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EHughes
SHill
HRood
RABirkel
EIGoulbourne
JYore, ASLB
IE (3)
RFroelich

FEB 2 7 1976

Docket Nos. 50-361
and 50-362

Honorable Alan Cranston
United States Senate

Dear Senator Cranston:

We are pleased to respond to your note which we received on February 9, 1976, and which was referred to this office for reply. Accompanying your note was a letter from Mr. William D. Conroy of San Clemente, California, President of the San Onofre Surfing Club. In his letter Mr. Conroy expresses concern about the possibility of creating an exclusion area on the beach adjacent to the San Onofre Nuclear Generating Station. In your note you requested our consideration of the matters discussed in Mr. Conroy's letter, and a report thereon to accompany return of the letter. I am pleased to provide the following information.

In answer to Mr. Conroy's first question, the first nuclear power plant at the San Onofre Nuclear Generating Station, Unit 1, was constructed in the mid-1960's and was licensed to operate in 1967. In 1970, the Southern California Edison Company and the San Diego Gas and Electric Company (the licensees) applied to the Atomic Energy Commission (now the Nuclear Regulatory Commission, or NRC) for permits to construct the second and third nuclear power plants at the San Onofre Nuclear Generating Station (Units 2 and 3). Construction permits were issued on October 18, 1973, and construction of these units is currently underway. We expect the licensees to apply later this year for licenses to operate Units 2 and 3 when they are completed (1980 and 1981, respectively).

There are two land parcels, known as Parcels 2 and 3, which are adjacent to the San Onofre Nuclear Generating Station. These parcels have been leased by the State of California from the Department of the Navy for the development of the San Onofre State Beach. Parcel 2 is located immediately northwest of the San Onofre Nuclear Generating Station site between the ocean and Interstate Highway 5. Parcel 3 is located immediately southeast of the site between the ocean and Interstate Highway 5. These areas are shown in Figure 1.

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With regard to Mr. Conroy's second question, it is a requirement of the NRC regulations (10 CFR Part 100, copy enclosed) that an exclusion area be established around all nuclear power plants that are licensed to operate. The size of the exclusion area is determined by the hypothetical radiation dose that an individual at the exclusion area boundary would receive in the very unlikely event of a postulated accident of a very severe type, as specified in 10 CFR 100.11. Since the plant design and the meteorological characteristics of the plant site affect the hypothetical consequences of the postulated accident, the exclusion area size varies from plant to plant. Further, the exclusion area size for a given plant may be changed if the plant design is appropriately modified.

Part 100.3(a) of 10 CFR 100 requires the holder of a license to operate a nuclear power plant to have the legal authority to determine all activities within the exclusion area. The regulations permit activities unrelated to the reactor to take place within the exclusion area under appropriate limitations, provided that no significant hazard to the public health and safety will result. Also, the regulations specifically state that public highways, railroads and waterways are permitted within the exclusion area, provided that (1) they are not so close to the plant as to interfere with normal operations, and (2) appropriate and effective arrangements have been made to control traffic in case of emergency.

An exclusion area is now specified for the currently operating San Onofre Nuclear Generating Station, Unit 1. The present exclusion area has been in effect, unchanged, since the plant was first licensed to operate on March 27, 1967. The present Unit 1 exclusion area is oval shaped, having a maximum length of about one and one-half miles. As may be seen from Figure 1, the present exclusion area extends approximately 1600 feet into Parcels 2 and 3 which adjoin the site.

Recently, the licensees have proposed that the Unit 1 exclusion area be reduced in size. The Unit 1 facility design will be modified to reduce the hypothetical radiation doses in the plant vicinity in the unlikely event of the occurrence of the postulated accident specified by 10 CFR Part 100. Following completion of these modifications, which are scheduled for completion later this year, a reduced exclusion area is acceptable under 10 CFR 100. The reduced exclusion area will become effective following NRC review and approval. The reduced exclusion area is an oval whose boundaries just meet the boundaries of Parcels 2 and 3, as is shown in Figure 2. Thus, Parcels 2 and 3 will be entirely outside the reduced exclusion area for Unit 1.

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As mentioned above, Units 2 and 3 at the San Onofre Nuclear Generating Station are scheduled to begin operation in 1980 and 1981. When and if licenses are issued for their operation, an exclusion area that meets the requirements of 10 CFR Part 100 will be established. The licensees have proposed an exclusion area for Units 2 and 3 that coincides with the reduced exclusion area for Unit 1.

Thus, Parcels 2 and 3, and the beach and surf zone associated with them will remain entirely outside the reduced exclusion area for Unit 1 and the proposed coinciding exclusion area for Units 2 and 3.

With regard to Mr. Conroy's third question, we are not prepared to speculate as to the effects of the California Nuclear Initiative, if passed. However, as long as the nuclear power plant(s) at San Onofre are licensed to operate, they like all other licensed plants must have an exclusion area that meets the requirements of 10 CFR Part 100. This regulation has the force of law under the Atomic Energy Act of 1954 as amended, and the NRC is required to enforce it.

With regard to Mr. Conroy's fourth question, the issue of recourse to preserve the surfing park will be mooted, since, after this year, the State Park will not be included in the existing and proposed exclusion areas for the plants at the San Onofre Nuclear Generating Station.

We hope that this information will help alleviate the concerns of Mr. Conroy and the San Onofre Surfing Club. We are returning Mr. Conroy's letter as requested.

Sincerely,

William J. Dircks
Assistant Executive Director
for Operations

Enclosures:
1. Figure 1
2. Figure 2
3. NRC Regulations - 10 CFR Part 100
4. Mr. Conroy's letter dated December 18, 1975

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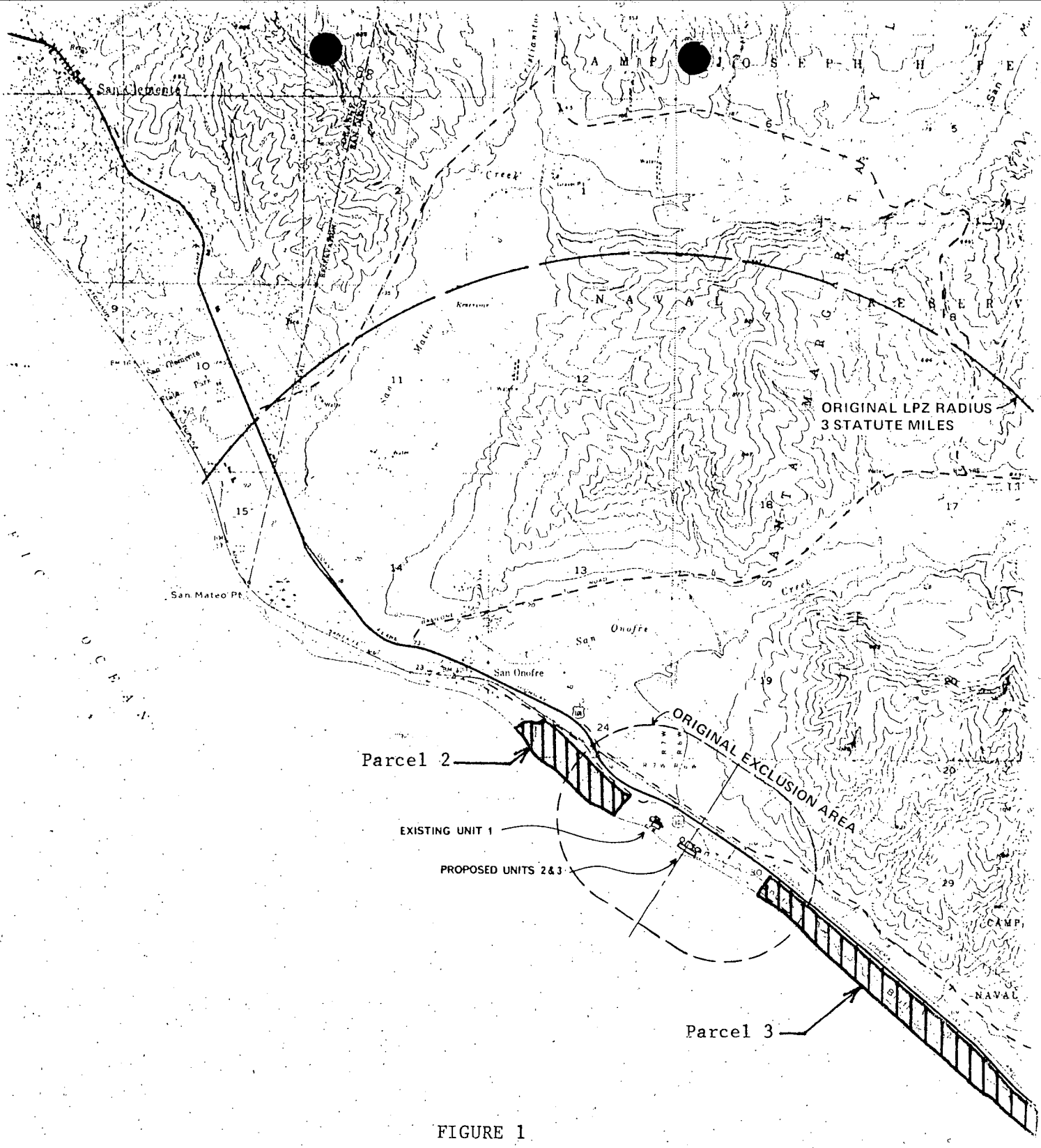

