

**NEI 98-03 (Draft Revision 2)**

# **Guidelines for Updating Final Safety Analysis Reports**

**March 2015**

[This page intentionally left blank.]

**NEI 98-03 [Draft Revision 2]**

**Nuclear Energy Institute**

**Guidelines for Updating  
Final Safety Analysis Reports**

**March 2015**

## **ACKNOWLEDGMENTS**

NEI appreciates the invaluable assistance of the New Plant Task Force and Licensing Action Task Force toward development of this guideline.

## **NOTICE**

Neither NEI, nor any of its employees, members, supporting organizations, contractors, or consultants make any warranty, expressed or implied, or assume any legal responsibility for the accuracy or completeness of, or assume any liability for damages resulting from any use of, any information apparatus, methods, or process disclosed in this report or that such may not infringe privately owned rights.

## **FOREWARD**

NEI 98-03, *Guidelines for Updating Final Safety Analysis Reports*, Revision 2 provides generic guidance for updating final safety analysis reports (FSARs) consistent with the requirements of 10 CFR 50.71(e), the FSAR update rule, and the change control and reporting requirements set forth in 10 CFR Part 52 design certification rules. This revision takes previously endorsed guidance for 10 CFR Part 50 nuclear power reactor licensees and updates it to add guidance for 10 CFR Part 52 licensees. Specifically, Section 10 discusses the applicability of this guidance to UFSARs that reference a design certification rule and considerations for associated NRC reporting requirements. Finally, updates to citations of regulations and generic communications were included as appropriate in Revision 2.

**TABLE OF CONTENTS**

**1 INTRODUCTION..... 1**

**2 BACKGROUND..... 1**

**3 DEFINITIONS..... 2**

**4 ROLE OF THE UPDATED FSAR ..... 4**

**5 SCOPE OF THE UPDATED FSAR..... 4**

**6 UPDATING FSARS TO MEET 10 CFR 50.71(E)..... 7**

**7 FREQUENCY OF REQUIRED UPDATES..... 12**

**8 TREATMENT OF LONG-TERM TEMPORARY MODIFICATIONS..... 13**

**9 TREATMENT OF DISCREPANCIES BETWEEN THE FACILITY AND THE UPDATED FSAR..... 15**

**10 TREATMENT OF FSAR INFORMATION UNIQUE TO 10 CFR PART 52..... 16**

**APPENDIX A: MODIFYING THE UPDATED FSAR..... A-1**

**APPENDIX B: 10 CFR 50.71(E) ..... B-1**

## **1 INTRODUCTION**

The purpose of this document is to provide licensees with guidance for updating final safety analysis reports (FSARs) consistent with the requirements of 10 CFR 50.71(e), the FSAR update rule, and the change control and reporting requirements set forth in 10 CFR Part 52 design certification rules. Guidance is also provided in Appendix A for making voluntary modifications to updated FSARs (UFSARs) (i.e., removal, reformatting and simplification of information, as appropriate) to improve their focus, clarity and maintainability. Figure 1 (page 6) depicts the overall process for updating and modifying the UFSAR.

## **2 BACKGROUND**

FSARs originally served as the principal reference document in support of Part 50 license applications. The original FSAR described methods for conforming with applicable NRC regulations and contained the technical information required by 10 CFR 50.34(b), including “information that describes the facility, presents the design bases and the limits on its operation, and presents the safety analyses of the structures, systems and components and of the facility as a whole.” In 1980, the NRC issued the FSAR update rule, 10 CFR 50.71(e), which requires licensees to update their FSARs periodically to assure that the information provided is the latest material developed.

Inspections in 1996-97 by the NRC and licensees identified numerous discrepancies between UFSAR information and the actual plant design and operation. These findings have raised questions about possible noncompliance with 10 CFR 50.71(e). The industry has developed this guidance in recognition of the importance of the UFSAR, the need to comply with 10 CFR 50.71(e) update requirements, and the need for UFSARs to be consistent with the plant design and operation.

Nuclear power plants licensed under 10 CFR Part 52 are also subject to 10 CFR 50.71(e). 10 CFR 50.71(e) contains unique FSAR updating requirements for Combined License (COL) applicants and for holders of a COL until the Commission makes its finding under 10 CFR 52.103(g). Subsequent to the 10 CFR 52.103(g) finding, the provisions of 10 CFR 50.71(e) are identical for nuclear plants licensed under 10 CFR Part 52 and nuclear plants licensed under 10 CFR Part 50. Specific reporting requirements for nuclear plants licensed under 10 CFR Part 52 are contained in Section X of the referenced

design certification rule as applied to the plant-specific Design Control Document (DCD).

### **3 DEFINITIONS**

#### **3.1 COMMISSION REQUIREMENTS**

Commission requirements include regulations, license conditions, technical specifications and orders.

#### **3.2 DESIGN BASES**

Design bases are information that identifies the specific functions to be performed by a structure, system, or component of a facility and the specific values or ranges of values chosen for controlling parameters as reference bounds for design. These values may be (1) restraints derived from generally accepted “state-of-the-art” practices for achieving functional goals or (2) requirements derived from analysis (based on calculations and/or experiments) of the effects of a postulated accident for which a structure, system or component must meet its functional goals. (10 CFR 50.2).

Further discussion and examples of design bases are provided in NEI 97-04, *Design Bases Program Guidelines*.

#### **3.3 HISTORICAL INFORMATION**

Historical information is that which was provided in the original FSAR to meet the requirements of 10 CFR 50.34(b), 10 CFR 52.47, or 10 CFR 52.79 and meets one or more of the following criteria:

- information that was accurate at the time the plant was originally licensed, but is not intended or expected to be updated for the life of the plant
- information that is not affected by changes to the plant or its operation
- information that does not change with time.

#### **3.4 OBSOLETE INFORMATION**

Obsolete information is information about (1) equipment that has been removed from the plant, (2) organizations, programs or procedures that are no longer in effect and do not meet the definition of historical information, or

(3) design information, evaluations and other UFSAR description that no longer apply to the facility.

### **3.5 ORIGINAL FSAR**

The original FSAR is the FSAR submitted with the application for the operating license, as amended and supplemented, and reviewed by the NRC in granting the initial license to operate the facility. Note that for early licensees, the Final Hazards Summary Report performed the role of the FSAR in the licensing process.

For nuclear power plants licensed under 10 CFR 52, the UFSAR is the Final Safety Analysis Report (including the plant-specific Design Control Document (DCD)) submitted in accordance with 10 CFR 52.79, as amended and supplemented, and as updated per the requirements of Section X.A of the applicable Part 52 design certification appendix, 10 CFR 52.3 and 10 CFR 50.71(e).

