Department of Energy
Washington, D.C. 20545

DOCKET NUMBER
PETITION RULE PRM-51-6 (3)

JUN 10 1980

Mr. Samuel J. Chilk
Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555
ATTN: Docket and Service Branch

Dear Mr. Chilk:

SUBJECT: Catherine Quigg: Filing of Petition for Rulemaking (Docket No. PRM-51-6)

The subject petition by Catherine Quigg is in part based on statements attributed to me. I would like to make the following comments on her petition:

1. Ms. Quigg indicated that "Dr. Peter Lang, Acting Director for LWR Development, Division of Nuclear Power, also projects greater fission gas releases as a side effect of higher fuel burnup times."

   Comment: As far as I am aware, I have not used this specific language in discussing the fission gas issue. I did write the following in the February 1979 issue of Nuclear Engineering International:

   "Pellet-clad interaction (p.c.i.) is the principal mechanism of premature fuel failure in present LWR fuel. The extent to which p.c.i. becomes more serious at high burnups as the result of increasing fuel swelling, increasing clad creepdown, greater fission gas release, higher irradiation damage to materials, and increased number of fuel shuffles and restarts, or on the other hand, less serious because of lower power levels at high burnup, is not yet clear. Even so, remedies or at least alleviations, are needed.

   Fission gas release and fuel rod internal pressure. The increase in fission gas release at high burnups must be accommodated with acceptable end-of-life internal pressure in the fuel rods. Depending on the level of increased burnup sought, provision of more space for fission product gases may be necessary."

   It should be noted that the thrust of my statement is that the fission gas release issue is being addressed and steps

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are being taken to assure that it doesn't present a problem. Ms. Quigg's sentence takes my statements out of context and unfortunately leaves an incorrect implication that greater fission gas releases are projected to occur to the environment with the use of higher burnup fuel. In fact, the fission gas releases discussed by me are those from the fuel pellet to the gas space within the fuel rod and are contained by the fuel cladding.

2. Ms. Quigg indicates that: "Dr. Peter Lang states that current LWRs have not experienced excessive corrosion on the outside surface of the fuel rod." He suggests, however, that: "If burnups and residence times are increased significantly, it is possible that a thicker layer of oxide and crud deposits may develop, raising the oxide cladding interface temperature sufficiently to accelerate corrosion."

   Ms. Quigg goes on to express concern that if the fuel is more corroded, radioactive emissions to and from the spent fuel pool and subsequently to the atmosphere and public will be higher.

   Comment: In this sentence, Ms. Quigg did accurately quote a statement of mine which appeared in the Nuclear Engineering International issue. As in the first instance, the quote is taken out of context. It was meant to define the challenge to researchers and designers; i.e., to design for conditions under which accelerated corrosion does not take place. Evidence to date with high burnup fuel indicates that this is certainly possible.

I appreciate this opportunity to set the record straight on this matter.

Sincerely,

Peter M. Lang, Chief
Light Water Reactors Branch
Division of Nuclear Power
Development