FIGURE 1

SAN ONOFRE NUCLEAR GENERATING STATION

EXISTING EXCLUSION AREA

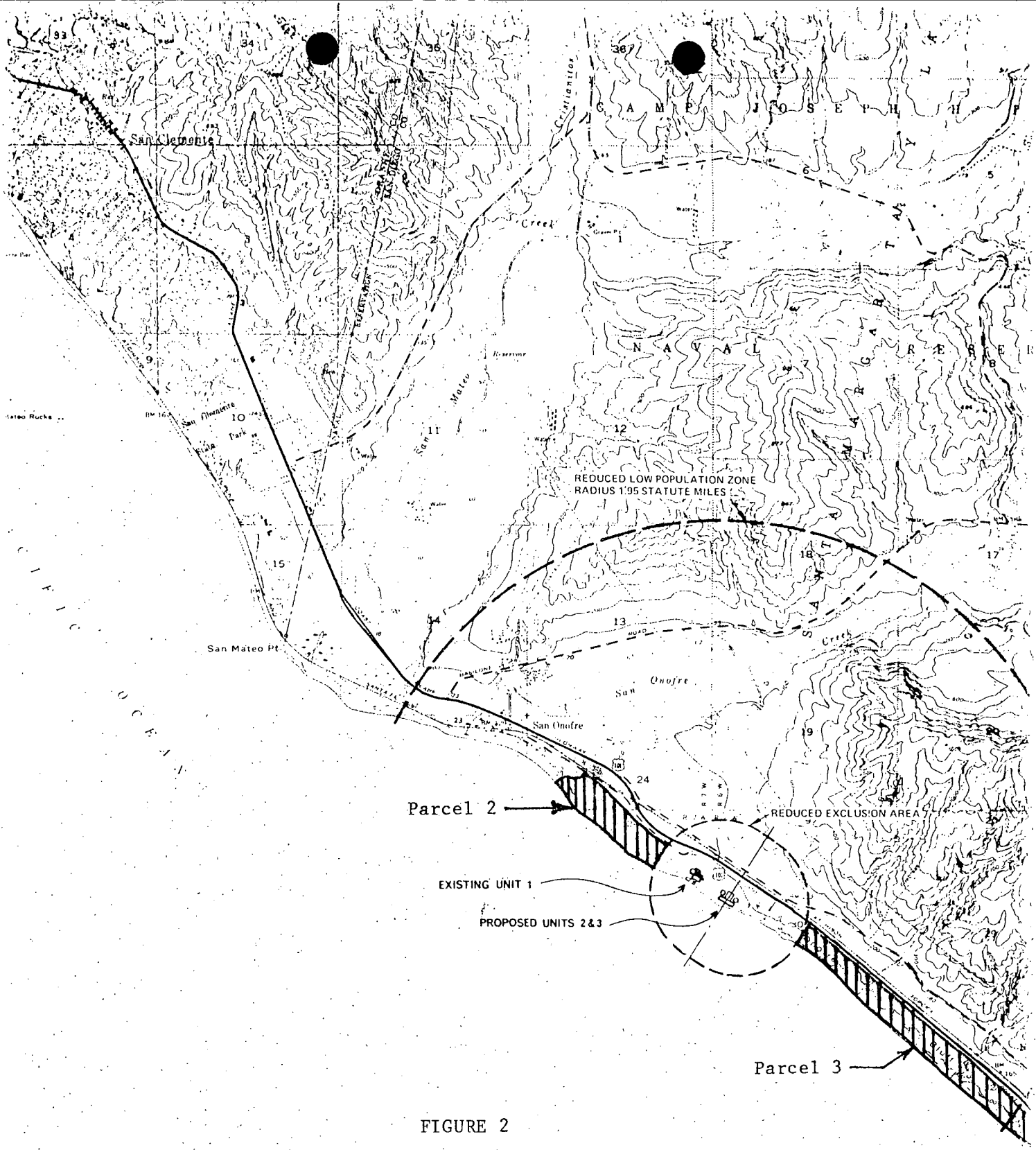

FIGURE 2

SAN ONOFRE NUCLEAR GENERATING STATION

REDUCED EXCLUSION AREA

PART 100

REACTOR SITE CRITERIA

Sec.
100.1 Purpose.
100.2 Scope.
100.3 Definitions.

SITE EVALUATION FACTORS

100.10 Factors to be considered when evaluating sites.
100.11 Determination of exclusion area, low population zone, and population center distance.

APPENDIX A

SEISMIC AND GEOLOGIC SITING CRITERIA FOR NUCLEAR POWER PLANTS

AUTHORITY: Secs. 202, Pub. L. 93-438, 88 Stat. 1244 (42 U.S.C. 5842)

§ 100.1 Purpose.

(a) It is the purpose of this part to describe criteria which guide the Commission in its evaluation of the suitability of proposed sites for stationary power and testing reactors subject to Part 50 of this chapter.

(b) Insufficient experience has been accumulated to permit the writing of detailed standards that would provide a quantitative correlation of all factors significant to the question of acceptability of reactor sites. This part is intended as an interim guide to identify a number of factors considered by the Commission in the evaluation of reactor sites and the general criteria used at this time as guides in approving or disapproving proposed sites. Any applicant who believes that factors other than those set forth in the guide should be considered by the Commission will be expected to demonstrate the applicability and significance of such factors.

§ 100.2 Scope.

(a) This part applies to applications filed under Part 50 of this chapter for stationary power and testing reactors.

(b) The site criteria contained in this part apply primarily to reactors of a general type and design on which experience has been developed, but can also be applied to other reactor types. In particular, for reactors that are novel in design and unproven as prototypes or pilot plants, it is expected that these basic criteria will be applied in a manner that takes into account the lack of experience. In the application of these criteria which are deliberately flexible, the safeguards provided—either site isolation or engineered features—should reflect the lack of certainty that only experience can provide.

§ 100.3 Definitions.

As used in this part:

(a) "Exclusion area" means that area surrounding the reactor, in which the reactor licensee has the authority to determine all activities including exclusion or removal of personnel and property from the area. This area may be traversed by a highway, railroad, or waterway, provided these are not so close to the facility as to interfere with normal operations of the facility and provided appropriate and effective arrangements are made to control traffic on the highway, railroad, or waterway, in case of emergency, to protect the public health and safety. Residence within the exclusion area shall normally be prohibited. In any event, residents shall be subject to ready removal in case of necessity. Activities unrelated to operation of the reactor may be permitted in an exclusion area under appropriate limitations, provided that no significant hazards to the public health and safety will result.

(b) "Low population zone" means the area immediately surrounding the exclusion area which contains residents, the total number and density of which are such that there is a reasonable probability that appropriate protective measures could be taken in their behalf in the event of a serious accident. These guides do not specify a permissible population density or total population within this zone because the situation may vary from case to case. Whether a specific number of people can, for example, be evacuated from a specific area, or instructed to take shelter, on a timely basis will depend on many factors such as location, number and size of highways, scope and extent of advance planning, and actual distribution of residents within the area.

(c) "Population center distance" means the distance from the reactor to the nearest boundary of a densely populated center containing more than about 25,000 residents.

