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STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO : B. F. Cope, Director, Reactor Division DATE: June 23, 1959

FROM : LeRoy H. Jackson, Director, Engineering Division

SUBJECT: NOTICE OF PROPOSED RULE MAKING

SYMBOL: EER:EFN

Pursuant to your memorandum of June 11, subject as above, we have reviewed the notice of proposed rule making on site evaluation for power and test reactors and have the following comments:

1. In general, it is our opinion that the proposed amendment to the regulations to state site criteria for evaluation of proposed sites is a desirable undertaking and could serve a worthy objective. It is also our opinion, however, based on our reading and analysis of this first notice, that much improvement in quality, clarity, and character of the information to be presented must be achieved to reach this objective. As shown by our comments below, there are a number of ambiguities in the present write-up and some of the statements lead us to believe that much more solid thinking must be brought to bear on the subject.

2. It is not all clear from the introductory paragraphs just what the Commission intends to incorporate in its regulations. Are the so-called site factors listed in the notice to become part of Commission regulations or are they yet to be developed "site criteria" to be incorporated, or a combination of both? Also, at one point, the statement refers to "safety factors" and at other points to "site factors" with no distinction between the two apparently intended. The interests of clarity again are not served when, in the second paragraph, reasons are cited for not being able to present definitive criteria for general application and yet, in the third paragraph, the public is invited to submit comments and suggestions for the very same criteria "which might be incorporated in the Commission's regulations".

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3. It is stated that the proposed regulation will cover criteria for the evaluation of sites for "nuclear power and test reactors". We wonder what types of test reactors are to be covered. Are they test reactors for power and power demonstrations only? What about materials testing?

   We believe that power reactors and test reactors are sufficiently different so that separate treatment may be warranted. Significant differences include the degree to which the reactor is designed prior to initiation of construction, and the degree to which operating conditions and hazards can be predicted, and amount of developmental work required to complete the design. Based on these criteria, many so-called power reactors might really be classified as test reactors, or developmental power reactors. In any event, the regulations and criteria should be specific on the area of coverage.

4. As pointed out in the second paragraph and again in paragraph "g", protective devices can be engineered so as to mitigate some of the environmental deficiencies at a particular site. This makes the development of definitive site criteria for evaluation meaningless unless criteria were also developed and published concurrently on the various types of protective devices that would be acceptable.

5. Under paragraph "a", it is stated the issuance of a construction permit does not imply that the issuance of an operating license will be granted later. This is a highly undesirable situation for the following reasons:

   a. Any organization would be most unwise to make a capital outlay for a power reactor installation on the basis of a construction permit if there was any reasonable doubt that an operating permit would be issued.

   b. The Commission would find itself in an almost untenable position in permitting an organization to construct a plant should the operating permit be refused. At the time the action is taken for an operating permit, the fact that a plant has already been constructed must necessarily become a large factor, which makes a decision on the technical matter most difficult.

We realize that, at the present status of the art, separate permits must be issued initially covering construction at a particular site and later actual operation. However, it is our hope and recommendation that the ultimate situation will be that a single permit be issued covering both construction and operation. This should be the Commission's aim for realization in the not too distant future.

6. In paragraph "b", a rather unsuccessful effort is made to give an idea of the size of the exclusion area required. The lack of a concrete basis for determining a reasonable exclusion area is most disturbing. We are of the opinion that the citing of such large figures as one-half to three-fourths miles radius, as the minimum exclusion radius that may be required for large power reactors, will cause unnecessary concern on the part of licensee's over land requirements for their proposed projects.

   We believe that a realistic approach to this is to set limiting boundary values for radiation levels and concentrations of gaseous, solid, and liquid radioactivity originating from the reactor installation. The exclusion area would then be defined as the minimum area necessary to provide reasonable assurance that these boundary conditions can be maintained. This would also do much to remove from the realm of conjecture what is meant by "....create (an) undue hazard to the health and safety of the public".

7. That reactors should be located away from population densities is axiomatic, but it is also obvious that there is no assurance that, during the life of the project, be it 30 years, 40 years, or even 10 years, the inevitable population shifts would still leave the reactor as isolated as it was when the license was issued. The additional criteria in paragraph "c", which discourages the location of reactors near air fields, arterial highways, and factories, may also be unrealistic from the long range viewpoint since there are no guarantees under the law that such facilities would not be erected in the proximity to reactors sometime in the future. We suggest that the evaluation of the site, with respect to any criteria based on such factors, recognize the transitory nature of the premise. Over-emphasis of these factors in site evaluation should be avoided.

8. The statement "A site should not be located on a fault", as given under paragraph "e", is rather naive. Better information with little additional effort could have been obtained by citing the reference source for codes and standards which govern design for seismological considerations.

   The other statements under "d", "e", and "f" are correct and provide good material for an after-dinner speech. Unfortunately, they provide little basis for determining, in advance, whether or not a site will be approved. Again, we suggest going back to the specification of acceptable boundary conditions.

LeRoy H. Jackson