

# Final Safety Analysis Report (FSAR) Updates

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# Final Safety Analysis Report (FSAR) Updates

- Background
- Overview of Non-Power Production and Utilization Facility License Renewal Final Rule (“NPUF Rule”) Requirements
- FSAR Update Process
- Content of FSAR Updates
- NRC Review of FSAR Updates
- FSAR Due Date Tracking and Extension Requests
- Questions and Answers

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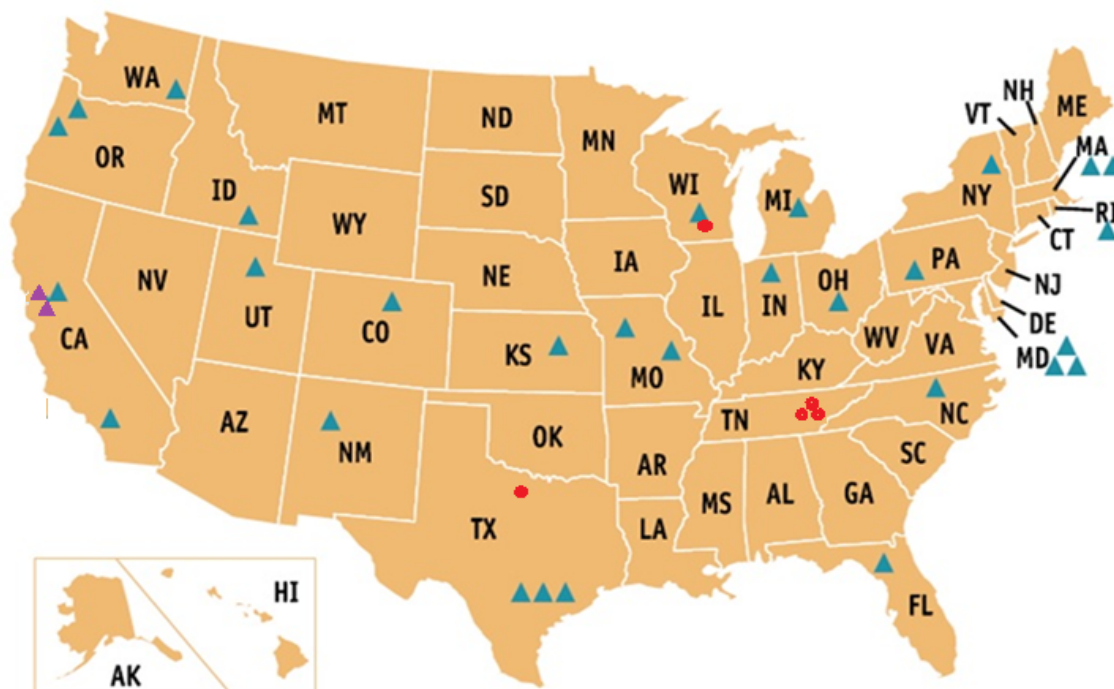
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# U.S. Non-Power Production and Utilization Facilities (NPUFs)

36 regulated NPUFs:

- ▲ 29 operating reactors
- ▲ 2 reactors permanently shut down and in decommissioning
- 5 construction permits



# NPUF Rule Summary

	Commercial (103)	Medical Therapy (104a)	Research Reactor (104c)	Testing Facility (103 or 104)
1. Create related NPUF definitions	✓	✓	✓	✓
2. Extend applicability of 10 CFR 50.59	✓	✓	✓	✓
3. 10 CFR 50.135 license renewal process	✓	N/A	N/A	✓
4. Eliminate NPUF financial qualification information requirement	✓	N/A	N/A	✓
5. Amend timely renewal provision	✓	✓	✓	✓
6. Provide an accident dose criterion	✓	✓	✓	N/A
7. Eliminate license terms	N/A	✓	✓	N/A
8. Clarify existing environmental reporting requirements	✓	✓	✓	✓
9. Require updated FSAR submittals	✓	✓	✓	✓

