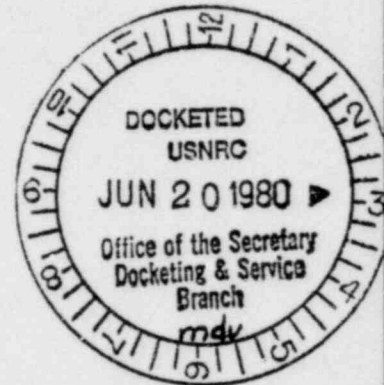




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(45 FR 18023)

June 18, 1980  
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Secretary of the Commission  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

ATTN: Docketing and Service Branch

Subject: Comments on Advanced Notice of Proposed Rulemaking on 10 CFR 20.

Dear Sir:

Combustion Engineering has reviewed the Advanced Notice of Proposed Rulemaking (ANPRM) for 10 CFR Part 20, "Standards For Protection Against Radiation" as published in the Federal Register on March 20, 1980 and provides the following comments for your consideration.

FR18024 - "Essential Elements Of The Radiation Protection Standards"

- (a) Under the heading of "Radiological Protection Principles," several basic assumptions and derived principles are stated which the NRC considers as essential elements to be contained in the regulations. We recommend that assumptions be clearly identified as being such and be accompanied, where appropriate, by a full explanation of their attendant implications. This is in keeping with the NRC's stated objective of presenting the bases for radiological protection, in terms understandable to the layman.

As a case in point, the ANPRM identifies as an essential element of radiation protection standards the concept of a linear relationship without threshold between dose and probability of stochastic effect. However, the International Commission on Radiological Protection (ICRP) in its Publication No. 26, clearly identifies this concept as a simplifying assumption for the purposes of addressing the complex relationship between dose received by an individual and any particular stochastic biological effect. The ICRP cautions the user of such an extrapolation to recognize that, as a comparative assessment of an upper limit of risk, it may lead to an over-estimate of the risk involved which in turn could result in the choice of alternative practices that are more hazardous than practices involving radiation exposures. Comparable language should be included in the

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text of this standard to emphasize that the linear hypothesis is specifically identified as an upper limit of risk intended for use in comparing the hazard of a practice involving radiation exposure with either the benefits derived or with a comparably conservative hazard assessment of an alternative practice not involving radiation exposure.

The ANPRM identifies as a basic radiation protection principle that no practice or operation involving exposure to radiation should be adopted unless its introduction produces a positive net benefit. We agree with this statement in principle. However, we question the feasibility of defining specific quantifiable criteria for compliance that meet the NRC's stated objective of being amenable to verification by the Commission's inspection programs. If this statement is retained, it should be made clear that a quantitative showing of net benefit is not required to justify each and every activity involving exposure to radiation.

The principle of maintaining exposures As Low As Reasonably Achievable (ALARA) is stated along with reference to taking economic and social factors into account. While we assume that the abbreviated reference to economic and social factors simply reflects the desire for brevity in the ANPRM, we recommend that the full definition of ALARA in Section 20.1(c) of the present regulations be retained in any revision of 10 CFR 20.

As noted above, the ICRP cautioned that an overestimate of radiological risks may lead to reliance on alternatives which are more hazardous than practices involving radiation exposure. As an extension of this reasoning, we recommend that the following be included as a principle of radiation protection in addition to those presently listed: Radiation protection requirements shall be established considering a comparison of radiological and non-radiological risks so that reliance on practices that pose greater risks than those associated with radiation exposure will not be encouraged.

- (b) Under the heading "Standards for Individual Occupational Exposures," we recommend that the NRC not adopt the recommendations of the ICRP in regard to the numerical limits for combined internal and external dose until such time as practical means for the determination or measurement of the internal dose are devised and a clear definition of the number and identity of the organs to be considered is made. If routinely required, the time consuming and complex nature of present methods for assessing internal dose could be extremely disruptive to normal facility operations because of the delay imposed by obtaining internal dose measurements before assigning personnel to additional work involving radiation exposure. We believe this to be totally unnecessary from a safety point of view because experience has shown that the internal dose is a small fraction of the external dose under normal conditions. We believe that measurement of the internal dose is only necessary in the rare event in which the dose from a single uptake of radioactive material might be expected to contribute a reasonable fraction of the regulatory limit.

We agree with the need for the revision of 10 CFR Part 20 to include provisions for planned special exposures, overexposure situations and emergency overexposures. We suggest, however, that such special exposure provisions should not be quantitatively regulated. It is recommended that such provisions be made as guidelines through reference to those presently specified in National Council on Radiation Protection (NCRP) Report No. 39, and ICRP Report No. 26.

- (c) Under the heading "Standards for Exposures of the General Public," we repeat our recommendation that the NRC not adopt at this time the recommendations of the ICRP for combined internal and external dose limits. Numerical criteria for the effluent releases from nuclear power plants are given in 10 CFR Part 50, Appendix I, and for the nuclear fuel cycle in 10 CFR Part 190. The proposed revision should not modify or duplicate these regulations, result in duplicate reporting to the NRC and EPA, or result in distinctions between licensees within the nuclear fuel cycle and other licensees of radioactive material unless distinctions are clearly warranted.

