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Part 53 Rulemaking Effort for Advanced Reactors

Juris Jauntirans Ismael Garcia

Division of Physical and Cyber Security Policy
Office of Nuclear Security and Incident Response

Outline

- Part 53 – Brief History and Objectives
- Key Messages for Advanced Reactor Rulemaking
- A New Approach to Cyber Security

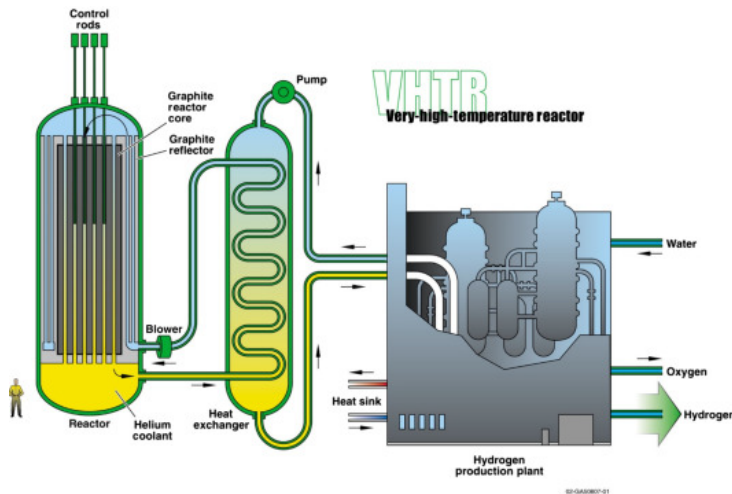
Brief History and Objectives

NEIMA

NEIMA requires the NRC to “complete a rulemaking to establish a technology-inclusive, regulatory framework for optional use by commercial advanced nuclear reactor applicants for new reactor license applications” by December 31, 2027.

OBJECTIVES

- Reasonable assurance of adequate protection of the public health and safety and common defense and security to at least the same degree of protection as required for current-generation LWRs
- Protect health and minimize danger to life or property to at least the same degree of protection as required for current-generation LWRs
- Provide greater operational flexibilities supported by enhanced margins of safety that may be provided in advanced nuclear reactor design
- Ensure that the requirements for licensing and regulating advanced nuclear reactors are clear and appropriate
- Identify, define, and resolve additional areas of concern related to the licensing and regulation of advanced nuclear reactors



Key Messages for Advanced Reactor Rulemaking

- The NRC is developing a new consequence-based, graded approach for cyber security to accommodate the potential for a wide range of advanced reactor technologies in the future.
- The proposed new approach leverages the operating experience.
 - Power reactors cyber rule (10 CFR 73.54)
 - The proposed cyber rule for fuel cycle facilities
 - Lesson learned from IAEA and international counterparts

A New Approach...

“Traditional Cyber Security Approach” (10 CFR 73.54)

Protect from cyber attacks up to and including the DBT with a focus on digital assets associated with :

- Safety, Security, and Emergency Preparedness functions;
- Support systems which, if compromised, could adversely impact safety, security, or emergency preparedness functions

“New Cyber Security Approach” (10 CFR 73.110)

Focus on protecting via a graded approach, functions and associated digital assets against cyber attacks, up to and including the DBT, that are capable of causing consequences associated with:

