

(iii) Interim reports shall be submitted by the CVA, as appropriate, to the Regional Supervisor and the lessee.

(iv) A final report shall be prepared by the CVA covering the adequacy of the entire installation phase giving details of how, by whom, and when the independent monitoring activities were conducted and providing any special comments considered necessary. The final report shall describe the CVA's activities during the verification process, summarize the findings, contain a confirmation or denial of compliance with the approved installation plan, and a recommendation to accept or reject the installation. The report shall be submitted to the lessee and, in triplicate, to the Regional Supervisor within 2 weeks of completion of the installation of the platform.

(4) All data provided to the CVA shall be handled in the strictest confidence and not be released by the CVA without the consent of the lessee.

(5) Individuals or organizations acting as CVA's for a particular platform shall not function in any capacity other than that of a CVA for that specific project, whenever the additional activities would create a conflict, or appearance of a conflict of interest.

(b) *CVA nomination.* (1) *Nomination.* Individuals or organizations shall be nominated by the lessee planning to use their services. The lessee shall specify whether the nomination is for the design, fabrication, or installation phase of verification; for two phases; or for all three phases.

(2) *Qualifications.* Qualification submissions shall contain sufficient information to determine compliance with § 250.902(b)(1)(ii) of this part.

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§ 250.904 Environmental conditions.

(a) *General.* The performance standards of this section pertain to all platforms covered by these requirements regardless of the fabrication material.

(1) *Environmental considerations.* All environmental phenomena appropriate to the areas of fabrication, transportation, and installation of an offshore platform shall be considered and their influence on the platform accounted for. Such phenomena shall include

wind, waves, current, temperature, tide, marine growth, chemical components of air and water, snow and ice, earthquakes, tsunamis, seiche, and other appropriate phenomena.

(2) *Environmental data.* Statistical data and defensible statistical and mathematical models shall be employed to describe the range of pertinent expected variations of environmental phenomena. Defensible data supplied by meteorologists, oceanographers, or other appropriate specialists are acceptable as the basis for design. Where possible, environmental phenomena shall be described by the characteristic parameters most relevant in the evaluation of effects on the platform.

(b) *Statistical methods.* (1) When statistical methods are employed in the determination of parameters characterizing environmental phenomena, the statistical methods and distributions employed shall be appropriate to their application as evidenced by relevant statistical tests, confidence limits, and other measures of statistical significance.

(2) Short-term and long-term variations of environmental phenomena such as wind, waves, and current shall be described by statistical distributions relevant to the parameter considered. Defensible statistical modeling techniques shall be used in the prediction of extreme values.

(3) When hindcasting techniques are employed to approximate environmental parameters, the validity of the model used shall be defensible.

(c) *Design considerations.* (1) *General.* A thorough assessment of the environment in the vicinity of the installation site shall be made to determine the conditions expected to occur at the site over the life of the platform.

(2) *Design environmental condition.* (i) "Design environmental condition" means the environmental factors producing the most unfavorable effects on the platform. Parameters describing the design environmental condition are given in paragraphs (c)(2)(ii) (A), (B), and (C) of this section.

(ii) The design environmental condition shall reflect the various environmental events that individually or collectively represent the most severe

conditions the platform is anticipated to experience. Such conditions shall be formulated with a set of parameters that describe the relevant environmental events, including the following:

(A) The maximum wave corresponding to a selected recurrence period together with the associated wind, current, and appropriate ice and snow effects;

(B) The minimum air and sea temperatures appropriate to the event being treated; and

(C) The maximum water level due to tide and storm surge.

(iii) Consideration shall be given to other combinations of the parameters specified in paragraph (c)(2)(ii)(A) of this section involving either maximum wind, maximum current, or maximum ice load which may cause a greater response of the platform.

(iv) In general, the recurrence period chosen for the events specified in paragraphs (c)(2)(ii)(A) and (C) of this section shall primarily be based on the design service life of the platform. For platforms designed for a service life of 20 years, the recurrence period chosen for the determination of these events shall not be less than 100 years. For other service lives, the design event recurrence interval shall generally be adjusted to provide for a risk of occurrence which does not exceed the risk of occurrence for the 20-year/100-year combination.

