

Changes to the U.S. Nuclear Regulatory Commission Regulation of Construction for Nuclear Materials Licensees – Assessment of Environmental Impacts and Implications for Applicants

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ABSTRACT

In 2007, the U.S. Nuclear Regulatory Commission (NRC) changed the definition of the term “construction” in its regulations governing nuclear reactors (Title 10 of the Code of Federal Regulations [CFR] Parts 50 and 52) and environmental reviews (10 CFR Part 51). The changes redefined the term “construction” to include only activities that are related to radiological health and safety or protection of the common defense and security. As a consequence, a variety of site preparation activities, such as clearing of the site and building of service facilities, were explicitly excluded from the definition of construction in these regulations, and therefore neither an NRC construction permit nor a combined license is required to undertake these activities. The NRC currently is considering a proposed rulemaking that would make conforming changes to the definition of “construction” and “commencement of construction” in other NRC regulations, including those pertaining to the licensing of source and special nuclear material. In the interim, applicants for NRC licenses for source material and special nuclear material have sought exemptions to allow commencement of certain site preparation activities without an NRC license.¹ The change in 10 CFR Part 51 has required the NRC staff to re-evaluate the NRC processes for completing environmental reviews, as well as interagency coordination that historically had been addressed as part of the NRC’s environmental reviews supporting licensing decisions. Although many site preparation activities are recognized to be outside of the NRC’s regulatory purview, once a license application is submitted, the NRC staff would, at a minimum, evaluate whether the proposed licensing action is expected to have cumulative effects in light of the impacts of site preparation activities.

This paper outlines changes in the NRC approach to addressing site preparation activities in environmental reviews of projects for which site preparation activities have been authorized by exemption prior to an NRC licensing decision. This paper also describes challenges faced by the NRC materials environmental review staff in reviewing projects for which applicants have requested exemptions to begin certain site preparation activities prior to a licensing decision. One notable challenge is that applicants must be aware of environmental obligations relevant to site preparation that they must meet although, if the definition of construction is changed, it is possible that an applicant may not file an application with the NRC until after site preparation

¹ With respect to byproduct, source, and special nuclear material licensing actions, the NRC’s regulations in 10 CFR 30.33(a)(5), 40.32(e), and 70.23(a)(7), respectively, currently provide that construction activities may not commence prior to the NRC conducting a Part 51 environmental review and concluding that a license, including any appropriate conditions to protect environmental matters, should be issued. For the purpose of this paper, the end result of this process shall be referred to as an NRC license.

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has begun. In addition, the paper describes the potential need for information from applicants regarding planned site preparation activities and the environmental impacts of those activities.

BACKGROUND

On October 9, 2007 (72 FR 57416), the NRC published changes to its regulations governing nuclear reactors (10 CFR Parts 50 and 52). The changes redefined the term “construction” to include only activities that are within the purview of the NRC’s legislatively conferred jurisdiction within the Atomic Energy Act of 1954, as amended, because they have a specific nexus to radiological health and safety or protection of the common defense and security. As part of that action and a subsequent modification on April 28, 2008 (73 FR 22786), the NRC made conforming changes to the NRC regulations implementing the National Environmental Policy Act of 1969, as amended (NEPA) (10 CFR Part 51). As a consequence of these changes, a variety of site preparation activities, including clearing land, site grading, building access roads, installing utilities, and erecting administrative buildings, among other similar activities, were explicitly excluded from the definition of construction in the NRC regulations governing power reactors and environmental reviews. Specifically, § 51.4 states, in relevant part, that “construction” does not include the following activities:

- 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;
- 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;
- Erection of fences and other access control measures;
- Excavation;
- 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; or
- 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.

These activities are considered outside of the NRC’s regulatory purview because they are not related to radiological health and safety or protection of the common defense and security. Thus, if the definition of construction is changed in other NRC regulations to conform to this definition in 10 CFR Part 51, as described below, applicants for source material or special nuclear material licenses will not require prior NRC approval before conducting these activities.

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At this time, many of the activities explicitly excluded from the definition of construction in 10 CFR Part 51 are still included in the definition of construction in the NRC regulations governing source material and uranium recovery facilities (10 CFR Part 40) or special nuclear material and uranium enrichment facilities (10 CFR Part 70). Furthermore, Parts 40 and 70 explicitly prohibit applicants from performing these activities without an NRC license. Specifically, §§ 40.32(e) and 70.23(a)(7) indicate that, with some limited exceptions, “commencement of construction” prior to license issuance is grounds for license denial. The NRC regulations in Parts 40 and 70 governing source material and special nuclear material, respectively, contain similar definitions of the commencement of construction. Section 40.32(e) states, in relevant part:

[T]he term “commencement of construction” means any clearing of land, excavation, or other substantial action that would adversely affect the environment of a site. The term does not mean site exploration, roads necessary for site exploration, borings to determine foundation conditions, or other site preparation monitoring or testing to establish background information related to the suitability of the site or the protection of environmental values.

On January 8, 2009, the Commission directed the NRC staff to budget resources to develop a proposed rule that will change this definition to conform to the definition of construction in 10 CFR Part 51 (NRC, 2009a). Until this process reaches a conclusion, the NRC staff will review requests for exemptions to authorize site preparation without an NRC license. To date, a few applicants for NRC licenses for source material and special nuclear material have sought exemptions to allow commencement of certain site preparation activities without an NRC license (GLE 2008; AREVA 2009; Ur-Energy, 2009). On September 23, 2009, the NRC staff published a Regulatory Issue Summary (RIS) to provide uranium recovery licensees and applicants information on the types of site preparation activities the NRC staff would expect to approve by exemption and to indicate what information should be included in an exemption request (NRC, 2009b).

CHANGES TO THE ENVIRONMENTAL REVIEW PROCESS

The change to the definition of construction in 10 CFR Part 51 and associated exemptions allowing certain site preparation activities without an NRC license have necessitated changes in the NRC’s approach to the environmental review process. The NRC recognizes that many site preparation activities, while outside of the NRC’s regulatory purview, historically have been within the scope of the NRC’s environmental reviews because they were viewed as connected to the NRC licensing decision or would have potential indirect or cumulative effects relevant to the licensing decision. This paper addresses potential changes to the NRC’s approach for completing environmental reviews and implications for applicants. Specifically, the paper addresses three issues: 1) changes in interagency coordination; 2) changes in how the NRC and applicants address environmental statutes that historically have been addressed as part of the

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NRC NEPA process; and 3) changes in the information the NRC may request from applicants to support preparation of NEPA documents.

Interagency Coordination

Typically, multiple regulatory authorities, including local, State, and Federal agencies, are involved in permitting aspects of a uranium recovery or fuel cycle facility. As part of its NEPA process supporting a licensing decision, the NRC reviews information regarding the relevant regulatory authorities and permitting requirements for the proposed action. This process facilitates coordination among the relevant regulatory authorities, which, ultimately, improves the efficiency of the licensing process.

Coordination among Federal agencies is particularly necessary to avoid duplication of effort in the preparation of NEPA review documents. Historically, other Federal agencies that have regulatory authority over aspects of an NRC licensed activity have participated informally in the NRC's environmental reviews or participated formally as cooperating agencies to meet their own NEPA requirements. However, if an exemption is granted to allow certain site preparation activities prior to a licensing decision, or if the definition of construction is changed in 10 CFR Part 40 to conform to the definition in 10 CFR Part 51, the NRC's NEPA documents will not necessarily be completed before site preparation activities begin. In this case, other agencies that have jurisdiction over site preparation activities would be obligated to evaluate these site preparation activities as they would a non-nuclear construction project, without relying on the NRC's NEPA document.

Recently, the NRC and the U.S. Bureau of Land Management (BLM) have identified areas of duplication of effort in the preparation of separate NEPA documents for certain in-situ recovery (ISR) uranium milling facilities, as well as conventional and heap leach uranium milling facilities. To help the NRC and BLM avoid this type of duplication of effort in the future, the two agencies have signed a Memorandum of Understanding (MOU) (NRC and BLM, 2009) that outlines the cooperative working relationship between the two agencies to support environmental reviews and preparation of NEPA documents related to uranium recovery facilities. The agreement provides a framework for this relationship and identifies responsibilities of each agency. The intent of the MOU is to improve interagency communications, facilitate the sharing of special expertise and information, and coordinate the preparation of studies, reports, and environmental (NEPA) documents associated with NRC licensing actions and BLM administration of public lands.

