Non-Power Reactor Safety and Security During a Public Health Emergency

**Background**

Non-Power Reactors (NPRs), also known as Research and Test Reactors (RTRs) or non-power production and utilization facilities (NPUFs), are licensed and regulated by the U.S. Nuclear Regulatory Commission (NRC). Safety and security requirements at these facilities are based on a "graded" approach concept. In general, NPRs that possess larger quantities of nuclear material are required to have more security measures in place that are commensurate to the potential threat to the public. The quantity of nuclear material utilized at these facilities is small when compared to nuclear power reactor facilities. In addition, NPRs have robust engineering designs that incorporate a variety of safety features which make them highly resistant to mis-operation (intentional or unintentional).

Physical security strategies at these facilities employ "defense-in-depth," and are founded on the "detect, delay, assess and respond" model. Applicable regulations in Title 10 of the *Code of Federal Regulations* (10 CFR), Part 73 are principally focused on preventing the theft or diversion of nuclear materials at NPRs.

Title 10 of the CFR Part 55, “Operators’ Licenses,” provides the regulations that apply to: (1) any individual who manipulates the controls of NPRs; (2) any individual designated by an NPR licensee to be responsible for directing any licensed activity of a licensed operator; and (3) any NPR license. Notably, this part addresses the requirements for operator licensing renewal, medical examinations, and requalification.

The NRC maintains an active oversight program of all NPRs which includes routine safety and security inspections and assessments.

**Questions and Answers**

Q1. How are NPRs different from nuclear power reactors?

A.1. Most NPRs are operated at very low power levels (licensed at a thermal power of 1 MW or less), while power reactors operate at much higher power levels (in excess of 1000 MW). Even the highest-powered NPR is licensed at only 20 MW, which is two-orders of magnitude less than the average power reactor. Additionally, most NPRs only operate a few hours a week depending on the type of activities being conducted at the facility.

Q2. What impact would a public health emergency have on NPR safety?

A2. For most NPRs, it is common for the reactor to be shutdown and secured for extended periods of time without staff physically present at the facility. Staffing of NPRs depend on the principal mission of the facility and the type of research or testing work being conducted. All NPRs have minimum staffing level requirements during operations that must be met, or the facility cannot operate. These staffing requirements during operations remain in effect during a public health emergency.

Q3. How would security be maintained at NPRs in the event of a public health emergency?

A3. The use of dedicated armed guards varies among the NPRs. Most university reactors rely on armed police officers, usually campus-based police officers for security protection. Duty officers are required to be continuously available to respond to the reactor facility when needed. These officers are supplemented by local, county and state police. Every NPR conducts periodic exercises with security forces to ensure a fast and effective response to any incident. These security requirements remain in effect during a public health emergency.

Q4. Can NPRs be left unattended while shutdown for an extended period?

A4. Yes. NPRs are built inherently safe and the reactor can be shutdown when not in use, the facility locked, and safely left secure and unstaffed for extended periods of time. NPR facilities have technical specification surveillances or other provisions that are required to be completed even when the reactor is shutdown (including extended shutdown). These surveillances would be performed by “essential” personnel during a public health emergency.

Q5. Do we expect to receive emergency amendments (technical specification changes) or other licensing actions as a result of a public health emergency?

A5. With NPRs having the ability to remain shutdown for extended periods of time unattended, it is unlikely that a public health emergency could create a situation resulting in a licensee not being able to meet license conditions. However, if the need arises, the NRC staff are capable of processing emergency amendments. Licensees should also ensure that challenges to their security force do not result in a decrease in effectiveness of their security plans. If necessary, licensees should immediately notify the NRC related to compliance with NRC requirements for their specific facility and situation. NRC could exercise enforcement discretion, as appropriate, regarding the completion of activities associated with NRC requirements.

Q6. When a licensed operator is unable to complete a medical examination by a physician for a renewal application due to a public health emergency, what actions can be taken?

A6. In accordance with 10 CFR 55.57, a licensed operator must renew the license every 6 years and receive a medical examination by a physician and submit NRC Form 398 and NRC Form 396.

When a licensed operator is unable to obtain a medical examination by a physician while seeking the renewal of an operator license during a declared public health emergency, the licensee will need to document the issue in the individual’s operator licensing/requalification records and request that the NRC grant an exemption. The NRC may grant exemptions from the regulation per 10 CFR 55.11. Exemptions to this requirement will be considered on a case-by-case basis. In such instances, the NRC may determine the application is sufficient for timely renewal provisions.

