THIS PRELIMINARY RULE LANGUAGE IS BEING RELEASED TO SUPPORT INTERACTIONS WITH STAKEHOLDERS AND THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS (ACRS). THIS LANGUAGE HAS NOT BEEN SUBJECT TO COMPLETE NRC MANAGEMENT OR LEGAL REVIEW, AND ITS CONTENTS SHOULD NOT BE INTERPRETED AS OFFICIAL AGENCY POSITIONS. THE NRC STAFF PLANS TO CONTINUE WORKING ON THE CONCEPTS AND DETAILS PROVIDED IN THIS PRELIMINARY RULE LANGUAGE AND WILL CONTINUE TO PROVIDE OPPORTUNITIES FOR PUBLIC PARTICIPATION AS PART OF THE RULEMAKING ACTIVITIES. THE STAFF IS PRIMARILY SEEKING INSIGHTS REGARDING THE CONCEPTS IN THIS PRELIMINARY LANGUAGE AND SECONDARILY SEEKING INSIGHTS RELATED TO DETAILS SUCH AS NUMERICAL VALUES FOR VARIOUS CRITERIA.

Preliminary proposed rule language is provided for selected sections related to the safety and risk criteria that would provide the foundations of the regulatory framework, whether using this outline or an alternative structure. Short summaries of other possible subparts and sections are provided for context. This revision includes previously released language for Subpart B (Technology-Inclusive Safety Requirements) and new preliminary language for Subpart C (Design and Analysis Requirements) and a portion of Subpart F (Requirements for Operations) related to Facility Safety Programs.

PRELIMINARY PROPOSED RULE LANGUAGE December 18, 2020
10 CFR PART 53, "LICENSING AND REGULATION OF ADVANCED NUCLEAR REACTORS"

Subpart A - General Provisions

This subpart is envisioned to include sections related to topics such as scope, definitions, interpretations, relationships to other parts, communications, misconduct, employee protections, and exemptions. Most sections will be developed based on similar requirements in existing parts of NRC regulations.

Subpart B - Technology-Inclusive Safety Requirements

Preliminary rule language for Subpart B was previously released to support interactions with stakeholders, including a public meeting on November 18, 2020 (ADAMS Accession No. ML20289A591). This version does not reflect possible revisions in response to those interactions but is being provided to provide context for preliminary versions of Subpart C and selected portion of Subpart F (Facility Safety Program) – which have been added to support continued interactions with stakeholders, including a public meeting scheduled for January 7, 2021.

Please note that the section numbers in Subpart B have been expanded to allow for future additions compared to the version made public to support the November 18, 2020, Part 53 public meeting.

§ 53.200 Safety Objectives.

Each advanced nuclear plant must be designed, constructed, operated, and decommissioned such that there is reasonable assurance of adequate protection of the public health and safety and the common defense and security. In addition, each advanced nuclear plant must take such additional measures to protect public health and minimize danger to life or property as may be reasonable when considering technology changes, economic costs, operating experience, or other factors identified in the assessments performed under the facility safety program required by § 53.80.

§ 53.210 Safety Functions.

(a) The primary safety function is limiting the release of radioactive materials from the facility and must be maintained during routine operation and for licensing basis events over the life of the plant.

(b) Additional safety functions supporting the retention of radioactive materials during routine operation and licensing basis events—such as controlling heat generation, heat removal, and chemical interactions--must be defined.

(c) Design features and programmatic controls serve to fulfill the primary safety function and additional safety functions and must be maintained over the life of the plant.

§ 53.220 First Tier Safety Criteria.

(a) Design features and programmatic controls must be provided for each advanced nuclear plant to ensure the contribution to total effective dose equivalent to individual members of the public from normal plant operation does not exceed 0.1 rem (1 mSv) in a year and the contribution to dose in any unrestricted area does not exceed 0.002 rem (0.02 millisievert) in any one hour.

