

Dr. Farrington Daniels, Chairman October 1, 1954
Department of Chemistry
University of Wisconsin
Madison, Wisconsin

Dear Dr. Daniels:

It was nice to hear from you and learn of the most recent developments relative to the generation of atomic power through gas turbines. With regard to suggestions I might have as to how to get a project started along these lines, I doubt if I have any you have not already considered.

The first thought that comes to mind is to contact the industrial outfits who have indicated their intentions to enter the atomic power field. To this end there is attached the most recent list of such companies [over 50 are named]. I have heard that, among these, TVA and American Machine and Foundry are giving serious thought to gas turbines.

If none of these contacts prove fruitful, there is the possibility of interesting one of the National Laboratories, presumably Argonne or Oak Ridge. I feel this is an empty suggestion since you must have discussed your ideas at considerable length with both Walter Zinn and Alvin Weinberg.

The other possibility I see is through the Division of Reactor Development here, although I don't know if such an approach would be fruitful at this time. The Division would still have to 'sell' the approach to someone who could do the actual work.

In summary, I expect the only really satisfactory way to develop an effort on your design would be for you to go to work on it yourself as a full-time job, possibly operating as a member of one of the interested companies or national labs.

At one time, we studied rather thoroughly a gas cooled reactor for submarine application. The plant using a boiler and steam turbine presented too many detailed problems to look good. Not much study was given to a direct cycle plant using a gas turbine because of the difficulties attending maintenance, and leakage of gas. Incidentally, I feel you are taking on a big headache when you have a helium to nitrogen heat exchanger. Such an exchanger will be large, expensive, and wasteful as to temperature. I think you

should face the problem of turbine contamination right from the beginning; and stick to the direct cycle if you want to demonstrate the usefulness of the gas turbine approach.

I appreciated your editorial in the Journal of Reactor Science and Technology. I think it was more in agreement with mine than in rebuttal of it. At least, I agree with much of what you said.

If your travels should lead you to Washington I would appreciate your stopping by and seeing me. Also, if you should be going West at any time, I wish you would let me know because I am sure you would like to stop at Arco and see the Mark I; after all, you did have something to do with its birth and a 'naval' reactor is not as much different from a 'civilian' reactor as you believe.

With kindest regards to Mrs. Daniels and to yourself,

Sincerely yours,

H. G. Rickover, Chief
Naval Reactors Branch
Division of Reactor Development

Twenty years later, the Environmental Protection Agency's pamphlet, Questions and Answers About Nuclear Power Plants, listed more than 29 nuclear plants in operation in the United States. This number, they said, is expected to reach more than 80 by 1976 and as many as 200 to 300 by 1985. A complete list of reactors—in operation, in construction or planned was given. Most of them are pressurized water, or boiling water plants. Three plants are described as high temperature, gas-