



10 CFR Part 53 “Licensing and Regulation of Advanced Nuclear Reactors”

Subpart F, “Staffing, Training, Personnel Qualifications,
and Human Factors Requirements”

October 26, 2021

Agenda

- | | |
|-------------------------|--|
| 1:00pm – 1:15pm | Welcome / Introductions / Logistics / Goals |
| 1:15pm – 3:30 pm | Overview and Discussion of Subpart F, sections related to Staffing, Training, Personnel Qualifications, and Human Factors Requirements |
| 3:30pm – 3:45pm | Break |
| 3:45pm – 4:45pm | Open Discussion of Other Part 53 Sections and Subparts |
| 4:45pm – 5:00pm | Additional Public Comments/Closing Remarks |

Welcome/Introductions

Welcome:

- Opening Remarks

Speakers/Presenters:

- Bob Beall, Office of Nuclear Materials Safety and Safeguards – Meeting Facilitator
- Jesse Seymour, NRR – Technical Lead

Public Meeting Slides: ADAMS Accession No. ML21295A241

Purpose of Today's Meeting

- Review preliminary proposed rule language for Subpart F, “Staffing, Training, Personnel Qualifications, and Human Factors Requirements”.
- Today's meeting is a “Comment-Gathering” meeting, which means that public participation is actively sought in the discussion of the regulatory issues during the meeting.
 - This meeting is being held in a “workshop” format to facilitate the discussion of today's topics.
 - The meeting is being transcribed and the transcription will be available with the meeting summary by November 24, 2021.
- No regulatory decisions will be made at today's meeting.

Subpart F – Staffing, Training, Personnel Qualifications, and Human Factors Requirements

Subpart F – Staffing, Training, Personnel Qualifications, and Human Factors Requirements

Overview of 53.750-799 Structure and Key Content

- 53.750-759: General Requirements
 - 53.753: Technical Requirements for operating license (OL) and combined license (COL) Applicants
 - Human Factors Engineering (HFE) design requirements
 - Human-System Interface (HSI) design requirements
 - Concept of Operations (ConOps), Functional Requirements Analysis (FRA), and Function Allocation (FA) requirements
 - Staffing Plan requirements
 - Licensed & Certified Operator program requirements
 - 53.755: Conditions of Licenses for OL and COL Holders
 - Provisions for not using licensed operators and criteria
 - Provisions for load-following
- 53.760-769: Operator Licensing Requirements.
 - Training, examination, requalification, and simulator requirements.
- 53.770-779: Operator Certification Requirements.
- 53.780-789: General Training and Qualification Requirements.

Subpart F – Staffing, Training, Personnel Qualifications, and Human Factors Requirements

53.750-759: “General Staffing, Training, Personnel Qualifications, and Human Factors Requirements”

- This section fulfils a role similar to certain aspects of the 50.34(f) post-Three Mile Island requirements, 50.54 conditions of facility licenses requirements, and Part 55 operator licensing requirements.
- A major difference is that the requirements established in areas of HFE, staffing, and operator qualification are directly linked to design-specific safety functions and their fulfillment.
 - HFE is required where needed to support safety functions, versus being generically applied to a control room.
 - Operator staffing is required to the extent necessary to support design-specific needs for safety function fulfillment, versus relying upon a prescribed number of reactor operators (RO) and senior reactor operators (SRO).
 - The fundamental role of the licensed operator centers around the management and fulfillment of safety functions, in addition to the manipulation of facility controls.

Subpart F – Staffing, Training, Personnel Qualifications, and Human Factors Requirements

- 53.750, “General Staffing, Training, Personnel Qualifications, and Human Factors Requirements”
 - Contains applicability and definitions
- 53.751, “Communications,” and 53.752, “Information Collection”
- 53.753, “Defining, fulfilling, and maintaining the role of personnel in ensuring safe operations”
 - Requires OL and COL applicants to develop, implement, and maintain specific measures (covered by 53.753(a)–(g)) to ensure that human actions needed to fulfil safety functions, prevent or mitigate licensing basis events (LBE), or otherwise meet safety criteria are satisfied.
 - 53.753(a) is the HFE design requirement (serving a similar role to that of 50.34(f)(2)(iii)) and is performance-based. Facility designs must reflect state-of-the-art human factors principles for safe and reliable performance in all settings that human activities are expected for performing or supporting the continued availability of plant safety or emergency response functions.
 - Guidance for reviewing this performance-based HFE requirement in a scalable manner is being developed by the staff via an Interim Staff Guidance (ISG).

Subpart F – Staffing, Training, Personnel Qualifications, and Human Factors Requirements

- 53.753, “Defining, fulfilling, and maintaining the role of personnel in ensuring safe operations” (continued)
 - 53.753(b) contains HSI design requirements (similar to elements of 50.34(f)) and requires facility designs to provide for the following to support operators in monitoring plant conditions and responding to plant events:
 - features for displaying to operators a minimum set of parameters that define the safety status of the plant,
 - automatic indication of bypassed and operable safety system status,
 - direct indication of structures, systems, and components (SSC) status that relates to the ability of the SSC to perform its safety function,
 - instrumentation to measure, record, and readout key plant parameters related to the performance of SSCs and the integrity of barriers important to fulfilling safety functions,
 - leakage control and detection in the design of systems that pass-through barriers to the release of radionuclides, and
 - monitoring of in-plant radiation and airborne radioactivity as appropriate for a broad range of routine and accident conditions.