(b) Design features and programmatic controls must be provided for each advanced nuclear plant such that analyses of licensing basis events in accordance with § 53.24 demonstrate with high confidence that events with an upper bound frequency greater than approximately once per 10,000 years meet the following:

(1) An individual located at any point on the boundary of the exclusion area for any 2-hour period following the onset of the postulated fission product release would not receive a radiation dose in excess of 25 rem (250 mSv) total effective dose equivalent; and

(2) An individual located at any point on the outer boundary of the low population zone who is exposed to the radioactive cloud resulting from the postulated fission product release (during the entire period of its passage) would not receive a radiation dose in excess of 25 rem (250 mSv) total effective dose equivalent.

(c) Design features and programmatic controls beyond those needed for paragraphs (a) and (b) of this section must be provided for each advanced nuclear plant to satisfy additional requirements established by the NRC for ensuring reasonable assurance of adequate protection of the public health and safety and maintaining common defense and security.

§ 53.230 Second Tier Safety Criteria.

(a) Design features and programmatic controls must be provided for each advanced nuclear plant to ensure the estimated total effective dose equivalent to individual members of the public from effluents resulting from normal plant operation are as low as is reasonably achievable taking into account the state of technology, the economics of improvements in relation to the state of technology, operating experience, the economics of improvements in

relation to benefits to the public health and safety and other factors included in the assessments performed under the facility safety program required by § 53.80. Performance objectives for design features and programmatic controls must be established such that:

(1) The calculated annual total quantity of all radioactive material above background to be released from each advanced nuclear plant to unrestricted areas will not result in an estimated annual dose or dose commitment from liquid effluents for any individual in an unrestricted area from all pathways of exposure in excess of 3 millirems to the total body or 10 millirems to any organ.

(2) The calculated annual total quantity of all radioactive material above background to be released from each advanced nuclear plant to the atmosphere will not result in an estimated annual air dose from gaseous effluents at any location near ground level which could be occupied by individuals in unrestricted areas in excess of 10 millirads for gamma radiation or 20 millirads for beta radiation.

(b) Design features and programmatic controls must be provided to:

(1) Ensure plant SSCs, personnel, and programs provide the necessary capabilities and maintain the necessary reliability to address licensing basis events in accordance with § 53.24 and provide measures for defense-in-depth in accordance with § 53.25; and

(2) Maintain overall cumulative plant risk from licensing basis events such that the risk to an average individual within the vicinity of the plant receiving a radiation dose with the potential for immediate health effects remains below five in 10 million years and below two in one million years for a radiation dose with the potential to cause latent health effects.

§ 53.240 Licensing Basis Events.

Licensing basis events must be identified for each advanced nuclear plant and analyzed in accordance with § 53.[3x] to support assessments of the safety requirements of this subpart B. The licensing basis events must address combinations of malfunctions of plant SSCs, human errors, and the effects of external hazards ranging from anticipated operational occurrences to highly unlikely event sequences that are not expected to occur in the life of the advanced nuclear plant. The evaluation of licensing basis events must be used to confirm the adequacy of design features and programmatic controls needed to satisfy first and second tier safety criteria of this subpart and to establish related functional requirements for plant SSCs, personnel, and programs.

§ 53.250 Defense in Depth.

Measures must be taken for each advanced nuclear plant to ensure appropriate defense in depth is provided to compensate for epistemic and aleatory uncertainties such that there is high confidence that the safety criteria in this subpart B are met over the life of the plant. The epistemic and aleatory uncertainties to be considered include those related to the ability of barriers to limit the release of radioactive materials from the facility during routine operation and for licensing basis events and those related to the reliability and performance of plant SSCs and personnel, and programmatic controls. Measures to compensate for these uncertainties can include increased safety margins in the design of SSCs and providing alternate means to accomplish safety functions. No single design or operational feature, no matter how robust, should be exclusively relied upon to meet the safety criteria of 10 CFR part 53.

