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June 26, 1959

Mr. H. L. Price, Director
Division of Licensing & Regulation
United States Atomic Energy Commission
Washington 25, D. C.

Dear Sir:

Please refer to your letter of May 26, 1959, addressed to our predecessor Atomic Energy Division, inviting comment on a notice of proposed rule-making by the AEC published in the Federal Register of May 23, 1959. This proposed regulation specifies the environmental factors to be considered in site evaluation for power and test reactors.

We fully appreciate the problems of preparing a comprehensive regulation for evaluating the adequacy of specific sites for high-powered test and power reactors. Without specifics in the licensing regulations, there will be a substantial risk to the applicant of prolonged and possibly unsuccessful licensing negotiations. An unsuccessful license negotiation would result in a significant monetary loss and unfavorable publicity for the applicant. Depending on the circumstances, a risk of this type could tip the scales against an application for a nuclear reactor where it might otherwise be attractive.

However, the safety of a nuclear reactor of a particular design depends upon three inter-related factors - site, containment, and exclusion. In our opinion, the proposed regulations are in error in suggesting that there are minimal values of each of these variables which no amount of expense or ingenuity spent on other factors can overcome. For example, while it is desirable that power and test reactors should be so located that the population density in surrounding areas is small, novel means of containment (perhaps not yet thought of) might permit departure from this general rule. It seems to us unwise to make statements regarding minimal values of exclusion distance and site based upon the assumption that technological progress will not uncover containment permitting an equivalent degree of safety. Under some circumstances, it may be highly uneconomic to meet the suggested exclusion and site requirements and yet at the same time may be feasible to insure a satisfactory degree of safety by ingenious containment measures.

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While we appreciate the intent of the AEC in that such regulations should be flexible and subject to change, we are also keenly aware that these regulations will be copied by state agencies and, as is historically true, will acquire rigidity, permanency, and inflexibility to the great detriment of the whole atomic energy effort.

As more appropriate statements to meet the twin objectives of (a) guidance to prospective reactor operators, and of (b) a reasonable awareness of the inter-relationships between site, exclusion, and containment, we suggest the following changes in language*:

Paragraph b. "For any power or test reactor, a minimum radius on the order of one-quarter mile ~~will usually be found necessary~~ [should be initially considered.] For large power reactors a minimum exclusion radius on the order of one-half to three-quarter miles ~~may be required~~ [should be initially considered. Otherwise very expensive containment structures may be necessary.] "

Paragraph c. "Power and test reactors should be so located that the population density in surrounding areas, outside the exclusion zone, is small [if this is at all possible. Otherwise, expensive containment will probably be necessary.] ~~It is usually desirable that the reactor should be~~ [For initial consideration, sites should be considered that are] several miles distant from the nearest town or city and for large reactors a distance of 10 to 20 miles from large cities. Where there is a prevailing wind direction ~~it is usually desirable to avoid locating a power or test reactor~~ [sites should not be considered within several miles up-wind from centers of population.] Nearness of the reactor to airfields, arterial highways and factories is discouraged. [If the above precautions cannot be observed, correspondingly more rigid containment must be developed.] "

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* Present language to be changed is crossed out. Suggested additional language is in square brackets.

We feel that the proposed regulation has one specific deficiency in applying it to our current licensing requirements. We are licensing and constructing low power test, research and/or training reactors. Since such reactors might conceivably be considered "Test Reactors", we feel that the regulations should specifically omit any such low power reactor, providing that it can be shown that there would be no significant release of fission products assuming a complete failure of the safety instrumentation. A definition of "Test Reactor" as used in the proposed statement is certainly required. It would appear that operation substantially in excess of 100 kw would have to be involved before site aspects of the regulation would be applicable.

Also in specific reference to low power test, research and/or training reactors, consideration should be given to establishing what constitutes the required site data. For example, the site hydrology, population density, or meteorological data other than frequency and types of destructive storms do not enter into the evaluation of a site for a reactor of this type. Since assembly of this site data represents a significant cost and the data do not bear on the safety evaluation, the requirement for inclusion of this data in a licensing application should be specifically omitted.

Your consideration of these suggestions would be appreciated.

Very truly yours,

E. J. Wilson, Jr.

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cc: Mr. J. C. Linsenmeyer