Subpart F – Staffing, Training, Personnel Qualifications, and Human Factors Requirements

- 53.753, “Defining, fulfilling, and maintaining the role of personnel in ensuring safe operations” (continued)
 - 53.753(c) requires an applicant to provide a Concept of Operations.
 - The concept of operations must address the following:
 - facility goals,
 - the roles and responsibilities of personnel and automation that are responsible for completing plant functions,
 - staffing, qualifications, and training,
 - the management of normal operations,
 - the management of off-normal conditions and emergencies,
 - the management of maintenance and modifications, and
 - the management of tests, inspections, and surveillance tasks.
 - 53.753(d) requires Functional Requirements Analysis & Function Allocation
 - FRA must address how safety functions are satisfied.
 - FA must describe how safety functions will be assigned to human action, automation, active safety features, passive safety features, or inherent safety characteristics.

Subpart F – Staffing, Training, Personnel Qualifications, and Human Factors Requirements

- 53.753, “Defining, fulfilling, and maintaining the role of personnel in ensuring safe operations” (continued)
 - 53.753(e) requires a description of the program for evaluating/applying operating experience.
 - 53.753(f) requires a staffing plan that describes the numbers, positions, and qualifications of licensed operators and senior licensed operators or, if applicable, certified operators across all modes of plant operations.
 - The staffing plan must also describe personnel providing support in areas such as plant operations, equipment surveillance and maintenance, radiological protection, chemistry control, fire brigades, engineering, security, and emergency response.
 - Plants that require licensed operators must also describe how the proposed licensed operator staffing will be sufficient to provide assurance that plant safety functions can be maintained; this must be supported by HFE analyses and assessments.
 - This provision for flexible licensed operator staffing is a significant change from current 50.54(m) control room staffing requirements.
 - Guidance for evaluating these staffing plans is being developed by the staff in the form of an ISG to be used in conjunction with NUREG-1791

Subpart F – Staffing, Training, Personnel Qualifications, and Human Factors Requirements

- 53.753, “Defining, fulfilling, and maintaining the role of personnel in ensuring safe operations” (continued)
 - While not addressed by the staffing plan requirements of 53.753(f), it is important to note that, at present, the staff preliminarily do not intend to require the Shift Technical Advisor (STA) position for Part 53 applicants.
 - 1985 Policy Statement on engineering expertise on shift (50 FR 43621) stated that the STA requirement was an interim measure until goals that included upgrading HSI and operator training were achieved.
 - Current staff perspective is that the upgrades to HSI and operator training envisioned within this Policy Statement will be the norm under Part 53 and driven by multiple regulatory requirements.
 - This represents a policy issue and the staff intend to use the Part 53 rulemaking process as a vehicle for Commission engagement.
 - 53.753(g) requires applicants to describe their programs for the operator licensing initial training program, the operator licensing examination program, and the operator licensing requalification program.
 - Facilities using certified operators (a new, non-licensed role) must instead submit the corresponding programs for operator certification.

Subpart F – Staffing, Training, Personnel Qualifications, and Human Factors Requirements

- 53.754, “General Exemptions”
- 53.755, “Conditions for Operations Staffing for OLs and COLs”
 - 53.755(a) requires facility licensees to have licensed operators unless they can meet criteria contained in 53.755(b) to use certified operators.
 - 53.755(b) contains the requirements that must be met in order to justify not using any licensed operators as a part of facility staffing.
 - There are presently two different staff proposals for these criteria.
 - The first proposal would require the following:
 - No human actions for event mitigation required to meet safety criteria, achieve safety functions, or provide defense-in-depth.
 - Probabilistic risk assessment demonstrating the evaluation criteria for each event sequence can be met without human action for mitigation;
 - LBE response not needing human action for SSCs to perform.
 - The second proposal would require the design-basis accident safety criteria to be met without mitigation by human actions, active engineered features, or passive design features (except passive features that can survive LBEs and not be defeated by credible human errors).

Subpart F – Staffing, Training, Personnel Qualifications, and Human Factors Requirements

- 53.755, “Conditions for Operations Staffing for Operating or Combined Licenses under this Part” (continued)
 - 53.755(c) restricts control manipulations to licensed or certified operators.
 - 53.755(d) requires operator requalification training programs to commence concurrent with when licensing or certification exams are first administered.
 - 53.755(e) requires that operations (other than control manipulations) affecting reactor power level only occur while plant conditions are being monitored by a licensed or certified operator.
 - However, load-following is permitted if one of the following can immediately refuse demands from the grid operator when they could challenge safe operation or if precluded by equipment conditions:
 - the actuation of an automatic protection system,
 - an automated control system; or
 - a licensed or certified operator.
 - 53.755(f) requires plants with licensed operators to include SROs.
 - 53.755(g) requires that the facility licensee must maintain the staffing complement described under their approved facility staffing plan.

