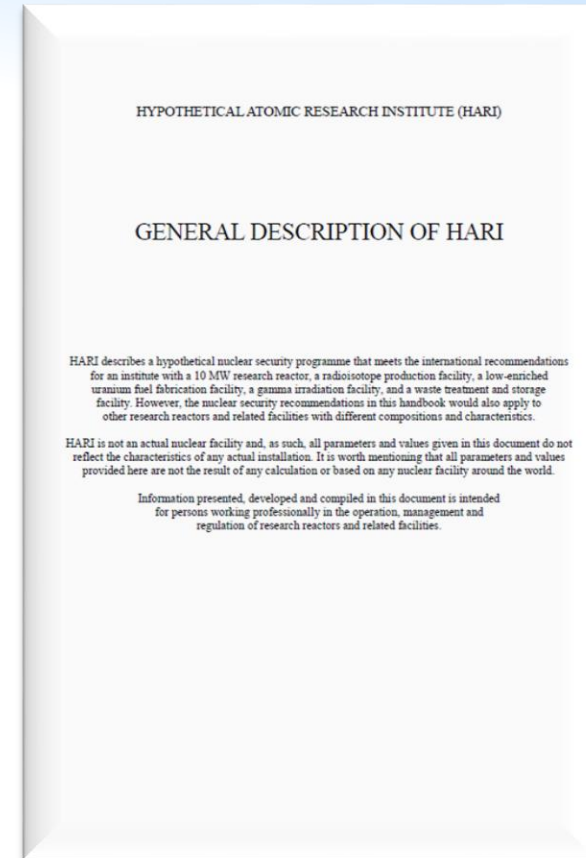
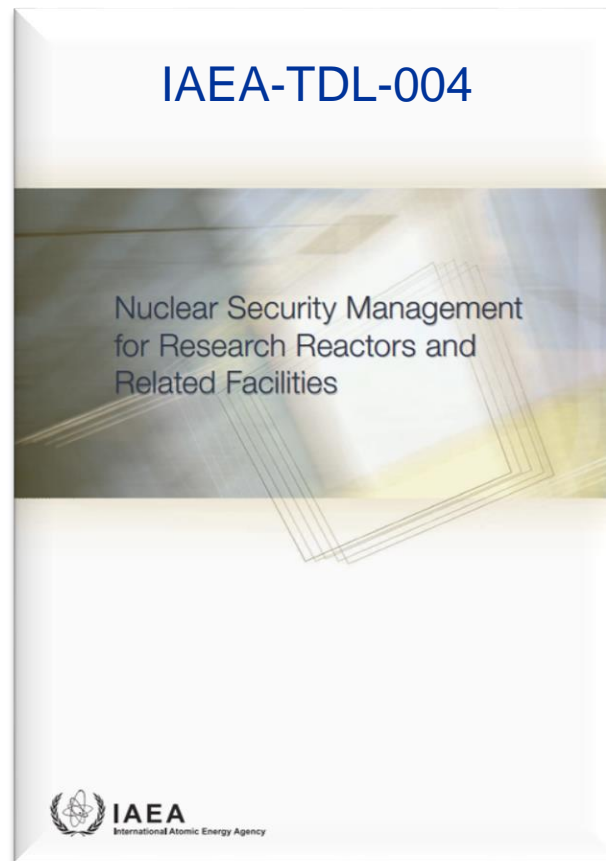
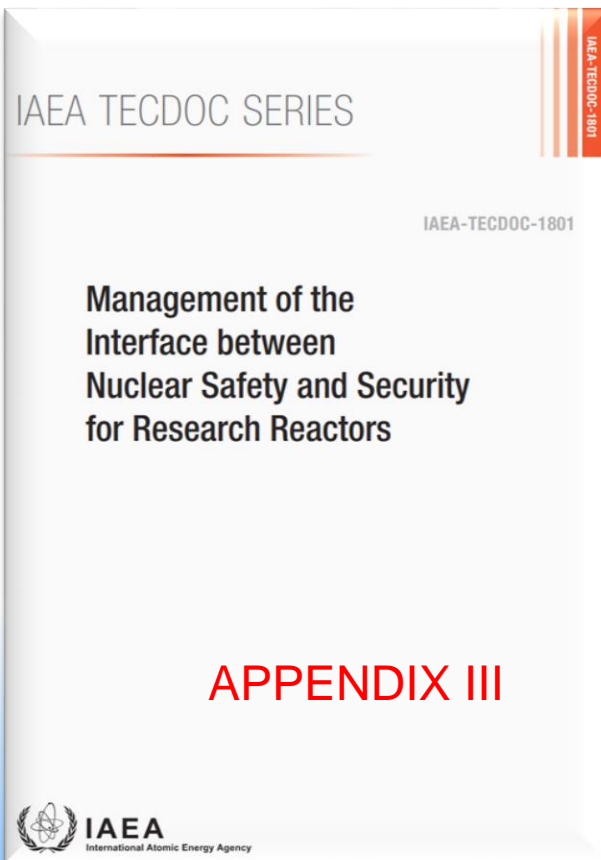
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Objective of the Working Group Activity



- Activity 1 and 2:
 - The objective of the Working Group is **to understand importance of management controls and processes; technical attributes; and expertise for change analysis** to ensure that proposed changes, and the activities will not adversely affect compliance with safety or security requirements, or reduce the relevance of safety analyses, operational limits and conditions or the facility's approved security plan credited for protection against theft and sabotage.
- Activity 1 and 2:
 - The objective of the working groups is **to review specific sections of the HARI documentation** and provide comments on the sections.

Reference documents



Case Study – 1: A Change to Security

- The small university research reactor needs to enhance physical protection system in response to plans to increase the maximum licensed reactor power from 500 kW to 3 MW.
- The security manager has proposed a modification to add a security fence around a portion of the exterior of a multi-purpose building housing the reactor, several classrooms, a utility room and faculty offices.
- In addition to the fence, several interior security doors will be required to segregate the reactor and the utility room from the classrooms and offices.

Case Study

- Specific performance criteria have to be met in order for the exterior fence to meet the requirements of a security barrier.
- One requirement is that the fence posts have to be at least 2.3 meters underground and set in concrete.
- Furthermore, the increased safety requirements that become necessary to licence the reactor for operation at 3 MW will increase the importance of the electrical power and water supplies.
- The building services (electrical power, water and heating steam) enter the building underground through the utility room. Therefore, the utility room needs also to be provided with additional physical protection.

Group Tasks for Change Review

- Given the information related to the proposed change to the facility security barriers, it would be necessary to review the security questions;
- However, for this group activity, Groups will:
 - specifically focus on the safety–security interface; and
 - limit discussions to the review of the proposed activity against the safety questions.

Question – 1:

- Could the proposed change result in an increase in the frequency of occurrence of an accident previously evaluated in the facility safety analysis?
- Task: Evaluate:
 - What level of understanding would be required associated with the accidents evaluated in the facility safety analysis and their assumed frequency?.
 - Which facility groups hold expertise to answer this question (e.g. operations, engineering etc.)
 - Who should communicate to the concerned facility groups?
 - In case of “yes” to Q-1, discuss process of change management and ways to manage safety-security interface.

Question – 2:

- Could the proposed change increase the risk of exposure to staff?
- Task: Evaluate:
 - What level of understanding would be required to evaluate potential risk of exposure to the facility staff?
 - Which facility groups hold expertise to answer this question (e.g. operations, engineering etc.)
 - Who should communicate to the concerned facility groups?
 - In case of “yes” to Q-2, discuss process of change management and ways to manage safety-security interface.

Question – 3:

- Could the proposed change create a possibility for a malfunction of a structure, system or component important to safety with a different result than from any previously evaluated in the facility safety analysis?
- Task: Evaluate:
 - What level of understanding would be required to evaluate potential malfunctions of a structure, system or components important to safety?
 - Which facility groups hold expertise to answer this question (e.g. operations, engineering etc.)
 - Who should communicate to the concerned facility groups?
 - In case of “yes” to Q-3, discuss process of change management and ways to manage safety-security interface.

Case Study – 2: A Change to Safety



- A modification to a 20 MW research reactor has been proposed by the operations manager which would **include a chemical storage tank and a chemical injection system** for adding corrosion inhibiting chemicals to a cooling tower.
- The cooling tower's safety function is **to provide a heat sink for decay heat removal** following operational transients and under accident conditions.
- The cooling tower is experiencing accelerated corrosion that could soon render the cooling tower inoperable if not corrected.