§ 53.260 Protection of Plant Workers.

(a) Design features and programmatic controls must exist for each advanced nuclear plant to ensure that radiological dose to plant workers does not exceed the occupational dose limits provided in subpart C to 10 CFR part 20.

(b) The licensee must use, to the extent practical, procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are as low as is reasonably achievable.

Subpart C - Design and Analysis Requirements

§ 53.400 Design Objectives and Design Features

Design features must be provided for each advanced nuclear plant such that, when combined with associated programmatic controls and human actions, the plant will satisfy the first and second tier safety criteria defined in §§ 53.220 and 53.230. Design features must ensure that the safety functions identified in § 53.210, of limiting the release of radioactive materials from the facility, is maintained during routine operations and licensing basis events by controlling the release of radioactive materials and by supporting other safety functions.

§ 53.410 Functional Design Criteria for First Tier Safety Criteria

(a) Functional design criteria must be defined for each design feature required by § 53.400 to demonstrate compliance with the first tier safety criteria defined in § 53.220(a). Corresponding programmatic controls, including monitoring programs, must be established to confirm the established functional design criteria and the first tier safety criteria required in § 53.220(a) are not exceeded during normal operations.

(b) Functional design criteria must be defined for each design feature required by § 53.400 relied upon to demonstrate compliance with the first tier safety criteria defined in § 53.220(b). Corresponding programmatic controls and interfaces must be established in accordance with this and [other subparts to achieve and maintain the reliability and capability of SSCs relied upon to meet the established functional design criteria and the first tier safety criteria required in § 53.220(b), and to maintain consistency with analyses required by § 53.450.

§ 53.420 Functional Design Criteria for Second Tier Safety Criteria

(a) Design features must be provided for each advanced nuclear plant such that, when combined with associated programmatic controls and human actions, the total effective dose equivalent to individual members of the public from effluents resulting from normal plant operation are as low as is reasonably achievable taking into account the state of technology, the economics of improvements in relation to the state of technology, operating experience, and benefits to the public health and safety, and other factors included in the assessments performed under the facility safety program required by § 53.80, and the safety criteria and performance objectives in § 53.230(a). Functional design criteria must be defined for each design feature relied upon to demonstrate compliance with the second tier safety criteria in § 53.230(a). Corresponding programmatic controls, including monitoring programs, must be established to confirm that the established functional design criteria and the safety criteria and performance objectives in § 53.230(a) are not exceeded during normal operations.

(b) Design features must be provided for each advanced nuclear plant such that, when combined with associated programmatic controls and human actions, the analyses required by § 53.450 provide reasonable assurance that the estimated risks from unplanned events will be

below the second tier safety criteria in § 53.230(b). Functional design criteria must be defined for each design feature relied upon to demonstrate compliance with the second tier safety criteria in § 53.230(b). Corresponding programmatic controls and interfaces must be established in accordance with this and other subparts to achieve and maintain the reliability and capability of SSCs relied upon to meet the second tier safety criteria in § 53.230(b) and to maintain consistency with analyses required by § 53.450.

§ 53.430 Functional Design Criteria for Protection of Plant Workers

Design features must be provided for each advanced nuclear plant such that, when combined with associated programmatic controls and human actions, there is reasonable assurance the requirements for the protection of plant workers in § 53.260 will be met. Functional design criteria must be defined for each design feature relied upon to demonstrate compliance with § 53.260. Corresponding programmatic controls, including monitoring programs, must be established to confirm that the worker protection criteria in § 53.260(a) are not exceeded. In addition, functional design criteria must be defined for each design feature to ensure that plant SSCs and associated programmatic controls, including monitoring programs, achieve occupational doses as low as is reasonably achievable as required by § 53.260(b).

§ 53.440 Design Requirements

(a) The design features required to meet the first and second tier safety criteria defined in §§ 53.220 and 53.230shall be designed using generally accepted consensus codes and standards wherever applicable.

