



U.S. NUCLEAR REGULATORY COMMISSION
STANDARD REVIEW PLAN
OFFICE OF NUCLEAR REACTOR REGULATION

SECTION 2.3.2

LOCAL METEOROLOGY

REVIEW RESPONSIBILITIES

Primary - Site Analysis Branch (SAB)

Secondary - None

I. AREAS OF REVIEW

Information is presented by the applicant and reviewed by the staff concerning the local (site) meteorological parameters, an assessment of the potential influence of the plant and its facilities on local meteorological conditions, and a topographical description of the site and its environs. The review covers the following specific areas.

1. A description of the local (site) meteorology in terms of airflow, temperature, atmospheric water vapor, precipitation, fog, and atmospheric stability.
2. An assessment of the influence of the plant and its facilities on the local meteorological parameters listed in (1), including the effects of plant structures, terrain modification, and heat and moisture sources due to plant operation.
3. A topographical description of the site and its environs, as modified by the plant structures, including the site boundary, exclusion zone, and low population zone.

II. ACCEPTANCE CRITERIA

The information in this section will be acceptable if the local meteorological and topographic descriptions of the site area applicable both before plant construction and during plant operation are adequately documented such that meteorological impacts on plant design and operation as well as the impact of the plant on local meteorological conditions can be reliably predicted. Specifically, the following information is needed for acceptance. This information should be fully documented and substantiated as to its representativeness of conditions at and near the site.

1. Local summaries of meteorological data based on onsite data and National Weather Service station summaries or other standard installation summaries from appropriate nearby locations should be presented.

USNRC STANDARD REVIEW PLAN

Standard review plans are prepared for the guidance of the Office of Nuclear Reactor Regulation staff responsible for the review of applications to construct and operate nuclear power plants. These documents are made available to the public as part of the Commission's policy to inform the nuclear industry and the general public of regulatory procedures and policies. Standard review plans are not substitutes for regulatory guides or the Commission's regulations and compliance with them is not required. The standard review plan sections are keyed to Revision 2 of the Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants. Not all sections of the Standard Format have a corresponding review plan.

Published standard review plans will be revised periodically, as appropriate, to accommodate comments and to reflect new information and experience.

Comments and suggestions for improvement will be considered and should be sent to the U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation, Washington, D.C. 20555.

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The following summaries are required:

- a. Monthly and annual wind roses and tabular data, and wind direction persistence summaries.
 - b. Monthly and annual air temperature summaries including averages, measured extremes, and diurnal variations.
 - c. Monthly and annual summaries of atmospheric water vapor (absolute and relative) including averages, measured extremes, and diurnal variations.
 - d. Monthly and annual summaries of precipitation (rain and snow) including averages, measured extremes, and intensity-duration data.
 - e. Monthly and annual summaries of fog (and smog) including expected values and extremes of frequency and duration.
 - f. Monthly and annual summaries of atmospheric stability (ΔT), including frequency and duration (persistence) of inversion conditions if data are available.
2. A discussion and evaluation of the influence of the plant and its facilities on the local meteorological conditions are required. Potential changes in normal and extreme values presented in SAR Section 2.3.2.1 resulting from plant construction and operation should be made.
 3. A complete topographical description of the site and environs out to a distance of 50 miles from the plant, as described in Standard Format Section 2.3.2.3 should be provided (Ref. 1).

III. REVIEW PROCEDURES

1. The summaries listed in Section 2.3.2.1 of the Standard Format are reviewed for completeness and adequacy of basic data. The wind and atmospheric stability data should be based on onsite data if possible since airflow and vertical temperature structure can vary substantially from one location to another and are inputs to the assessment of atmospheric diffusion conditions at the site. The other summaries should be based on nearby representative stations with long periods of record since the locally measured extremes in intensity and frequency are compared to design basis values presented in Section 2.3.1 of the safety analysis report or are used by other branches to determine whether these meteorological conditions are limiting conditions for design and emergency procedures. When offsite data are used, a determination is made of how well the data represent site conditions and whether more representative data are available. National Oceanic and Atmospheric Administration (NOAA) state meteorological summaries (Ref. 2), local climatological data (Ref. 3), and various NOAA Environmental Data Service summaries are used by the reviewer to evaluate the representativeness of stations and periods of record. The reviewer visits all primary meteorological data collection locations.

2. The review procedure for evaluating the contents of Section 2.3.2.2 of the SAR is as follows:
 - a. Determine the terrain modifications that will occur as a result of plant construction such as removal of trees, leveling of ground, and installation of lakes and ponds.
 - b. Determine the location, size, and materials used for plant structures including buildings, switchyard gear, parking lots, and roads.
 - c. Determine and quantify the heat and moisture sources that will result from plant operations.
 - d. Relate the input information in items a,b, and c, above, to local meteorological modifications.
 - e. Compare the reviewer's assessment with that of the applicant.
3. Section 2.3.2.3 is reviewed for completeness in accordance with the specifications of the Standard Format. The reviewer assures that all topographic maps and topographic cross-sections presented by the applicant are legible and well-labeled so that the information needed during the review can be readily extracted. Reference points and the direction of true north should be checked carefully. Points of interest such as plant structures, site boundary, and exclusion zone should be marked on the maps and diagrams.

The reviewer compares the applicant's assessment of the effect of topography to standard assessments such as those presented in "Meteorology and Atomic Energy - 1968" (Ref. 4) and decides whether the standard regulatory atmospheric diffusion models (discussed in Standard Review Plans 2.3.4 and 2.3.5) are appropriate for this site.

IV. EVALUATION FINDINGS

The reviewer verifies that sufficient information has been provided and that his evaluation supports concluding statements of the following type, to be included in the staff's safety evaluation report:

"The applicant has provided adequate information on local meteorological and air quality conditions that are of importance to the safe design and siting of this plant."

This statement will be preceded by a resume of local meteorological and air quality parameters appropriate to the site.

V. REFERENCES

1. Regulatory Guide 1.70, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants," Revision 2.
2. U.S. Department of Commerce, "State Climatological Summary," Environmental Data Service, NOAA, published annually by state.
3. U.S. Department of Commerce, "Local Climatological Data and Comparative Data," Environmental Data Service, NOAA, published annually for all first-order NWS Stations.
4. D.H. Slade (ed.), "Meteorology and Atomic Energy - 1968," TID-24190, Division of Technical Information, USAEC (1968).

SRP 2.3.3