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# NPUF Rule

- Final rule published in the *Federal Register* on December 30, 2024 (89 FR 106234); became effective January 29, 2025
- Order issued implementing certain provisions of the rule issued February 6, 2025 (ML24354A200)
  - Order requires initial FSAR updates and specifies due dates for:
    - 25 research reactors
    - 1 testing facility
    - 2 facilities in decommissioning
  - Order requiring FSAR updates does not apply to certain licensees:
    - 5 construction permit holders
    - 3 research reactors still in (NUREG-1537) license renewal
  - However, all operating license holders (and facilities in decommissioning) will eventually be required to submit FSAR updates pursuant to the rule

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# 10 CFR 50.71, “Maintenance of records, making of reports”

- 10 CFR 50.71(e)(3)(iv): *Submit a whole revised FSAR. Must be current as of 6 months prior to submission.*

NPUF licensees “shall file a revision of the original FSAR containing those original pages that are still applicable plus new replacement pages...The revision must bring the FSAR up to date as of a maximum of 6 months prior to the date of filing the revision.”

- 10 CFR 50.71(e)(4)(ii): *Submit subsequent updated FSARs every 5 years. Must be current as of 6 months prior to submission.*

NPUF “licensees shall file an FSAR update no more than 5 years from the date of the submittal of the updated FSAR required by 50.71(e)(3)(iv) ... and shall file subsequent updates no more than 5 years from the date of the previous submittal. Each submittal must reflect all changes made to the FSAR up to a maximum of 6 months prior to the date of filing the submittal.”

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# 10 CFR 50.71, “Maintenance of records, making of reports”

10 CFR 50.71(e): *The updated FSAR shall include all changes to the facility and procedures; all safety analyses and evaluations.*

“This submittal shall contain all the changes necessary to reflect information and analyses submitted to the Commission by the ... licensee or prepared by the ... licensee pursuant to Commission requirement since the submittal of the original FSAR, or as appropriate, the last update to the FSAR under this section.

The submittal shall include the effects of all changes made in the facility or procedures as described in the FSAR; all safety analyses and evaluations performed by the applicant or licensee either in support of approved license amendments or in support of conclusions that changes did not require a license amendment in accordance with § 50.59(c)(2) ...; and all analyses of new safety issues performed by or on behalf of the ... licensee at Commission request. The updated information shall be appropriately located within the update to the FSAR.”

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# 10 CFR 50.71, “Maintenance of records, making of reports”

- 10 CFR 50.71(e)(1): *Make a list of the pages which have been updated.*

“The licensee shall submit revisions containing updated information to the Commission, as specified in § 50.4, on a replacement-page basis that is accompanied by a list which identifies the current pages of the FSAR following page replacement.”

- 10 CFR 50.71(e)(2): *Certify that the changes are accurate or no changes were made. Mark which changes were made under § 50.59.*

“The submittal shall include (i) a certification by a duly authorized officer of the licensee that either the information accurately presents changes made since the previous submittal, necessary to reflect information and analyses submitted to the Commission or prepared pursuant to Commission requirement, or that no such changes were made; and (ii) an identification of changes made under the provisions of § 50.59 but not previously submitted to the Commission.”

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# 10 CFR 50.71, “Maintenance of records, making of reports”

- 10 CFR 50.71(e)(5): *For pages that were changed, mark changes with a change bar; add a date and/or change number.*

“Each replacement page shall include both a change indicator for the area changed, e.g., a bold line vertically drawn in the margin adjacent to the portion actually changed, and a page change identification (date of change or change number or both).”

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# 10 CFR 50.4, “Written communications”

- 10 CFR 50.4(b)(6): *Submit to the Document Control Desk. Paper is ok, but if submitted electronically, can’t go back to paper.*

*“Updated FSAR. An updated Final Safety Analysis Report (FSAR) or replacement pages, under §50.71(e) must be submitted to the NRC’s Document Control Desk, .... Paper copy submissions may be made using replacement pages; however, if a licensee chooses to use electronic submission, all subsequent updates or submissions must be performed electronically on a total replacement basis.  
[...]*”

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# FSAR Update Process: General Format

- For initial update, **should** submit the updated version of the original FSAR submitted for the initial operating license or last completed license renewal, as appropriate
- For subsequent updates, **should** submit the updated version of previously updated FSAR
- Updated FSAR **should** contain pages from prior FSAR that are still applicable, plus replacement pages to reflect changes

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# FSAR Update Process: Change Markings

