



Construction Activities with the NRC

Greg Oberson, Project Manager

Mike Spencer, Senior Attorney

July 6, 2021





Greg Oberson
Project Manager



Mike Spencer
Senior Attorney

Definition of Construction and LWA Process

Michael Spencer, Senior Attorney, NRC
Greg Oberson, Project Manager, NRC

Overview

- NRC approval needed to construct a reactor
- Definition of construction in 10 CFR 50.10
- Limited work authorization (LWA) process
- Inspection of LWA activities

Construction Requires NRC Approval

- 10 CFR 50.10(c): No person may begin constructing a production or utilization facility on the site where it is to be operated until issuance of:
 - a construction permit (CP),
 - a combined license (COL),
 - an early site permit (ESP) with an LWA, or
 - an LWA

Definition of Construction

- 10 CFR 50.10(a)(1) defines what construction is
- 10 CFR 50.10(a)(2) defines what construction is not
- 10 CFR 51.4 replicates the 50.10 definition.
- Regulatory Guide 1.206, Rev. 1 provides guidance on the definition of construction and the LWA process

What is Construction?

- “Construction” includes the “the driving of piles, subsurface preparation, placement of backfill, concrete, or permanent retaining walls within an excavation, installation of foundations, or in-place assembly, erection, fabrication, or testing, which are for” various structures, systems, or components (SSCs) listed in 10 CFR 50.10(a)(1)
- The general idea is that construction includes onsite, in-place activities with a reasonable nexus to NRC-regulated safety/security issues

What is NOT Construction?

- Examples:
 - Excavation and site prep/exploration
 - Building fences, roads, parking lots, transmission lines, service facilities, support buildings for construction
 - Procuring/fabricating parts at other than the final, installed location
 - Manufacturing a reactor

What is NOT Construction? (cont.)

- 10 CFR 50.10(a)(2)(x): “...the erection of buildings which will be used for activities other than operation of a facility and which may also be used to house a facility (e.g., the construction of a college laboratory building with space for installation of a training reactor)” BUT ONLY IF:
 - The facility is not a power reactor or a testing facility, AND
 - The facility must be licensed under AEA 104a. or 104c.

Implications for Technical Reviews

- Applicant's determination that activities are excluded from definition of construction because they do not have safety nexus
- Applicant's determination that features that are excluded from definition of construction because they are considered to be "temporary"
- See guidance and examples in RG 1.206
- Staff encourages early engagement

Preconstruction

- “Preconstruction” activities are those that 10 CFR 50.10 and 51.4 specify as not being construction
- Preconstruction activities might still have a nexus to safety (e.g., fabrication of components)
- The applicant’s environmental report must describe preconstruction environmental impacts (10 CFR 51.45)
- Preconstruction activities might require a permit from another Federal/state/local agency

“Construction” Has Changed Over Time

- As discussed in the 2007 LWA Rule (72 FR 57416):
 - The NRC first defined “construction” in 1960 (25 FR 8712)—conceptually similar to current definition
 - In 1972 (37 FR 5748), the NRC required a construction permit before land clearing, excavation, etc. because of the National Environmental Policy Act of 1969 (NEPA)
 - The 2007 LWA rule revised the definition of “construction” to focus once again on onsite, in-place activities with a reasonable nexus to NRC-regulated safety/security issues
- Past NRC decisions must be understood in context

LWA Background

- LWA process created in 1974 rule (39 FR 14506)
 - LWA-1: for non-safety-related activities
 - LWA-2: for safety-related activities
- Process revised in 2007 LWA rule
 - LWA issued concurrently with the Vogtle ESP and Vogtle COL
 - Currently, an LWA is similar in scope to the former LWA-2

LWA Scope: 10 CFR 50.10(d)

- An LWA is for the “driving of piles, subsurface preparation, placement of backfill, concrete, or permanent retaining walls within an excavation, installation of the foundation, including placement of concrete, any of which are for an SSC of the facility for which a [COL] or [CP] is otherwise required.”

Scope of LWA Activities Considered by Prior Applicants

- Reactor building foundation
 - Placement of rebar
 - Pouring concrete
 - Emplacement of sumps and drain lines
- Crane foundation retaining walls – abandoned in place
- Auxiliary building foundations
- Water intake structures with nexus to safety
- Review timeline is dependent upon the scope of requested activities as well as degree of pre-applicant engagement with NRC

LWA Application: Who, How?

- 10 CFR 50.10(d)(1): A person may request an LWA if the NRC may issue a license/permit to the person “under Sections 103, 104.b, or 185 of the Act for a facility of the type specified in §§ 50.21(b)(2), (b)(3), or 50.22 of this chapter, or a testing facility.”
- 10 CFR 50.10(d)(2): LWA application may be submitted:
 - As part of a complete CP or COL application
 - As a partial application for a CP or COL under 10 CFR 2.101(a)(9)
 - As a complete LWA application by an ESP applicant or holder

Application Content: 50.10(d)(3)

The LWA application must include:

- A safety analysis report
 - describing the proposed activities
 - providing required design and construction information for portions of the facility within the LWA's scope
 - demonstrating that LWA activities will comply with the applicable regulatory requirements.
- An environmental report (ER) in accordance with 10 CFR 51.49
- A redress plan

Issuance Requirements: 50.10(e)

- To issue an LWA:
 - NRC issues a final environmental impact statement (EIS)
 - Staff makes positive findings on safety, compliance, and technical qualifications for the LWA activities
 - Presiding officer makes environmental findings and finds there are no unresolved safety issues relating to LWA activities that constitute good cause for withholding the LWA
 - NOTE: The LWA process involves a mandatory hearing and an opportunity for a contested hearing—10 CFR 2.104, 51.105, 51.107

Mandatory vs Contested Hearings

- Mandatory (i.e., uncontested) hearing:
 - Held after NRC staff completes its environmental & safety reviews
 - The parties are the applicant and the NRC staff
 - Informal procedures
- Contested hearing:
 - Opportunity to request a hearing occurs after docketing
 - Hearing request must show “standing” and include a specific, material, well-supported “contention”
 - Evidentiary hearing occurs after NRC staff completes its review of the portions of the application associated with contested issues
 - Procedures are more formal than in a mandatory hearing

LWA Redress: 50.10(g)

- Redress plan must be implemented upon the following triggering events:
 - The LWA holder terminates construction
 - The NRC revokes the LWA
 - The underlying COL or CP application is withdrawn or denied
- Implementation must begin “in a reasonable time” after the triggering event and be completed no later than 18 months after the triggering event

Early LWA Request: 10 CFR 2.101(a)(9)

- Phased application process available to COL applicant or to CP applicant for a utilization facility “subject to § 51.20(b)” and of the type described in § 50.21(b)(2)-(3) or 50.22:
 - Part 1 of the application must include information required by 10 CFR 50.10(d)(2)-(d)(3), 50.33(a)-(f)
 - Part 2 includes rest of application and may be submitted up to 18 months later
- Procedures in 10 CFR 2.641-2.649 apply to phased application

Construction Inspection

- IMC-2503: Inspections to evaluate the licensee's ITAAC-related construction activities.
 - May begin when a licensee is issued a COL or an LWA that contains ITAAC
 - IP 65001.XX (foundations, piping, valves, electrical systems, etc.)
- IMC-2504: Inspections for evaluating the construction programs not directly related to ITAAC that support construction of a plant licensed in accordance with 10 CFR Part 52
 - Becomes effective upon issuance of a COL or LWA
 - QA (IP 35007), reporting defects and non-compliance (IP 36100.01), fitness for duty (IP 81504), and others

Backup Slides

10 CFR 50.10(a)(1)

“Activities constituting construction are the driving of piles, subsurface preparation, placement of backfill, concrete, or permanent retaining walls within an excavation, installation of foundations, or in-place assembly, erection, fabrication, or testing, which are for:

- (i) Safety-related structures, systems, or components (SSCs) of a facility, as defined in 10 CFR 50.2;
- (ii) SSCs relied upon to mitigate accidents or transients or used in plant emergency operating procedures;
- (iii) SSCs whose failure could prevent safety-related SSCs from fulfilling their safety-related function;
- (iv) SSCs whose failure could cause a reactor scram or actuation of a safety-related system;

10 CFR 50.10(a)(1) (cont.)

- “(v) SSCs necessary to comply with 10 CFR part 73;
- (vi) SSCs necessary to comply with 10 CFR 50.48 and criterion 3 of 10 CFR part 50, appendix A; and
- (vii) Onsite emergency facilities, that is, technical support and operations support centers, necessary to comply with 10 CFR 50.47 and 10 CFR part 50, appendix E.”

10 CFR 50.10(a)(2)

“Construction does not include:

- (i) Changes for temporary use of the land for public recreational purposes;
- (ii) Site exploration, including necessary borings to determine foundation conditions or other preconstruction monitoring to establish background information related to the suitability of the site, the environmental impacts of construction or operation, or the protection of environmental values;
- (iii) Preparation of a site for construction of a facility, including clearing of the site, grading, installation of drainage, erosion and other environmental mitigation measures, and construction of temporary roads and borrow areas;
- (iv) Erection of fences and other access control measures;
- (v) Excavation;
- (vi) Erection of support buildings (such as, construction equipment storage sheds, warehouse and shop facilities, utilities, concrete mixing plants, docking and unloading facilities, and office buildings) for use in connection with the construction of the facility;”

10 CFR 50.10(a)(2) (cont.)

- “(vii) Building of service facilities, such as paved roads, parking lots, railroad spurs, exterior utility and lighting systems, potable water systems, sanitary sewerage treatment facilities, and transmission lines;
- (viii) Procurement or fabrication of components or portions of the proposed facility occurring at other than the final, in-place location at the facility;
- (ix) Manufacture of a nuclear power reactor under a manufacturing license under subpart F of part 52 of this chapter to be installed at the proposed site and to be part of the proposed facility; or
- (x) With respect to production or utilization facilities, other than testing facilities and nuclear power plants, required to be licensed under Section 104.a or Section 104.c of the Act, the erection of buildings which will be used for activities other than operation of a facility and which may also be used to house a facility (e.g., the construction of a college laboratory building with space for installation of a training reactor).”