### **3.6 SAFETY ANALYSES**

Safety analyses are analyses performed pursuant to Commission requirement to demonstrate the integrity of the reactor coolant pressure boundary, the capability to shut down the reactor and maintain it in a safe shutdown condition, or the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the guidelines in 10 CFR 50.34(a)(1), 10 CFR 52.47(a)(2), 10 CFR 52.79(a)(1), or 10 CFR 100.11. Safety analyses are required to be presented in the UFSAR per 10 CFR 50.34(b), 10 CFR 52.47(a), 10 CFR 52.79(a), or 10 CFR 50.71(e) and include, but are not limited to, the accident analyses typically presented in Chapter 14 or 15 of the UFSAR.

### **3.7 UFSAR DESCRIPTION**

UFSAR description includes text, tables, diagrams, etc., that provide an understanding of the design bases, safety analyses and facility operation under conditions of normal operation, anticipated operational occurrences, design basis accidents, external events, and natural phenomena for which the plant is designed to function.

### **3.8 UPDATED FSAR**

The updated FSAR (UFSAR) is the original FSAR as updated per the requirements of 10 CFR 50.71(e) and Section X of the applicable design certification rule for nuclear plants licensed under 10 CFR Part 52.

## **4 ROLE OF THE UPDATED FSAR**

UFSARs provide a description of each plant and, per the Supplementary Information for the FSAR update rule, serve as a “reference document to be used for recurring safety analyses performed by licensees, the Commission, and other interested parties.” The UFSAR is used by the NRC in its regulatory oversight of a nuclear power plant, including its use as a reference for evaluating license amendment requests and in the preparation for and conduct of inspection activities. For licensees, portions of the UFSAR are used as a reference in evaluating changes to the facility and procedures under the 10 CFR 50.59 change process or Section VIII of the referenced design certification rule, as applicable. The UFSAR also serves to provide the general public a description of the plant and its operation.

## **5 SCOPE OF THE UPDATED FSAR**

10 CFR 50.34(b), 10 CFR 52.47(a) or 10 CFR 52.79(a), as applicable, defined the scope of information required to be submitted in original FSARs and, by extension, the scope of UFSARs as they exist today. While original FSARs expanded greatly over the years as increasingly detailed information was required of new licensees, the scope given by 10 CFR 50.34(b) provided the common baseline for all original FSARs.

In addition to the scope of information contained in the original FSAR, the scope of today’s UFSARs includes information added per the FSAR update rule<sup>1</sup>. The update rule requires licensees to update their UFSARs to reflect new Commission requirements and the effects of changes to the facility and procedures, safety evaluations and analyses of new safety issues requested by the Commission.

Just as the scope of the original FSAR was determined by the requirements of 10 CFR 50.34(b), 10 CFR 52.47(a) or 10 CFR 52.79(a), it follows that the scope of information subsequently added to the original FSAR through the update process should be guided by the requirements used to establish the content of the original FSAR.

---

<sup>1</sup> The scope of the UFSAR also may be affected by the other NRC requirements, such as 10 CFR 54.21(d). This rule requires licensees to supplement their UFSARs as part of the technical information submitted with license renewal applications.

10 CFR 50.34(b)<sup>2</sup> contains the following statement of general intent concerning the required content of FSARs submitted as part of original license applications:

The FSAR shall include information that describes the facility, presents the design bases and the limits on its operation, and presents the safety analyses of the structures, systems and components and of the facility as a whole.

Subsections (1) through (9) of 10 CFR 50.34(b)<sup>3</sup> further define or amplify this statement of general intent. Certain information required to be included in original FSARs is now controlled in separate licensee documents in accordance with other NRC regulations. For example, the plant technical specifications establish the limits on facility operation, including safety limits; limiting safety system settings; and limiting conditions for operation for structures, systems and components. The technical specifications were required as part of the original FSAR under 10 CFR 50.34(b)(6)(vi), but are now controlled separately from the UFSAR per 10 CFR 50.36.

Based on analysis of 10 CFR 50.34(b), 10 CFR 52.47, and 10 CFR 52.79, UFSAR updates should contain the following basic types of information concerning new requirements and information developed since the UFSAR was last updated that are required to be reflected in the UFSAR under 10 CFR 50.71(e):

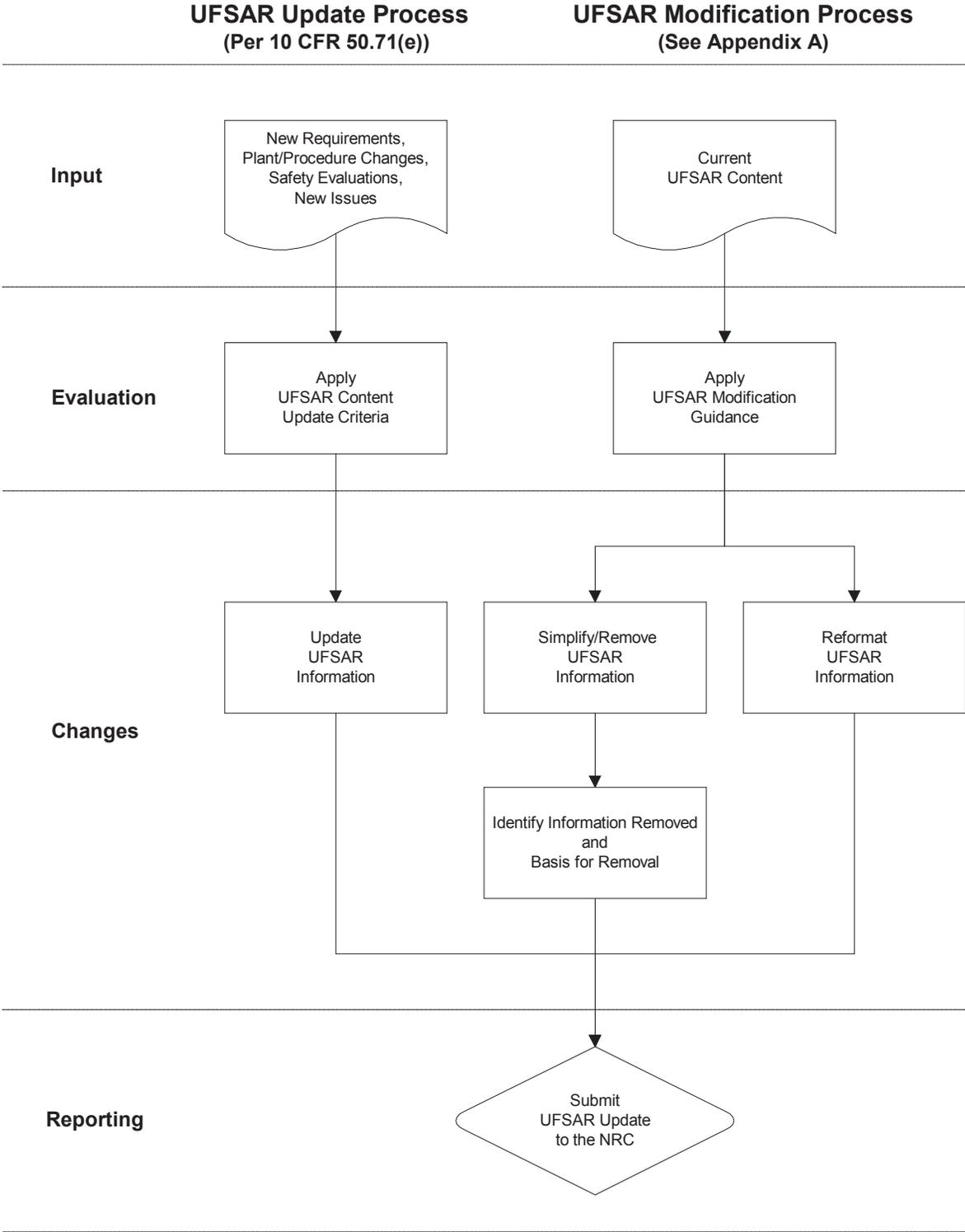
- new or modified design bases
- summary of new or modified safety analyses
- UFSAR description sufficient to permit understanding of new or modified design bases, safety analyses, and facility operation (as defined in Section 3.7).