- **Shall** include change indicators (e.g., change bars) on all changed pages (including table of contents)
- For each changed page, **shall** include page change identification (date of change, change number, or both)
- FSAR update **shall** be accompanied by a list of the current FSAR pages which are being replaced
- **Should** provided a summary of changes (and their bases)

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# FSAR Update Process: Submission

- Submittal **shall** include certification either that the information accurately presents any applicable changes since the previous submittal, or that no applicable changes were made (this requirement **may** be met by submission of the updated FSAR under oath or affirmation)
- **Shall** be submitted in accordance with 10 CFR 50.4 (**should** generally be submitted by either NRC Electronic Information Exchange or signed original hard copy sent to NRC Document Control Desk). Once you go electronic, you can't switch back to paper.



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# FSAR Update Process: Submission

- For facilities subject to the Order, initial and subsequent FSAR updates may be submitted either on total replacement basis (electronic or paper) or by paper copies of change pages only
- However, if electronic submission is used, then all future updates shall also be submitted electronically on total replacement basis
- For licenses issued after January 29, 2025 (initial licenses or renewals), both the initial (within 5 years of license issuance) and subsequent updates shall be submitted on total replacement basis

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# FSAR Update Process: Other Considerations

- FSAR update shall be accompanied by an identification of changes made under 10 CFR 50.59 but not previously submitted to the Commission
- Proprietary information under 10 CFR 2.390 shall be marked and submitted in accordance with that regulation
- Security information shall also be marked and submitted in accordance with NRC requirements
- If, since the original FSAR or prior FSAR update, no changes were made that affect the FSAR, a letter certifying this fact may be submitted in lieu of a full FSAR update

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# Content of FSAR Updates

Examples of information that should be considered for inclusion in updated FSAR:

- 50.59 evaluations and screens

This could include analysis updates and/or facility changes related to:

- Aging management
  - Facility site environs (e.g., new nearby facilities, population changes, changes in meteorology/geology/hydrology/seismology data)
- Evaluations and analyses (including initial applications, RAI responses, and any other supplemental information) supporting approved LARs
- Information or commitments in special reports (e.g., event reports) or other correspondence to NRC (e.g., responses to generic letters)

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# Content of FSAR Updates

Additionally, for the initial FSAR update (required by the Order and/or following license renewal or initial licensing), the following **should** be considered for inclusion:

- RAI responses and any other supplemental information from the last completed license renewal or the initial licensing

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# Content of FSAR Updates

Other considerations for FSAR update content:

- Licensees **should** remove obsolete information from the FSAR (e.g., SSCs that are no longer installed, or analyses or descriptions that are no longer relevant).
- The summary of changes accompanying the FSAR update **should** include identification and justification of the information being removed.
- Licensees **should not** re-perform analyses (e.g., using new codes, methods, or assumptions) for the purpose of the FSAR update.

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# Content of FSAR Updates

Other considerations for FSAR update content:

- Updated FSAR does not need to include information and analyses supporting a LAR if the LAR was approved less than 6 months prior to the FSAR submittal. (However, the updated FSAR may include this information.)
- If a LAR is under NRC review at the time updated FSAR is submitted, the updated FSAR should not include information related to the LAR.

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# NRC Review of FSAR Updates

- The FSAR update submission is not a licensing action
- No requests for additional information (RAIs) or safety evaluations (SEs) will be issued
- NRC staff review will focus on changes and is generally expected to be between 20 and 40 hours (NRC staff will perform a separate SUNSI review)
- FSAR updates will inform inspection program, as appropriate

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# FSAR Update Timing

- For 28 licensees subject to the Order, initial update **shall** be submitted by the date specified in the Order
- For three licensees currently undergoing license renewal, initial update **shall** be submitted no later than 5 years after a renewed license is issued
- For new NPUFs, initial update **shall** be submitted no later than 5 years after issuance of an operating license
- For all licenses, subsequent updates **shall** be submitted no later than 5 years after the previous update

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# Additional Clarifications: FSAR Update Timing

- The second FSAR submittal is due 5 years from the date of the first FSAR submittal letter (or can certify no changes) ([nrc.gov](http://nrc.gov))
- If a submittal is late, the interval to submit the subsequent update begins on the due date of the late submittal (i.e., late submittals do not grant extra time for next update)
- Updates may be submitted early, but this does not grant additional time for the next update (e.g., if a submittal is 2 years early, the next update is due in 5 years, not 7)