(d) "Power reactor" means a nuclear reactor of a type described in § 50.21(b) or 50.22 of this chapter designed to produce electrical or heat energy.

(e) "Testing reactor" means a "testing facility" as defined in § 50.2 of this chapter.

SITE EVALUATION FACTORS

§ 100.10 Factors to be considered when evaluating sites.

Factors considered in the evaluation of sites include those relating both to the proposed reactor design and the characteristics peculiar to the site. It is expected that reactors will reflect through their design, construction and operation an extremely low probability for accidents that could result in release of significant quantities of radioactive fission products. In addition, the site location and the engineered features included as safeguards against the hazardous consequences of an accident, should one occur, should insure a low risk of public exposure. In particular, the Commission will take the following factors into consideration in determining the acceptability of a site for a power or testing reactor:

(a) Characteristics of reactor design and proposed operation including:

(1) Intended use of the reactor including the proposed maximum power level and the nature and inventory of contained radioactive materials;

(2) The extent to which generally accepted engineering standards are applied to the design of the reactor;

(3) The extent to which the reactor incorporates unique or unusual features having a significant bearing on the probability or consequences of accidental release of radioactive materials;

(4) The safety features that are to be engineered into the facility and those barriers that must be breached as a result of an accident before a release of radioactive material to the environment can occur.

(b) Population density and use characteristics of the site environs, including the exclusion area, low population zone, and population center distance.

(c) Physical characteristics of the site, including seismology, meteorology, geology and hydrology.

(1) Appendix A, "Seismic and Geologic Siting Criteria for Nuclear Power Plants," describes the nature of investigations re-

27 FR 3509
27 FR 3509
27 FR 3509

quired to obtain the geologic and seismic data necessary to determine site suitability and to provide reasonable assurance that a nuclear power plant can be constructed and operated at a proposed site without undue risk to the health and safety of the public. It describes procedures for determining the quantitative vibratory ground motion design basis at a site due to earthquakes and describes information needed to determine whether and to what extent a nuclear power plant need be designed to withstand the effects of surface faulting. 38 FR 31279

(2) Meteorological conditions at the site and in the surrounding area should be considered.

(3) Geological and hydrological characteristics of the proposed site may have a bearing on the consequences of an escape of radioactive material from the facility. Special precautions should be planned if a reactor is to be located at a site where a significant quantity of radioactive effluent might accidentally flow into nearby streams or rivers or might find ready access to underground water tables.

(d) Where unfavorable physical characteristics of the site exist, the proposed site may nevertheless be found to be acceptable if the design of the facility includes appropriate and adequate compensating engineering safeguards. 27 FR 3509

§ 100.11 Determination of exclusion area, low population zone, and population center distance.

(a) As an aid in evaluating a proposed site, an applicant should assume a fission produce release[1] from the core, the expected demonstrable leak rate from the containment and the meteorological conditions pertinent to his site to derive an exclusion area, a low population zone and population center distance. For the purpose of this analysis, which shall set forth the basis for the numerical values used, the applicant should determine the following:

(1) An exclusion area of such size that an individual located at any point on its boundary for two hours immediately following onset of the postulated fission product release would not receive a total radiation dose to the whole body in excess of 25 rem[2] or a total radiation dose in excess of 300 rem[2] to the thyroid from iodine exposure. 27 FR 3509

(2) A low population zone of such size that an individual located at any point on its outer boundary who is exposed to the radioactive cloud resulting from the postulated fission product release (during the entire period of its passage) would not receive a total radiation dose to the whole body in excess of 25 rem or a total radiation dose in excess of 300 rem to the thyroid from iodine exposure.

(3) A population center distance of at least one and one-third times the distance from the reactor to the outer boundary of the low population zone. In applying this guide, the boundary of the population center shall be determined upon consideration of population distribution. Political boundaries are not controlling in the application of this guide. Where very large cities are involved, a greater distance may be necessary because of total integrated population dose consideration. 40 FR 26526

(b) For sites for multiple reactor facilities consideration should be given to the following:

(1) If the reactors are independent to the extent that an accident in one reactor would not initiate an accident in another, the size of the exclusion area, low population zone and population center distance shall be fulfilled with respect to each reactor individually. The envelopes of the plan overlay of the areas so calculated shall then be taken as their respective boundaries.

(2) If the reactors are interconnected to the extent that an accident in one reactor could affect the safety of operation of any other, the size of the exclusion area, low population zone and population center distance shall be based upon the assumption that all interconnected reactors emit their postulated fission product releases simultaneously. This requirement may be reduced in relation to the degree of coupling between reactors, the probability of concomitant accidents and the probability that an individual would not be exposed to the radiation effects from simultaneous releases. The applicant would be expected to justify to the satisfaction of the Commission the basis for such a reduction in the source term. 27 FR 3509

(3) The applicant is expected to show that the simultaneous operation of multiple reactors at a site will not result in total radioactive effluent releases beyond the allowable limits of applicable regulations.

NOTE: For further guidance in developing the exclusion area, the low population zone, and the population center distance, reference is made to Technical Information Document 14844, dated March 23, 1962, which contains a procedural method and a sample calculation that result in distances roughly reflecting current siting practices of the Commission. The calculations described in Technical Information Document 14844 may be used as a point of departure for consideration of particular site requirements which may result from evaluation of the characteristics of a particular reactor, its purpose and method of operation.

Copies of Technical Information Document 14844 may be obtained from the Commission's Public Document Room, 1717 H Street NW., Washington, D.C., or by writing the Director of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. 31 FR 4668

[1] The fission product release assumed for these calculations should be based upon a major accident, hypothesized for purposes of site analysis or postulated from considerations of possible accidental events, that would result in potential hazards not exceeded by those from any accident considered credible. Such accidents have generally been assumed to result in substantial meltdown of the core with subsequent release of appreciable quantities of fission products.

[2] The whole body dose of 25 rem referred to above corresponds numerically to the once in a lifetime accidental or emergency dose for radiation workers which, according to NCRP recommendations may be disregarded in the determination of their radiation exposure status (see NBS Handbook 69 dated June 5, 1959). However, neither its use nor that of the 300 rem value for thyroid exposure as set forth in these site criteria guides are intended to imply that these numbers constitute acceptable limits for emergency doses to the public under accident conditions. Rather, this 25 rem whole body value and the 300 rem thyroid value have been set forth in these guides as reference values, which can be used in the evaluation of reactor sites with respect to potential reactor accidents of exceedingly low probability of occurrence, and low risk of public exposure to radiation.

APPENDIX A.—SEISMIC AND GEOLOGIC SITING CRITERIA FOR NUCLEAR POWER PLANTS

I. PURPOSE

General Design Criterion 2 of Appendix A to Part 50 of this chapter requires that nuclear power plant structures, systems, and components important to safety be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunami, and seiches without loss of capability to perform their safety functions. It is the purpose of these criteria to set forth the principal seismic and geologic considerations which guide the Commission in its evaluation of the suitability of proposed sites for nuclear power plants and the suitability of the plant design bases established in consideration of the seismic and geologic characteristics of the proposed sites.

These criteria are based on the limited geophysical and geological information available to date concerning faults and earthquake occurrence and effect. They will be revised as necessary when more complete information becomes available.

II. SCOPE

These criteria, which apply to nuclear power plants, describe the nature of the investigations required to obtain the geologic and seismic data necessary to determine site suitability and provide reasonable assurance that a nuclear power plant can be constructed and operated at a proposed site without undue risk to the health and safety of the public. They describe procedures for determining the quantitative vibratory ground motion design basis at a site due to earthquakes and describe information needed to determine whether and to what extent a nuclear power plant need be designed to withstand the effects of surface faulting. Other geologic and seismic factors required to be taken into account in the siting and design of nuclear power plants are identified.

The investigations described in this appendix are within the scope of investigations permitted by § 50.10(c)(1) of this chapter.

Each applicant for a construction permit shall investigate all seismic and geologic factors that may affect the design and operation of the proposed nuclear power plant irrespective of whether such factors are explicitly included in these criteria. Additional investigations and/or more conservative determinations than those included in these criteria may be required for sites located in areas having complex geology or in areas of high seismicity. If an applicant believes that the particular seismology and geology of a site indicate that some of these criteria, or portions thereof, need not be satisfied, the specific sections of these criteria should be identified in the license application, and supporting data to justify clearly such departures should be presented.