---

<sup>2</sup> 10 CFR 52.47 and 52.79 contain a similar statement with respect to DCDs and COL FSARs.

<sup>3</sup> 10 CFR 52.47 and 10 CFR 52.79 contain similar subsections and treat Technical Specifications as does 10 CFR 50.34.

**Figure 1**  
**PROCESS FOR UPDATING AND MODIFYING THE UFSAR**



## **6 UPDATING FSARS TO MEET 10 CFR 50.71(E)**

### **6.1 WHAT THE REGULATIONS REQUIRE**

10 CFR 50.71(e) requires licensees to periodically update their UFSARs to assure they remain up-to-date such that they accurately reflect the plant design and operation. Per 10 CFR 50.71(e)(4), the UFSAR is required to reflect changes up to a maximum of six months prior to the date that the last update was submitted to the NRC. The 10 CFR 50.71(e) requirements concerning the content of updates are as follows<sup>4</sup>:

Each person licensed to operate a nuclear power reactor under the provisions of § 50.21 or § 50.22, and each applicant for a combined license under part 52 of this chapter, shall update periodically, as provided in paragraphs (e)(3) and (4) of this section, the final safety analysis report (FSAR) originally submitted as part of the application for the license, to assure that the information included in the report contains the latest information developed. This submittal shall contain all the changes necessary to reflect information and analyses submitted to the Commission by the applicant or licensee or prepared by the applicant or 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) or, in the case of a license that references a certified design, in accordance with § 52.98(c) of this chapter; and all analyses of new safety issues performed by or on behalf of the applicant or licensee at Commission request. The updated information shall be appropriately located within the update to the FSAR.

The rule does not require that licensees review all the information contained in the UFSAR for each periodic update. Rather, the intent of the rule is that licensees update only those portions that have been affected by licensee

---

<sup>4</sup> In addition to the update requirements of 10 CFR 50.71(e), the rule also includes certain administrative and reporting requirements. The full text of 10 CFR 50.71(e) is provided in Appendix B to this report.

activities since the previous update. Per the Supplementary Information provided with the 1980 FSAR update rule,

Submittal of updated FSAR pages does not constitute a licensing action but is only intended to provide information. It is not intended for the purpose of re-reviewing plants.... The material submitted may be reviewed by the NRC staff but will not be formally approved.

The rule specifies the types of new information that must be evaluated to determine if the UFSAR must be updated to reflect the new information, i.e., new requirements, changes to the facility or procedures, including supporting safety evaluations, and NRC-requested analyses. The following subsections provide guidance for implementing the requirements.

### **6.1.1 New Regulatory Requirements**

UFSARs must be updated to reflect changes to the facility resulting from new or amended requirements, e.g., Appendix R, the Station Blackout rule (10 CFR 50.63), the Anticipated Transient Without Scram (ATWS) rule (10 CFR 50.62), or plant-specific orders. As a result of such new requirements, the following information must be incorporated in the UFSAR, as applicable:

- new or modified design bases
- summary of new or modified safety analyses
- appropriate UFSAR description as defined in Section 3.7 of this guideline.

If a new NRC requirement does not result in these types of information, the UFSAR does not need to be updated to reflect the new requirement.

### **6.1.2 Changes to the Facility or Procedures**

The UFSAR must be updated to reflect the following effects, as applicable, of changes implemented under 10 CFR 50.12, 10 CFR 50.90, 10 CFR 50.59, or Section VIII of the referenced design certification rule including supporting safety evaluations:

- a change requires update of the existing UFSAR information, including changes to existing design bases, safety analyses or description of existing structures, systems, components or functions described in the UFSAR
- a change results in the removal from the plant of SSCs described in the UFSAR or the elimination of functions or procedures described in the UFSAR

- a change or supporting safety evaluation results in new design bases or safety analyses, or associated description, that must be included in the UFSAR.

If a change or supporting safety evaluation does not affect existing UFSAR information and does not result in new design bases, safety analyses or UFSAR description, the UFSAR does not need to be updated to reflect the change.

### **6.1.3 Analyses of New Safety Issues**

Licensees should evaluate the effects of analyses or similar evaluations performed by licensees in response to plant-specific NRC requests or NRC generic letters or bulletins. NRC-requested analyses and evaluations must be reflected in UFSAR updates only if, on the basis of the results of the requested analysis or evaluation, the licensee determines that the existing design bases, safety analyses or UFSAR description are either not accurate or not bounding or both. The existing design bases, safety analyses and UFSAR description must be updated to reflect the new information, as appropriate.

If the NRC-requested analyses or evaluations do not cause any of these effects, no change to the UFSAR is required.