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# Additional Clarifications: FSAR Update Timing and License Renewal

- The NPUF rule did not eliminate license renewal for testing facilities or commercial NPUFs
- The timely renewal provisions in 10 CFR 2.109(f) do not provide relief from the FSAR update requirements
- Therefore, for any facilities subject to license renewal going forward, FSAR updates **shall** continue to be submitted during the period of timely renewal
- Submittal of FSAR in support of a license renewal application does not qualify as FSAR update under 10 CFR 50.71(e) unless licensee designates it as such
- For the three research reactors currently undergoing license renewal, no FSAR update is required under 10 CFR 50.71 unless/until a renewed license is issued

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# FSAR Update Tracking

- Each licensee is responsible for tracking due dates and developing its own schedule to ensure the required updates are submitted within the allowed intervals
- NRC public website is also tracking due dates for FSAR updates:  
<https://www.nrc.gov/reactors/non-power/final-safety-report.html>

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# FSAR Update Extension Requests

- For initial FSAR updates required by the Order, the due date may be extended upon written application (i.e., letter submitted to NRC in accordance with 10 CFR 50.4) and for good cause shown
- Licensees should contact their assigned PM well in advance to discuss any potential need for an extension
- Extensions are expected to be infrequent; licensees should establish by administrative procedure a schedule for submissions that allows for unforeseen circumstances (such as temporary reductions in staff) to ensure due dates will be met

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# Questions and Answers

- Questions, answers, and examples in the following slides are provided for illustrative purposes only and may not necessarily apply to every unique situation.
- To help ensure all FSAR update requirements are appropriately met, licensees are encouraged to contact their PMs to discuss any facility-specific questions or circumstances.

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# Question #1

- Q: Is the “list which identifies the current pages of the FSAR” required by 10 CFR 50.71(e)(1) needed for a total replacement submission?
- A: Yes. Per guidance in Section C.3.g of RG 2.7, this requirement applies to both replacement page and total replacement submissions.

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## Question #2

- Q: Should the replacement page identifiers (e.g., date and/or change number at bottom of page) required by 10 CFR 50.71(e)(5) be used for a total replacement submission?
- A: Yes. For both replacement page and total replacement submissions, replacement page identifiers would generally be included for any pages with changes (this includes any pages with formatting changes and/or shifted text caused by changes to other pages).

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## Question #3

- Q: Are the change indicators (e.g., change bars) required by 10 CFR 50.71(e)(5) needed for a total replacement submission?
- A: Yes, change bars would generally be used for both replacement page and total replacement submissions.

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## Question #4

- Q: For the initial FSAR update, what prior FSAR version should change bars be relative to?
- A: Change bars would generally indicate changes since the most recent complete FSAR that was submitted for a licensing request (initial license or license renewal) that was ultimately approved by NRC.

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## Question #5

- Q: For subsequent FSAR updates, what prior FSAR version should change bars be relative to?
- A: Change bars would generally indicate changes since the previous FSAR update submitted pursuant to 10 CFR 50.71.

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## Question #6

- Q: When providing the change log (i.e., list of changes) accompanying an FSAR update, is it acceptable to simply indicate a “total replacement”?
- A: In general, it is recommended that for all FSAR updates, licensees provide a comprehensive summary of the FSAR changes and their bases, even if the changes are significant.

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## Question #7

- Q: Does the updated FSAR submission need to include a list of 10 CFR 50.59 changes if the changes were previously included in annual reports?
- A: No, provided that all 10 CFR 50.59 changes were previously submitted to NRC (in annual reports and/or other submittals meeting the reporting requirements of 10 CFR 50.59). See the answers to other questions for details on how 50.59 changes should be incorporated into the FSAR.



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## Question #8

- Q: In meeting the requirement that FSAR submittals include an identification of changes made under 10 CFR 50.59, is it necessary to include 10 CFR 50.59 screens or only full evaluations?
- A: Only full evaluations are needed.

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## Question #9

- Q: Do all license renewal RAIs (and responses) need to be reflected in updated FSAR text?
- A: Not necessarily. For example, RAI responses that may not need to be included would be those responses that:
  - provided additional clarifying details of SAR discussions, or
  - provided information to support NRC confirmatory calculations, but did not actually result in changes to the facility, procedures, design bases, design basis functions, or safety analyses.

