



10 CFR 50.59 - Overview
Applicable to Reactors in
Decommissioning: The
Review Process Followed by
Licensees to Ensure Activities
are Performed in Compliance
with License Requirements.

Pilgrim Nuclear Decommissioning Community Advisory Board
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Does the NRC have to review and either approve or disapprove every decision the licensee makes related to decommissioning a facility?

- **No**, the NRC does not review every decision the licensee makes related to decommissioning the facility.
- The licensee may make any of the following types of changes without prior NRC approval provided that are consistent with the license, license requirements and the safety analysis report.





Conduct of Decommissioning Activities

As in operations, the licensee may make changes to the facility in accordance with 10 CFR 50.59. “Changes, tests and experiments,” to determine the activities are compliant with the license and licensing basis.

- Ninety (90) days after the Post Shutdown Decommissioning Activities Report (PSDAR) has been received by the NRC, a licensee may perform major decommissioning activities.
- A licensee may take actions permitted by 10 CFR 50.59 but must notify the NRC before performing any decommissioning activity inconsistent with the actions and schedule described in the PSDAR.

10 CFR 50.59 Overview

- 10 CFR 50.59 is the regulation *that allows licensees* to determine whether prior NRC review and approval is needed if the proposed activity is within the NRC license, may conduct the decommissioning activities.
- **A 10 CFR 50.59 evaluation is *not* a safety evaluation**, and the focus is whether NRC approval is required prior to implementing the change.
- Technical justification is an input to the 50.59 process, not the conclusion. A change that appears to make sense or engineering judgement may not necessarily be allowed without prior NRC review.
- Review of the licensee's 50.59 evaluations are reviewed at least annually during decommissioning, Inspection Procedure 37801, "[*Safety Reviews, Design Changes, and Modifications at Permanently Shutdown Reactors \(PSRs\)*](#),"



Plant Licensing Basis Requirements Examples:

- The site's NRC License and amendments, including the License Termination Plan
- Technical Specifications (TS) and the Defueled Safety Analysis Report
- Environmental TS and implementing requirements including the Offsite Dose Calculation Manual
- Radiological Environmental Monitoring Program
- NRC Safety Evaluations (including Technical Evaluation Reports) in support of the Operating License and submittals required pursuant to 10 CFR 50.54(f)
- Quality Assurance Program Plan
- Physical Security Plan
- Emergency Plan

Summary

- The 50.59 Review Process is implemented by licenses to determine that proposed decommissioning activities are compliant with the licensing basis. For effluents, this includes the Environmental Tech Specs and Offsite Dose Calculation Manual.
- The licensee determines that the decommissioning activity can be performed safely and is compliant with NRC requirements. These include the method for releasing effluents from the plant provided they are compliant with NRC and other requirements.
- The NRC Inspectors and Project Manager hold periodic meetings with the licensee to review planned activities at the site. The information from the licensee is used to assess the safety risks and determine inspection plans for those activities and potential licensing needs.
- Inspection Procedure 37801, [“Safety Reviews, Design Changes, and Modifications at Permanently Shutdown Reactors \(PSRs\)”](#) is conducted at [least annually.](#)



Tritium Facts in Perspective



- Tritium is a radioactive isotope of Hydrogen (one proton, two neutrons). The radioactive hydrogen rapidly incorporates into water molecules and cannot be removed once it becomes tritiated water or more commonly known as “Tritium.” Tritium emits a Beta particles of very low energy (cannot penetrate the skin surface) and has a radioactive half-life of 12.3 years.
- Tritium is produced naturally in the upper atmosphere when cosmic rays interact with Nitrogen atoms (along with C-14 and Be-7). Tritium may be found at very low concentrations in lakes and streams (about 4 pCi/L).
- **Tritium is used very large quantities in medicine, industry, and research at universities and other research institutions. In these applications, the tritium is released to the atmosphere or by the Sanitary Sewer System. The Defense Complex uses tremendous amount of Tritium.**
- **Inorganic Tritium** is produced by reactors and (effluent) “releases are at fractions of the natural background production rate” [EPA fact sheet].
- **Inorganic Tritium does not bioaccumulate, because water turns over rapidly in the biological systems. Tritium in the human body is rapidly cleared from tissues [EPA fact sheet] having a 10-day biological half-life. For more information, see the Health Physics Society Tritium Fact Sheet and NRC Public Website www.nrc.gov/reading-rm/basic-ref/glossary/tritium.html.**

Tritium Air Releases Based on Plant Conditions

(Source: NUREG/CR-2907 Radioactive Effluents from Nuclear Power Plants)

Year	Plant Condition	Tritium Released	Yearly Dose (tritium and particulates)	Percent of 10CFR50 Dose Objective
2022	Pilgrim Decom - no fuel	2.38 Ci	0.000070 mrem	0.00047%
2021	Pilgrim Decom - moving fuel	8.0 Ci	0.00024 mrem	0.0016%
2020	Pilgrim Decom - fuel in pool	7.7 Ci	0.00022 mrem	0.0014%
2018	Pilgrim Operating Boiling Water Reactor*	34.0 Ci	0.014 mrem	0.43%

*Average Operating BWR is 41.6 Ci per year

Questions?