As the NRC began the preparation of NEPA documents for the first group of new ISR applications, the NRC and BLM staffs determined that both the NRC and BLM have responsibilities under NEPA for several proposed ISR sites involving federal land. As a result, the NRC and the BLM investigated the possibility of conducting joint environmental reviews, with the eventual goal of producing joint NEPA documents for ISR applications. The MOU recognizes that, because the missions of the agencies differ, the scope and purpose of the

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environmental reviews conducted by the NRC and BLM also differ. During discussions regarding the goal of producing joint NEPA documents, the NRC and BLM recognized that, unless applicants submit applications to each agency concurrently, the timelines for the agencies' environmental reviews would not coincide. Coordination will, nevertheless, remain important so that both agencies use the same sets of data and have the same understanding of the project. This coordination will improve review thoroughness and efficiency.

During preparation of the MOU, the NRC and BLM also concluded that, in many cases, the NRC requirements governing the commencement of construction may not be the primary factor limiting project schedules. For example, for projects on BLM land, because of the time required for BLM to complete an environmental assessment to approve a Plan of Operations, an applicant's request for an exemption from the NRC regulations governing the commencement of construction is unlikely to change the overall project schedules if a Plan of Operations was not first filed with BLM.

If the NRC definition of construction for materials licensees is changed to conform to the definition in 10 CFR Part 51, an exemption from the NRC's regulations governing commencement of construction would no longer be necessary for an applicant to begin site preparation activities without a license from the NRC. However, an applicant proposing to develop BLM land would still require BLM approval of a Plan of Operations before beginning any land disturbing activity. Thus, an applicant proposing to develop BLM land may seek BLM's approval for a Plan of Operations before interacting with NRC. To facilitate interagency coordination, the MOU indicates that BLM will inform the NRC of any Plans of Operations it receives for review that involve uranium recovery activities. Similarly, the MOU indicates that the NRC will inform BLM of any applications it receives for uranium recovery facilities proposed to be located on BLM land.

Environmental Regulation

In addition to permitting requirements of other agencies, applicants must be aware of requirements of environmental statutes that historically had been met as part of the NRC's NEPA process. For example, the NRC typically meets obligations imposed by the Endangered Species Act of 1973 (ESA) and the National Historic Preservation Act of 1966, as amended (NHPA), through its NEPA process. If the NRC definition of construction for materials licenses is changed to conform to the definition in 10 CFR Part 51, an applicant would not be required to obtain authorization from the NRC prior to beginning site preparations. However, as noted above, certain obligations imposed by environmental statutes would still be applicable to the NRC, once a licensing action is filed, or to potential applicants. For example, while an applicant would not require NRC authorization to begin site preparation activities, the ESA would still prohibit the land owner from harming threatened or endangered animals during site preparation without an "incidental take" permit from the U.S. Fish and Wildlife Service (FWS) or the National Marine Fisheries Service (NMFS). Because these obligations typically were considered during the NEPA process, but now may need to be addressed before the NRC begins its NEPA

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process, additional effort may be required on the part of land developers to ensure the appropriate information is collected and any necessary protective actions are taken so that the applicable obligations are satisfied.

For example, historically, applicants have submitted surveys of threatened and endangered species, critical habitat, and historic and cultural resources in an Environmental Report as part of an NRC license application. The submittals informed the NRC staff's evaluation of potential impacts to these resources, which usually was completed prior to any significant land disturbance.² If the definition of construction is changed in regulations governing uranium recovery facilities to conform to the definition of construction in 10 CFR Part 51, land could be disturbed before an Environmental Report is submitted to the NRC. If another Federal agency, such as BLM, is involved, this type of information would still be required to be submitted to that agency in support of its NEPA review.

A delay in collecting relevant site information until submission of an NRC license application could present problems to both the applicant and the NRC staff. Applicants may need information about site conditions prior to land disturbance to comply with applicable Federal, State, and local environmental laws. For example, the ESA imposes criminal and civil penalties against any person that undertakes an activity that results in taking of any threatened or endangered animal without authorization from the FWS or the NMFS. As a result, an applicant may want to conduct surveys of threatened and endangered animals prior to beginning site preparation activities that may result in the destruction of ecological resources. Additional obligations apply to Federal agencies. For example, Federal agencies making licensing or grant decisions have an obligation to identify and assess potential impacts to historic properties under Section 106 of the NHPA and NEPA.

Furthermore, once the NRC has received a license application for review, the NRC staff typically will need a detailed description of the affected environment before site preparation activities were started to fully evaluate potential environmental impacts as required by NEPA. For example, in most cases, information about the site prior to site preparation will be necessary for the NRC to evaluate the cumulative effects³ of the proposed action in light of any impacts of site preparation. In addition, information about the condition of the site prior to site preparation typically will be needed for the NRC staff to distinguish the environmental consequences of the NRC's licensing decision from the impacts of site preparation activities that will occur

² Currently, an applicant may engage in certain activities that would cause minor land disturbance prior to receiving an NRC license. For example, the definition of the "commencement of construction" in § 40.4 states, in relevant part, that construction does not include "changes desirable for the temporary use of the land for public recreational uses, necessary borings to determine site characteristics or other preconstruction monitoring to establish background information related to the suitability of a site or to the protection of environmental values."

³ Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.7 define the term "cumulative impact" to mean "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions."

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irrespective of the NRC's licensing decision. One exception may be development of a "brownfield" or previously developed site, for which site preparation was not connected to the proposed action requiring an NRC license.

In the short term, prior to any change in the definition of construction in 10 CFR Parts 40 or 70, the NRC will consult with appropriate State and Federal agencies as part of its review of requests for exemptions to allow pre-licensing construction. For example, the NRC staff has coordinated with the FWS and Wyoming State Historic Preservation Office (WSHPO) regarding a recent exemption request for a proposed ISR facility in Sweetwater County, Wyoming (FWS, 2009; WSHPO, 2009). To complete these consultations, the consulting agencies reviewed site information collected by the applicant prior to any land disturbance and recommended actions that should be taken to protect ecological or historic and cultural resources. In the long term, if a conforming change is made to the definition of construction in Parts 40 or 70, these consultations would not take place until the NRC has received a license application. In this case additional effort may be required by the applicant to ensure that the application contains the information necessary for the NRC to perform its requisite environmental reviews. In addition, further effort may be required by the applicant to ensure that appropriate steps are taken to protect site resources in the event site preparation activities begin before conclusion of the NRC's consultations with State or Federal agencies, from which recommendations for protective actions often result.

Environmental Information Needs Relevant to Site Preparation

The change in the definition of construction in 10 CFR Part 51 and associated exemptions from the NRC regulations governing the commencement of construction in 10 CFR Parts 40 and 70 have necessitated changes in the staff's documentation of the environmental impacts of actions that will involve pre-licensing site preparation. Specifically, if the rulemaking process determines that certain site preparation activities are outside of the NRC's regulatory purview, the NRC materials environmental review staff will describe the impacts of the proposed action as distinct from the impacts of site preparation activities in environmental review documents. The change also will cause the staff to clarify the description of the no-action alternative, under which some site preparation activities may still occur. This clarification is necessary so that the public and decision maker understand which environmental impacts are attributable to the licensing decision addressed in the NEPA document and which impacts could occur irrespective of the NRC's licensing decision.

From an applicant's perspective, the primary effect of these changes is that the NRC may request additional information regarding site preparation activities. In the short term, applicants requesting an exemption to allow site preparation should be aware of the information the NRC staff may request to support its environmental review. If the definition of construction in 10 CFR Part 40 is changed to conform to the definition of construction in 10 CFR Part 51, requests for information regarding site preparation activities would likely be routine. For example, to support a description of the proposed action alternative, the NRC would need

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information regarding the applicant's plans to complete site preparation activities, including the planned timing of these activities. Information about the applicant's plans would be necessary because, in general, actions that would be completed irrespective of the NRC's licensing decision would not be included as part of the proposed action, although, at a minimum, NRC would consider whether the proposed action would have cumulative effects in light of the impacts of site preparation activities.

