

Dr. MACKENZIE: We appoint them as our advisers to the advisory board, as I have noted. When we come to public health matters, we would delegate our responsibility to the federal health department. We would not act until we had their opinion. When it came to the clinical use of isotopes, which we also had to pass for hospitals, we also would have the view of a clinical body in which we would have confidence—and I think that is the normal procedure in business.

Mr. BEST: You have stated in reply to Mr. Drysdale that some of the suggestions or guides of the A.S.M.E. or other bodies did not necessarily apply in this case. You may not have used those words, but you said this was a special case. If this were a special or unusual case, perhaps the first in Canada, why would not all normal safety procedures and factors apply, and perhaps further ones?

Dr. MACKENZIE: If we adopted the normal procedures for non-nuclear things, we might run into great difficulties. If we had an ordinary vessel which you would allow in this room, or downstairs, and we had one with radioactive material which would be the more dangerous? There are many cases where we would not follow the normal code because it would not be safe enough. For instance, in the case of NPD, our reactor vessel is contained in a concrete box. If a tube should break or a tube should blow, no one would get hurt. So we are interested in the fundamental safety of the people involved.

Mr. BEST: This may be so, that to follow exactly these guides such as A.S.M.E. might not give sufficient protection. My question would be in more detail. Why are not all the minimum standards followed through, plus any additional standards which might apply to your particular case in question? If the details are not there in this guide, for the case of a nuclear reactor, and further precautions to safeguard your standards are necessary, which I can understand, why, on the other hand, was there a lowering in one of the perhaps more conventional standards from a factor of four to one of three?

Dr. MACKENZIE: I had prepared a brief on this factor of safety. There is no such thing as a factor of safety. The words are not used in the code. I have prepared something on that as a sort of explanation which might guide the committee, if you would like to hear it.

Mr. BEST: I would very much like to hear it, but I have one other question first. You have mentioned just now that some parts of this reactor are protected and so forth. Dr. Laurence mentioned this a week ago, that no one could get hurt because no one was inside there. This may well be so, but in the case of the explosions or difficulties we have seen in the United States, or perhaps at Chalk River, even though a loss of life did not occur, the plant was immobilized and the loss and damage in operating expenses was tremendous and extensive. This may not apply as far as human injury goes, but it can scarcely satisfy as far as economic risk goes.

Dr. MACKENZIE: I should not really be talking about this, because I am not responsible for the design, but in every case I followed up any causes of accidents when I was in charge. They never occurred through the factor of safety. They always occurred through some human error, through someone doing something which should not have been done. It is the same in the case of flying aircraft and it is like all major accidents. I do not know of any which occurred because of lowering of the factor of safety at all.

Mr. BEST: Would Dr. Mackenzie like to give his views?

The CHAIRMAN: Is it agreed that he do this?

Agreed.