(b) The materials used for safety related and non-safety related but safety significant SSCs (as defined in § 53.460) must be qualified for their service conditions over the plant lifetime.

(c) Safety and security must be considered together in the design process such that, where possible, security issues are effectively resolved through design and engineered security features.

(d) Design features must be demonstrated capable of accomplishing the safety functions defined in § 53.210 without adversely affecting other design features. The demonstration must be through analysis consistent with § 53.450, appropriate test programs, prototype testing, operating experience, or a combination thereof for the range of conditions under which the analysis required in § 53.450 assumes these features will function throughout the plant's lifetime.

§ 53.450 Analysis Requirements

(a) A probabilistic risk assessment of each advanced nuclear plant [reminder – plant definition to include multi-module and multi-source] must be performed to identify potential failures, degradation mechanisms, susceptibility to internal and external hazards, and other contributing factors to unplanned events that might challenge the safety functions identified in § 53.210.

(b) The probabilistic risk assessment (PRA) must:

(1) Be used in determining the licensing basis events, as described in § 53.240, which must be considered in the design to determine compliance with the safety criteria in Subpart B of this part.

(2) Be used for classifying SSCs and human actions according to their safety significance in accordance with § 53.460 and for identifying the environmental conditions under which the SSCs and operating staff must perform their safety functions.

(3) Be used in evaluating the adequacy of defense-in-depth measures required in accordance with § 53.250.

(4) Assess all plant operating states where there is the potential for the uncontrolled release of radioactive material to the environment.

(5) Consider events that challenge plant control and safety systems whose failure could lead to the uncontrolled release of radioactive material to the environment. These include internal events, such as human errors and equipment failures, and external events, such as earthquakes, identified in accordance with Subpart D of this part.

(6) Conform with generally accepted methods, standards, and practices.

(7) Be maintained and upgraded to cover initiating events and modes of operation contained in generally accepted methods, standards, and practices in effect one year prior to each required PRA upgrade. The PRA must be upgraded every two years until the permanent cessation of operations under Subpart G of this part.

(c) The analytical codes used in modeling plant behavior during licensing basis events (e.g. thermodynamics, reactor physics, fuel performance, mechanistic source term) must be qualified for the range of conditions for which they are to be used.

(d) If not addressed within the PRA under paragraph (b), analyses must be performed to assess:

(1) measures provided to protect against, detect and suppress fires that could impact the ability of equipment to perform its safety function and challenge the safety criteria contained in §§ 53.220 and 53.230.

(2) measures provided to protect against aircraft impacts as required by 10 CFR 50.150, and

(3) measures to mitigate specific beyond design basis events as required by 10 CFR 50.155.

(e) The analysis of licensing basis events required by § 53.240 must include analysis of a set of design basis accidents that address possible challenges to the safety functions identified in accordance with § 53.210. Design basis accidents must be selected from those unanticipated event sequences with an upper bound frequency of less than one in 10,000 years as identified using insights from a design-specific probabilistic risk assessment that systematically identifies and analyzes equipment failures and human errors. The events selected as design basis accidents should be those that, if not terminated, have the potential for exceeding the safety criteria in § 53.220(b). The design-basis accidents selected must be analyzed using deterministic methods assuming only the safety-related SSCs identified in § 53.460 and human actions addressed by § 53.8xx (reference to concept of operations sections of Subpart F) are available to perform the safety functions identified in accordance with § 53.210. The analysis must conservatively demonstrate compliance with the safety criteria in § 53.220(b).

§ 53.460 Safety Categorization and Special Treatment

(a) SSCs and human actions must be classified according to their safety significance. The categories must include “Safety Related” (SR), which are those SSCs and human actions relied upon to function in response to design basis accidents to meet the safety criteria in § 53.220(b); “Non-Safety Related but Safety Significant” (NSRSS), which are those SSCs and

human actions that perform a function that is necessary to achieve adequate defense-in-depth or are classified as risk significant (i.e., whose failure contributes 1% or more to cumulative plant risk, as defined in § 53.230, or would cause a licensing basis event to exceed the safety criteria in § 53.220(b)); and "Non-Safety Significant" (NSS), which are those SSCs not warranting special treatment.