(v) For installation sites located in seismically active areas, see paragraph (d)(8) of this section.

(3) *Operating environmental conditions.* Operating environmental conditions means the set of characteristic parameters of environmental conditions associated with a normal function or operation to be conducted on the platform. For each such intended normal function or operation, the lessee shall determine a set of characteristic parameters of environmental conditions.

(d) *Specific environmental conditions.* (1) Waves information including the following:

(i) Wave conditions considered for design shall be described by defensible statistical and/or deterministic methods.

(ii) Parameters characterizing design environmental waves shall be based on

wave statistics or the results of defensible analytic prediction methods such as hindcasting techniques.

(iii) When using probabilistic analyses, the probability of occurrence of various wave-height groups classified by directionality and for a wide range of possible periods (i.e., tables of exceedance) shall be determined. Where required by the method selected to predict extreme values, the average duration of various wave-height groups (i.e., persistence data) shall be determined. All extrapolations and long-term wave data analyses shall use defensible techniques, and available data on extreme values measured in the vicinity of the site shall be included in the long-term prediction.

(iv) When using deterministic methods, waves shall be described by the parameters, height, period, and other relevant shape characteristics. The design-wave formulation used shall be valid for the problem considered.

(v) Breaking-wave criteria appropriate to the installation site shall be determined using defensible formulations.

(vi) If spectral wave data are established for the dynamic analysis of structural response to waves, such data shall be derived in accordance with defensible methods. If spectral data are not available in adequate quantities for the intended application, defensible mathematical formulations that best fit the available data shall be used.

(2) Wind information including the following:

(i) Wind velocities shall be classified on the basis of their duration. Wind velocities having a duration of less than 1 minute are referred to as gust winds. Wind velocities having a duration equal to or greater than 1 minute are referred to as sustained winds. The reference elevation is 33 feet above still-water level.

(ii) Wind conditions considered for design shall be described by defensible statistical or deterministic methods.

(iii) Wind profiles shall be determined on the basis of defensible statistical or mathematical models. Corrections of wind velocity data to averaging periods other than those employed in the collections of data shall be based on defensible methods.

(iv) Distribution of the direction and speed of wind approach to the platform shall be determined, or alternatively, winds shall be considered to approach from any direction.

(3) Current information including the following:

(i) Current velocities to be used in design shall be determined on the basis of the best statistics available. Tidal current, wind-generated current, density current, circulation current, and river-outflow current shall be combined on the basis of their probability of simultaneous occurrence in arriving at current velocities to be used in design.

(ii) Current velocity profiles shall be determined on the basis of site-specific studies or defensible empirical relationships. Unusual profiles due to bottom currents and stratified effects in regions near the mouth of large rivers shall be accounted for.

(iii) Directional data on currents which exist in the absence of waves shall be described for each month or by season. Unless a detailed study of current directions is made, currents shall be assumed to run in any direction.

(4) Tide information including the following:

(i) The design storm-tide elevation shall be identified for the installation site. For design purposes, the design environmental wave height shall be superimposed on the storm-tide elevation.

(ii) Variations in the elevation of the daily lunar tide shall be used in determining the elevations of boat landings, barge fenders, and the corrosion-prevention treatment of platforms in the splash zone (see § 250.906(c)(5) of this part).

(iii) The assumed maximum or storm tide shall include astronomical tide, wind tide, and pressure-induced storm surge. Minimum-tide estimates shall be based on either the astronomical or lunar tide only. The water depth shall be referenced to a datum (e.g., mean low/water or mean low low/water) consistent with all other references to elevations and depths.

(iv) If data directly applicable to the installation site are not available, the best estimate based on data for nearby locations shall be used.

(5) Temperature information including the following:

(i) Extreme values of low temperatures shall be expressed in terms of the most probable, lowest values with their corresponding recurrence periods;

(ii) Air, sea surface, and seabed temperatures shall be accounted for in describing the environment and in justifying the temperatures used in design.