Subpart F – Staffing, Training, Personnel Qualifications, and Human Factors Requirements

- 53.755, “Conditions for Operations Staffing for Operating or Combined Licenses under this Part” (continued)
 - 53.755(h) requires SRO supervision of core alterations (e.g., refueling).
 - Those facilities that do not require any licensed operator staffing are instead required to use a certified operator in an equivalent manner.
 - This does not apply to facilities capable of refueling online/at power.
 - 53.755(i) contains specific requirements for plants using certified operators
 - Certified operator are responsible for specified administrative functions.
 - Certified operator staffing must provide for continuity of responsibility for facility operations at all times during the operating phase.
 - Continuous monitoring of fueled units with the following capabilities:
 - receiving plant operating data and parameters
 - the ability to immediately initiate a reactor shutdown
 - the ability to promptly dispatch ops and maintenance personnel
 - the ability to implement any emergency plan responsibilities
 - conducting reactivity manipulations that require human action

Subpart F – Staffing, Training, Personnel Qualifications, and Human Factors Requirements

- 53.755, “Conditions for Operations Staffing for Operating or Combined Licenses under this Part” (continued)
 - Allowing non-licensed, certified operators to manipulate plant controls and conduct reactivity changes represents a policy issue; the staff intend to use the rulemaking process as a vehicle for Commission engagement.
 - 53.755(j) allows facility licensees to take reasonable actions that depart from license conditions and technical specifications in emergency situations when the action is immediately needed to protect the public health and safety.
 - This is comparable to the provision of 50.54(x)
 - 53.755(k) limits the authority to invoke (j) above to an SRO, a certified operator, or at those plants which have permanently ceased operations, to a senior licensed operator, a certified operator, or a certified fuel handler, as applicable.
 - This is comparable to the requirement of 50.54(y).

Subpart F – Staffing, Training, Personnel Qualifications, and Human Factors Requirements

- 53.756, “Medical Requirements”
 - 53.756(a) requires that applicants for RO and SRO licenses must have medical examinations by a physician; licensed ROs and SROs must have ongoing medical examinations by a physician every two years.
 - In a comparable manner, certified operators must have a medical examination prior to certification and every two years thereafter.
 - The physician must determine that the individual’s medical condition and general health will not adversely affect the performance of assigned operator job duties or cause operational errors endangering public health and safety.
 - 53.756(b) requires facility licensees to submit the medical certifications that are required for licensed operators to the Commission.
 - These submittals are not required for certified operators.
 - 53.756(c) requires facility licensees to retain the results of medical examinations for both licensed and certified operators and to provide the documentation to the Commission upon request.
- 53.757, “Violations,” and 53.758, “Criminal Penalties”

Subpart F – Staffing, Training, Personnel Qualifications, and Human Factors Requirements

53.760-769: Operator Licensing Requirements (for Part 53 facilities)

- 53.760, “Operator Licensing”
 - Describes applicability of the 53.760-769 requirements section.
- 53.761, “License Requirements”
 - Requires facility licensees to authorize SROs and ROs to perform roles.
- 53.762, “Completeness and Accuracy of Information ”
- 53.763, “Incapacitation Because of Disability or Illness”
 - Requires Commission notification for permanent medical conditions.
- 53.764, “Applications for licensed operators”
 - 53.764(a) describes how to apply and what must be included:
 - NRC Form 398 (the staff intend to provide guidance on content)
 - Evidence of competence in control manipulations (no prescribed number) via either the facility or a simulation facility.
 - Medical certification
 - 53.764(b) describes the disposition of applications.
 - 53.764(c) describes the re-application process (no waiting periods)

Subpart F – Staffing, Training, Personnel Qualifications, and Human Factors Requirements

53.760-769: Operator Licensing Requirements (continued)

- 53.765, “Training Program” (for Licensed Operators)
 - 53.765(a) requires initial licensed operator training programs to:
 - Be based upon a systems approach to training
 - Ensure that license applicants at the facility will possess the knowledge, skills, and abilities necessary to:
 - protect the public health, and
 - maintain design-specific plant safety functions
 - Be approved by the Commission prior to use for license training
 - 53.765(b) requires facilities to establish a licensing examination program to test the knowledge, skills, and abilities for ROs and SROs.
 - This must include the exam methods and criteria used to assess passing performance and have Commission approval before use.
 - Guidance for reviewing these facility-developed operator licensing exam programs is being developed by the staff via an ISG.
 - Facility licensees will be allowed to administer licensing exams; however, the Commission will reserve the ability to do so also.

Subpart F – Staffing, Training, Personnel Qualifications, and Human Factors Requirements

- 53.765, “Training Program” (for Licensed Operators) (continued)
 - 53.765(c) requires facilities to establish requalification training programs for licensed operators. These programs must:
 - Be based on a systems approach to training
 - Ensure that ROs and SROs maintain the knowledge, skills, and abilities necessary to protect the public health and maintain those plant safety functions specific to the facility design.
 - Be conducted for a continuous period not to exceed 24 months.
 - Be approved of by the Commission.
 - Facilities must propose a biennial requal exam program for testing topics from the requal training program, including both the exam methods and criteria to be used to assess passing performance. This program must be approved by the Commission and exams must be administered biennially.
 - Guidance for reviewing these facility-developed, licensed operator requal exam programs is being developed by the staff via an ISG.
 - 53.765(d) requires examination integrity (similar to 55.49)