We strongly support the development of limits of contamination for release of material for unrestricted use and for disposal as non-radioactive waste and the development of limits for burial of radioactive waste in other than licensed burial grounds.

- (d) Under the heading "Requirements for a Radiation Protection Program," numerous areas are listed that the NRC states should be covered by requirements and procedures. It is not clear whether the NRC ultimately intends to state specific requirements and procedural provisions or, instead, to provide general guidelines or objectives regarding the listed activities. We recommend that, in general, specific requirements and procedural provisions not be included in the regulations. Flexibility is required to enable each licensee to optimize procedures for his particular circumstances and this flexibility is best preserved by incorporating guidelines and objectives into the regulations rather than specific requirements. For example, the stated need for procedures for responding to emergency situations and for managing overexposures could be addressed in the regulations by referring to the guidelines in NCRP Report No. 39 and ICRP Report No. 26.

In addition, establishing specific procedural requirements in the regulations could have negative effects other than loss of flexibility. The ANPRM states that procedural requirements should be provided for radioactive waste disposal. The establishment of specific procedural requirements for the disposal of radioactive waste could reduce the incentive to develop improved disposal technology and potentially eliminate viable techniques as the regulatory process falls behind the pace of developing technologies. Therefore, it is recommended that such specific procedural requirements not be included in the proposed revision to 10 CFR Part 20.

The ANPRM states that requirements should be provided for transportation of radioactive materials. Packaging and transportation of radioactive material is, however, presently regulated by 10 CFR Part 71. Should the NRC determine that additional requirements for radiation protection during packaging or transport be required, we recommend that such requirements be included in 10 CFR Part 71. We do not recommend the inclusion of these requirements in 10 CFR Part 20 as they would result in duplication of regulation.

FR18025 - "Areas In Part 20 That Need Improvement"

- (a) Under the heading "Radiological Protection Principles," the ANPRM states that special provisions to limit collective doses should be made. We question the value of establishing a collective dose limitation for the nuclear power industry in light of the already established principle that "all exposures shall be kept as low as reasonably achievable, economic and social factors being taken into account." Moreover, implementation of such a regulation would, in our opinion, not serve to either significantly improve the performance of radiation protection programs or reduce the collective occupational exposure to radiation. Available data indicate that the collective dose at nuclear power facilities is more dependent on the nature of the maintenance activities than on the proficiency of the radiation protection programs employed. An annual collective dose limit could extend the period of time over which a maintenance activity is performed and, therefore, extend the period of time over which the associated dose is received. However, it would not be likely to produce any reduction in the ultimate collective dose. Clearly, a collective dose limit could disrupt facility operations by prolonging maintenance activities and extending outages. This disruptive effect would not be compensated by increased safety, would be unwarranted and could be in violation of the proposed principle of not establishing radiation protection principles that could encourage reliance on more hazardous alternatives. Therefore, it is recommended that the subject of collective dose limitation be deleted from the proposed revision to 10 CFR Part 20.

The ANPRM states that the ALARA principle for both effluents and occupational exposures should be strengthened and quantitative guidelines should be established wherever possible for NRC licensed facilities. However, numerical ALARA criteria presently exist for offsite exposures for nuclear power plants and nuclear fuel cycle facilities through 10 CFR Part 50, Appendix I and 40 CFR Part 190. Duplication of regulation by implementing similar numerical criteria in 10 CFR Part 20 is not recommended. Numerical criteria for occupational exposures may, depending on how low they are set, be counter productive as they could result in an increase in the collective occupational dose. Moreover, the NRC already addresses occupational ALARA requirements in the review of Safety Analysis Reports and has published detailed guidelines in Regulatory Guides for maintaining occupational doses ALARA. In view of the various factors that affect occupational exposures and the degree to which they are facility-specific, we believe the flexibility of the present approach is superior to the adopting of a quantitative ALARA criterion whose establishment may, in any case, be impractical.

- (f) Under the heading "Miscellaneous," the ANPRM states that the SI system of units for radiation protection should be considered for adoption into the proposed revision to 10 CFR Part 20. These units have not, as yet, received either wide acceptance or understanding among the people employed in the radiation protection programs at nuclear facilities. Adoption of the SI system of units would encounter many problems in practice and interpretation of regulation. Therefore, it is recommended that more time be allowed for acceptance by industry before adoption of these units is required.

Combustion Engineering welcomes this opportunity to comment on the proposed rulemaking. If you have any questions on our comments, please feel free to call on me or Mr. G. D. Hess of my staff at (203)688-1911, Extension 4579.

Very truly yours,

COMBUSTION ENGINEERING, INC.



A. E. Scherer  
Director  
Nuclear Licensing

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