(b) For SR and NSRSS SSCs and human actions, the conditions under which they must perform their safety function in § 53.210 must be identified. Special Treatment (e.g., functional design criteria and programmatic controls) must be established in accordance with this and [other Subparts to provide appropriate confidence that the SSCs will perform under the service conditions and with the reliability assumed in the analysis performed in accordance with § 53.450 to provide reasonable assurance of meeting the safety criteria in §§ 53.220(b) and 53.230(b).

(c) Human actions to prevent or mitigate licensing basis events must be capable of being reliably performed under the postulated environmental conditions present and be addressed by programs established in accordance with Subpart F of this part to provide confidence that those actions will be performed as assumed in the analysis performed in accordance with § 53.450 to provide reasonable assurance of meeting the safety criteria in §§ 53.220(b) and 53.230(b).

§ 53.470 Application of Analytical Safety Margins to Operational Flexibilities

Where an applicant or licensee so chooses, design criteria more restrictive than those defined in § 53.230(b) may be adopted to support operational flexibilities (e.g., emergency planning requirements under Subpart F of this part). In such cases, applicants and licensees must ensure that the functional design criteria of § 53.420(b), the analysis requirements of § 53.450, and identification of special treatment of SSCs and human actions under § 53.460 reflect and support the use of alternative design criteria to obtain additional analytical safety margins. Licensees must ensure that measures taken to provide the analytical margins supporting operational flexibilities are incorporated into design features and programmatic controls and are maintained within programs required in other Subparts.

§ 53.480 Design Control Quality Assurance

(a) Measures must be established to assure that the design criteria, analysis, categorization and special treatment of SSCs as required by § 53.460 are correctly translated into specifications, drawings, procedures, and instructions. These measures must include provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled. Measures must also be established for the selection and review for suitability of application of materials, parts, equipment, and processes needed to meet the safety criteria identified per §§ 53.220 and 53.230 in accordance with § 53.xxx (construction and procurement subpart). The QA program must conform with generally accepted consensus codes and standards.

(b) Measures must be established for the identification and control of design interfaces in accordance with § 53.490.

(c) The design control measures must provide for verifying or checking the adequacy of design in a manner commensurate with its safety significance, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program. The verifying or checking process must be performed in accordance with appropriate quality standards. Design changes, including field changes, must be subject to design control measures commensurate with those applied to the

original design and be approved by the organization that performed the original design unless the applicant designates another qualified organization.

§ 53.490 Design and Analyses Interfaces

Measures must be established for the identification and control of interfaces between (a) the plant design and supporting analyses required by this Subpart and (b) the activities addressed by other Subparts over the life of each advanced nuclear plant. These measures must include procedures for the review, approval, release, distribution, and revision of documents involving design interfaces such that design decisions are made in an integrated fashion considering all aspects of the facility impacted by the design or operational change prior to its implementation. Changes to design features and related programmatic controls over the lifetime of an advanced nuclear plant must be considered along with the state of technology, the economics of improvements in relation to the state of technology, operating experience, and benefits to the public health and safety, and other factors included in the assessments performed under the facility safety program required by § 53.800.

Subpart D - Siting Requirements

This subpart is envisioned to address siting matters related to external hazards, design interfaces, population-related considerations, and compatibility with requirements for environmental reviews, emergency preparedness, and security.

Subpart E - Construction and Manufacturing Requirements

This subpart is envisioned to address areas such as construction, manufacturing, and procurement. Specific sections are likely to address areas such as quality assurance, testing, and interfaces with design (change control).