Subpart F – Staffing, Training, Personnel Qualifications, and Human Factors Requirements

- 53.765, “Training Program” (for Licensed Operators) (continued)
 - 53.765(e) establishes simulation facility requirements for plants required to have licensed operator staffing (separate, less stringent, simulation facility requirements are provided for plants with certified operators). Key aspects are:
 - Full-scope simulators are not mandated; partial scope simulators may be acceptable provided that the scope is adequate to meet intended usage.
 - Simulation facilities must be approved by the Commission if the facility licensee will rely upon them for training purposes, meeting experience requirements (e.g., reactivity changes), or for initial or requal examinations.
 - Use of a simulation facility for conducting HFE analyses or assessments requires demonstrating that adequate simulator scope is provided as well.
 - Prior to initial fuel load, simulator models are allowed to replicate intended initial core loads; this supports operator licensing during construction.
 - 53.765(f) establishes requirements for waivers of exam requirements, including those instances when additional units are constructed at multi-unit sites.
 - 53.765(g) requires that facilities establish Commission-approved programs for both maintaining and re-establishing licensed operator proficiency.
 - This is a different that the prescriptive approach of Part 55 for proficiency.

Subpart F – Staffing, Training, Personnel Qualifications, and Human Factors Requirements

53.760-769: Operator Licensing Requirements (continued)

- 53.766, “Conditions of Licensed Operator and Senior Licensed Operator Licenses”
 - Comparable to the corresponding requirements of Part 55
- 53.767, “Expiration and Renewal of Licenses”
- 53.768, “Issuance, Modification, and Revocation of Licenses”
- In general, it should be noted that the 53.760-769 section proposes a framework for an operator licensing pathway independent of that contained within Part 55. However, the extent to which this operator licensing pathway will remain independent from Part 55 is an area of ongoing work by the staff and is subject to change under future iterations of the preliminary rule language.

Subpart F – Staffing, Training, Personnel Qualifications, and Human Factors Requirements

53.770-779: Operator Certification Requirements

- Certified operators (defined under Part 53) are individuals certified to manipulate facility controls but not licensed by the Commission.
 - Certified operators are not credited for fulfilling safety functions.
- 53.770, “Operator Certification”
 - Describes applicability of the 53.770-779 requirements section.
- 53.771, “Certification Requirements”
 - Requires individuals to hold a certification issued by the facility licensee (not the Commission) to perform the function of a certified operator.
 - Requires the processes used by facilities to establish, administer, and maintain their certified operator programs to comply with Part 53.
- 53.772, “Incapacitation Because of Disability or Illness ”
 - Requires facility licensees to immediately remove individuals from the performance of certified operator duties in that event that medical requirements are not met due to permanent physical or mental conditions.
 - Allows for medical restrictions if they can accommodate the medical issue, provided that compliance with restrictions are maintained.

Subpart F – Staffing, Training, Personnel Qualifications, and Human Factors Requirements

53.770-779: Operator Certification Requirements (continued)

- 53.773, “Training Program” (for Certified Operators)
 - 53.773(a) requires initial operator certification training programs to:
 - Be based upon a systems approach to training
 - Ensure that certified operator trainees will possess the knowledge, skills, and abilities necessary to protect the public health.
 - Be approved by the Commission prior to use.
 - 53.773(b) requires facilities to establish an examination program to test the knowledge, skills, and abilities for certified operators.
 - This must include the exam methods and criteria used to assess passing performance and have Commission approval before use.
 - Guidance for reviewing these facility-developed, certified operator exam programs is being developed by the staff via an ISG.
 - Facilities would develop, administer, and grade certification exams.
 - Facilities would also issue operator certifications (not the NRC).
 - The Commission would reserve the ability to observe the process.

Subpart F – Staffing, Training, Personnel Qualifications, and Human Factors Requirements

53.770-779: Operator Certification Requirements (continued)

- 53.773(c), requires facilities to establish continuing training programs for certified operators. These programs must:
 - Be based upon a systems approach to training
 - Ensure that certified operators maintain the knowledge, skills, and abilities necessary to protect the public health
 - Be approved by the Commission prior to use.
- Facility licensees must also propose a requalification exam program for testing continuing training topics. This program must include the examination methods and criteria to be used to assess passing performance.
 - Facilities must also propose the periodicity for requal exam administration (a difference from licensed operator requal exam periodicity).
 - This program must be approved by the Commission prior to its use.
 - Guidance for reviewing these facility-developed, certified operator requal exam programs is being developed by the staff via an ISG.
 - As operator certifications do not have renewal requirements, continuing training program records are instead retained while operators remain certified at the facility (different from licensed operator requal programs).

Subpart F – Staffing, Training, Personnel Qualifications, and Human Factors Requirements

53.770-779: Operator Certification Requirements (continued)

- 53.773(d), requires examination integrity (similar to 55.49)
- 53.773(e), establishes simulation facility requirements for plants with certified operators (separate simulation facility requirements are provided for plants with licensed operators). Key aspects are:
 - Full-scope simulators are not mandated; partial scope simulators may be acceptable provided that the scope is adequate for intended usage.
 - The simulation facilities at those facilities using certified operators do not require Commission approval. However, certain requirements apply if the facility will use them for training, meeting experience requirements (e.g., reactivity changes), or for initial/requal exams.
 - Using a simulation facility for conducting HFE analyses or assessments requires demonstrating that adequate simulator scope is provided.
 - Prior to initial fuel load, simulator models are allowed to replicate the intended initial core load; this supports operator certification during construction.

Subpart F – Staffing, Training, Personnel Qualifications, and Human Factors Requirements

53.770-779: Operator Certification Requirements (continued)

- 53.773(f), allows the facility licensee to waive examination requirements in accordance with their approved training and qualification program.
- 53.765(g) requires that facilities establish a program for maintaining certified operator proficiency on position functions and plant status, as well as for re-establishing certified operator proficiency when needed.
 - This program does not require Commission approval (different from the requirement for facilities with licensed operators).
- 53.774, “Issuance of Certificates” (for Certified Operators)
 - Requires that facility licensees ensure that individuals meet the following requirements prior to being issued operator certifications:
 - completion of either a high school diploma or GED
 - satisfactory completion of the approved initial training program
 - passing of an initial operator certification examination
 - demonstration of competence in conducting control manipulations
 - meeting medical condition requirements (restrictions allowed)

Subpart F – Staffing, Training, Personnel Qualifications, and Human Factors Requirements

53.770-779: Operator Certification Requirements (continued)

- 53.775, “Conditions of Certificates”
 - Establishes requirements that facility licensee must ensure are met for each certificate it issues to certified operators. These include:
 - Limiting certifications to the facility specified in the certificate (but no limit is placed on how many facilities individuals can certify at).
 - Completion of the continuing training program.
 - Passing of the periodic continuing training examination.
 - Biennial medical examination.
 - Maintaining proficiency in accordance with the facility program.
 - Fitness for Duty requirements regarding drug and alcohol usage.
 - Commission notification for felony convictions.
- 53.776, “Expiration”
 - Operator certifications must be terminated at the end of employment or upon determination by that the individual no longer needs certification.
 - Commission renewal and revocation are not applicable to certifications.

Subpart F – Staffing, Training, Personnel Qualifications, and Human Factors Requirements

53.780-789 Training and Qualification of Commercial Nuclear Plant Personnel

- Addresses personnel training requirements other than those directly associated with the training of licensed and certified operators.
- This section fulfills a role similar to that of the 50.120 training rule.
- 53.780, “Operator Certification”
 - Describes applicability of the 53.780-789 requirements section.
- 53.781, “Training and Qualification Requirements”
 - Requires training programs to be established with sufficient time to provide trained and qualified personnel to operate the facility prior to fuel load (a difference compared to 18-month requirement of 50.120).
 - Requires use of a systems approach to training.
 - Requires the training and qualification of supervisors, technicians, and other appropriate operating personnel to be provided for.
 - Categories of personnel are more generic than 50.120 to accommodate greater flexibilities in roles and responsibilities.
 - Requires record retention to allow for NRC inspection of programs.

Subpart F – Staffing, Training, Personnel Qualifications, and Human Factors Requirements

Discussion

U.S. Nuclear Industry Council

Comments for NRC Part 53 Public Meeting:

Subpart F: Operations - Staffing, Training, Personnel Qualifications (Licensing/Certification), and Human Factors

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26 October 2021



Overall comments based on preliminary rule text for Subpart F Staffing

- Limited time to review and provide comments on Subpart F and H
 - Especially because Subpart F is long, and implementation in many cases depends on guidance that has not yet been written
- 43 pages of detailed Subpart F regulations
 - How many pages of guidance for Subpart F are anticipated?

Initial comments based on preliminary rule text for Subpart F Staffing

- Comments and areas where clarification would be helpful:
 - 53.750 (NRC discussion) Clarify independence from Part 55
 - 53.753 (a) What is status of scalable HFE review guidance? Why is expansion of Human factors to response facilities/offsite (beyond control room) in rule?
 - 53.753 (f) appropriate that shift technical advisor (STA) not required
 - Clarification if the criteria for allowing no licensed operators may have such a high standard that non licensed operators may not be possible
 - Allowing load following with automatic protection is desirable path
 - Explain regulatory philosophy related to simulator licensing and requirements
 - Has NRC been working with CNSC to gain from their simulator facility reviews? (prefer to avoid different approaches)

Initial comments based on preliminary rule text for Subpart F Staffing

- Comments and areas where clarification would be helpful:
 - Future clarification of role of operator (flexibility to allow autonomous operations based on “Concept of Operations”, with staffing plan, and external control room)
 - Some developers are contemplating "fleet" operation -- central control room at the HQ controlling/monitoring a number of reactors which are autonomously operating. Part 53 should be forward looking and allow such "future" operating approach when appropriate for some reactor designs

Discussion of Other Part 53 Sections and Subparts

Other Part 53 Sections and Subparts

- Subpart B – Technology-Inclusive Safety Requirements (3rd iteration) (ML21202A162)
- Subpart C – Requirements for Design and Analysis (3rd iteration) (ML21202A162)
- Subpart H – Licenses, Certifications, and Approvals (ML21267A004)
- Subpart I – Maintaining and Revising Licensing Basis Information (ML21202A175)
- Subpart J – Reporting and Other Administrative Requirements (ML21225A224)

