CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
4 IRVING PLACE
NEW YORK 3, N. Y.

May 31, 1961

J. F. FAIRMAN
SENIOR VICE PRESIDENT

Mr Harold L Price
Acting Director of Regulation
Atomic Energy Commission
Washington 25 D C

Dear Mr Pri

In response to the release for public comment, dated February 10, 1961, by the AEC of "Notice of Proposed Guides" No. D-38, we would like to offer our comments in regard to what we feel are the basic site requirements for nuclear power and test reactors.

Certainly the suitability of any reactor site must be judged against the need to protect the public from higher than permissible dosage from plant effluents under normal conditions, and must similarly assure the public protection against excessive dosage under a "maximum credible accident". Permissible repetitive biological dose rates have been established for normal operations, covering airborne release and release in adjacent waters of plant effluents in Part 20 of the Commission's "Standards for Protection Against Radiation". However, there are currently no Commission regulations giving permissible dosage rates for the public in the event of such a nuclear accident.

We believe the attempt to establish limitations for a "maximum credible accident" is the major positive feature of the proposed guide. However, we believe the AEC proposal has a most important omission which is absolutely necessary; that is, a relationship between "once-in-a-lifetime dosage" from an accident and the size and density of the "population at risk". We feel that there obviously is a relationship between dosage and population, and that this can be defined in some relatively simple mathematical way. Recognizing fully that the establishment of proper dosage limits to the population is a complex determination best made by the Commission and its experts, we are nonetheless including a sample graph relating dosage and population, together with an accompanying explanation of the assumptions, as a sample of what appears to us possible and desirable. The attached graph with its accompanying explanation is designated as "Reactor Siting Evaluation - Once-in-a-Lifetime Dosage Criteria". In setting up this graph, we have established limits both for whole body dose and for iodine dosage to the thyroid based upon the numerical values given in the proposed guide. We believe the applicant for site approval should be required to demonstrate that both of these limits would be met. Moreover, if any other radioactive isotopes would be released in a reactor accident in concentration sufficient to result in hazard to the public, limits should be set for these isotopes which the applicant would also have to meet.

A/264

With the permissible dosage in the case of a maximum credible accident defined, the suitability of the site in the event of such an accident rests on the adequacy of the construction when related to the meteorology, geology, seismology, and hydrology of the site to safely contain, control and eventually dispose of the products of the accident within these limits. These then become matters of submission to the AEC and subject to their determination as to the adequacy of the assumptions concerning the cause and consequences of the accident and the adequacy of the plant construction and the natural features of the site.

In addition to the major concern discussed above we have participated in a review of the guide by the Atomic Industrial Forum which is submitting a proposed revision. We agree with the major points of that proposed revision, namely:

1) That greater emphasis must be given to the effect of engineering design on distance requirements.

2) That Appendix A should not be an integral part of the Guide and if sample calculations are deemed to be necessary, they should at least encompass more than one set of assumptions relating to design and meteorology.

3) That the concept of a "population center distance" should be replaced by the adoption of a dosage vs population criteria. The area beyond the "low population zone" might be designated as the "extended population zone". Dosages under maximum credible incident in all three zones, exclusion, low population, and extended population zone would have to meet the limits imposed by the dosage population criteria.

Very truly yours,

J F Fairman
Senior Vice President

Attach.
JFF/ecp

Attachment A - Reactor Siting Evaluation

Once-in-a-Lifetime Dosage Criteria

It is recognized that the setting of a once-in-a-lifetime dosage criteria to the public is a complicated subject, but we believe the accompanying figures are reasonable and present a starting point from which expert discussion can evolve a final dosage criteria. The dosage from a reactor incident may be whole body gamma or beta, or may be due to inhaled beta; the principal hazard being that of the radioactive iodine. We have, therefore, presented criteria for both full body dosage, Figure #1, and for thyroid dosage, Figure #2, which results from inhaled radioactive iodine.

The proposed Guide apparently concedes that a whole body dosage of 25 rem does not represent a significant hazard to a relatively small number of people; it indicates a whole body dosage of 25 rem to a population at risk of about 25,000 people would be a reasonable basis for site evaluation. This value, therefore, was used for the initial portion of Figure #1. The dosage was then reduced logarithmically to a 5 rem point for a population at risk of one million people and held constant at that rem level for larger populations. The 5 rem dosage criteria is only ten times the annual routine dosage criteria limit now set in 10 CFR-20, and we believe this to be reasonable as a once-in-a-lifetime dosage.