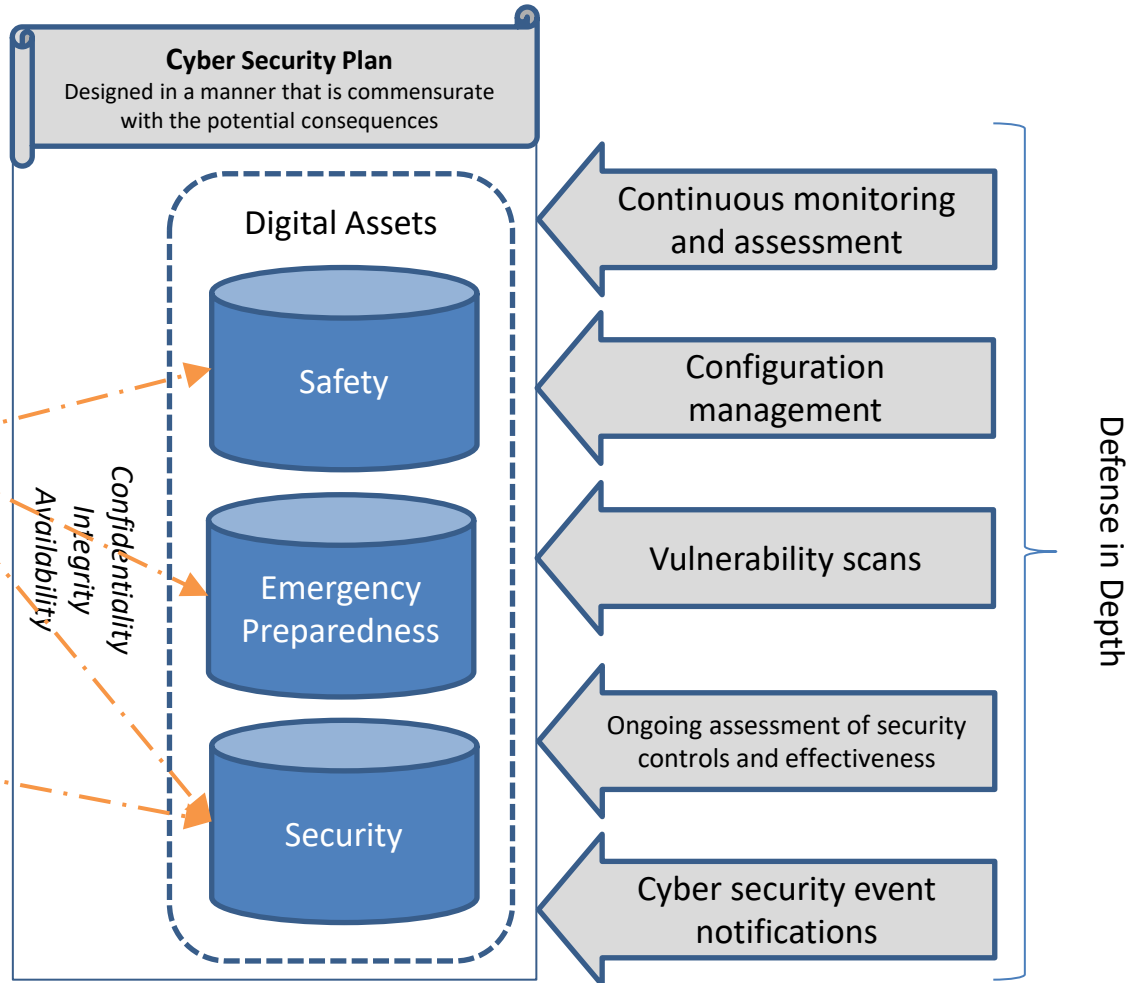
- Radiological Sabotage
- Physical Intrusion

New Cyber Security Approach - 10 CFR 73.110

The cyber security program must provide reasonable assurance that digital computer and communication systems and networks are adequately protected against cyber attacks that are capable of causing the following consequences:

Adversely impacting the functions performed by digital assets that would prevent a postulated fission product release resulting in offsite doses exceeding the values in §53.210 of this chapter.

Adversely impacting the functions performed by digital assets used by the licensee for implementing the physical security requirements in §53.860(a) of this chapter.



Draft Regulatory Guide Development



An acceptable approach for meeting the 10 CFR 73.110 requirements



Effective guidance to support a performance-based regulatory framework



Leverage IAEA and IEC security approaches

Draft Regulatory Guide – Three-Tier Analysis Approach



Facility Level

Eliminate potential adversary scenarios through facility design



Function Level

Eliminate or mitigate attack vectors through passive CSP & DCSA elements



System Level

Utilize active CSP & DCSA elements to protect against cyber attacks

Milestones

Continued work on Proposed Cyber Requirements and draft Regulatory Guide

- Finalize draft rule text: **June 2022**
- Finalize draft regulatory guidance: **July 2022**
- Inclusion in Part 53 rulemaking package to Commission: **February 2023**

Questions?