Discussion

Final Discussion and Questions



Part 53 Rulemaking Schedule

Milestone Schedule	
Major Rulemaking Activities/Milestones	Schedule
Public Outreach, ACRS Interactions and Generation of Proposed Rule Package	Present to April 2022 (6 months)
Submit Draft Proposed Rule Package to Commission	May 2022
Publish Proposed Rule and Draft Key Guidance	October 2022
Public Comment Period – 60 days	November and December 2022
Public Outreach and Generation of Final Rule Package	January 2023 to February 2024 (14 months)
Submit Draft Final Rule Package to Commission	March 2024
Office of Management and Budget and Office of the Federal Register Processing	July 2024 to September 2024
Publish Final Rule and Key Guidance	October 2024

Future Public Meetings

- The NRC staff will continue to announce public meetings to discuss and receive feedback on various regulatory topics and preliminary proposed rule text.
 - The next topical public meeting on technology-inclusive alternative requirements for commercial nuclear plants is on October 28, 2021.
 - A topical public meeting on Part 26, Fitness for Duty Requirements, is tentatively scheduled for November 16, 2021.
 - Preliminary proposed rule language will be posted on regulations.gov under docket ID [NRC-2019-0062](#) before the public meetings.
- The NRC staff is scheduled to meet with the ACRS Future Plants Subcommittee on November 18, 2021.
 - Part 5X Supplement, Technology-inclusive alternative requirements for commercial nuclear plants
 - Subpart H, Licenses, Certifications, and Approvals
 - Subpart F, Requirements for Operations

Closing Remarks

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Regulations.gov docket ID: **NRC-2019-0062**

Please provide feedback on this public meeting using this link:

<https://www.nrc.gov/public-involve/public-meetings/contactus.html>

Acronyms and Abbreviations

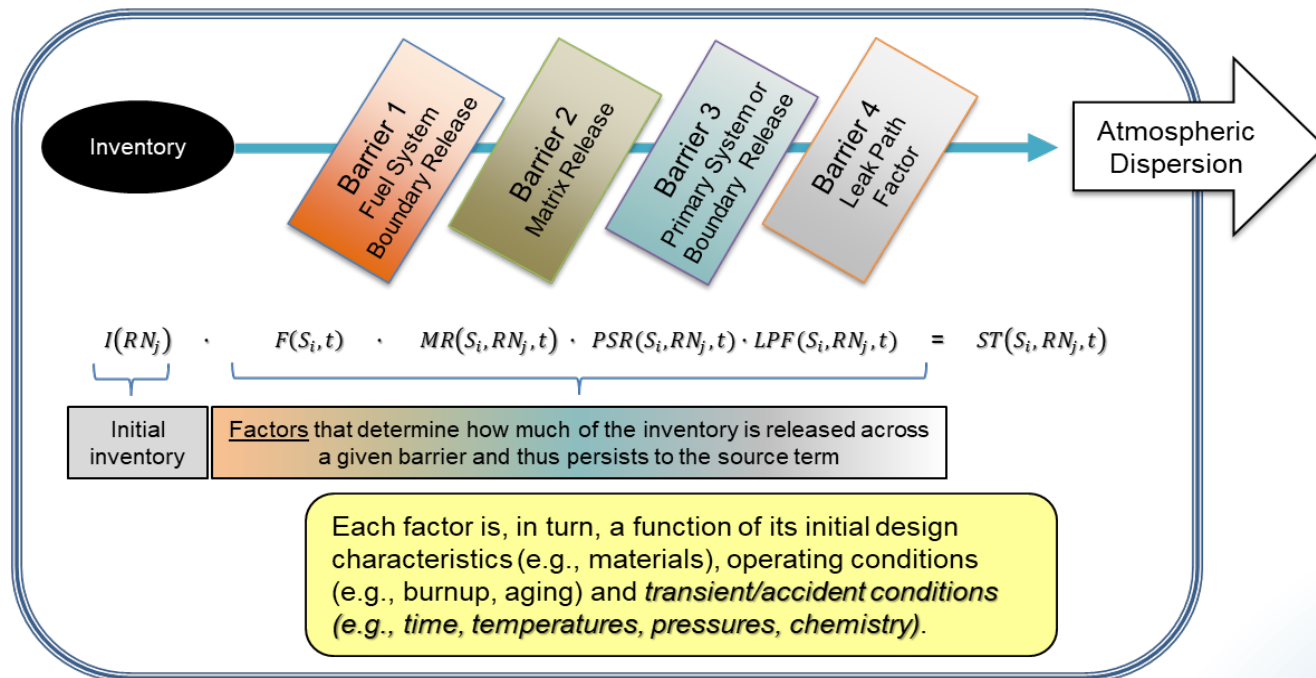
ACRS	Advisory Committee on Reactor Safeguards
ADAMS	Agencywide Document Access Management System
CFR	Code of Federal Regulations
CNSC	Canadian Nuclear Safety Commission
COL	Combined license
ConOps	Concept of operations
FA	Functional allocation
FRA	Functional requirements analysis
HFE	Human factors engineering
HSI	Human-system interface

