C.2.18 Limited Work Authorization

OVERVIEW

The limited work authorization (LWA) process allows COL applicants and applicants for and holders of ESPs to request approval to perform certain limited construction activities before the issuance of a COL. The regulations in 10 CFR 50.10, "License Required; Limited Work Authorization," govern the issuance of LWAs and specify the information to be included in an LWA application. The regulations clarify that activities defined as "construction" are those which fall within the NRC's regulatory authority, and require an LWA, because they have a reasonable nexus to radiological health and safety or common defense and security. Those activities that are not considered "construction" are referred to as "preconstruction" and may occur in the absence of an NRC licensing action.

A COL applicant may submit an application for an LWA as part of an application for a COL. An ESP applicant may submit an application for an LWA as part of an application for an ESP; and a holder of an ESP may submit a request for an LWA as an amendment to the ESP.

As required by 10 CFR 50.10, the LWA application must include a safety analysis report that describes the activities requested to be performed along with the information otherwise required for a COL application by 10 CFR 52.79 or an ESP application by 10 CFR 52.17. The LWA application must also include an environmental report in accordance with the applicable section(s) of 10 CFR 51.49. Further, the LWA applicant must include a redress plan which describes the scope of the actions to be taken following suspension of construction activities, and addresses the mitigation of impacts incurred due to the performance of construction activities.

The NRC recently issued a LWA as the Vogtle Electric Generating Plant Early Site Permit and Limited Work Authorization (ESP-004) in August 2009. The NRC staff's safety and environmental reviews supporting issuance of the ESP and LWA are publicly available as NUREG-1923, "Safety Evaluation Report for an Early Site Permit at the Vogtle Electric Generating Plant Site," and NUREG-1872, "Final Environmental Impact Statement for an Early Site Permit at the Vogtle Electric Generating Plant."

The guidance herein updates that contained in Final Interim Staff Guidance COL/ESP-ISG-04 on the Definition of Construction and on LWAs (ML090060897), and upon issuance of revised RG 1.206, COL/ESP-ISG-04 is retired. However, ISG-04 includes an explanatory discussion of "construction" and "preconstruction" activities that remains valid and may be useful to prospective applicants. Accordingly, the explanatory discussion portion of ISG-04 is retained as an attachment to this section, C.2.18, within this guidance.

GUIDANCE

<u>Limited Work Authorizations and Combined License</u>

The issuance of an LWA has no bearing on the issuance of the underlying COL. As set forth in 10 CFR 50.10(f), any activities that the applicant undertakes under an LWA are entirely at the risk of the applicant.

Applications

A COL applicant may submit a request for an LWA either as part of a complete application under 10 CFR 2.101, "Filing of Application," paragraphs (a)(1) through (4); or as a partial application under 10 CFR 2.101(a)(9) (i.e., "phased COL application"). An ESP applicant may include a request for an LWA as part of a complete ESP application in accordance with 10 CFR 2.101(a)(1) through (a)(4). A holder of an ESP may submit a request for an LWA as an application for an amendment to the ESP in accordance with 10 CFR 52.39(e).

As required by 10 CFR 50.10, if the LWA request is submitted as part of a complete COL application or as part of an ESP or ESP amendment application, the application must include the following:

(1) site safety analysis report (SSAR) required by 10 CFR 52.17 or final safety analysis report (FSAR) required by 10 CFR 52.79, as applicable;
(2) description of the LWA activities that the applicant seeks to perform;
(3) proposed inspections, tests, and analyses (for the LWA activities that the applicant seeks to perform) that the licensee will perform, and the acceptance criteria that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, the portion of the facility covered by the LWA has been constructed and will be operated in conformity with the LWA, the provisions of the Atomic Energy Act, and the Commission's rules and regulations;
(4) environmental report that meets the requirements of 10 CFR 51.49, "Environmental Report—Limited Work Authorization";
(5) plan for redress of activities performed under the LWA, should one of the following situations arise:
    (a) limited work activities are terminated by the holder of the LWA
    (b) the LWA is revoked by the NRC
    (c) the Commission denies the associated COL application; and
(6) technical qualifications of the applicant to engage in the proposed activities.

Safety Analysis Report

The SSAR or FSAR must demonstrate that the LWA activities will be conducted in accordance with applicable Commission requirements.

(1) If the LWA application is submitted as part of a complete COL application, the application must clearly identify which portions of the COL FSAR are applicable to the LWA request.
(2) If the LWA application is submitted as part of a phased COL application, or as part of an ESP or ESP amendment application, the SSAR or FSAR must include the following:
    (a) final design for any foundation or other work being requested under the LWA;
    (b) final design for any structures that would be supported by the foundation or other work being requested under the LWA;
    (c) safety analysis for any foundation or other work being requested under the LWA; and
    (d) safety analysis for structures that would be supported by the foundation or other work being requested under the LWA (e.g., stability (static and dynamic) analyses).

Environmental Report

In accordance with 10 CFR 51.49, the environmental report for an LWA shall

include the following:
(1) description of the activities to be conducted under the LWA;
(2) statement of the need for the activities;
(3) description of the environmental impacts that may reasonably be expected to result from the activities;
(4) description of the mitigation measures the applicant proposes to implement;
(5) discussion of the reasons for rejecting additional mitigation measures that were considered; and
(6) description of the process used to identify new and significant information for an ESP holder or for a site where an EIS has been prepared, but the facility construction was not completed.

Guidance regarding the organization and content of the environmental report is available in RG 4.2, "Preparation of Environmental Reports for Nuclear Power Stations," NUREG-1555, "Standard Review Plans for Environmental Reviews for Nuclear Power Plants," and COL/ESP-ISG-026, "Environmental Issues Associated with New Reactors Interim Staff Guidance."

Site Redress Plan

The primary purpose of the redress plan is to address activities that were authorized under the LWA, such as the placement of piles and installation of foundations. Redress of site impacts resulting from preconstruction activities will not be required under the redress plan. In addition, while redress of LWA impacts may have the practical effect of mitigating some environmental impacts, the redress plan is not a substitute for a thorough evaluation of environmental impacts, or the development of mitigation measures that may be necessary to provide relief from environmental impacts associated with the proposed LWA activities.

In general, the site redress plan should describe the scope of actions to be taken following the suspension of construction. COL applicants and applicants for and holders of ESPs should consider the requirements of10 CFR 52.25, which allow the applicant to redress the site for alternative uses that were not considered at the time it prepared the original site redress plan.

As required by 10 CFR 50.10(g), if construction is terminated by the holder, the underlying application is withdrawn by the applicant or denied by the NRC, or the limited work authorization is revoked by the NRC, then, the holder must begin implementation of the redress plan in a reasonable time. The holder must complete the redress of the site no later than 18 months after termination of construction, revocation of the limited work authorization, or upon effectiveness of the Commission's final decision denying the associated construction permit application or the underlying combined license application, as applicable.

ATTACHMENT
(Excerpt from Final Interim Staff Guidance COL/ESP-ISG-04 on the Definition of Construction and on Limited Work Authorizations (ML090060897))

Discussion:

As stated in 10 CFR 50.10(c), no person may begin the construction of a production or utilization facility on a site on which the facility is to be operated until that person has been issued either a COL, an ESP authorizing the activities under 10 CFR 50.10(d), or an LWA. As defined in 10 CFR 50.10(a), "construction" means the activities in paragraph (1) below and does not mean the activities in paragraph (2) below.

(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;
- (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.

(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;
- (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;

Manufacture of a nuclear power reactor under a manufacturing license under Subpart F of Part 52 to be installed at the proposed site and to be part of the proposed facility.