These criteria do not address investigations of volcanic phenomena required for sites located in areas of volcanic activity. Investigations of the volcanic aspects of such sites will be determined on a case-by-case basis.

III. DEFINITIONS

As used in these criteria:

(a) The "magnitude" of an earthquake is a measure of the size of an earthquake and is related to the energy released in the form of seismic waves. "Magnitude" means the numerical value on a Richter scale.

(b) The "intensity" of an earthquake is a measure of its effects on man, on man-built structures, and on the earth's surface at a particular location. "Intensity" means the numerical value on the Modified Mercalli scale.

(c) The "Safe Shutdown Earthquake"[1] is that earthquake which is based upon an evaluation of the maximum earthquake potential considering the regional and local geology and seismology and specific characteristics of local subsurface material. It is that earthquake which produces the maximum vibratory ground motion for which certain structures, systems, and components are designed to remain functional. These structures, systems, and components are those necessary to assure:

(1) The integrity of the reactor coolant pressure boundary,

(2) The capability to shut down the reactor and maintain it in a safe shutdown condition, or

(3) The capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to the guideline exposures of this part.

(d) The "Operating Basis Earthquake" is that earthquake which, considering the regional and local geology and seismology and specific characteristics of local subsurface material, could reasonably be expected to affect the plant site during the operating life of the plant; it is that earthquake which produces the vibratory growth motion for which those features of the nuclear power plant necessary for continued operation without undue risk to the health and safety of the public are designed to remain functional.

(e) A "fault" is a tectonic structure along which differential slippage of the adjacent earth materials has occurred parallel to the fracture plane. It is distinct from other types of ground disruptions such as landslides, fissures, and craters. A fault may have gouge or breccia between its two walls and includes any associated monoclinal flexure or other similar geologic structural feature.

(f) "Surface faulting" is differential ground displacement at or near the surface caused directly by fault movement and is distinct from nontectonic types of ground disruptions, such as landslides, fissures, and craters.

(g) A "capable fault" is a fault which has exhibited one or more of the following characteristics:

(1) Movement at or near the ground surface at least once within the past 35,000 years or movement of a recurring nature within the past 500,000 years.

(2) Macro-seismicity instrumentally determined with records of sufficient precision to demonstrate a direct relationship with the fault.

(3) A structural relationship to a capable fault according to characteristics (1) or (2) of this paragraph such that movement on one could be reasonably expected to be accompanied by movement on the other.

In some cases, the geologic evidence of past activity at or near the ground surface along a particular fault may be obscured at a particular site. This might occur, for example, at a site having a deep overburden. For these cases, evidence may exist elsewhere along the fault from which an evaluation of its characteristics in the vicinity of the site can be reasonably based. Such evidence shall be used in determining whether the fault is a capable fault within this definition.

Notwithstanding the foregoing paragraphs III(g)(1), (2) and (3), structural association of a fault with geologic structural features which are geologically old (at least pre-Quaternary) such as many of those found in the Eastern region of the United States shall, in the absence of conflicting evidence, demonstrate that the fault is not a capable fault within this definition.

(h) A "tectonic province" is a region of the North American continent characterized by a relative consistency of the geologic structural features contained therein.

(i) A "tectonic structure" is a large scale dislocation or distortion within the earth's crust. Its extent is measured in miles.

(j) A "zone requiring detailed faulting investigation" is a zone within which a nuclear power reactor may not be located unless a detailed investigation of the regional and local geologic and seismic characteristics of the site demonstrates that the need to design for surface faulting has been properly determined.

(k) The "control width" of a fault is the maximum width of the zone containing mapped fault traces, including all faults which can be reasonably inferred to have experienced differential movement during Quaternary times and which join or can reasonably be inferred to join the main fault trace, measured within 10 miles along the fault's trend in both directions from the point of nearest approach to the site. (See Figure 1 of this appendix.)

(l) A "response spectrum" is a plot of the maximum responses (acceleration, velocity or displacement) of a family of idealized single-degree-of-freedom damped oscillators against natural frequencies (or periods) of the oscillators to a specified vibratory motion input at their supports.

IV. REQUIRED INVESTIGATIONS

The geologic, seismic and engineering characteristics of a site and its environs shall be investigated in sufficient scope and detail to provide reasonable assurance that they are sufficiently well understood to permit an adequate evaluation of the proposed site, and to provide sufficient information to support the determinations required by these criteria and to permit adequate engineering solutions to actual or potential geologic and seismic effects at the proposed site. The size of the region to be investigated and the type of data pertinent to the investigations shall be determined by the nature of the region surrounding the proposed site. The investigations shall be carried out by a review of the pertinent literature and field investigations and shall include the steps outlined in paragraphs (a) through (c) of this section.

(a) *Required Investigation for Vibratory Ground Motion.* The purpose of the investigations required by this paragraph is to obtain information needed to describe the vibratory ground motion produced by the Safe Shutdown Earthquake. All of the steps in paragraphs (a)(5) through (a)(8) of this section need not be carried out if the Safe Shutdown Earthquake can be clearly established by investigations and determinations of a lesser scope. The investigations required by this paragraph provide an adequate basis for selection of an Operating Basis Earthquake. The investigations shall include the following:

(1) Determination of the lithologic, stratigraphic, hydrologic, and structural geologic conditions of the site and the region surrounding the site, including its geologic history;

(2) Identification and evaluation of tectonic structures underlying the site and the region surrounding the site, whether buried or expressed at the surface. The evaluation should consider the possible effects caused by man's activities such as withdrawal of fluid from or addition of fluid to the subsurface, extraction of minerals, or the loading effects of dams or reservoirs;

(3) Evaluation of physical evidence concerning the behavior during prior earthquakes of the surficial geologic materials and the substrata underlying the site from the lithologic, stratigraphic, and structural geo-

[1] The "Safe Shutdown Earthquake" defines that earthquake which has commonly been referred to as the "Design Basis Earthquake."

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logic studies;

(4) Determination of the static and dynamic engineering properties of the materials underlying the site. Included should be properties needed to determine the behavior of the underlying material during earthquakes and the characteristics of the underlying material in transmitting earthquake-induced motions to the foundations of the plant, such as seismic wave velocities, density, water content, porosity, and strength;

(5) Listing of all historically reported earthquakes which have affected or which could reasonably be expected to have affected the site, including the date of occurrence and the following measured or estimated data: magnitude or highest intensity, and a plot of the epicenter or location of highest intensity. Where historically reported earthquakes could have caused a maximum ground acceleration of at least one-tenth the acceleration of gravity (0.1g) at the foundations of the proposed nuclear power plant structures, the acceleration or intensity and duration of ground shaking at these foundations shall also be estimated. Since earthquakes have been reported in terms of various parameters such as magnitude, intensity at a given location, and effect on ground, structures, and people at a specific location, some of these data may have to be estimated by use of appropriate empirical relationships. The comparative characteristics of the material underlying the epicentral location or region of highest intensity and of the material underlying the site in transmitting earthquake vibratory motion shall be considered;

(6) Correlation of epicenters or locations of highest intensity of historically reported earthquakes, where possible, with tectonic structures any part of which is located within 200 miles of the site. Epicenters or locations of highest intensity which cannot be reasonably correlated with tectonic structures shall be identified with tectonic provinces any part of which is located within 200 miles of the site;

(7) For faults, any part of which is within 200 miles [3] of the site and which may be of significance in establishing the Safe Shutdown Earthquake, determination of whether these faults are to be considered as capable faults.[3,4] This determination is required in order to permit appropriate consideration of the geologic history of such faults in establishing the Safe Shutdown Earthquake. For guidance in determining which faults may be of significance in determining the Safe Shutdown Earthquake, Table 1 of this appendix presents the minimum length of fault to be considered versus distance from site. Capable faults of lesser length than those indicated in Table 1 and faults which are not capable faults need not be considered in determining the Safe Shutdown Earthquake, except where unusual circumstances indicate such consideration is appropriate;

TABLE 1

Distance from the site (miles):	Minimum length [1]
0 to 20	1
Greater than 20 to 60	5
Greater than 50 to 100	10
Greater than 100 to 150	20
Greater than 150 to 200	40

(8) For capable faults, any part of which is within 200 miles [2] of the site and which may be of significance in establishing the Safe Shutdown Earthquake, determination of:

(i) The length of the fault;

(ii) The relationship of the fault to regional tectonic structures; and

(iii) The nature, amount, and geologic history of displacements along the fault, including particularly the estimated amount of the maximum Quaternary displacement related to any one earthquake along the fault.

(b) *Required Investigation for Surface Faulting.* The purpose of the investigations required by this paragraph is to obtain information to determine whether and to what extent the nuclear power plant need be designed for surface faulting. If the design basis for surface faulting can be clearly established by investigations of a lesser scope, not all of the steps in paragraphs (b)(4) through (b)(7) of this section need be carried out. The investigations shall include the following:

(1) Determination of the lithologic, stratigraphic, hydrologic, and structural geologic conditions of the site and the area surrounding the site, including its geologic history;

(2) Evaluation of tectonic structures underlying the site, whether buried or expressed at the surface, with regard to their potential for causing surface displacement at or near the site. The evaluation shall consider the possible effects caused by man's activities such as withdrawal of fluid from or addition of fluid to the subsurface, extraction of minerals, or the loading effects of dams or reservoirs;

(3) Determination of geologic evidence of fault offset at or near the ground surface at or near the site;

(4) For faults greater than 1000 feet long, any part of which is within 5 miles [5] of the site, determination of whether these faults are to be considered as capable faults; [6,7]

(5) Listing of all historically reported earthquakes which can reasonably be associated with capable faults greater than 1000 feet long, any part of which is within 5 miles [5] of the site, including the date of occurrence and the following measured or estimated data: magnitude or highest intensity, and a plot of the epicenter or region of highest intensity;

(6) Correlation of epicenters or locations of highest intensity of historically reported earthquakes with capable faults greater than 1000 feet long, any part of which is located within 5 miles [5] of the site;

(7) For capable faults greater than 1000 feet long, any part of which is within 5 miles [5] of the site, determination of:

(i) The length of the fault;

(ii) The relationship of the fault to regional tectonic structures;

(iii) The nature, amount, and geologic history of displacements along the fault, including particularly the estimated amount of the maximum Quaternary displacement related to any one earthquake along the fault; and

(iv) The outer limits of the fault established by mapping Quaternary fault traces for 10 miles along its trend in both directions from the point of its nearest approach to the site.

(c) *Required Investigation for Seismically Induced Floods and Water Waves.* (1) For coastal sites, the investigations shall include the determination of:

(i) Information regarding distantly and locally generated waves or tsunami which have affected or could have affected the site. Available evidence regarding the runup and drawdown associated with historic tsunami in the same coastal region as the site shall also be included;

(ii) Local features of coastal topography which might tend to modify tsunami runup or drawdown. Appropriate available evidence regarding historic local modifications in tsunami runup or drawdown at coastal locations having topography similar to that of the site shall also be obtained; and

(iii) Appropriate geologic and seismic evidence to provide information for establishing the design basis for seismically induced floods or water waves from a local offshore earthquake, from local offshore effects of an onshore earthquake, or from coastal subsidence. This evidence shall be determined, to the extent practical, by a procedure similar to that required in paragraphs (a) and (b) of this section. The probable slip characteristics of offshore faults shall also be considered as well as the potential for offshore slides in submarine material.

(2) For sites located near lakes and rivers, investigations similar to those required in paragraph (c)(1) of this section shall be carried out, as appropriate, to determine the potential for the nuclear power plant to be exposed to seismically induced floods and water waves as, for example, from the failure during an earthquake of an upstream dam or from slides of earth or debris into a nearby lake.

V. SEISMIC AND GEOLOGIC DESIGN BASES

(a) *Determination of Design Basis for Vibratory Ground Motion.* The design of each nuclear power plant shall take into account the potential effects of vibratory ground motion caused by earthquakes. The design basis for the maximum vibratory ground motion and the expected vibratory ground motion should be determined through evaluation of the seismology, geology, and the seismic and geologic history of the site and the surrounding region. The most severe earthquakes associated with tectonic structures or tectonic provinces in the region surrounding the site should be identified, considering those historically reported earthquakes that can be associated with these structures or provinces and other relevant factors. If faults in the region surrounding the site are capable faults, the most severe earthquakes associated with these faults should be determined by also considering their geologic history. The vibratory ground motion at the site should be then determined by assuming that the epicenters or locations of highest intensity of the earthquakes are situated at the point on the tectonic structures or tectonic provinces nearest to the site. The earthquake

[1] Minimum length of fault (miles) which shall be considered in establishing Safe Shutdown Earthquake.

[2] If the design basis for surface faulting can be determined from a fault closer than 5 miles to the site, the procedures of paragraphs (b)(4) through (b)(7) of this section need not be carried out for successively more remote faults.

[3] If the Safe Shutdown Earthquake can be associated with a fault closer than 200 miles to the site, the procedures of paragraphs (a)(7) and (a)(8) of this section need not be carried out for successively more remote faults.

[4] In the absence of absolute dating, evidence of recency of movement may be obtained by applying relative dating techniques to ruptured, offset, warped or otherwise structurally disturbed surface of near-surface materials or geomorphic features.

[5] The applicant shall evaluate whether or not a fault is a capable fault with respect to the characteristics outlined in paragraphs III(g)(1), (2), and (3) by conducting a reasonable investigation using suitable geologic and geophysical techniques.

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which could cause the maximum vibratory ground motion at the site should be designated the Safe Shutdown Earthquake. The specific procedures for determining the design basis for vibratory ground motion are given in the following paragraphs.

(1) *Determination of Safe Shutdown Earthquake.* The Safe Shutdown Earthquake shall be identified through evaluation of seismic and geologic information developed pursuant to the requirements of paragraph IV(a), as follows:

(i) The historic earthquakes of greatest magnitude or intensity which have been correlated with tectonic structures pursuant to the requirements of paragraph (a)(6) of Section IV shall be determined. In addition, for capable faults, the information required by paragraph (a)(8) of Section IV shall also be taken into account in determining the earthquakes of greatest magnitude related to the faults. The magnitude or intensity of earthquakes based on geologic evidence may be larger than that of the maximum earthquakes historically recorded. The accelerations at the site shall be determined assuming that the epicenters of the earthquakes of greatest magnitude or the locations of highest intensity related to the tectonic structures are situated at the point on the structures closest to the site;

(ii) Where epicenters or locations of highest intensity of historically reported earthquakes cannot be reasonably related to tectonic structures but are identified pursuant to the requirements of paragraph (a)(6) of Section IV with tectonic provinces in which the site is located, the accelerations at the site shall be determined assuming that these earthquakes occur at the site.

(iii) Where epicenters or locations of the highest intensity of historically reported earthquakes cannot be reasonably related to tectonic structures but are identified pursuant to the requirements of paragraph (a)(6) of Section IV with tectonic provinces in which the site is not located, the accelerations at the site shall be determined assuming that the epicenters or locations of highest intensity of these earthquakes are at the closest point to the site on the boundary of the tectonic province;

(iv) The earthquake producing the maximum vibratory acceleration at the site, as determined from paragraph (a)(1)(i) through (iii) of this section shall be designated the Safe Shutdown Earthquake for vibratory ground motion, except as noted in paragraph (a)(1)(v) of this section. The characteristics of the Safe Shutdown Earthquake shall be derived from more than one earthquake determined from paragraph (a)(1)(i) through (iii) of this section, where necessary to assure that the maximum vibratory acceleration at the site throughout the frequency range of interest is included. In the case where a causative fault is near the site, the effect of proximity of an earthquake on the spectral characteristics of the Safe Shutdown Earthquake shall be taken into account. In order to compensate for the limited data, the procedures in paragraphs (a)(1)(i) through (iii) of this section shall be applied in a conservative manner. The maximum vibratory accelerations of the Safe Shutdown Earthquake at each of the various foundation locations of the nuclear power plant structures at a given site shall be determined taking into account the characteristics of the underlying soil material in transmitting the earthquake-induced motions, obtained pursuant to paragraphs (a)(1), (3), and (4) of section IV. The Safe Shutdown Earthquake shall be defined by response spectra corresponding to the maximum vibratory accelerations as outlined in paragraph (a) of section VI; and

(v) Where the maximum vibratory accelerations of the Safe Shutdown Earthquake at the foundations of the nuclear power plant structures are determined to be less than one-tenth the acceleration of gravity (0.1 g) as a result of the steps required in paragraphs (a)(1)(i) through (iv) of this section, it shall be assumed that the maximum vibratory accelerations of the Safe Shutdown Earthquake at these foundations are at least 0.1 g.