HQ	headquarters
ISG	Interim staff guidance
LBE	Licensing basis event
NRC	U.S. Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
OL	Operating license
RO	Reactor operator
SRO	Senior reactor operator
SSC	Structures, systems, and components
STA	Shift technical advisor
USNIC	U.S. Nuclear Industry Council

Background Slides

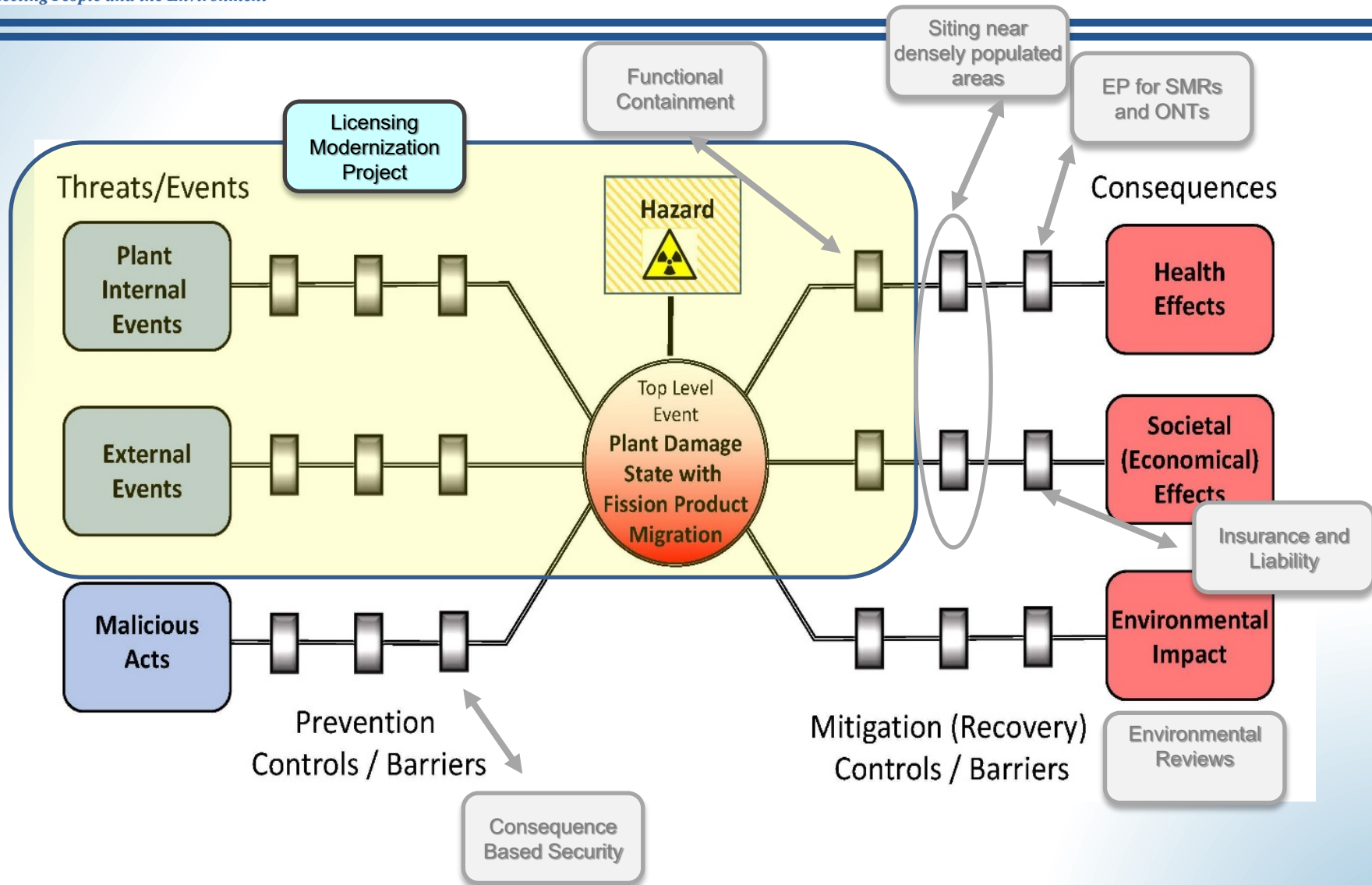
First Principles

Recent NRC activities related to advanced reactors (e.g., functional containment performance criteria, possible changes to emergency planning & security, and DG-1353) recognize the limitations of existing LWR-related guidance, which requires a return to first principles such as fundamental safety functions supporting the retention of radionuclides