Q7. When a licensed operator is unable to complete a biennial medical examination by a physician due to a public health emergency, what actions can be taken?

A7. In accordance with 10 CFR 55.21, a licensed operator shall have a medical examination by a physician every two years.

When an operator is unable to obtain a biennial medical examination by a physician due to a public health emergency, the licensee will need to document the issue in the individual’s operator licensing/requalification records stating that there are no changes in health and request that the NRC grant an exemption. The NRC may grant exemptions from the regulation per 10 CFR 55.11. Exemptions to this requirement will be considered on a case-by-case basis.

Q8. When an applicant for an operator license is unable to complete a medical examination by a physician due to a public health emergency, what actions can be taken?

A8. In accordance with 10 CFR 55.21, an applicant for an initial operator license shall have a medical examination by a physician. An applicant for an initial operator license cannot receive an NRC license without the completion of a medical examination by a physician and the submittal of NRC Forms 396 and 398. During a public health emergency event, it is likely that all NRC operator initial and requalification license examinations will be postponed until conditions improve to prevent the potential for additional spread or exposure to the disease.

Q9. What provisions are allowed for licensees who cannot meet licensed operator requalification requirements to maintain the operator license ACTIVE due to a public health emergency?

A9. The requirements in accordance with 10 CFR 55.59 specifies the operator must comply with the qualification program including pass a comprehensive requalification biennially written examination and an annual operating test and shall have a medical examination by a physician every two years.

If the operator cannot meet the requalification requirements,the NRC may grant exemptions from the regulation per 10 CFR 55.11. Exemptions to this requirement will be considered on a case by case basis.

Relief may be required to avoid putting all operators through a written exam and operating test.  Many instructors are inactive licensed operators who may be re-activating in order to stand shift and unable to conduct training/exams. An annual exam can be re-scheduled by the licensee. Licensees in the middle of their 24-month cycle should not need relief. Exemption of 10 CFR 55.59 would be required for operators to perform licensed duties after the 24-month cycle ends if they have not passed their requalification exam, including biennial written and two annual operating tests.

Q10. If a former operator’s license was ended under favorable conditions or expired within 1 year, can the operator get a waiver of some of the examination requirements?

A10. Yes. The provisions of 10 CFR 55.47 allow for waivers for a former operator to not have to take an initial exam to be re-licensed. It specifies that the former operator has had extensive actual operating experience within the last 2 years. The former operator would need to get caught up in requalification training. No relief will be required to implement this regulation. Exemptions to this requirement will be considered on a case by case basis.

Q11. If a former licensed operator separated from a facility under favorable conditions, can the license operator come back to help during a public health emergency?

A11. Yes. The provisions of 10 CFR 55.47 require that the former operator has had extensive actual operating experience at the facility within the last 2 years. The former operator could perform his former duty. No relief will be required to implement this regulation.

Q12. What provisions are available if licensees are challenged to fully implement access authorization requirements because of difficulties in finding a facility to take fingerprints, or difficulties in obtaining information from the Federal Bureau of Investigations (FBI), a federal agency that may have reduced or sequestered staffing due to a public health emergency?

A12. For individuals who are requesting unescorted access under 73.57(g) and cannot implement these requirements due to a public health emergency, all occurrences shall be documented. After exhausting all reasonable options in locating a facility to take fingerprints, such as contacting state and local police departments, US Post Office, UPS stores, or private fingerprinting services, in an public health emergency event the licensee’s NRC-approved Reviewing Official may grant authorization for the interim period if the individual has had a recent criminal history check within 365 days and true identification can be verified by developing an accumulation of information for establishing trustworthiness and reliability.

For individuals requesting initial authorization, authorization shall be denied until all regulatory requirements have been met. If determined to be necessary during a public health emergency event, the NRC will work with the licensees’ reviewing official to use other factors, such as a name-based check, if warranted. The reviewing official must complete all other parts of the background check and determine that no other disqualifying information exists. In all cases, compliance shall be restored as soon as reasonably practicable

Licensees wishing to nominate personnel as an NRC-approved Reviewing Official and cannot submit fingerprints due to a public health emergency may still request approval. The licensee must first exhaust all options in locating a facility to take fingerprints, such as contacting state and local police departments, US Post Office, UPS stores, or private fingerprinting services. Those individuals who are nominated must maintain current unescorted access and have had no breaks of service. Additionally, those individuals must have been maintained in the licensee’s access authorization program, true-identity is verified, and the individuals are without pending reported legal actions. The NRC will use other factors, such as a name-based check, to issue interim approval. In all cases, compliance shall be restored as soon as reasonably practicable.