Case Study – 2: A Change to Safety



- The placement of the **chemical storage tank is within the protected area**, in an area with easy access for the chemical delivery vehicle.
- The placement of the tank will **obstruct the view** of the research reactor security personnel and may **interfere with the detection** of unauthorized personnel in the protected area.
- Additionally, the delivery vehicle will further obstruct **observation of the outermost security physical barrier** when making routine deliveries, which occur once a week and require about one hour.

Group Tasks for Change Review

- Given the information related to the proposed change to enhance the reliability and availability of equipment important to safety, it would be necessary to review both safety and security questions;
- However, for this group activity, Groups will:
 - specifically focus on the safety–security interface; and
 - limit discussions to the review of the proposed activity against the security questions.

Question:

- Could the proposed change or activity decrease the reliability or availability of a security system to perform its intended functions?
- Task: Evaluate:
 - What level of understanding would be required to evaluate the impact of the proposed safety change on the reliability and the availability of security systems?
 - Which facility groups hold expertise to answer this question (e.g. operations, engineering etc.)
 - Who should communicate to the concerned facility groups?
 - In case of “yes” to Q-1, discuss process of change management and ways to manage safety-security interface.

Instructions:

- Identify the **technical attributes** for each of the safety/security questions to demonstrate that the minimum regulatory requirements for safety have been maintained, given the scope of the proposed change to security or safety.
- Identify the appropriate **expertise** necessary for the review of the change.
- If the evaluation of the technical attributes presented in any safety/security question is “yes” then **it can no longer be assumed that the minimum level of safety/security would be maintained.**
- In that case, a revision to the proposed safety/security change needs to be considered or additional or modified safety/security features may be necessary.
- If the conclusion of all the question evaluations is “no,” then the proposed safety/security change would likely not result in the reduction safety below the minimum regulatory requirements.

Example list of expertise

- The physical layout of the facility;
- The layout of security layers in the facility;
- The configuration and purpose of structures, systems, and components;
- Integrated management system requirements and quality procedures;
- Facility operating programme and procedures;
- Security plan and procedures;
- The safety analyses and the operational limits and conditions;
- Facility licence conditions and licensing process;
- Emergency and contingency plans and preparedness;
- Programmes for radiation protection and waste management;
- Engineering;
- Maintenance;
- Work management (control and planning);
- Training and qualification of personnel;
- Fire protection;
- Environmental protection;
- Conventional health and safety (includes chemical safety).

Activity 3: Feedback on the Hypothetical Atomic Research Institute (HARI) draft documents



- Participants will review HARI booklet which was developed to serve as guidance through an example of effective/adequate security (not ideal).
- Each group should provide a summary of their thoughts on what changes might be made to improve the intent of the information in the section.
- Each group should also develop a short presentation summarizing the group's comments on the sections they reviewed in the HARI document.
- All groups should review the general description of HARI and the research reactor appendix.

Activity 3: Feedback on the Hypothetical Atomic Research Institute (HARI) draft documents



Specific Group Tasks (in priority order)

Group 1

Comment on
Physical Protection System
and
Access Control

Abdul SHAKOOR

Group 2:

Comment on
Trustworthiness
And
Information Security

David SEARS

Group 3:

Comments on
Security Management
and
Materials on-site

Joseph RIVERS

Group Membership

Title	Last Name	First Name	Country	Working Group
Mr	Tran	Vinh-Thanh	Viet Nam	1
Mr	Gregorio	Eugene	Philippines	1
Mr	Dela Cruz	Rafael Miguel	Philippines	1
Mr	Husain	Mohammad Annuar Assadat	Malaysia	1
Ms	Diah	Hidayanti Sukarno	Indonesia	1
Ms	Fahma	Roswita	Indonesia	1
Mr	Nguyen	Hoang-Ahn	Viet Nam	2
Ms	Azores	Romelda	Philippines	2
Mr	Valdez	Francis Cyril	Philippines	2
Mr	Chakovski	Jason	Austrailia	2
Ms	Nina	Widiawati	Indonesia	2
Ms	Yasintha	Niniek	Indonesia	2
Mr	Vo	Doan Hai Dang	Viet Nam	3
Mr	Soner	Md. Abdul Malek	Bangladesh	3
Ms	Hernandez	Eileen Beth	Philippines	3
Mr	Rosalan	Ridha	Malaysia	3
Ms	Lucas	Katherine	Austrailia	3
Ms	Nuri	Trianti	Indonesia	3



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Thank you!