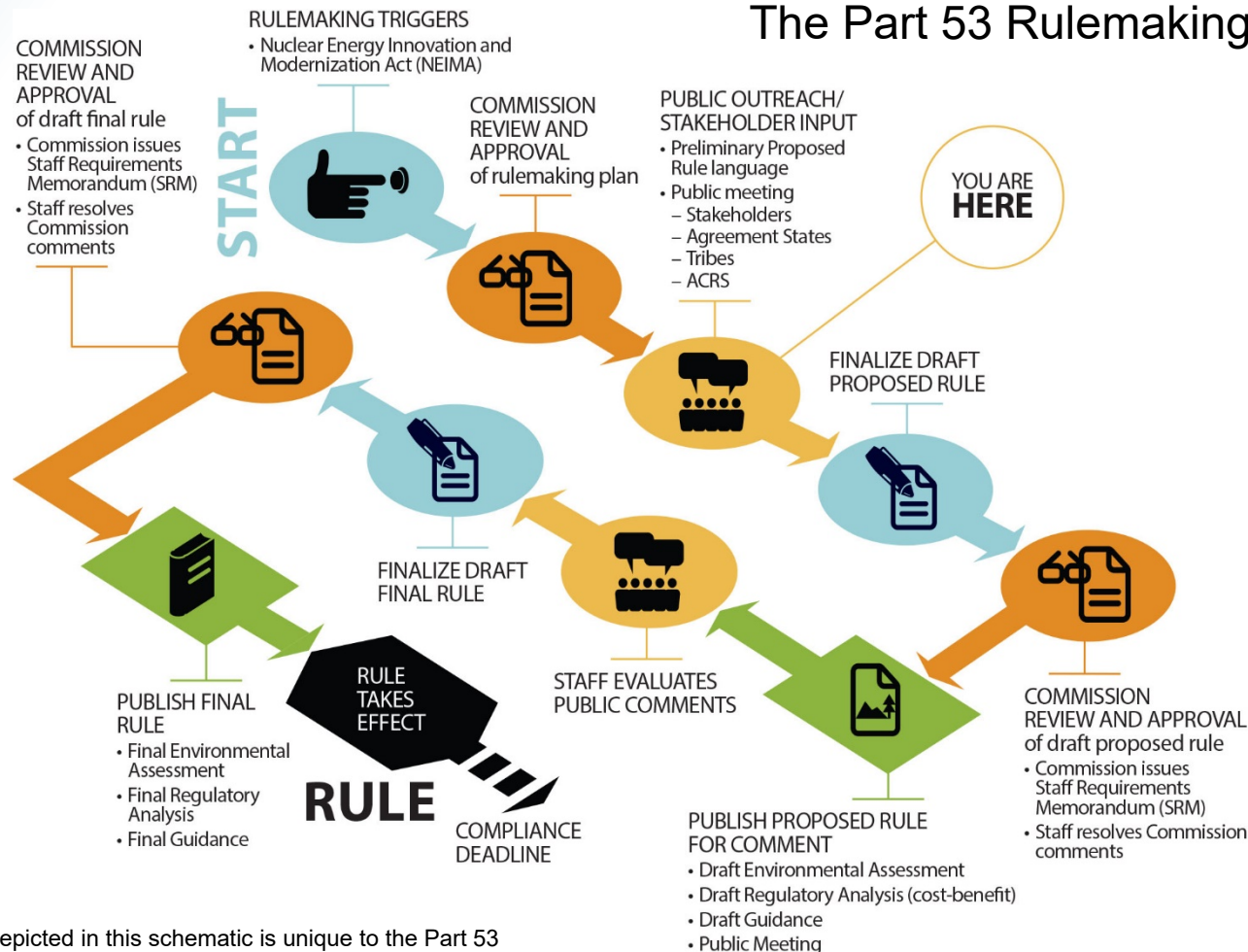
See: SECY-18-0096, “Functional Containment Performance Criteria for Non-Light-Water-Reactors,” and INL/EXT-20-58717, “Technology-Inclusive Determination of Mechanistic Source Terms for Offsite Dose-Related Assessments for Advanced Nuclear Reactor Facilities”

Integrated Approach



Part 53 Rulemaking

The Part 53 Rulemaking Process*



*The process depicted in this schematic is unique to the Part 53 rulemaking and varies in some ways compared to a similar "A Typical Rulemaking Process" schematic available on the NRC's public website.

Background

- Nuclear Energy Innovation and Modernization Act (NEIMA; Public Law 115-439) signed into law in January 2019 requires the NRC to complete a rulemaking to establish a technology-inclusive, regulatory framework for optional use for commercial advanced nuclear reactors no later than December 2027
 - (1) **ADVANCED NUCLEAR REACTOR**—The term “advanced nuclear reactor” means a nuclear fission or fusion reactor, including a prototype plant... with significant improvements compared to commercial nuclear reactors under construction as of the date of enactment of this Act, ...

NRC Staff Plan to Develop Part 53

Subpart B

Subpart C

Subpart D

Subpart E

Subpart F

Subpart G

← Project Life Cycle →

Requirements Definition

- Safety Objectives
- Safety Criteria
- Safety Functions

Design and Analysis

System & Component Design

Analysis Requirements

Safety Categorization & Special Treatment

Siting

External Hazards

Site Characteristics

Environmental Considerations

Construction

Construction/Manufacturing

Ensuring Capabilities/Reliabilities

Change Control

Environmental Considerations

Operation

Facility Safety Program

Surveillance Maintenance

Configuration Control

Staffing & Human Factors

Programs Security, EP

Retirement

Other

Subpart A
General Provisions

Subpart J
Admin & Reporting

Other 10 CFR Parts

Plant/Site (Design, Construction, Configuration Control)

Analyses (Prevention, Mitigation, Compare to Criteria)

Plant Documents (Systems, Procedures, etc.)

LB Documents (Applications, SAR, TS, etc.)

Subparts H & I

Clarify Controls and Distinctions Between