In accordance with 10 CFR 50.10(a)(2)(ii), the NRC does not consider site investigations that are required by 10 CFR 100.23(c) to be construction. Also, the above definition of construction excludes excavation. Excavation includes the removal of any soil, rock, gravel, or other material below the final ground elevation to the final parent material. Thus, all these excavation activities may be conducted without a COL, LWA, or ESP authorizing LWA activities. However, placing permanent, nonstructural dewatering materials, mudmats, or engineered backfill in advance of the placing the foundation and associated

permanent retaining walls for SSCs within the scope of the definition of construction is not an excavation activity and is considered to fall within the scope of construction. Any person or entity that excavates should be aware that the NRC expects any subsequent application requesting construction authorization to accurately document and address the excavation process and the conditions exposed by excavation, to ensure that the NRC will have an adequate basis for evaluating the relevant portions of the application. The NRC staff may also discuss with applicants and prospective applicants the possibility of voluntarily allowing it access to the site during excavation activities to assist in its evaluation of the relevant portions of the application.

Construction includes installation of the foundation, including soil compaction; the installation of permanent drainage systems and geofabric; the placement of backfill, concrete (e.g., mudmats), or other materials that will not be removed before placement of the foundation of a structure; the placement and compaction of a subbase; the installation of reinforcing bars to be incorporated into the foundation of the structure; the erection of concrete forms for the foundations that will remain in place permanently (even if nonstructural); and the placement of concrete or other material constituting the foundation of any SSC within the scope of the definition of construction. The term “permanent” in this context includes anything that will exist in its final, in-place plant location after fuel load.

Construction also includes the “onsite, in-place” fabrication, erection, integration, or testing activities for any in-scope SSC. The terms “onsite, in place, fabrication, erection, integration, or testing” are intended to describe the historical process of constructing a nuclear power plant in its final, onsite plant location, where components or modules are integrated into the final, in-plant location. The definition is intended to prevent persons from having to obtain a COL, LWA, or ESP authorizing LWA activities to fabricate, assemble, and test components and modules in a shop building, warehouse, or laydown area, even if located onsite. However, the installation or integration of that SSC into its final plant location would require a COL, LWA, or ESP authorizing LWA activities. Finally, construction does not include manufacturing a nuclear power reactor under Subpart F, “Manufacturing Licenses,” of 10 CFR Part 52, even if the manufacturing is accomplished onsite, so long as the manufacturing is not done in place, at the final (permanent) plant location on the site.

Construction includes driving piles for SSCs that are described in the definition. Hence, an applicant must obtain permission from the NRC in the form of a COL, LWA, or ESP authorizing LWA activities to drive piles for such SSCs. However, driving piles that do not ensure the structural stability or integrity of an SSC within the scope of the definition of “construction” (e.g., piles driven to support the erection of a bridge for a temporary or permanent access road) would not be considered “construction” under this section; therefore, those piles may be driven without a COL, LWA, or ESP authorizing LWA activities.

In the LWA rule, the scope of SSCs falling within the definition of construction was derived from the scope of SSCs that are included in the program for monitoring the effectiveness of maintenance at nuclear power plants, as defined in 10 CFR 50.65(b), and supplemented with additional criteria (10 CFR 50.10(a)(1)(v–vii)). The supplementary information published with the 2007 final LWA rule contained a discussion of the definition of construction and guidance on the delineation of preconstruction and construction activities. As discussed in the supplementary information, the NRC selected the criteria used in the definition of construction to take advantage of the work done during the development and implementation of the maintenance rule (10 CFR 50.65, “Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants”). Like the LWA rule, the maintenance rule defines a scope of SSCs that have some nexus to radiological health and safety (safety significance).

The NRC selected the maintenance rule criteria for use in the definition of construction, in part because the criteria are well understood and there is good agreement on their implementation. In addition, the NRC has prepared guidance for implementing the maintenance rule in RG 1.160, “Monitoring the Effectiveness of Maintenance at Nuclear Power Plants,” issued March 1997, and that guidance has been tested. This RG endorses industry guidance provided in Revision 2 of NUMARC 93-01, “Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants,” issued April 1996. For these reasons, the NRC has decided that the maintenance rule guidance can also be applied to determinations of SSCs that are within the scope of the definition of construction. Also, the NRC

recognizes that determinations of which SSCs fall within the definition of construction will depend on the design of the facility.