### **6.1.4 Update Process Considerations**

Licensees should establish a process to identify the types of new information that must be evaluated to determine if the UFSAR must be updated to reflect the new information. To be consistent with the requirements of the FSAR update rule, the process should include sufficient administrative controls to identify information and analyses submitted pursuant to Commission requirements; changes to the facility or procedures; safety evaluations; and analyses of new safety issues performed at Commission request.

In general, controls sufficient to identify information pursuant to Commission requirement should focus on changes to NRC regulations, license conditions, orders and technical specifications. The controls for identifying changes to the facility or procedures and safety evaluations should be integrated with existing licensee administrative controls for implementing design and procedure changes, including the process used by licensees in preparing, reviewing and approving 10 CFR 50.59 evaluations or evaluations performed pursuant to Section VIII of the applicable design certification rule. The controls for identifying analyses of new safety issues performed at Commission request should focus on NRC bulletins, generic letters and

analogous plant-specific communications, including NRC requests pursuant to 10 CFR 50.54(f).

## 6.2 LEVEL OF DETAIL FOR FSAR UPDATES

While not explicitly addressing the level of detail required for FSARs, 10 CFR 50.34(b)(2)<sup>5</sup> requires that original FSARs include:

... description and analysis of the structures, systems, and components of the facility, with emphasis upon performance requirements, the bases, with technical justification therefor, upon which such requirements have been established, and the evaluations required to show that safety functions will be accomplished. The description shall be sufficient to permit understanding of the system designs and their relationship to safety evaluations.

In addition, the Supplementary Information provided with the 1980 FSAR update rule stated: “The level of detail to be maintained in the UFSAR should be at least the same as originally provided.” Thus, existing UFSAR information of a similar nature may provide a guide for determining the level of detail for new information to be included in UFSAR updates. However, the primary consideration in determining the level of detail for new information is whether updated information is sufficient to permit understanding of new or modified safety analyses, design bases and facility operation.

## 6.3 EXAMPLES

The following examples illustrate the application of the UFSAR update guidance.

**CASE 1:** The licensee action is not in response to a new Commission requirement, does not involve a change, safety evaluation or analysis of a new issue, and does not affect existing UFSAR information. Therefore, no update to the UFSAR is required by 10 CFR 50.71(e).

### Example

Generic Letter 96-01, “Testing of Safety-Related Circuits,” requested licensees to conduct a review of Logic System Testing to ensure that all elements of the logic circuits were being adequately tested and met the technical specification surveillance requirement for adequate logic system functional testing.

---

<sup>5</sup> 10 CFR 52.47(a)(2) and 10 CFR 52.79(a)(2) contain analogous requirements.

This generic correspondence did not constitute a new regulatory requirement and did not request a new analysis. Provided the licensee response to Generic Letter 96-01 did not result in a change to the facility or actions that affected existing UFSAR information, no change to the UFSAR is required.

**CASE 2:** The licensee action responds to a new Commission requirement or involves a change, safety evaluation or analysis of a new issue, and update of the UFSAR is required to change existing information.

Example

A change to the safety injection system was initiated to address an operability concern identified in NRC Bulletin 88-04, “Potential for Safety-Related Pump Loss.” An evaluation of safety injection pump minimum-flow lines resulted in an increase in the recommended minimum-flow rate to preclude hydraulic instability at low flow conditions and assure pump operability. As a result of this evaluation, the orifices in the safety injection recirculation lines were modified to provide for increased minimum-flow rate for the pumps.

Unlike the generic letter in the example of Case 1, NRC Bulletin 88-04 requested that licensees evaluate safety-related pump performance under minimum flow conditions, and the licensee evaluation resulted in a change to the safety injection recirculation lines. Because sufficient minimum-flow is necessary to ensure the system is able to perform its intended safety function, the UFSAR description associated with the safety injection system should be modified to include a discussion of the minimum-flow function as it relates to maintaining operability of the safety injection pumps. In some cases, this may entail adding UFSAR discussion of the minimum-flow function where none previously existed.

If licensee evaluations requested by Bulletin 88-04 determined the existing minimum-flow design to be acceptable, no change to the UFSAR is required.

**CASE 3:** The licensee action responds to a new Commission requirement or involves a change, safety evaluation or analysis of a new issue, and update of the UFSAR is required to reflect new information.

Example

10 CFR 50.62 (the ATWS rule) required the installation of a new mitigation system specific to the type of plant (Westinghouse, Combustion Engineering, etc.). In response to the ATWS rule, the licensee installed new equipment in the facility. An evaluation was performed in accordance with the guidance in Section 6 to determine if update of the UFSAR was required. Because ATWS constitutes new Commission requirements for the plant, the design bases and associated description of the new ATWS equipment should be added to the UFSAR.

**CASE 4:** The licensee action responds to a new Commission requirement or involves a change, safety evaluation or analysis of a new issue, and update of the UFSAR is not required.

Example

The NRC issued a new requirement, 10 CFR Part 26, requiring licensees to implement a Fitness for Duty Program (FFD). An evaluation was performed in accordance with the guidance in Section 6 to determine if update of the UFSAR was required. The FFD program did not result in new or modified safety analyses or design bases. Provided that the UFSAR does not contain security-related information affected by FFD program implementation, no change or addition to the UFSAR is required as a result of the new requirement.

## **7 FREQUENCY OF REQUIRED UPDATES**

As required by 10 CFR 50.71(e)(4), licensees are required to submit a periodic UFSAR update annually or within six months after each refueling outage provided the interval between successive updates does not exceed 24 months. Licensees may request an exemption from this requirement from the NRC. For example, the NRC has granted exemptions allowing licensees to submit a single, combined periodic update for multi-unit plants.

As required by 10 CFR 50.71 (e)(3)(iii), “during the period from the docketing of an application for a combined license under subpart C of part 52 of this chapter until the Commission makes the finding under § 52.103(g), COL license applicants and COL licensees are required to submit an update to the FSAR annually.”

## **8 TREATMENT OF LONG-TERM TEMPORARY MODIFICATIONS**

The UFSAR is revised periodically to assure that the information reflects the latest material developed. Nevertheless, at any given time there may be a number of temporary plant and/or procedure changes in effect to support corrective actions or other plant activity. Temporary changes in support of plant operations should be restored to the normal plant condition, e.g., consistent with the UFSAR, in a timely manner. For temporary conditions involving safety related equipment, timely restoration is required by 10 CFR 50, Appendix B. Per Generic Letter 91-18, Revision 1, temporary conditions subject to Appendix B that exist longer than the next refueling outage are to be explicitly justified as part of tracking documentation.