Q13. What provisions are available if licensees are challenged in conducting the required TS surveillances and testing of systems that support security or emergency response functions at an NPR facility due to a public health emergency resulting in all university staff and students not being allowed on campus unless facility is deemed critical infrastructure?

A13. Licensees should review TSs and physical security plan and identify, ahead of time, and identify potential challenges to adhering to their TSs or security/emergency plan and assesses its impact on meeting safety or security. If potential challenges are foreseen, licensees should contact their PM promptly to discuss issues and options, including potential challenges to the TSs or security/emergency plan. If a licensee finds a specific occurrence that results in a non-compliance with the TSs, then the licensee should notify the NRC, document the possible length of non-compliance, and implement an interim plan to restore compliance as soon as reasonably practicable or request exemption from the requirement(s).

Q14. What provisions are available if licensees are challenged to fully implement material inventory and status reports requirements because of difficulties accessing the facility due to a public health emergency?

A14. The requirements in 10 CFR 74.13, 74.15, and 74.19 are associated with material status reports, transaction reports, and physical inventory. Each of these reports have specific times when they are due. For example, a physical inventory report is required every 12 months per 10 CFR 74.19 (c), with no grace period allowed.

Licensees should assess their ability to meet these requirements in advance of the deadlines. If they are unable to meet the deadline, licensees should contact their PM, document the specific occurrences in which the licensee is in non-compliance with the requirement in part 74, document the possible length non-compliance and how they will implement a plan to restore compliance as soon as reasonably practicable or request exemption from the requirement(s). The NRC will consider this information and in accordance with 74.13(a) “The Commission may permit a licensee to submit the reports at other times for good cause”.

Q15. What provisions are available if licensees are challenged to meet emergency drill and exercise periodicity requirements due to a public health emergency resulting in college campus emergency response personnel not being available for participation in an exercise?

A15. Per 10 CFR 50 Appendix E, NPR licensees will use Regulatory Guide 2.6 as guidance for acceptability for emergency response plan. The regulatory guide endorses ANSI/ANS 15.16 as means to demonstrate compliance with NRC regulations. Annual on-site emergency drills are required to be conducted as action drills, and at least every two years, these drills should be coordinated with off-site emergency personnel. There is flexibility in the allowable intervals between drills/exercises. Additionally, RIS 06-03, “Guidance On Requesting an Exemption From Biennial Emergency Preparedness Exercise Requirements”, though specifically applicable to power reactors, provides information for altering drill and exercise frequency. Also, per post-9/11 Confirmatory Action Letters, most of which have been incorporated in sites physical security plans, licensees shall, where practical, include local law enforcement in periodic action drills.

Licensees should assess their ability to meet these requirements in advance of the deadlines. If they are unable to meet the deadline, licensees should contact their PM to discuss re-scheduling alternatives and documentation, including specific occurrences in which the licensee would be in non-compliance with the requirements for conducting a drill/exercise, and the possible length of non-compliance and how they will implement a plan to restore compliance as soon as reasonably practicable. The NRC will consider this information and work with the licensee on compliance actions.

Q16. Will routine safety and security inspections be conducted at NPR facilities during a public health emergency?

A16. Consistent with practices and recommendations of health organizations, NRR management may defer all safety and security inspections during a public health emergency. NRR management will assess the impacts on the NPR inspection program once the public health emergency conditions subside.

Q17. Will NRC inspectors respond to events at NPR facilities during a public health emergency?

A17. Inspectors will use remote means for response to non-safety significant events and follow-up actions of licensees to events will be evaluated during the next routine inspection. NRR management may authorize on-site response for significant events. This is expected to be rare for NPR facilities during a public health emergency. When responding on-site during these conditions, inspectors will follow health organizations recommended practices and site-specific requirements for preventing disease contamination and spread (i.e., personal protective equipment, social distancing, etc.).