(2) *Determination of Operating Basis Earthquake.* The Operating Basis Earthquake shall be specified by the applicant after considering the seismology and geology of the region surrounding the site. If vibratory ground motion exceeding that of the Operating Basis Earthquake occurs, shutdown of the nuclear power plant will be required. Prior to resuming operations, the licensee will be required to demonstrate to the Commission that no functional damage has occurred to those features necessary for continued operation without undue risk to the health and safety of the public. The maximum vibratory ground acceleration of the Operating Basis Earthquake shall be at least one-half the maximum vibratory ground acceleration of the Safe Shutdown Earthquake.

(b) *Determination of Need to Design for Surface Faulting.* In order to determine whether a nuclear power plant is required to be designed to withstand the effects of surface faulting, the location of the nuclear power plant with respect to capable faults shall be considered. The area over which each of these faults has caused surface faulting in the past is identified by mapping its fault traces in the vicinity of the site. The fault traces are mapped along the trend of the fault for 10 miles in both directions from the point of its nearest approach to the nuclear power plant because, for example, traces may be obscured along portions of the fault. The maximum width of the mapped fault traces, called the control width, is then determined from this map. Because surface faulting has sometimes occurred beyond the limit of mapped fault traces or where fault traces have not been previously recognized, the control width of the fault is increased by a factor which is dependent upon the largest potential earthquake related to the fault. This larger width delineates a zone, called the zone requiring detailed faulting investigation, in which the possibility of surface faulting is to be determined. The following paragraphs outline the specific procedures for determining the zone requiring detailed faulting investigation for a capable fault.

(1) *Determination of Zone Requiring Detailed Faulting Investigation.* The zone requiring detailed faulting investigation for a capable fault which was investigated pursuant to the requirement of paragraph (b)(7) of Section IV shall be determined through use of the following table:

TABLE 2

Determination of Zone Requiring Detailed Faulting Investigation

Magnitude of earthquake:	*Width of zone requiring detailed faulting investigation (See fig. 1)*
Less than 5.5	1 x control width
5.5–6.4	2 x control width
6.5–7.5	3 x control width
Greater than 7.5	4 x control width

The largest magnitude earthquake related to the fault shall be used in Table 2. This earthquake shall be determined from the information developed pursuant to the requirements of paragraph (b) of Section IV for the fault, taking into account the information required by paragraph (b)(7) of Section IV. The control width used in Table 2 is determined by mapping the outer limits of the fault traces from information developed pursuant to paragraph (b)(7)(iv) of section IV. The control width shall be used in Table 2 unless the characteristics of the fault are obscured for a significant portion of the 10 miles on either side of the point of nearest approach to the nuclear power plant. In this event, the use in Table 2 of the width of mapped fault traces more than 10 miles from the point of nearest approach to the nuclear power plant may be appropriate.

The zone requiring detailed faulting investigation, as determined from Table 2, shall be used for the fault except where:

(i) The zone requiring detailed faulting investigation from Table 2 is less than one-half mile in width. In this case the zone shall be at least one-half mile in width; or

(ii) Definitive evidence concerning the regional and local characteristics of the fault justifies use of a different value. For example, thrust or bedding-plane faults may require an increase in width of the zone to account for the projected dip of the fault plane; or

(iii) More detailed three-dimensional information, such as that obtained from precise investigative techniques, may justify the use of a narrower zone. Possible examples of such techniques are the use of accurate records from closely spaced drill holes or from closely spaced, high-resolution offshore geophysical surveys.

In delineating the zone requiring detailed faulting investigation for a fault, the center of the zone shall coincide with the center of the fault at the point of nearest approach of the fault to the nuclear power plant as illustrated in Figure 1.

(c) *Determination of Design Bases for Seismically Induced Floods and Water Waves.* The size of seismically induced floods and water waves which could affect a site from either locally or distantly generated seismic activity shall be determined, taking into consideration the results of the investigation required by paragraph (c) of section IV. Local topographic characteristics which might tend to modify the possible runup and drawdown at the site shall be considered. Adverse tide conditions shall also be taken into account in determining the effect of the floods and waves on the site. The characteristics of the earthquake to be used in evaluating the offshore effects of local earthquakes shall be determined by a procedure similar to that used to determine the characteristics of the Safe Shutdown Earthquake in paragraph V(a).

(d) *Determination of Other Design Conditions.*—(1) *Soil Stability.* Vibratory ground motion associated with the Safe Shutdown Earthquake can cause soil instability due to ground disruption such as fissuring, differential consolidation, liquefaction, and cratering which is not directly related to surface faulting. The following geologic features which could affect the foundations of the proposed nuclear power plant structures shall be evaluated, taking into account the information concerning the physical properties of materials underlying the site developed pursuant to paragraphs (a)(1), (3), and (4) of Section IV and the effects of the Safe Shutdown Earthquake:

(i) Areas of actual or potential surface or subsurface subsidence, uplift, or collapse resulting from:

(a) Natural features such as tectonic depressions and cavernous or karst terrains, particularly those underlain by calcareous or other soluble deposits;

(b) Man's activities such as withdrawal of fluid from or addition of fluid to the subsurface, extraction of minerals, or the loading effects of dams or reservoirs; and

(c) Regional deformation.

(ii) Deformational zones such as shears, joints, fractures, folds, or combinations of these features.

(iii) Zones of alteration or irregular weathering profiles and zones of structural weakness composed of crushed or disturbed materials.

(iv) Unrelieved residual stresses in bedrock.

(v) Rocks or soils that might be unstable

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because of their mineralogy, lack of consolidation, water content, or potentially undesirable response to seismic or other events. Seismic response characteristics to be considered shall include liquefaction, thixotropy, differential consolidation, cratering, and fissuring.

(2) *Slope stability.* Stability of all slopes, both natural and artificial, the failure of which could adversely affect the nuclear power plant, shall be considered. An assessment shall be made of the potential effects of erosion or deposition and of combinations of erosion or deposition with seismic activity, taking into account information concerning the physical property of the materials underlying the site developed pursuant to paragraph (a)(1), (3), and (4) of Section IV and the effects of the Safe Shutdown Earthquake.

(3) *Cooling Water Supply.* Assurance of adequate cooling water supply for emergency and long-term shutdown decay heat removal shall be considered in the design of the nuclear power plant, taking into account information concerning the physical properties of the materials underlying the site developed pursuant to paragraphs (a)(1), (3), and (4) of section IV and the effects of the Safe Shutdown Earthquake and the design basis for surface faulting. Consideration of river blockage or diversion or other failures which may block the flow of cooling water, coastal uplift or subsidence, or tsunami runup and drawdown, and failure of dams and intake structures shall be included in the evaluation, where appropriate.

(4) *Distant Structures.* Those structures which are not located in the immediate vicinity of the site but which are safety related shall be designed to withstand the effect of the Safe Shutdown Earthquake and the design basis for surface faulting determined on a comparable basis to that of the nuclear power plant, taking into account the material underlying the structures and the different location with respect to that of the site.

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VI. APPLICATION TO ENGINEERING DESIGN

(a) *Vibratory Ground Motion.*—(1) *Safe Shutdown Earthquake.* The vibratory ground motion produced by the Safe Shutdown Earthquake shall be defined by response spectra corresponding to the maximum vibratory accelerations at the elevations of the foundations of the nuclear power plant structures determine pursuant to paragraph (a)(1) of Section V. The response spectra shall relate the response of the foundations of the nuclear power plant structures to the vibratory ground motion, considering such foundations to be single-degree-of-freedom damped oscillators and neglecting soil-structure interaction effects. In view of the limited data available on vibratory ground motions of strong earthquakes, it usually will be appropriate that the response spectra be smoothed design spectra developed from a series of response spectra related to the vibratory motions caused by more than one earthquake.