Subpart F - Requirements for Operation

This subpart is envisioned to address operational areas such as configuration control; maintaining availability and capabilities of SSCs; maintenance, repair and inspection programs; quality assurance; staffing (including operator licensing); emergency preparedness; security; radiation protection; and facility safety program. Preliminary proposed language for selected sections of Subpart F for a proposed Facility Safety Program is being provided to support interactions with stakeholders, including a public meeting scheduled for January 7, 2021.

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§ 53.800 Facility Safety Program

Each licensee must establish and implement a facility safety program (FSP) that routinely and systematically evaluates potential hazards, operating experience related to plant SSCs, human actions, and programmatic controls affecting the safety functions required by § 53.210, and the resulting changes in risks to the public from operation of the facility over its operating lifetime. An FSP must include a risk-informed, performance-based process to

proactively identify new or revised internal or external hazards to the facility and performance issues related to plant SSCs, human actions, and programmatic controls and must consider measures to mitigate or eliminate the resulting risks using the criteria defined in § 53.810. The FSP must be implemented and supported by a written FSP as required in § 53.820.

§ 53.810 Facility Safety Program Performance Criteria

(a) Each licensee for an advanced nuclear plant must take measures to protect public health and minimize danger to life or property as may be reasonably achieved when considering technology changes, economic costs, operating experience, new or revised hazard assessments, or other factors included in the FSP plan required by § 53.820. Performance objectives for design features and programmatic controls must be established such that the risks to public health and safety from an advanced nuclear plant due to normal operation or licensing basis events must not be a significant addition to other societal risks.

(1) Each licensee must assess risk reduction measures related to the release or potential release of radioactive materials in plant effluents during normal operation whenever such a release could result in a member of the public receiving an annual radiation dose in excess of 0.3 millirems from liquid effluents or 1 millirem from gaseous effluents. The assessment and risk reduction measures must maintain doses to members of the public as low as is reasonably achievable taking into account the state of technology, the economics of improvements in relation to the state of technology, operating experience, and the economics of improvements in relation to benefits to the public health and safety.

(2) Each licensee must assess potential risk reduction measures related to licensing basis events, identified hazards, or other specific contributors to the overall cumulative risk from unplanned events as follows:

(i) For new or revised hazards, plant features, or other contributors to licensing basis events with an estimated upper bound frequency above one in one thousand years, licensees must consider risk reduction measures whenever the estimated radiation dose to a member of the public exceeds 2.5 millirem and the estimated frequency weighted cumulative dose to nearby populations increases by [5 person-rem].

(ii) For new or revised hazards, plant features, or other contributors to licensing basis events with an estimated lower bound frequency below one in one thousand years, licensees must consider risk reduction measures whenever the estimated frequency weighted cumulative dose to nearby populations increases by [5 person-rem] and either the frequency of a member of the public receiving a radiation dose with the potential for immediate health effects approaches five in one hundred million years or a radiation dose with the potential to cause latent health effects approaches two in ten million years.

(iii) For new or revised hazards, plant features, or other contributors to licensing basis events with an estimated dose to a member of the public less than or equal to a threshold value used for operational flexibilities in accordance with § 53.470, licensees must consider risk reduction measures whenever changes to the estimated consequences reduce the margin to the subject threshold value by more than ten percent and the estimated frequency weighted cumulative dose to nearby populations increases by [5 person-rem].

(iv) The assessment and risk reduction measures must maintain doses to members of the public as low as is reasonably achievable taking into account the state of technology, the economics of improvements in relation to the state of technology, information available on potential hazards, operating experience, and the economics of improvements in relation to benefits to the public health and safety.

(b) Risk reduction measures taken at advanced nuclear plants whose licenses refer to certified designs or manufacturing licenses must also follow the change control and reporting provisions of 10 CFR part 52 or subpart H of this part related to changes to standardized designs.

§ 53.820 Facility safety program plan

(a) *General*. Each licensee must adopt and implement an FSP using a written FSP plan that, at a minimum, contains the elements in this section. This FSP plan must be approved by NRC under the process required in § 53.830.

