

Harold L. Price, Director
Division of Licensing and Regulation

APR 15 1958

Clifford K. Beck, Chief
Hazards Evaluation Branch

TRIP REPORT ON CONFERENCE WITH DR. HENRY NEWSON AT DUKE UNIVERSITY

On April 9 and 10 I was at Duke University for conferences with Dr. Henry Newson, a member of the ACES regarding site criteria, criteria for control rods and reactor control systems, standardization of hazards reports, and other related matters.

1. Dr. Newson believes that the present (final) form of the general site criteria developed by HEB which is now ready for transmittal to the Commission and, if approved, to the Federal Register for 30 days notice, is acceptable. Dr. Newson believes that we have been wise in avoiding commitment to definite numbers on exclusion distance, population density and similar items. He agrees that the criteria in our present form will not preclude more quantitative development of comprehension reactor site-accident probability formulas which he believes can and should be developed.
2. Dr. Newson believes that a multi-factor formula can be developed, in which probability numbers can be assigned the various factors, which will yield quantitative definition of the degree of safety contained within a given reactor-site proposal. He believes that the ideas presented by Dr. McCullough at the March meeting were considerably confused and "flubbed" but that a portion of this general approach can probably be worked out satisfactorily. He expects to do some work on this but has not yet had time.
3. Dr. Newson has gone over in minute detail the tentative proposals of HEB criteria related to control rod and control rod systems. He offered many detailed suggestions on these site criteria. He strongly encourages the idea of issuing these as general guides and instructions at the earliest possible moment.
4. The criteria developed by HEB on containment was discussed at considerable length. Dr. Newson believes that it would be very useful for this also to be published in our regulations but strongly urges that a preamble be prepared which would make it clear that containment, as understood to mean external building or vessel of some sort, may not necessarily be required for all reactor facilities. We also discussed the merits and

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potentialities of "steam suppression" which offers the possibility of lower capacity pressure buildings around water reactors and Dr. Newson concurred in the opinion that some mention of this should also be included in the containment criteria.

5. The outline prepared by HEB for a standardized hazards report was discussed briefly. There was not opportunity to consider this in detail though Dr. Newson was of the strong opinion that instructions should be issued which would require presentation of the hazards information in a standardized form. Dr. Newson and the writer will discuss this outline in further detail on April 15, in Washington.

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RD - Reactor Criteria

*Return to Mr. Beck
Arthur - Stinson*

William Hughes
Information Services

April 15, 1959

Gifford R. Beck, Chief
Hazard Evaluation Branch

ANSWER TO CALTECH'S QUESTION - "WHAT DANGERS ARE THERE IN
ESTABLISHING REACTORS IN POPULATED AREAS"

There are only two hazards to the public associated with operation
of nuclear reactors:

- 1) The possibility of radioactivity release from the reactor into the unshielded containing structures of the facility, so that direct radiation, "shine," from the contained material could cause radiation exposure to people in adjacent areas. This hazard does not extend beyond 3,000 or so feet, even for very large reactors.
- 2) The possibility that radioactivity might be released from the facility to the atmosphere and become dispersed to areas beyond the site boundary. An operating license is not given for any facility unless there appears to be adequate safeguards to prevent injurious radioactivity release from the facility from any accident considered to be credible. However, the possibility is never entirely removed that an "incredible" accident could occur which would breach or penetrate the safeguard barriers and result in injurious releases. There also is the possibility that non-catastrophic amounts, small releases, could occasionally occur which would be nuisances (and possibly costly) if people were nearby.

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To Clifford Beck:

In connection with a visit which Chairman McCone is to make to Rockhurst College in Missouri, he has asked us to provide him immediately with answers to a number of questions which will be asked. One of these questions is:

What dangers are there in establishing reactors in populated areas?

Will you please give me a paragraph which will serve as an answer to the Chairman to this question? We do not have in mind a lengthy discussion. Ten or 15 lines will suffice.

We must have this material by the close of business today. We must deliver all answers to the Chairman tomorrow.

Thanks.

Bill Hughes
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