The nuclear power plant shall be designed so that, if the Safe Shutdown Earthqake occurs, certain structures, systems, and components will remain functional. These structures, systems, and components are those necessary to assure (i) the integrity of the reactor coolant pressure boundary, (ii) the capability to shut down the reactor and maintain it in a safe condition, or (iii) the capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to the guideline exposures of this part. In addition to seismic loads, including aftershocks, applicable concurrent functional and accident-induced loads shall be taken into account in the design of these safety-related structures, systems, and components. The design of the nuclear power plant shall also take into account the possible effects of the Safe Shutdown Earthquake on the facility foundations by ground disruption, such as fissuring, differential consolidation, cratering, liquefaction, and landsliding, as required in paragraph (d) of section V.

The engineering method used to ensure that the required safety functions are maintained during and after the vibratory ground motion associated with the Safe Shutdown Earthquake shall involve the use of either a suitable dynamic analysis or a suitable qualification test to demonstrate that structures, systems and components can withstand the seismic and other concurrent loads, except where it can be demonstrated that the use of an equivalent static load method provides adequate conservatism.

The analysis or test shall take into account soil-structure interaction effects and the expected duration of vibratory motion. It is permissible to design for strain limits in excess of yield strain in some of these safety-related structures, systems, and components during the Safe Shutdown Earthquake and under the postulated concurrent conditions, provided that the necessary safety functions are maintained.

(2) *Operating Basis Earthquake.* The Operating Basis Earthquake shall be defined by response spectra. All structures, systems, and components of the nuclear power plant necessary for continued operation without undue risk to the health and safety of the public shall be designed to remain functional and within applicable stress and deformation limits when subjected to the effects of the vibratory motion of the Operating Basis Earthquake in combination with normal operating loads. The engineering method used to ensure that these structures, systems, and components are capable of withstanding the effects of the Operating Basis Earthquake shall involve the use of either a suitable dynamic analysis or a suitable qualification test to demonstrate that the structures, systems and components can withstand the seismic and other concurrent loads, except where it can be demonstrated that the use of an equivalent static load method provides adequate conservatism. The analysis or test shall take into account soil-structure interaction effects and the expected duration of vibratory motion.

(3) *Required Seismic Instrumentation.* Suitable instrumentation shall be provided so that the seismic response of nuclear power plant features important to safety can be determined promptly to permit comparison of such response with that used as the design basis. Such a comparison is needed to decide whether the plant can continue to be operated safely and to permit such timely action as may be appropriate.

These criteria do not address the need for instrumentation that would automatically shut down a nuclear power plant when an earthquake occurs which exceeds a predetermined intensity. The need for such instrumentation is under consideration.

(b) *Surface Faulting.* (1) If the nuclear power plant is to be located within the zone requiring detailed faulting investigation, a detailed investigation of the regional and local geologic and seismic characteristics of the site shall be carried out to determine the need to take into account surface faulting in the design of the nuclear power plant. Where it is determined that surface faulting need not be taken into account, sufficient data to clearly justify the determination shall be presented in the license application.

(2) Where it is determined that surface faulting must be taken into account, the applicant shall, in establishing the design basis for surface faulting on a site take into account evidence concerning the regional and local geologic and seismic characteristics of the site and from any other relevant data.

(3) The design basis for surface faulting shall be taken into account in the design of the nuclear power plant by providing reasonable assurance that in the event of such displacement during faulting certain structures, systems, and components will remain functional. These structures, systems, and components are those necessary to assure (i) the integrity of the reactor coolant pressure boundary, (ii) the capability to shut down the reactor and maintain it in a safe shutdown condition, or (iii) the capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to the guideline exposures of this part. In addition to seismic loads, including aftershocks, applicable concurrent functional and accident-induced loads shall be taken into account in the design of such safety features. The design provisions shall be based on an assumption that the design basis for surface faulting can occur in any direction and azimuth and under any part of the nuclear power plant, unless evidence indicates this assumption is not appropriate, and shall take into account the estimated rate at which the surface faulting may occur.

(c) *Seismically Induced Floods and Water Waves and Other Design Conditions.* The design basis for seismically induced floods and water waves from either locally or distantly generated seismic activity and other design conditions determined pursuant to paragraphs (c) and (d) of Section V, shall be taken into account in the design of the nuclear power plant so as to prevent undue risk to the health and safety of the public.

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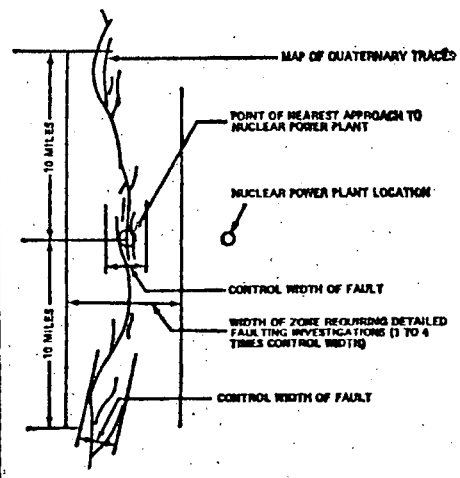

FIGURE 1—DIAGRAMMATIC ILLUSTRATION OF DELINEATION OF WIDTH OF ZONE REQUIRING DETAILED FAULTING INVESTIGATIONS FOR SPECIFIC NUCLEAR POWER PLANT LOCATIONS.

San Onofre Surfing Club

P. O. Box 324

San Clemente, California 92672

December 18, 1975

The Honorable Alan Cranston
11000 Wilshire Blvd.
Room 3220 Federal Building
Los Angeles, California 90024

Dear Senator Cranston:

I wonder if I could impose upon you and your office to clarify a situation for me. As President of the San Onofre Surfing Club I am concerned about the relationship between the San Onofre Nuclear Generating Plant and the San Onofre State Park. The Park contains in Parcel 2 one of the best surfing areas in California. When the generating plant was built Parcel 2 was then, by lease from the U. S. Marine Corps, the property of the Surfing Club. We were assured at that time by the power company that the plant posed no threat to beach users, even in front of the plant.

The property now belongs to the State as a surfing Park and there are disturbing articles on the possibility of declaring the area on either side of the plant an exclusion area for safety reasons, which would deny Californians the use of this excellent and unique beach/surfing area.

What I would like to know is this:

1. What is the present situation concerning the nuclear plant and the State Park.

2. Is an exclusion area planned. If so, how large an area and at what date is it scheduled to go into effect.

3. What effect, if any, does the nuclear initiative on the California primary ballot have upon the exclusion area.

4. If the State Park is to be included in the possible exclusion area what recourse do California citizens have to preserve this needed recreation area.

The membership of the San Onofre Surfing Club will deeply appreciate any light you can shed on this situation. I am looking forward to hearing from you.

Sincerely,

William D. Conroy

William D. Conroy
President

WC/ph

ALAN CRANSTON
CALIFORNIA

United States Senate

WASHINGTON, D.C. 20510

February 3, 1976

To: Office of Congressional Liaison
Nuclear Regulatory Commission
Washington, D.C. 20555

Enclosure from:

William D. Conroy, President
San Onofre Surfing Club
Post Office Box 324
San Clemente, California 92672

Re:

Please provide information on the possibility of creating an exclusion area on the beach adjacent to the San Onofre Nuclear Generating Plant.

I forward the attached for your consideration.

Your report, in duplicate, along with the return of the enclosure will be appreciated.

Sincerely,

Alan Cranston

Alan Cranston

Please address envelope to:
Senator Alan Cranston
Senate Office Building
Washington, D.C. 20510

Att:

Jim Forcier

The reporting requirements and the application requirements contained in Appendix I of 10 CFR Part 50 have been approved by the U.S. General Accounting Office under Clearance Number B-180225 (920071). This clearance expires June 30, 1978.

Docket Nos. 50-361
and 50-362

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Distribution:
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FJWilliams
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TBAbernathy, DTIE

San Diego Gas and Electric Company
ATTN: Mr. Jack E. Thomas
Vice President - Electric
101 Ash Street
P. O. Box 1831
San Diego, California 92112

Gentlemen:

RE: San Onofre 2/3

On May 5, 1975, the Commission published Appendix I to 10 CFR Part 50 which set forth numerical guides for design objectives and limiting conditions for operation to meet the criterion "as low as practicable" regarding releases of radioactive materials in effluents from light-water-cooled nuclear reactors. Section V.B of Appendix I requires the holders of permits or licenses authorizing the operation of light-water-cooled reactors, for which application was filed prior to January 2, 1971, to file with the Commission by June 4, 1976:

1. Such information as is necessary to evaluate the means employed for keeping levels of radioactivity in effluents to unrestricted areas as low as practicable, including all such information as is required by paragraphs 50.34a(b) and (c) not already contained in his application; and

2. Plans and proposed Technical Specifications developed for the purpose of keeping releases of radioactive materials in unrestricted areas during normal reactor operations, including expected operational occurrences, as low as practicable.

