

BICHTEL CORPORATION



ENGINEERS-CONSTRUCTORS

TWO TWENTY BUSH STREET . . . SAN FRANCISCO 4, CALIFORNIA

June 9, 1961

Secretary
U. S. Atomic Energy Commission
Washington 25, D. C.

Attention: Director, Division of Licensing and Regulation

Gentlemen:

We have reviewed the Proposed 10CFR 100, "Reactor Site Criteria", as published in the Federal Register on February 11, 1961, in the light of our experience and interest in nuclear power plants and submit our comments herewith. We believe that the formulation and publication of criteria by the Commission is useful to industry and encourage the Commission to continue this effort.

We believe that the general form and approach used in the proposed criteria is logical and of value to those contemplating the construction of nuclear power plants. Such a guide will be of most use at the time that reactor types, alternate sites and general engineering features are under consideration. The Criteria must recognize the importance of the protective engineering features which will or can be incorporated into the design without at the same time requiring engineering details which will only be available at the time of preparing the definitive design. The Criteria should also be sufficiently flexible to take account of experience and new data as these are developed.

We believe that this Criteria should be restricted to power reactors since the technical and economic considerations for testing reactors are substantially different.

Section 100.2 of the proposed criteria implies that reactors which are novel in design are necessarily less safe than conventional reactors. Some novel devices or plant concepts may increase plant safety despite the lack of experience with them. Also, this section states that the only compensation for reactors which have relatively unproven safety features is greater isolation. We consider that design precautions can substitute for greater isolation and these should be given full consideration.

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Similarly, Section 100.10 tends to minimize the importance of plant design features among the factors considered when evaluating sites. The inherent safety features of the plant and the extra safety provisions provided in the design should be recognized as having equal importance as well as the starting point for any site evaluation. In fact, we believe that risks can be reduced more by design than by isolation.

While we recognize the problems involved in the very low probability exposure of large numbers of people to radioactivity released from a reactor incident, we do not believe that the proposed establishment of a "population center distance" as defined in Section 100.3 and used in Section 100.11 is a logical or technically sound way of dealing with this matter. The definition is inadequate for practical use and the reasoning behind the application of a factor of 1-1/3 is not set forth.

In our opinion, some method of evaluating the risk of exposing large numbers of persons should be developed taking into account the integrated man-rem exposure potential based on the proposed plant including its design features, the meteorology, and the size, distance, and direction of areas of substantial population.

The statement in Section 100.10 (iii) on release of liquid radioactive effluents is in our opinion unduly alarming. It seems very unlikely that future inland sites can be found which have water supplies which are not used at some downstream point. Although contamination in the hydrographic area may be more persistent than atmospheric contamination, there is always ample time for warning before the water is used. We would suggest "The plant design must provide reasonable assurance that radioactive liquid effluents cannot accidentally contaminate usable water supplies and prevent use of the water for long time periods. The provisions to prevent accidental releases as well as the importance of the potentially contaminated water must be considered."

Section 100.11 (a) states that the applicant should assume a fission product release illustrated in Appendix A, corresponding to a core meltdown, as the basis for evaluation. This would define the maximum credible accident and containment

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design accident for all plants. In our opinion, present design efforts and future work will make a core meltdown an extremely improbable event, even to the most critical evaluator. We believe that the statements in this section should be modified to allow this conclusion when design and operating experience demonstrates that our confidence is justified.

The intent and importance of the example in Appendix A is not clear. Paragraph (b) of Section 100.11 should clarify this point. From our experience, it would be unreasonable to assume that Appendix A can even be used as an initial guide for the required distances without some adjustment for the reactor design, containment features, and local meteorology. We feel that Appendix A should be eliminated from the Criteria or, if retained, additional examples should be included showing calculations for plants with additional safety and containment features. Reference to any such examples should indicate that appropriate design features, site data, and technical facts should be used in preparing initial estimates of the specified distances in accordance with the Criteria.

We note that in the present Appendix A inversion conditions were used with the air moving in the same direction for evaluating the leakage at the outer edge of the low population zone over the entire course of the accident. This seems quite unrealistic and misleading. Assuming an inversion only 50% of the time with the air moving toward any one point 50% of the time would be a simple and more realistic worst case assumption, although still conservative. In any case, conditions pertinent to the site in question should be utilized in making the calculations.

Site selection is a major factor in the initiation of new nuclear power plants, which in turn, is generally recognized as an important national goal. The modifications which we suggest are intended to allow for future improvements through design and operating experience and to avoid public dispute on the intent of the proposed guide. We hope that you will give serious consideration to these comments as well as comments of other industrial organizations which share our interest in not only building economically attractive but safe nuclear power plants.

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In this connection, we have worked closely with the Atomic Industrial Forum Reactor Safety Committee and wish to indicate our support and approval of their recommendations.

Sincerely yours,



W. Kenneth Davis
Vice President

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