In determining whether SSCs fall within the criteria in 10 CFR 50.10(a)(1)(v–vii), the maintenance rule guidance should not be used. For these criteria, SSCs are considered within the definition of "construction" if they are designed to comply with 10 CFR Part 73, "Physical Protection of Plants and Materials"; 10 CFR 50.48, "Fire Protection"; Criterion 3, "Fire Protection," of Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities"; 10 CFR 50.47, "Emergency Plans"; or Appendix E, "Emergency Planning and Preparedness of Production and Utilization Facilities," to 10 CFR Part 50.

In addition to the criteria in 10 CFR 50.10(a)(1)(i–vii) that are used to determine the scope of SSCs that fall within the definition of construction, the final LWA rule also specifies criteria in 10 CFR 50.10(a)(1) for construction activities that take place within the necessary excavation for SSCs that fall within the definition of construction. A necessary excavation is the portion of an excavation that provides sufficient construction access to the structures that are within the definition of construction. Applicants should ensure that these preconstruction activities are separate from, and do not result in adverse interactions with, construction-related SSCs, including influence on the stability (static and dynamic) analyses. The definition of construction includes any change made to the parent material in which the excavation occurs (e.g., soil compaction, rock grouting); the driving of piles; the installation of foundations; the installation of permanent drainage systems and geofabric; the placement of backfill, concrete (e.g., mudmats) or other materials that will not be removed before placement of the foundation of a structure; the placement and compaction of a subbase; and the installation of reinforcing bars to be incorporated into the foundation of any SSC that fall within the definition of construction.

The definition of construction includes use of the "temporary" and "permanent" criteria that are discussed in the statement of considerations for the final LWA rule (72 FR 57429; October 9, 2007). The term "permanent," in this context, includes anything that will exist in its final, in-place plant location after fuel load. By contrast, the term "temporary" means anything that will be removed from the excavation before fuel load. Therefore, the installation of permanent retaining walls within an excavation and the erection of concrete forms for the foundations that will remain in place permanently (even if nonstructural) fall within the definition of construction. However, if erosion control measures are conducted outside the excavated hole and do not cover up the exposed soil conditions, those activities would be considered preconstruction. Also, the placement of temporary SSCs in the excavation, such as retaining walls, drainage systems, and erosion control barriers, all of which will be removed before fuel load, would be considered preconstruction.

Discussion of Examples:

In addition to the background discussion provided above, the following examples clarify the delineation of preconstruction and construction activities. It is important to recognize that the NRC may have regulatory authority over some preconstruction activities, such as the requirement to verify such activities by ITAAC (e.g., procurement of components). It should also be noted that, while the preconstruction activities do not require prior NRC approval, various local, State, or other Federal permits may be required.

Circulating Water System

As a general matter, the NRC staff considers the circulating water system (CWS), on a system level, to be within the scope of construction because 10 CFR 50.10(a)(1)(iv) includes equipment that can cause a reactor trip. Although the system and active equipment such as pumps and valves can cause a plant trip, an applicant could exclude certain portions of the CWS from construction as discussed below.

Buried Circulating Water System Piping up to the Turbine Building

Depending on the plant design, it is possible for an applicant to demonstrate that plausible failures (leakage) associated with the CWS piping (intake and discharge) would not result in a reactor trip. It is reasonable to exclude the piping from the scope of construction for certain designs, given that the reactor trip or safety system actuation criterion is the only reason to consider it within scope. This finding remains consistent with the NRC's decision to use the maintenance rule and related guidance to define the scope of SSCs within the definition of construction. RG 1.160 provides the following guidance for systems to include under this criterion:

(1) SSCs whose failure has caused a reactor scram or actuation of a safety-related system at their site

(2) SSCs whose failure has caused a reactor scram or actuation of a safety-related system at a site with a similar configuration

(3) SSCs identified in the licensee's analysis (e.g., final safety analysis report (FSAR), individual plant evaluation) whose failure would cause a reactor scram or the actuation of a safety-related system