To support a description of the impacts of the proposed action, the NRC would require information about the environmental impacts of site preparation as distinct from the impacts of construction. In general, the NRC materials environmental review staff documentation of site preparation impacts would indicate which impacts depend on the licensing decision under consideration and which are expected to occur irrespective of the NRC's licensing decision. This distinction is necessary so that the decision maker and public understand the environmental impacts of the licensing decision being considered.

The degree of distinction made between site preparation and construction impacts may depend on the applicant's project plan. For example, the NRC staff expects that, if an applicant plans to clear a site before the NRC makes a licensing decision, either by virtue of an exemption or because the definition of construction in the applicable regulation has been revised, the NEPA document would indicate that impacts caused by clearing land (e.g., most impacts to historic and cultural resources, threatened and endangered species, and wildlife habitat) are likely to occur whether or not the NRC grants the requested licensing action. If the proposed action is expected to have cumulative effects in light of the impacts of clearing the site, these cumulative effects would be addressed in the environmental review document. However, in this example, the NRC's environmental review document would distinguish between the effects of site clearing and the NRC-licensed construction activities.

Alternately, under the current NRC regulations, if an applicant does not plan to perform any site preparation activities prior to receiving an NRC license, the NRC environmental document would not distinguish between the effects of site preparation activities and the NRC-licensed construction activities because all of the impacts would occur only if the NRC approves the licensing action. If conforming changes are made to the definition of construction in the NRC regulations governing source and special nuclear material, the NRC staff would, at a minimum, evaluate whether the proposed action has cumulative effects in light of the impacts of site preparation activities. The practical implication for applicants is that, to make these distinctions, the NRC staff would require information about the applicant's plans to complete site preparation activities including the timing of these actions and whether the applicant would complete the actions if the NRC denies the licensing action.

The NRC staff also would require information about the applicant's plans for the site if the proposed action is not taken for any reason, including if the NRC denies the required licensing action. This information is necessary for the description of the no-action alternative. For example, an applicant may indicate that, to meet local permit requirements, if the NRC denies

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the license application it will replace any vegetation it has cleared from the land during site preparation. In this case, the NRC NEPA document would indicate that, even if the NRC takes no action, the land is likely to be cleared before the NRC makes a licensing decision. It would also indicate that the applicant intends to re-vegetate the land if the NRC denies the license. If the necessary information is not available, the NRC staff would need to make reasoned assumptions about the effects of denying the licensing decision.

CONCLUSION

The change in the definition of construction in the NRC's regulations implementing NEPA (10 CFR Part 51) resulted from an NRC clarification of its regulatory purview. Although the revised construction definition indicates that the NRC does not regulate certain site preparation activities, once a license application is submitted, the NRC staff would, at a minimum, evaluate whether the proposed licensing action is expected to have cumulative effects in light of the impacts of site preparation activities. Thus, although the change has implications for the NRC's NEPA process and resulting documentation of impacts, in most cases it is not expected to have a significant effect on the scope of the information the NRC would need to evaluate in its environmental reviews.

This paper outlines steps the NRC is taking to ensure appropriate interagency coordination of environmental reviews and the most significant changes expected for applicants. The NRC staff experience to date has shown that exemptions to complete site preparation are unlikely to benefit project schedules unless an applicant applies for the necessary permits for land-disturbing activities from the relevant permitting authorities concurrently with applying for an NRC exemption. In addition to these permitting considerations, the NRC staff and applicants must remain aware of the requirements of environmental statutes relevant to site preparation activities that historically would have been considered during the NRC environmental review supporting the licensing decision. Although the NRC is not a land-managing agency, it recognizes its obligations under NEPA, at a minimum, to consider whether the proposed action has cumulative effects in light of the impacts of site preparation activities. To fulfill these obligations, the NRC staff expects to request information about site preparation plans, and the environmental impacts of planned site preparation projects, from applicants.

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