(6) Snow and ice information including the following:

(i) If the platform is to be located in an area where sea ice may develop or drift, ice conditions shall be accounted for. Data shall be derived from actual field investigations, laboratory analyses, or other appropriate analogous sources;

(ii)(A) Relevant statistical and physical data on the sea-ice and snow conditions shall be described with particular attention to the following:

(1) Concentration and distribution of ice and snow,

(2) Morphology of sea ice (e.g., ice floes, ice ridges, or rafted ice),

(3) Mechanical properties of ice (mode of failure),

(4) Drift speed and direction,

(5) Thickness of ice and keel depth of pressure ridges, and

(6) Probability of encountering icebergs, ice floes, ice-floe fragments, and hummocks.

(B) The weight of the maximum snow and ice anticipated to accumulate on the platform shall be determined.

(7) Marine growth information including the following:

(i) When assessing the potential for marine growth, account shall be taken of relevant observations and experience in the area. In the absence of such information, defensible analytical techniques shall be employed to assess the potential for marine growth. These techniques shall take into account salinity, oxygen content, hydrogen-ion concentration value, current, temperature, water turbidity, and other appropriate factors.

(ii) Consideration shall be given to the selection of surface coatings which resist breakdown by micro-organisms which reduce the onset of corrosion.

(iii) Particular attention shall be paid to the effects that marine growth

has on surface roughness characteristics of submerged structural members.

(8) Earthquake information including the following:

(i) The effects of earthquakes on platforms located in areas known to be seismically active shall be addressed.

(ii) Except for the provision of § 250.905(d)(5)(ii) of this part, the seismicity of the site shall be determined. Preferably, this shall be based on site-specific data. However, regional data shall be deemed acceptable for use when site-specific data are not available and the regional data are interpreted in a manner to produce the most adverse effect on a platform at the specific site. The following data shall be obtained:

(A) Recurrence interval of seismic events appropriate to the design life of the structure,

(B) Proximity to active faults,

(C) Type of faulting,

(D) Attenuation of ground motion between the faults and the site,

(E) Subsurface soil conditions, and

(F) Records from past seismic events at the site or from analogous sites.

(iii) The use of available data to describe the seismic characteristics of the site is permitted where it can be shown that such data are consistent with the requirements of paragraph (d)(8)(ii) of this section.

(iv) The seismic data shall be used to establish a quantitative design earthquake criterion describing the design earthquake-induced ground motion. In addition to ground motion and as applicable to the installation site, the following earthquake-related phenomena shall be taken into account:

(A) Liquefaction of subsurface soils,

(B) Submarine slides,

(C) Tsunamis, and

(D) Fluid motions in tanks.

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§ 250.905 Loads.

(a) *Introduction.* This section covers the identification, definition, and determination of the loads to which a fixed offshore platform may be exposed during and after its transportation and installation. The requirements contained in paragraphs (b) through (d) of

this section apply to both steel-piled platforms and concrete-gravity platforms. Additional requirements covering steel-piled platforms are contained in paragraph (e) of this section. Additional requirements covering concrete-gravity platforms are contained in paragraph (f) of this section.

(b) *General.* (1) All types of loads specified in paragraphs (c)(1) through (c)(5) of this section shall be accounted for in the design and operation of the platform.

(2) Where applicable, the effects of increased dimensions and weight due to marine growth and snow and ice accumulation shall be addressed in the design.

(c) *Load definition.* (1) *Dead loads.* Dead loads associated with the platform are loads that do not change during the mode of operation under consideration. Dead loads include the following:

(i) Weight in the air of the platform (refer to paragraphs (e)(1) and (f)(1) of this section for itemizations of weight for pilefounded platforms and gravity platforms, respectively).

(ii) Weight of permanent ballast and the weight of permanent machinery including liquids at operating levels.

(iii) External hydrostatic pressure and buoyancy in calm sea conditions calculated on the basis of the design waterline.

(iv) Static earth pressure.

(2) *Live loads.* Live loads associated with the normal operation and use of the platform are loads that could change during the mode of operation considered. Live loads acting after fabrication or installation include the following:

(i) Weight of drilling and production equipment that can be removed such as derrick, draw works, mud pumps, mud tanks, separators, and tanks.

(ii) Weight of crew and consumable supplies such as mud, chemicals, water, fuel, pipe, cable, stores, drill stem, and casing.

(iii) Weight of liquids in storage tanks.

(iv) Forces exerted on the platform due to drilling, e.g., the maximum derrick reaction when placing or pulling casing.