Temporary changes generally should not be reflected in UFSAR updates. Because UFSAR information may lag the current plant status by up to 30 months, the UFSAR is an inefficient vehicle for documenting temporary conditions. This would cause licensees to needlessly revise information in the UFSAR that would shortly revert to its prior condition. The result would be a UFSAR that described temporary modifications that are no longer installed, and the UFSAR would not reflect their removal until the next periodic update.

Temporary changes are administratively controlled separately from the UFSAR, and the current status of each is tracked to completion. Tracking documentation ensures that plant staff can determine the current plant status to support ongoing plant operations, including evaluations performed under 10 CFR 50.59 or Section VIII of the referenced design certification rule. Evaluations performed for temporary changes are submitted to the NRC in a summary report in accordance with 10 CFR 50.59(b) or Section X of the referenced design certification rule.

In general, UFSARs should not duplicate the licensee's tracking and reporting of temporary changes. However, the licensee should reflect in periodic UFSAR updates temporary modifications meeting both of the following criteria:

- The temporary modification is expected to be in place throughout the next required periodic UFSAR update cycle<sup>6</sup>, or no schedule for removal has been established; and
- The licensee determines based on the update guidance in Section 6 that the temporary modification should be reflected in the next required UFSAR update.

Temporary modifications reflected in the UFSAR should be clearly identified as such to distinguish temporary conditions from the permanent plant design and normal operation. Consistent with licensee configuration control procedures, there may be temporary modifications reflected in the UFSAR that are not reflected in other permanent plant documentation. If corrective action or other work associated with a temporary modification results in a permanent change to the plant as described in the UFSAR, the UFSAR should be updated to reflect the change.

### Examples

1. A temporary modification was installed for six months to defeat an alarm that is explicitly discussed in the UFSAR. While the temporary modification affected information contained in the UFSAR, it would not be included in the periodic update because the alarm is expected to be restored to service before the end of the next required periodic UFSAR update cycle.
2. Temporary cables for an intercom system have been routed through one of the safety-related battery rooms, and the permanent installation is not planned for more than two years. Based on this schedule, and the schedule for the next UFSAR update, the temporary modification is expected to be in place until after the next UFSAR update cycle. Therefore, the temporary modification should be evaluated per Section 6 of the guideline for inclusion in the next required UFSAR update. Because the modification does not affect existing UFSAR information, and does not result in new safety analyses, design bases or UFSAR description, this modification would not be reflected in the next required UFSAR update.
3. A temporary modification was installed for a safety injection accumulator makeup water pump, and the permanent resolution of the issue will not be implemented for at least two more years. Based on this schedule, and the schedule for the next UFSAR update, the

---

<sup>6</sup> A periodic update cycle is the period between the cutoff dates for new information for successive required UFSAR updates, i.e., from six months (maximum) prior to submittal of one update until six months (maximum) prior to the next.

temporary modification is expected to be in place until after the next UFSAR update cycle and should be evaluated per Section 6 of the guidance for inclusion in the next required update. Because the modification affects the existing description of the makeup function for the safety injection accumulators, the UFSAR should be modified to reflect the temporary modification as part of the next required update.

## **9 TREATMENT OF DISCREPANCIES BETWEEN THE FACILITY AND THE UPDATED FSAR**

If the licensee discovers a discrepancy between the facility and its description in the UFSAR, the licensee should address the discrepancy in accordance with its corrective actions program under 10 CFR Part 50, Appendix B. If evaluation of the discrepancy results in the identification of a nonconforming or degraded plant condition that may impact the operability of the associated structures, systems and components, the nonconforming or degraded condition should be addressed in accordance with Regulatory Issue Summary 2005-20<sup>7</sup>.

If evaluation of the discrepancy determines that the UFSAR is incorrect, a correction should be initiated in accordance with licensee procedures for inclusion in the next UFSAR update.

For nuclear power plants licensed under 10 CFR Part 52, discrepancies between the facility and the description in the UFSAR should be addressed in accordance with Section VIII of the referenced design certification rule. NEI 96-07, Appendix C, provides guidance.<sup>8</sup>

---

<sup>7</sup> Licensees also should evaluate nonconforming or degraded conditions for reportability pursuant to NRC requirements.

<sup>8</sup> NRC has stated in a letter to NEI, dated July 2, 2014, that NEI 96-07, Appendix C, is “acceptable for use by licensees during formal NRC endorsement via the NRC’s regulatory guide process.” (ML14113A529)

## **10 TREATMENT OF FSAR INFORMATION UNIQUE TO 10 CFR PART 52**

Design certification rules place certain restrictions on a licensee's ability to modify or remove information from the UFSAR. For nuclear power plants licensed under 10 CFR Part 52 referencing a certified design, the UFSAR contains information as specified in 10 CFR 52.47(a) and 10 CFR 52.79. FSAR information for a design certification application is presented in the form of a generic design control document that includes Tier 1, Tier 2 and Tier 2\* information.<sup>9</sup> The generic DCD is modified and supplemented by a COL applicant with plant-specific departures and exemptions made under Section VIII<sup>10</sup> of the applicable design certification rule and becomes a plant-specific DCD. The licensee's UFSAR consists of the plant-specific DCD plus plant-specific FSAR content.<sup>11</sup>

Due to special change control requirements under Part 52, guidance in this document, including Appendix A guidance on making voluntary modifications to UFSARs, applies only to the Tier 2 and plant-specific FSAR content.

As discussed in Section A6, voluntary modifications to Tier 2 that improve focus, clarity and maintainability of the plant-specific DCD are considered departures from the generic DCD and should be reported to NRC in accordance with Section X of the design certification rule.

---

<sup>9</sup> Tier 1, Tier 2 and Tier 2\* information is defined in each design certification rule.

<sup>10</sup> Regulatory guidance for departures and exemptions is contained in NEI 96-07, Appendix C, *Guideline for Implementation of Change Processes for New Nuclear Power Plants Licensed Under 10 CFR Part 52*.

<sup>11</sup> Regulatory guidance for changes to site-specific FSAR content is contained in NEI 96-07, *Guidelines for 10 CFR 50.59 Implementation*.

## **APPENDIX A: MODIFYING THE UPDATED FSAR**

### **A1 INTRODUCTION**

As discussed in this guideline, 10 CFR 50.71(e) requires that changes and certain new information be incorporated in periodic updates to the UFSAR. As provided in this appendix, the licensee also may initiate voluntary modifications to the UFSAR—unrelated to plant changes or required updates under 10 CFR 50.71(e)—to improve its focus, clarity and maintainability. The following sections provide guidance for reformatting, simplifying and removing existing UFSAR information. While not discussed in this document, licensees also may add information that goes beyond regulatory requirements and guidance to facilitate use of the UFSAR by plant staff or for other purposes.