(b) *Scope*. (1) Each licensee must set forth in its FSP plan a statement describing the facility or facilities covered by the plan. The description must include the facility, personnel, programmatic controls, and facility environs that influence the assessments used in assessing potential risks in accordance with subparts B and C of this part and potential reduction measures using the performance criteria in § 53.810. The scope of the program plan must consider new or revised information related to:

(i) The performance of SSCs in terms of their capability and availability to perform the required safety functions required by § 53.210 during normal operation and licensing basis events and assessing potential risk reduction measures using the performance criteria in § 53.810;

(ii) The role of personnel in making decisions, operating plant SSCs, or otherwise supporting the safety functions required by § 53.210 and assessing potential risk reduction measures using the performance criteria in § 53.810;

(iii) The programmatic controls required within this part or otherwise implemented by a licensee to ensure capabilities and availabilities of SSCs and personnel performing the safety functions required by § 53.210 and assessing potential risk reduction measures using the performance criteria in § 53.810;

(iv) Natural and manmade hazards with the potential to affect plant SSCs or personnel supporting the safety functions required by § 53.210 and assessing potential risk reduction measures using the performance criteria in § 53.810; and

(v) Operating experience related to plant SSCs, personnel, or programmatic controls supporting the safety functions required by § 53.210 and assessing potential risk reduction measures using the performance criteria in § 53.810.

(2) The methods used to analyze the technologies identified under paragraph (f)(1)(i) of this section against the criteria provided in § 53.810.

(3) Each licensee must set forth in its FSP plan a description of its overall safety philosophy and intended safety culture to be practiced by its management, employees and contractors; and

(4) Each licensee must identify the required participants in the FSP plan, which will include managers, employees, and contractors that directly support facility operations; maintain, inspect, or change plant SSCs or programmatic controls; or assess potential risk reduction measures as required by § 53.820.

(c) *Implementation*. Each licensee must describe in its FSP plan the process the licensee will use to implement and maintain its FSP. As part of the licensee's implementation process, the licensee must describe roles and responsibilities of each position that has significant responsibility for implementing the FSP, including those held by employees and other persons utilizing or providing significant services as identified by the licensee pursuant to paragraph (b)(3) of this section.

(d) *Facility safety program training*:

(1) Each manager, employee, and contractor identified under paragraph (b)(3) of this section will be trained on the licensee's FSP.

(2) Each licensee must establish and describe in its FSP plan the licensee's facility safety program training plan. An FSP training plan must set forth the procedures by which managers, employees, and contractors identified under paragraph (b)(3) of this section will be trained on the licensee's FSP. An FSP training plan must help ensure that all personnel who are responsible for implementing and supporting the FSP understand the goals of the program, are

familiar with the elements of the program, and have the requisite knowledge and skills to fulfill their responsibilities under the program.

(3) For each position identified pursuant to paragraph (b)(3) of this section, the training plan must describe the frequency and content of the FSP training that the position receives.

(4) Training under this subpart F may include, but is not limited to, classroom, computer-based, or correspondence training.

(5) The licensee must keep a record of all training conducted under this part and update that record as necessary. The FSP training plan must set forth the process used to maintain and update the necessary training records required by this part.

(6) The FSP training plan must set forth the process used by the licensee to ensure that it is complying with the training requirements set forth in the training plan.

(e) *Risk-informed hazard management program*. Each licensee must establish a risk-informed hazard management program as part of the licensee's FSP. The risk-informed hazard management program must be fully described in the FSP plan. The risk-informed hazard management program must establish:

(1) The processes or procedures used in the risk-informed hazard analysis to identify internal and external hazards having the potential to increase the frequency or consequences of radiological releases from normal operation or licensing basis events;

(2) The processes or procedures used in the risk-informed hazard analysis to analyze identified hazards and support assessments against the criteria provided in § 53.810;

(3) The methods used to identify and implement actions that mitigate or eliminate hazards based on assessments against the criteria provided in § 53.810.