A review of the licensee event reports for currently operating reactors did not identify occurrences of piping failures in the CWS up to the turbine building that resulted in plant scrams or safety system actuations. The turbine building demarcation may be important, since the piping within the building could, depending on plant design, cause internal plant flooding or safety system actuations, or prevent other SSCs from fulfilling their safety-related functions. Applicants need to perform design-specific reviews to ensure that piping failures in the CWS up to the turbine building are not identified in other analyses (e.g., FSAR, probabilistic risk assessment) as being a plausible initiating event for a reactor scram or safety system actuation. Therefore, CWS piping could be considered preconstruction in certain circumstances.

Circulating Water Intake Structure

Depending on the plant design, it is possible for an applicant to demonstrate; similar to CWS piping up to the turbine building, that the plant intake structure does not have a safety function (e.g., some plant intakes only provide makeup to the CWS). This conclusion would not apply to related SSCs, such as pumps, travelling screens, or other active components associated with the CWS, because there are many examples of plant transients and safety system actuations that have loss of circulating water flow as an initiating event. To expand the preconstruction activities beyond the intake structure, applicants will need to perform design-specific reviews to ensure that a loss of CWS flow caused by pump failures or screen blockage is not a plausible initiating event for a reactor scram or safety system actuation. Therefore, the facility design will determine whether intake structures and related components are within the scope of construction.

Cooling Towers

Depending on the plant design, it is possible for an applicant to demonstrate, similar to that for intake structures, that cooling tower structures do not have a safety function. This conclusion may not apply to related SSCs, such as pumps associated with the CWS, because there are examples of plant transients and safety system actuations that have loss of circulating water flow as an initiating event. To expand the preconstruction activities beyond the cooling tower structure, applicants will need to perform design-specific reviews to ensure that a loss of circulating water system flow caused by loss of pumps or other components is not a plausible initiating event for a reactor scram or safety system actuation. Therefore, the facility design will determine whether cooling towers and related components are within the scope of construction.

Turbine Building Structure or Foundation

The turbine/generator system is within the scope of construction because failure of the turbine/generator could cause a reactor scram. However, depending on the plant design, it is possible for an applicant to demonstrate that a plausible failure of the turbine building structure or foundation (settling) would not result in a reactor scram or safety system actuation. Depending on the facility design, the turbine building structure or foundation may not fall within the scope of construction, if the reactor scram or safety system

actuation criterion is the only reason to consider it.

Temporary or Permanent Features

This section addresses the distinction between temporary and permanent construction features (e.g., retaining walls and dewatering systems). As discussed in the supplementary information for the final LWA rule, excavation and other site preparation activities, whether permanent or temporary, are outside the scope of construction and are considered preconstruction. For example, piles driven to support the erection of a bridge for a temporary or permanent access road would not be considered as construction and may be performed without an LWA or combined license.

The installation of a temporary feature within the excavation or area associated with construction that will be removed during construction is considered to be a preconstruction activity. Such features include some retaining walls, some types of dewatering systems, ramps, and other structures that have no physical presence following construction.

Regarding installation of temporary features within the necessary excavation during preconstruction, if the applicant proposes to abandon the subject feature in place, the NRC must approve that action (i.e., abandonment) as part of an LWA or COL application. Examples may include certain retaining walls and some types of dewatering systems. The applicant must show that the abandoned feature would not adversely affect the SSCs, introduce undesirable flow paths, or otherwise conflict with nuclear plant safety or regulatory compliance, and the NRC would have to approve.

Construction Crane Foundations and Support Pads

Construction includes placing permanent features (e.g., retaining walls and foundations) within the necessary excavations for SSCs within the definition of construction. Site preparation activities that are performed outside the necessary excavations are considered preconstruction. Therefore, installing foundations and support pads outside the necessary excavations for SSCs that are within the definition of construction would be considered preconstruction. As stated previously, applicants should ensure that these preconstruction activities are separate from, and do not result in adverse interactions with, construction-related SSCs, including influence on the stability (static and dynamic) analyses.