In a letter to you from D. Muller dated June 30, 1975, we indicated that the staff was in the process of developing guidance for licensees required to file information with the Commission under the provisions of Section V.B of Appendix I. This guidance is set forth in Enclosure 1.

Enclosure 1 makes reference to proposed Regulatory Guides 1.AA thru 1.FF. These guides have been published in draft form and are available in the Commission's public document room. Copies of these guides are being forwarded to you under separate cover. We are preparing additional guidance regarding

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DATE ➤						

FEB 25 1976

the formulation of Technical Specifications to implement Appendix I which will be forwarded to you in the near future. It is recommended that proposals to modify Technical Specifications related to Appendix I be deferred pending the completion of this guidance in order to obtain a consistent format for radiological effluent release Technical Specifications.

Enclosure 2 provides a list of information we will need to evaluate your facility.

The staff is in the process of determining whether plants for which application was filed prior to January 2, 1971, can be treated in a manner similar to the treatment given to later plants in the Commission's September 4, 1975, Amendment to Appendix I. On this basis, the information called for by Enclosures 1 and 2 would be sufficient to determine compliance with the criteria set forth in Section II, paragraphs A, B and C of Appendix I and the design objectives set forth in the Concluding Statement of Position of the Regulatory Staff in Docket RM-50-2, which is reproduced as an Annex to Appendix I as amended September 4, 1975. If further information is required to satisfy a plant specific assessment under Section II.D of Appendix I, we will so inform you at a later time.

Within 30 days of the receipt of this letter, you should inform us of the measures you intend to adopt or propose to meet the requirements of paragraph 50.34a. We suggest that a meeting between your staff and the NRC staff be arranged shortly thereafter to discuss the submittal of data and methods of evaluation.

Sincerely,

Original Signed by
W. R. Butler

for

R. C. DeYoung, Assistant Director
for Light Water Reactors
Division of Project Management

Enclosures:
1. Guidance to Holders of Permits to Construct or Licenses to Operate Light-Water-Cooled Reactors for Which Application was Filed Prior to 1/2/71 to Meet the Requirements of Appendix I to 10 CFR Part 50
2. Additional Information Needed from Holders of Permits or Licenses to Construct or Operate Light-Water-Cooled Reactors for Which Application was Filed Prior to 1/2/71

cc: See Next Page

OFFICE	DPM:LWR #3	DPM:LWR #3	DPM:LWR #3	DPM:AD/LWR		
SURNAME	EGoulbourne:mt	HRood HR	ODParr ODP	RCDeYoung RCD		
DATE	2/24/76	2/24/76	2/24/76	2/24/76		

cc: Rollin E. Woodbury, General Counsel
Southern California Edison Company
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California Public Utilities Commission
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San Francisco, California 94102

George Spiegel, Esq.
2600 Virginia Avenue, N. W.
Washington, D. C. 20036

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R. C. DeYoung, Assistant Director
for Light Water Reactors
Division of Project Management

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cc: See Next Page

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ENCLOSURE 1

Guidance to Holders of Permits to Construct or Licenses to Operate Light-Water-Cooled Reactors for Which Application was Filed Prior to January 2, 1971 to Meet the Requirements of Appendix I to 10 CFR Part 50

1. Licensees should provide an evaluation showing their facility's capability to meet the requirements set forth in Section II of Appendix I to 10 CFR Part 50.

2. Radioactive Source Terms used in the evaluation should be consistent with the parameters and methodology set forth in Draft Regulatory Guides 1.BB or 1.CC (as appropriate). Note: For BWRs gaseous releases from the containment building and auxiliary building should be combined to form reactor building release for pre-BWR/6 Mark III Containment designs.

3. Meteorology/Hydrology information used in the calculation of doses should be consistent with Draft Regulatory Guides 1.DD and 1.EE.

4. Dose Calculations should be consistent with Draft Regulatory Guide 1.AA.

5. Effluent Release Data from previous reactor operation should be provided, if available, for use in evaluating the source term calculations. Such data should include at least one full year of effluent release data tabulated by effluent release point, month, mode of operation (e.g., full power operation, refueling shutdown), excluding the first year of reactor operation.

6. The above evaluations should be accompanied by the information requested in Enclosure 2. Exceptions from the information requested will be considered on a case-by-case basis.

7. The staff is preparing standard Technical Specifications and will issue further guidance to licensees regarding changes to Technical Specifications to implement the Appendix I objectives. Proposed revisions to Technical Specifications by licensees based on the limiting conditions for operation set forth in Section IV of Appendix I should be withheld pending further guidance from the staff.

ENCLOSURE 2

Additional Information Needed from Holders of
Permits or Licenses to Construct or Operate
Light-Water-Cooled Reactors for Which
Application was Filed Prior to January 2, 1971

1. Provide the information requested in Appendix D of Draft Regulatory Guide 1.BB or 1.CC, as appropriate.

2. Provide, in tabular form, the distances from the centerline of the first nuclear unit to the following for each of the 22-1/2 degree radial sectors centered on the 16 cardinal compass directions.

   a) nearest milk cow (to a distance of 5 miles)

   b) nearest meat animal (to a distance of 5 miles)

   c) nearest milk goat (to a distance of 5 miles)

   d) nearest residence (to a distance of 5 miles)

   e) nearest vegetable garden greater than 500 ft^2 (to a distance of 5 miles)

   f) nearest site boundary

   For radioactivity releases from stacks which qualify as elevated releases as defined in Draft Regulatory Guide 1.DD, identify the locations of all milk cows, milk goats, meat animals, residences, and vegetable gardens, in a similar manner, out to a distance of 3 miles for each radial sector.

3. Based on considerations in Draft Regulatory Guide 1.DD, provide estimates of relative concentration (X/Q) and deposition (D/Q) at locations specified in response to item 2 above for each release point specified in response to item 1 above.

4. Provide a detailed description of the meteorological data, models and parameters used to determine the X/Q and D/Q values. Include information concerning the validity and accuracy of the models and assumptions for your site and the representativeness of the meteorological data used.

5. If an onsite program commensurate with the recommendations and intent of Regulatory Guide 1.23 exists:

   a) Provide representative annual and monthly, if available, joint frequency distributions of wind speed and direction by atmospheric stability class covering at least the most recent one year period of record, preferably two or more years of record. Wind speed and direction should be measured at levels applicable to release point elevations and stability should be determined from the vertical temperature gradient between measurement levels that represent conditions into which the effluent is released.

   b) Describe the representativeness of the available data with respect to expected long-term conditions at the site.

6. If recent onsite meteorological data are not available, or if the meteorological measurements program does not meet the recommendations and intent of Regulatory Guide 1.23:

   a) Provide the best available meteorological data in the format described in item 5.a above.

b) Describe the representativeness of the available data with respect to onsite and near site atmospheric transport and diffusion conditions, and with respect to expected long term conditions at and near the site.

c) Provide a description of the meteorological measurements used for collection of the data presented. This description should include the location of the sensors with respect to the power plant(s) and other prominent topographic features (including buildings) and accuracy of the instrumentation.

d) Provide a commitment to establish a program to meet the recommendations and intent of Regulatory Guide 1.23, or provide sufficient justification to allow the present program to remain unchanged.

7. Describe airflow trajectory regimes of importance in transporting effluents to the locations for which dose calculations are made.

8. Provide a map showing the detailed topographical features (as modified by the plant, on a large scale, within a 10-mile radius of the plant and a plot of the maximum topographic elevation versus distance from the center of the plant in each of the sixteen 22-1/2 degree cardinal compass point sectors (centered on true north), radiating from the center of the plant, to a distance of 10 miles.

9. Provide the dates and times of radioactivity releases from intermittant sources by source location based on actual plant operation and, if available, appropriate hourly meteorological data (i.e., wind direction and speed, and atmospheric stability) during each period of release.