### **A2 CONTROLLING MODIFICATIONS TO THE UPDATED FSAR**

As discussed in the following sections, three types of modifications may be made to the information in the UFSAR: reformatting, simplification and removal. UFSAR modifications discussed in Sections A3 through A5 that are not the result of changes to the plant or procedures do not require evaluation under 10 CFR 50.59 or Section VIII.B.5.b of the applicable design certification rule, but they should be administratively controlled through a process that has the following attributes:

- The licensee process controls what and how information is reformatted, simplified or removed from the UFSAR.
- The licensee process ensures that the UFSAR continues to contain the necessary scope of information as discussed in Section 5 of this guideline.
- As discussed in Section A6, the NRC should be informed of information removed from the UFSAR and the basis for the licensee's determination that such information may be removed. This information should be specifically identified to the NRC as part of required UFSAR updates, i.e., in addition to the changed pages and a list of effective pages currently required by 10 CFR 50.71(e).
- It is the intent of this guideline to help licensees remove unimportant information from UFSARs such as excessive detail, obsolete information, or redundant information. This guideline is not intended to be used to remove important information from UFSARs about features or functions of SSCs that insights from operating experience or probabilistic risk assessments indicate are risk-significant. The intent that risk-significant

information be retained does not preclude removal of obsolete or redundant information, or excessive detail concerning the design or operation of risk-significant SSCs, provided that the action is consistent with the guidance in this Appendix.

### **A3 REFORMATTING OF UPDATED FSAR INFORMATION**

Neither 10 CFR 50.34(b), 10 CFR 52.47, 10 CFR 52.79, nor 10 CFR 50.71(e) contain requirements on the format of FSARs. Thus the format of the UFSAR is at the option of the licensee, and the licensee may change the format of the UFSAR provided the content of the UFSAR is maintained consistent with these regulations, regulatory guidance committed to by the licensee (e.g., Regulatory Guide 1.70 or Regulatory Guide 1.206), and this guideline. For example, a licensee may elect to reformat the UFSAR to more clearly identify the design bases as defined in 10 CFR 50.2.

Historical information provided in the original FSAR may have become out-of-date and is not expected to be used to support current or future plant operations or regulatory activities. Accordingly, it may be appropriate to reformat such information to distinguish it from UFSAR information actively maintained by licensees to describe the updated plant design and operation.

By definition, reformatting UFSAR information—such as designating certain information as historical or relocating historical information to an appendix—does not remove that information from the UFSAR. As such, changes the licensee initiates to historical information constitute changes to the UFSAR that must be reported to the NRC per 10 CFR 50.71(e).

Absent an NRC requirement, licensees need not update historical information in UFSARs to reflect minor changes in population data or other such changes in the site environment. However, licensees should evaluate potentially significant changes in the site environs, e.g., a new natural gas line within the site boundary or a major new industrial facility near the plant site, to determine if notification of NRC and appropriate update of the UFSAR are required. For example, 10 CFR 50.9 and 10 CFR 52.6 require licensees to “notify the Commission of information identified by the applicant or licensee as having for the regulated activity a significant implication for public health and safety or common defense and security.”

Because changes to historical information as defined in this guideline are generally not expected or required (except possibly to reflect a significant change in the site environs, as discussed above), licensee update of such information under 10 CFR 50.71(e) is not expected.

The following are examples of historical information:

- Description of pre-service inspections
- Description of preoperational tests
- Description of start-up tests
- Description of station organization for initial licensing
- Comparative plant data provided to support original plant licensing
- Industry or other data obtained to support or develop the original plant design bases, including that relating to natural or man-made phenomena such as geography, meteorology, hydrology, geology, seismology, population density and nearby facilities (typically in Chapter 2 of the UFSAR)<sup>12</sup>
- Lists of references, figures and submittals relevant only to the original licensing proceeding
- Description of original factory testing of plant equipment, e.g., emergency diesel generators.

Licensees may reformat such historical information by either of the following, or equivalent, methods:

- Qualifying information may be designated as historical via clear annotation in the UFSAR.
- Historical information may be relocated to separate volumes or to specially designated appendices of the UFSAR.

Reformatting of UFSAR information should be controlled in accordance with Section A2.

## **A4 SIMPLIFYING UPDATED FSAR INFORMATION**

Licensees may elect to simplify information contained in the UFSAR to improve its focus, clarity and maintainability. As discussed in the subsections below, licensees may simplify UFSAR information by removing excessive detail and by using references to other documents where appropriate.

### **A4.1 REMOVING EXCESSIVE DETAIL**

UFSARs contain the scope of information required for the original FSAR by 10 CFR 50.34(b), 10 CFR 52.47, 10 CFR 52.79, and the additions to that scope required by 10 CFR 50.71(e). Later license applicants included significantly more detailed information in original FSARs than did earlier applicants. More recent FSARs grew to be 20 to 30+ volumes and may include more

---

<sup>12</sup> While data and information supporting the original plant design bases for natural and man-made phenomena may be designated as historical, the associated design bases themselves should not. This is because the original design bases continue to be part of the overall design bases for the facility, and new information may warrant their update.

detail in certain respects than was absolutely necessary to support NRC safety and licensing reviews.

Removal of excessively detailed text and drawings can improve the focus of UFSARs on significant descriptive, design bases, operational and analytical information that is relevant and useful to support current and future operational and regulatory activities. Detailed text and drawings may be removed from the UFSAR to the extent that the information provided exceeds that necessary to present the plant design bases, safety analyses and appropriate UFSAR description.

The following types of excessively detailed textual information may be removed from UFSARs, except as indicated by applicable regulatory guidance or NRC Safety Evaluation Reports:

- Descriptive information that is not important to providing an understanding of the plant's design and operation from either a general or system functional perspective, e.g., component model numbers
- Design information that is not important to the description of the facility or presentation of its safety analysis and design bases, e.g., component details such as specific motor horsepower ratings for MOVs
- Design information that, if changed during the life of the plant, would have no impact on the ability of plant systems, structures and components described in the UFSAR to perform their design basis function(s), e.g., specific HVAC equipment capacity and flow rate information for structures that do not contain equipment that performs design basis functions
- Analytical information, e.g., detailed calculations, that is not important to providing an understanding of the safety analysis methodology, input assumptions and results, and/or compliance with relevant regulatory and industry standards.

Removal of excessively detailed information from the UFSAR should be controlled in accordance with Section A2, including reporting to NRC as discussed in Section A6.

#### **A4.2 REPLACING DETAILED DRAWINGS WITH SIMPLIFIED SCHEMATICS**

Detailed drawings, such as piping and instrumentation diagrams (P&IDs), typically contain engineering and component information that goes beyond

that appropriate to complement the textual descriptions in the UFSAR and beyond that necessary to aid in understanding of the system design and principal functions. Examples of such information contained in detailed drawings include pipe line numbers, vents and drains, etc.

Simplified schematics may be substituted for detailed drawings under either of the following conditions: (1) the original FSAR contained simplified schematics that the licensee had later replaced with P&IDs or other detailed drawings as a matter of convenience, or (2) the original FSAR included detailed drawings, but simplified schematics will be substituted such that they will not result in removal of information required to be in the UFSAR.

In the first case, licensees may substitute simplified schematics for detailed drawings because simplified schematics were provided in the original FSAR. Returning simplified schematics to the UFSAR would be consistent with the intent of the FSAR update rule that the level of detail of the UFSAR should be at least the same as that provided in the original FSAR.

In the second case, the licensee would need to ensure that simplified drawings together with associated UFSAR text continue to provide sufficient understanding of design bases, safety analyses and facility operation. For example, if the licensee determines that design bases or safety analyses information is contained in detailed drawings that is not conveyed by text, tables or other means in the UFSAR, the licensee should incorporate the information into the simplified schematic or other UFSAR information so that the UFSAR continues to contain all necessary information. Substitution for detailed drawings as described in this paragraph should be controlled in accordance with Section A2, including reporting to NRC as discussed in Section A6.

In some cases, UFSAR drawings may contain little or no information that is necessary or important to provide sufficient understanding of a facility's design bases, safety analyses or operation. Such drawings may be eliminated completely from UFSARs provided both of the following conditions are met:

- Inclusion of the drawing in the UFSAR must not be part of an existing licensee commitment to the NRC (e.g., to Regulatory Guide 1.70)
- Existing UFSAR text, tables, and other information provide sufficient understanding of a facility's design bases, safety analyses and operation or the licensee supplements the existing information to compensate for the removal of the drawing.

Drawings should generally not be removed from the UFSAR where they are helpful in understanding the textual description of the design or function of

important structures, systems and components. When removing drawings from the UFSAR that are to be maintained as part of other design documents, licensees should consider providing a reference in the UFSAR to the location of the drawing.

#### **A4.3 REFERENCING OTHER DOCUMENTS IN UPDATED FSARS**

When assessing the presentation of existing UFSAR information (or evaluating information to be added), there may be instances when the information exists in a separate source document and it is preferable to reference, rather than duplicate, all or part of the source document in the UFSAR. Referencing, rather than duplicating, information in the UFSAR can simplify the presentation and maintenance of UFSAR information and, in some cases, avoid the need for duplicative reporting of changes to the NRC.

There are two basic ways licensees can reference other documents in the UFSAR depending on the nature of the document and the purpose of the reference. Each is discussed below.

***General References.*** General references are not considered part of the UFSAR, but are intended to provide background information or additional detail that the reader may refer to in order to learn more about particular material presented in the UFSAR. These may be texts, environmental studies or technical reports, as well as licensee-controlled documents such as operating or maintenance procedures, calculation manuals, etc. References to such information may be located at specific points in the UFSAR, or they may be listed at the end of UFSAR chapters or in introductory sections.

Licensees may wish to remove excessively detailed, duplicate UFSAR information that is controlled in a separate licensee source document. In some cases, it may be appropriate to provide a brief summary of the detail being removed and/or a general reference to the controlling document as an aid to the reader. Unless the referenced source document is “incorporated by reference” (as discussed below), referenced information is not part of the UFSAR and would not be subject to 10 CFR 50.71(e), except as specifically committed to by licensees. Replacement of detailed information with a brief summary and/or reference constitutes removal of UFSAR information that must be controlled consistent with guidance in Section A2 and reported to NRC as discussed in Section A6.

***Incorporation by Reference.*** “Incorporation by reference” refers to a method by which all or part of a separate source document can be made part

of the UFSAR without duplicating the desired information in the UFSAR. Information that is appropriate to include in the UFSAR that is also part of a separate licensee-controlled document or technical report may be incorporated in the UFSAR by appropriate reference to that information. By relying on information “incorporated by reference,” licensees may simplify their UFSARs by removing information that is duplicated in separate, controlling program documents such as the Emergency Plan, Offsite Dose Calculation Manual, Fire Protection Plan and Fire Hazards Analysis Report, Security Plan, Environmental Protection Plan and Quality Assurance Plan. Considerations when incorporating by reference include the following:

- Licensees should clearly identify in the UFSAR text the document or portion thereof to be incorporated, and state that the document or portion thereof is “incorporated by reference” in the UFSAR. For example, one option would be to locate in Chapter One of the UFSAR a single section or table that maintains the list of all documents considered incorporated. References should be as clear and specific as possible to avoid misunderstandings about the extent of information incorporated by reference and thus considered part of the UFSAR.
- For information to be incorporated by reference, the information must be publicly available (i.e., it must have been submitted to the NRC) unless there exists an explicit NRC requirement to maintain the information on site. Furthermore, information incorporated by reference into the UFSAR is subject to the update and reporting requirements of 10 CFR 50.71(e) and change controls of 10 CFR 50.59 unless separate NRC change control requirements apply (e.g., 10 CFR 50.54(a)).

Because documents incorporated by reference in UFSARs are subject to the requirements of 10 CFR 50.71(e) and 10 CFR 50.59 (except where separate NRC requirements apply), and Section VIII of the applicable design certification rule, licensees should ensure that such documents are being maintained in accordance with these requirements. Documents incorporated by reference containing information that is not required to be in the UFSAR, e.g., by 10 CFR 50.34(b), 10 CFR 52.47, 10 CFR 52.79, or 10 CFR 50.71(e), may be appropriately reclassified as general references.

Licensees may control the Technical Requirements Manual and similar licensee controlled documents in either of the following ways:

- The TRM or other licensee controlled document is explicitly “incorporated by reference” into the UFSAR. Under this approach, the referenced document is subject to the change control requirements of 10 CFR 50.59, Section VIII of the applicable design certification rule, and the

update/reporting requirements of 10 CFR 50.71(e), e.g., periodic submittal of change pages, etc.

- The TRM or other licensee controlled document is treated in a manner consistent with procedures fully or partially described in the UFSAR. Under this approach, the referenced document is maintained on-site in accordance with licensee administrative processes, and changes are evaluated using 10 CFR 50.59 or Section VIII of the applicable design certification rule.

## **A5 REMOVING UNNECESSARY INFORMATION FROM UPDATED FSARS**

Licensees may remove obsolete and redundant information and commitments from UFSARs. When removing information as described in this section, licensees should follow the guidance in Section A2 for controlling modifications to the UFSAR and Section A6 for reporting to the NRC.

***Obsolete Information.*** Licensees should remove UFSAR information, as appropriate, in connection with removal of SSCs from the plant or elimination of functions or procedures described in the UFSAR. However, licensee review of UFSAR information may identify where this has not occurred, or where removal of UFSAR information in connection with a change was incomplete. In general, licensees should remove from UFSARs description of equipment that is no longer installed in the plant; organizations, programs or procedures that are no longer in effect; and design information, evaluations or other description that no longer apply to the facility. The exception to this guidance is that programmatic information that was explicitly required under 10 CFR 50.34(b), 10 CFR 52.47, or 10 CFR 52.79, to be included in original FSARs, e.g., plans for preoperational testing and initial operations, may not be removed from the UFSAR. Such information is considered historical; licensees may opt to reformat this information in accordance with Section A3.

Where the presence of obsolete information indicates a discrepancy between the UFSAR and the actual plant design or operation, the discrepancy should be evaluated in accordance with Section 9 of this guideline.

Organizations, programs and procedures no longer in effect are considered obsolete, as opposed to historical, if they were instituted and included in the UFSAR subsequent to initial plant licensing.

If equipment has been retired in place (equipment that is no longer in service but has not been physically removed from the plant), functional descriptions in the UFSAR that no longer apply to the equipment are considered obsolete information. To accurately reflect the condition of the plant, physical

descriptions of equipment retired in place (e.g., component and location) in the form of text and/or drawings should be retained in the UFSAR.

***Redundant Information.*** Licensees may remove duplicate information from the UFSAR. If some or all of the duplicated information is important to facilitate understanding of multiple sections of the UFSAR, the licensee should retain appropriate duplicate information where it is needed. Alternatively, the licensee may remove duplicate information and provide a reference to the location in the UFSAR where the information is to be retained.

***Commitments.*** Some licensees may have incorporated specific commitments made to the NRC within the UFSAR. Consistent with Commission guidance<sup>13</sup>, licensees may remove from the UFSAR commitments that are not integral to required UFSAR information, i.e., design bases, safety analyses and associated description. Removal from the UFSAR does not change the status or nature of commitments to the NRC. NEI 99-04, *Guideline for Managing NRC Commitment Changes*, provides guidance for making changes to NRC commitments.

Licensees should ensure that NRC commitments removed from the UFSAR are included in licensee commitment management or corrective action programs as appropriate. If the licensee committed to the NRC to incorporate a commitment in the UFSAR, then the licensee should inform the NRC of its removal from the UFSAR, consistent with the licensee's commitment change process.

---

<sup>13</sup> In a Staff Requirements Memorandum dated May 20, 1997, the Commission directed the NRC staff to formulate an approach to FSAR updates that would "allow obsolete or less meaningful information and commitments to be readily removed from the FSAR."

## **A6 REPORTING TO THE NRC INFORMATION REMOVED FROM THE UFSAR**

Information removed from the UFSAR should be specifically identified to the NRC as part of required UFSAR updates. A brief description of the information removed and the basis for its removal should be provided. This information should not be incorporated in the UFSAR but should be provided in addition to the changed pages and a list of effective pages currently required by 10 CFR 50.71(e).

For plants licensed under 10 CFR Part 52, information removed from the plant-specific DCD portion of the UFSAR should be documented in a departure report in accordance with Section X.B.1 of the applicable design certification rule.

The following are examples of description suitable for notifying the NRC that information was removed from the UFSAR:

- removed model number information for components of the Reactor Equipment Cooling System previously contained in UFSAR Section XYZ on the basis that this was excessively detailed information
- replaced the P&ID for the auxiliary feedwater system with a simplified schematic.

## **APPENDIX B: 10 CFR 50.71(E)**

### **10 CFR 50.71(e)**

Each person licensed to operate a nuclear power reactor under the provisions of § 50.21 or § 50.22, and each applicant for a combined license under part 52 of this chapter, shall update periodically, as provided in paragraphs (e) (3) and (4) of this section, the final safety analysis report (FSAR) originally submitted as part of the application for the license, to assure that the information included in the report contains the latest information developed. This submittal shall contain all the changes necessary to reflect information and analyses submitted to the Commission by the applicant or licensee or prepared by the applicant or 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<sup>1</sup> 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) or, in the case of a license that references a certified design, in accordance with § 52.98(e) of this chapter; and all analyses of new safety issues performed by or on behalf of the applicant or licensee at Commission request. The updated information shall be appropriately located within the update to the FSAR.

(1) 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.

(2) 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.

(3)

(i) A revision of the original FSAR containing those original pages that are still applicable plus new replacement pages shall be filed within 24 months of either July 22, 1980, or the date of issuance of the operating

license, whichever is later, and shall bring the FSAR up to date as of a maximum of 6 months prior to the date of filing the revision.

(ii) Not less than 15 days before § 50.71(e) becomes effective, the Director of the Office of Nuclear Reactor Regulation shall notify by letter the licensees of those nuclear power plants initially subject to the NRC's systematic evaluation program that they need not comply with the provisions of this section while the program is being conducted at their plant. The Director of the Office of Nuclear Reactor Regulation will notify by letter the licensee of each nuclear power plant being evaluated when the systematic evaluation program has been completed. Within 24 months after receipt of this notification, the licensee shall file a complete FSAR which is up to date as of a maximum of 6 months prior to the date of filing the revision.

(iii) During the period from the docketing of an application for a combined license under subpart C of part 52 of this chapter until the Commission makes the finding under § 52.103(g) of this chapter, the update to the FSAR must be submitted annually.

(4) Subsequent revisions must be filed annually or 6 months after each refueling outage provided the interval between successive updates does not exceed 24 months. The revisions must reflect all changes up to a maximum of 6 months prior to the date of filing. For nuclear power reactor facilities that have submitted the certifications required by § 50.82(a)(1), subsequent revisions must be filed every 24 months.

(5) 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).

(6) The updated FSAR shall be retained by the licensee until the Commission terminates their license.