(4) The methods used to ensure changes to the facility design or operations do not adversely affect measures in place to mitigate or eliminate hazards or that such changes have been assessed pursuant to the appropriate change control and have been incorporated into models used for assessments against the criteria provided in § 53.810.

(5) The methods used to maintain records of identified hazards and risks and the mitigation or elimination of the identified hazards and risks throughout the life of the facility.

(6) The position title(s) of the individual(s) responsible for administering the risk-informed hazard management program.

(f) *Technology assessment program*. Each licensee must establish a technology assessment program as part of the licensee's FSP. The technology assessment program must be fully described in the FSP plan. The technology assessment program must establish:

(1) The methods used to identify and analyze current, new, or novel technologies that will mitigate or eliminate internal or external hazards and resulting risks from the release of radioactive materials from a facility during normal operations or licensing basis events;

(2) The methods used to analyze the technologies identified under paragraph (f)(1) of this section against the criteria provided in § 53.810.

(3) The methods used to identify and implement actions related to technologies identified under paragraph (f)(1) of this section based on assessments against the criteria provided in § 53.810.

(4) The methods used to maintain records of technology assessments throughout the life of the facility.

(5) The position title(s) of the individual(s) responsible for administering the technology assessment program.

(g) *Internal facility safety program assessment*. (1) The licensee must describe in the FSP plan methods to annually confirm:

(i) The FSP is fully implemented and effective;

(ii) The licensee's overall safety philosophy and intended safety culture are being implemented and effective;

(iii) The facility safety program training program is implemented and effective;

(iv) The facility continues to meet the performance criteria set forth in § 53.210 and effectively consider risk reduction measures using the performance criteria set forth in § 53.810.

(2) As part of its FSP plan, the licensee must describe the processes used to:

(i) Conduct internal FSP assessments;

(ii) Internally report the findings of the internal FSP assessments to a management level so that the required authority and organizational freedom, including sufficient independence from cost and schedule when opposed to safety considerations, are provided;

(iii) Develop, track, and review recommendations as a result of the internal FSP assessments;

(iv) Develop improvement plans based on the internal FSP assessments; and

(v) Manage revisions and updates to the FSP plan based on the internal facility safety program assessments.

§ 53.830 Review, Approval, and Retention of Facility safety Program Plans

(a) *Initial Filing*. Each applicant for a license under this part must include its FSP plan as part of the application.

(b) *Approval*. The NRC will review the FSP plan to determine if the elements prescribed in this part are sufficiently addressed in the applicant's submission. Approval of an FSP plan under this part does not constitute approval of the specific actions the licensee will implement under its FSP plan pursuant to § 53.820 and must not be construed as establishing an NRC standard regarding those specific actions.

(c) *Review of amendments*. *Need to work out nature of reviews, notices, opportunities for hearing, etc. on amendments to the FSP plan. (CRITERIA X OK report w/in x days, NRC respond within y days). CRITERIA Y follow process in § 53.xyz (license amendment)*

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Subpart G - Decommissioning Requirements

This subpart is envisioned to address transition to decommissioning.

Subpart H - Licenses, Certifications and Approvals

This subpart is envisioned to address requirements for initial applications for licenses, certifications, or approvals. The subpart will support either licensing under the Part 50 or Part 52 frameworks. Assessment and update of manufacturing licenses is possible. Other improvements could include combining Part 50 process for first of a kind (FOAK) applications and simper transition to Part 52 for subsequent applications.

Subpart I - Maintaining and Revising Licensing Basis Information

This subpart is envisioned to address requirements for maintaining and revising licensing basis information related to licenses, certifications, or approvals. Specific provisions would include maintaining and updating safety analysis reports and amending licenses.

Subpart J - Reporting and Other Administrative Requirements

This subpart is envisioned to address requirements for maintaining records, making reports, and other administrative-type activities