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## Question #10

- Q: Do all 10 CFR 50.59 evaluations and/or screens need to be reflected in updated FSAR text?
- A: Not necessarily. Examples of things that may not need to be included could include:
  - Full 10 CFR 50.59 evaluations done in the past for changes that were only temporary, were superseded by other changes, or were never implemented
  - Changes that both screened out of 10 CFR 50.59 and do not affect the accuracy of the FSAR text

Generally, implemented changes that required full 50.59 evaluations are expected to require FSAR changes.

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## Question #11

- Q: Do all approved LARs need to be reflected in updated FSAR text?
- A: Most LARs would require FSAR changes, but there could be occasional exceptions, for example, a LAR only making minor corrections to the license.

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## Question #12

- Q: Do all FSAR changes need to be associated with a 10 CFR 50.59 evaluation/screen, LAR, or license renewal?
- A: No. Examples could include:
  - Administrative or editorial/formatting updates to the FSAR, minor corrections, removal of excessive detail, or readability/comprehension clarifications that do not change the meaning or substance of information
  - Certain other FSAR changes associated with facility or procedure changes that screen out of 10 CFR 50.59

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## Question #13

- Q: If a change to the facility, procedures, and/or analyses screened out of 10 CFR 50.59, does it need to be reflected in the FSAR?
- A: Potentially, yes. Examples could include:
  - Changing elements of a method of analyses described in the FSAR such that the results become more conservative or essentially stay the same
  - Making an equipment replacement that improves design function, and changing a corresponding input (e.g., response time) in a safety analysis to reflect the improved performance
  - Other changes that do not affect safety but require FSAR text or figure updates for accuracy and/or consistency

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## Question #14

- Q: If obsolete information or analyses are removed during the FSAR update, is a 10 CFR 50.59 evaluation needed?
- A: Potentially, yes. For example:
  - Per 10 CFR 50.59(a)(3)(iii) and guidance in NEI 21-06, 10 CFR 50.59 covers changes to SAR analyses even if there are no physical changes to the facility; removal of analyses could be a change to analyses subject to 10 CFR 50.59
  - Past termination of activities and/or taking SSCs out of use (causing FSAR information and/or analyses to be superseded) could itself have been a facility change needing a 10 CFR 50.59 evaluation or LAR

However, in general, if the FSAR update is only conforming with a previous change under 10 CFR 50.59 or a LAR, no new 50.59 would be needed.

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## Question #15

- Q: Does information in FSAR Chapter 2 (site characteristics) need to be brought up-to-date for the updated FSAR?
- A: Yes, the FSAR update should consider new information including:
  - Evaluations by the licensee of changes in the facility site environs (e.g., new industrial, transportation, military, or residential facilities near the facility site or changes in the population potentially exposed to releases)
  - Significant changes in the facility site environs such as data obtained to support or develop the original facility design basis related to natural phenomena, including geography, meteorology, geology, hydrology, and seismology



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## Question #16

- Q: Are 10 CFR 50.59 evaluations needed for changes made to FSAR Chapter 2 to bring information up to date?
- A: Possibly, yes. If changes simply update data in Chapter 2 but the FSAR safety analyses and licensing bases are not impacted, a 10 CFR 50.59 evaluation may not be necessary. However, if updates to Chapter 2 impact facility safety analyses (in Chapter 2 or other FSAR chapters), 10 CFR 50.59 may apply.

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## Question #17

- Q: Does the updated FSAR need to include the technical specifications (TSs)?
- A: No. It is not necessary for the updated FSAR to be accompanied by a copy of the current TSs. Similarly, it is not necessary for TSs to be added to the FSAR if they were not included in the previous version of the FSAR. However, updated FSARs would reflect the current TSs and incorporate up-to-date information (e.g., from license renewal and/or LARs) on the TSs and their bases, as appropriate.