The thyroid dosage criteria, Figure #2, has been set in an analogous manner. The high portion of the curve has been set at 300 rem to the thyroid for a population at risk of 25,000 people. The dosage has been reduced logarithmically to 15 rem to the thyroid for a million population. This is five times the present iodine-131 continuous non-occupational concentration listed in 10 CFR-20, but it is our understanding that consideration is being given to a reduction in this regulation by a factor of two. We have set the lower dosage point as ten times the expected revision, and have held the dosage constant at this level for larger populations.

May 31, 1961

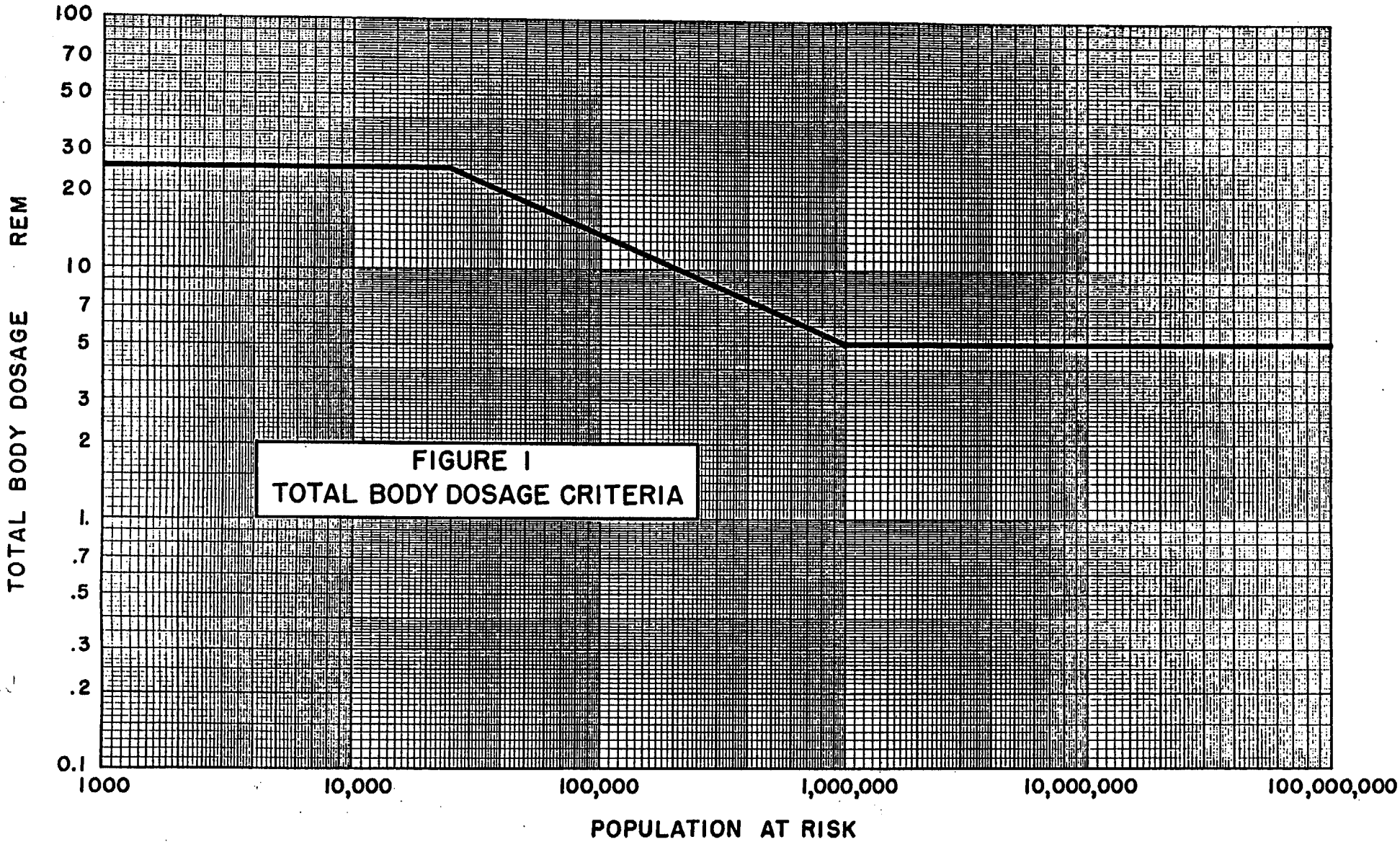

FIGURE I
TOTAL BODY DOSAGE CRITERIA

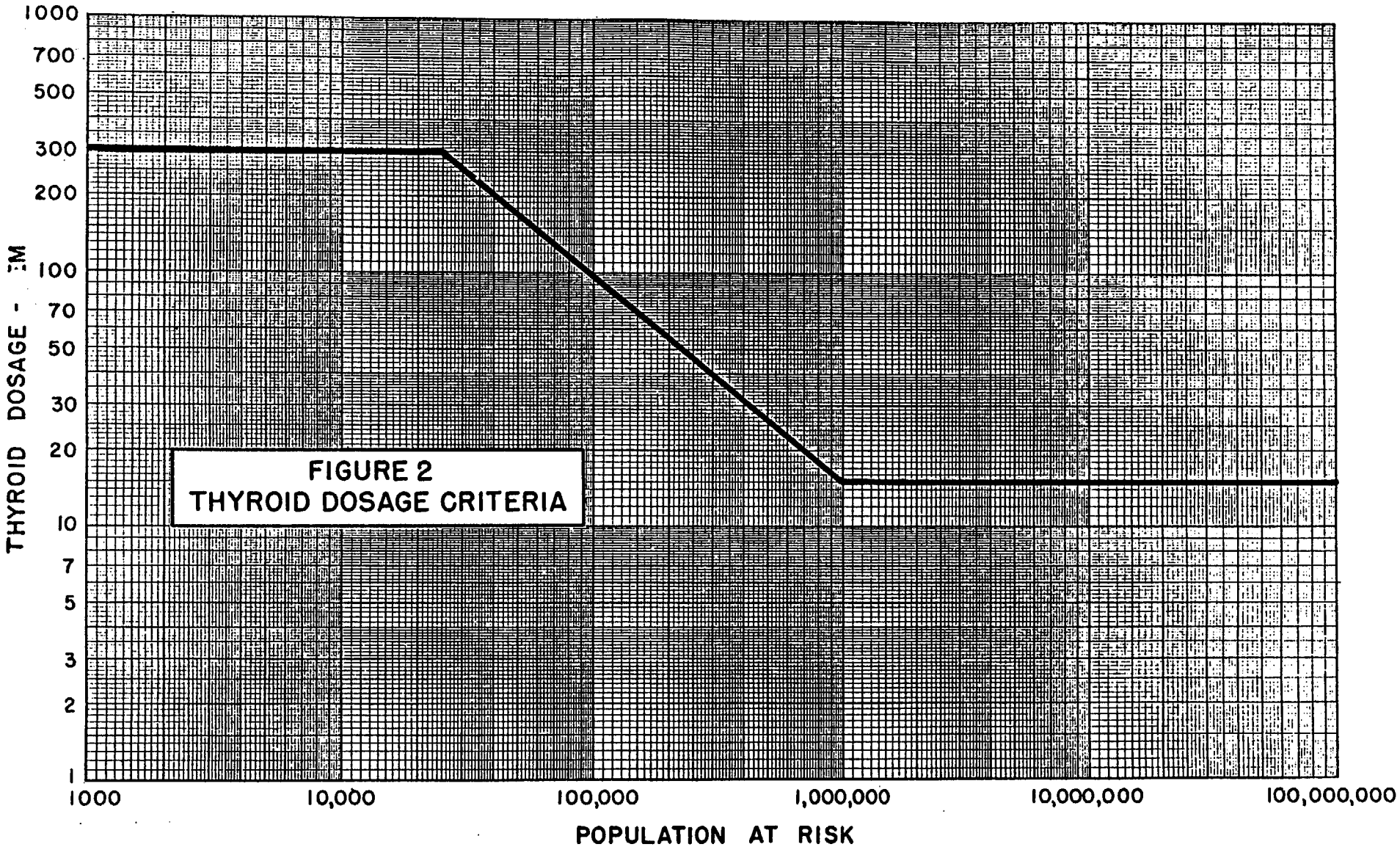

FIGURE 2
THYROID DOSAGE CRITERIA

FORM AEC-204
(9-57)

U. S. ATOMIC ENERGY COMMISSION

CC RESPONDENCE REFERENCE RM

DATE:

INDEX: Legal Part 160

5/22/61

TO: Mr. Pierre Balligand/IAEA

FROM: Clifford Beck

SUMMARY: Re small conference on reactor siting and related problems

FILED: IAEA

INDEXER:

REMARKS: