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American National Standard
Guidelines for Establishing Site-Related Parameters for Site Selection and Design of an Independent Spent Fuel Storage Installation (Water Pool Type)

Secretariat
American Nuclear Society

Prepared by the
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Standards Committee
Working Group ANS-2.19

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Foreword

(This Foreword is not a part of American National Standard Guidelines for Establishing Site-Related Parameters for Site Selection and Design of an Independent Spent Fuel Storage Installation (Water Pool Type) ANSI/ANS-2.19-1981.)

This standard is one of a set of two standards prepared for an Independent Spent Fuel Storage Installation. The set of American National Standards includes:

Guidelines for Establishing Site-Related Parameters for Site Selection and Design of an Independent Spent Fuel Storage Installation (Water Pool Type), ANSI/ANS-2.19-1981, and

Design Criteria for an Independent Spent Fuel Storage Installation (Water Pool Type), ANSI/ANS-57.7-1981.

The purpose of this standard, ANS-2.19, is to provide guidelines for establishing site-related parameters to be considered in site evaluation, and in the design, construction, and operation of an independent spent fuel storage installation (ISFSI). This installation provides storage of spent light water reactor (LWR) fuel that has been aged a minimum of one year after discharge from the reactor core in a water basin type structure. Such an installation may be independent of both a nuclear power station and a reprocessing facility or located adjacent to these facilities in order to share selected support systems. The information generated through the use of this standard may be used in the preparation of Safety Analysis Reports (SARs) and in accordance with Environmental Reports (ERs) for an ISFSI.

The user of this standard is encouraged to concentrate his evaluation on those site-related parameters which are required for the actual site selection, design, and safety analysis of the storage installations at a specific site. The guidelines also include a discussion of quality assurance as related to the site-related aspects of a project.

The parameters considered necessary in this guideline for site selection and design of an ISFSI include those required: to establish flooding potential, to evaluate the geotechnical characteristics, to derive the design earthquake, and to derive the design windspeed. This standard does not restrict or limit the use of alternative approaches or innovations for (1) assessing the site-related parameters or (2) assessing parameters other than those identified in this guideline.

The application of these parameters to the selection of a site for an ISFSI is at the discretion of the user. Selection of the appropriate parameters for design and operation monitoring is, to a large extent, site-dependent. The content of this standard is the result of cooperative efforts between Working Group ANS-2.19 and ANS-57.7.

Working Group ANS-2.19, in concert with Working Group ANS-57.7, decided that the level of natural hazards that should be considered in the design should be tested with respect to radiological risk. To this end, a study was prepared which evaluated the radiological risk associated with various low probability external events. For each type of event considered, conservative fuel damage estimates were made, based on an installation constructed in accordance with the design requirements of ANS-57.7-1981 for events of each type which could result in forces greater than that for which the installation was designed. In each case, estimated fuel damage was converted to site boundary dose which was then combined with the probability of occurrence of the event which could cause this damage, to produce radiological risk (Rem/year) for each event. Estimated risks for each (beyond design) event were summed to provide an estimate of the accumulative risk associated with each type of

event. The study showed that the conceptual design approach, site selection criteria, and the level of design event was a radiological risk that is two to three orders of magnitude below that of a nuclear power plant. It should be understood that a site specific accident analysis should be performed to verify the validity of the site selection and design approach.

Working Group ANS-2.19 was formed under Subcommittee ANS-2, "Site Evaluation," of the American Nuclear Society Standards Committee at a meeting held in Denver, Colorado, on April 6, 1978. The first meeting of the working group was held in Sun Valley, Idaho, on May 22-25, 1978. At this meeting, a scope, outline, and Draft 1 of the standard were developed.

Working Group ANS-2.19 of the Standards Committee of the American Nuclear Society had the following membership:

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