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## Question #18

- Q: Does information in FSAR Chapter 15 (financial qualifications) need to be brought up-to-date for the updated FSAR?
- A: This information may need to be updated if there have been significant changes that could affect compliance with NRC requirements, for example:
  - Changes in decommissioning funding mechanism
  - Changes that could significantly impact decommissioning cost estimates
  - Changes in information affecting compliance with the cost criteria for a Class 104c (research and development) license

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## Question #19

- Q: Does the updated FSAR need to include an updated environmental report?
- A: No.

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## Question #20

- Q: Does the FSAR update need to include an updated emergency plan, physical security plan, or operator requalification plan?
- A: No. However, an updated FSAR would include updated references to the current versions of the plans, if they have changed since the last update.

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## Question #21

- Q: Is it necessary for the FSAR to be updated to conform to changes in NRC regulations since the last version of the FSAR?
- A: No, this is generally not required unless there is a change in the facility, safety analyses, and/or licensing basis that relates to compliance with a new or changed regulation.

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## Question #22

- Q: Are licensees expected to update FSAR references to documents such as codes and standards or NRC regulatory guides?
- A: No, this is generally not expected or required unless a document reference or commitment needs to be updated for conformance with a previous facility and/or safety analysis change (e.g., a change associated with a 10 CFR 50.59 evaluation, LAR, or license renewal).

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## Question #23

- Q: Should facility aging be considered in FSAR updates?
- A: Yes. Information that should be considered for inclusion in FSAR updates includes any evaluations by the licensee of potential or actual aging of SSCs, and any aging management actions taken that could affect descriptions or analyses in the FSAR.

Any changes to the facility or updates to analysis (e.g., updates to the expected life of the reactor tank) would be subject to 10 CFR 50.59 or 10 CFR 50.90, as appropriate, and would generally be incorporated in the next FSAR update.



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## Question #24

- Q: NUREG-1537 is currently being revised by the NRC. Will licensees be expected to revise FSARs to be consistent with the revised NUREG-1537 once it is issued?
- A: No.

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## Question #25

- Q: If portions of the content and/or format of a licensee's current FSAR do not reflect the current (1996) NUREG-1537, will the licensee need to bring them in line for the initial update?
- A: No.

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## Question #26

- Q: Are licensees required to keep FSARs up to date (internally) between the 5-year required updates?
- A: No. However, this is a good practice that may facilitate proper 10 CFR 50.59 evaluations and LAR analyses.

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## Question #27

- Q: May licensees submit an updated FSAR more frequently than every 5 years?
- A: Yes. The 5 years is the maximum, but there is no limit to how frequently an FSAR update may be submitted.

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## Question #28

- Q: Is it acceptable to submit an FSAR that is updated to less than 6 months prior to the submission date?
- A: Yes. The interval must be no greater than 6 months, but a licensee may use a shorter interval.

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## Question #29

- Q: What happens if a submittal is late or doesn't meet the requirements?
- A: The licensee will be subject to the NRC Enforcement Policy\* if the contents of the initial updated FSAR or subsequent FSAR updates are not in accordance with requirements or if the licensee fails to submit an FSAR update within the allowed maximum interval of 5 years.

\*Current version is dated August 12, 2025 ([ML25224A097](#))

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# References for Further Guidance

- FSAR update requirements:
  - [10 CFR 50.71\(e\)](#), [10 CFR 50.4\(b\)\(6\)](#)
  - “Order Modifying Licenses and Establishing Initial Final Safety Analysis Report Update Due Dates Consistent with the Non-Power Production or Utilization Facility License Renewal Rule,” dated February 6, 2025 ([ML24354A200](#))
- Guidance for FSAR updates:
  - NRC Regulatory Guide 2.7, “Preparation of Updated Final Safety Analysis Reports for Non-Power Production or Utilization Facilities” ([ML18031A007](#))
- Additional references to inform FSAR update content:
  - [10 CFR 50.34](#), [10 CFR 50.59](#)
  - NUREG-1537, “Guidance for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors” ([ML042430055](#) and [ML042430048](#))
  - NEI 21-06, “Guidelines for 10 CFR 50.59 Implementation at Non-Power Production or Utilization Facilities” ([ML22005A045](#)), as endorsed in NRC Regulatory Guide 2.8, “Guidance for Implementation of 10 CFR 50.59, ‘Changes, Tests and Experiments,’ at Non-Power Production or Utilization Facilities” ([ML22020A292](#))

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# Thank you for your attention, any additional questions?

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